



UNIwersytet  
Przyrodniczy  
we Wrocławiu

## Program studiów

**Kierunek:** Weterynaria (Veterinary Medicine)

## Spis treści

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# Charakterystyka kierunku

## Informacje podstawowe

Nazwa kierunku:	Weterynaria (Veterinary Medicine)
Poziom:	jednolite studia magisterskie
Profil:	ogólnoakademicki
Forma:	Stacjonarne
Tytuł zawodowy nadawany absolwentom:	lekarz weterynarii
Czas trwania studiów (liczba semestrów):	11
Liczba punktów ECTS konieczna do ukończenia studiów na danym poziomie:	360
Liczba godzin (w tym realizowanych z wykorzystaniem metod i technik kształcenia na odległość):	5204
Liczba godzin z wychowania fizycznego*:	60

\*) - dotyczy studiów pierwszego stopnia i jednolitych studiów magisterskich realizowanych w formie stacjonarnej

## Przyporządkowanie kierunku do dziedzin oraz dyscyplin, do których odnoszą się efekty uczenia się:

Dyscyplina wiodąca	Udział procentowy	ECTS
Weterynaria	100%	360

## Sylwetka absolwenta

Absolwent nabywa wiedzę z zakresu weterynarii zgodnie z zasadami określonymi w Ustawie o zawodzie lekarza weterynarii i izbach lekarsko - weterynaryjnych, w Ustawie o inspekcji weterynaryjnej oraz w prawie Unii Europejskiej (dyrektywa 2005/36/WE Parlamentu Europejskiego i Rady z dnia 7 września 2005 r. w sprawie uznawania kwalifikacji zawodowych oraz na poziomie 7 Polskiej Ramy Kwalifikacji.

Absolwent posiada umiejętności wykonywania zawodu lekarza weterynarii z zachowaniem zasad etyki i deontologii weterynaryjnej. Absolwent posiada wiedzę umożliwiającą: badanie stanu zdrowia zwierząt oraz rozpoznawanie, zapobieganie, zwalczanie i leczenie chorób zwierząt, wykonywanie zabiegów chirurgicznych; wydawanie opinii i orzeczeń lekarsko-weterynaryjnych; wydawanie recept na leki i materiały medyczne; badanie zwierząt rzeźnych, mięsa i innych produktów pochodzenia zwierzęcego; nadzór sanitarno-weterynaryjny nad produktami pochodzenia zwierzęcego; sprawowanie nadzoru weterynaryjnego nad ochroną zdrowia publicznego i środowiska oraz zdrowia zwierząt w stadzie; sprawowanie nadzoru weterynaryjnego nad obrotem zwierzętami i miejscami ich gromadzenia; wykonywanie badań i weterynaryjnej oceny środków żywienia zwierząt i warunków ich wytwarzania; upowszechnianie wiedzy weterynaryjnej; zarządzanie w zakresie spraw weterynaryjnych oraz wykonywanie badań laboratoryjnych prowadzonych dla celów diagnostycznych, profilaktycznych, leczniczych lub sanitarno-weterynaryjnych.

Absolwent jest przygotowany do pracy w: zakładach leczniczych dla zwierząt, laboratoriach diagnostycznych oraz przy produkcji i dystrybucji weterynaryjnych produktów leczniczych, wyrobów medycznych i materiałów medycznych, w administracji weterynaryjnej różnego szczebla, a także: w jednostkach naukowo - badawczych i ośrodkach badawczo-rozwojowych; jednostkach zajmujących się poradnictwem i upowszechnianiem wiedzy z zakresu weterynarii, gdy wymagane jest posiadanie tytułu zawodowego lekarza weterynarii; w szkolnictwie - po ukończeniu specjalności nauczycielskiej (zgodnie ze standardami kształcenia przygotowującego do wykonywania zawodu nauczyciela).

Absolwent powinien znać język obcy na poziomie biegłości B2+ Europejskiego Systemu Opisu Kształcenia Językowego Rady Europy oraz umieć posługiwać się językiem specjalistycznym z zakresu kierunku studiów. Absolwent jest przygotowany do podjęcia kształcenia na poziomie 8 Polskiej Ramy Kwalifikacji w szkołach doktorskich.

## Wymiar (liczba godz. i punktów ECTS), zasady i forma odbywania praktyk

L.p.	Rodzaj praktyki	Okres realizacji	Czas trwania		ECTS
			tygodnie	godziny	

1	Praktyka hodowlana	po 4 semestrze	2	80	4
2	Praktyka kliniczna	po 8 semestrze	4	160	8
3	Praktyka w inspekcji weterynaryjnej	po 8 semestrze	2	80	4
4	Praktyka kliniczna	po 10 semestrze	4	160	8
5	Praktyka w inspekcji weterynaryjnej	po 10 semestrze	2	80	4
<b>Razem</b>			<b>14</b>	<b>560</b>	<b>28</b>

Praktyki zawodowe służą osiągnięciu wymaganych efektów uczenia się.

Praktyki zawodowe obejmują poznanie praktycznych aspektów postępowania lekarsko-weterynaryjnego w gospodarstwach, w zakładach leczniczych dla zwierząt, rzeźniach oraz w zakładach przetwórstwa produktów pochodzenia zwierzęcego i produkcji pasz, a także w zakresie unasienniania zwierząt.

Studenckie praktyki zawodowe mają na celu poszerzanie wiedzy zdobytej na studiach i rozwijanie umiejętności jej wykorzystania, poznanie praktycznych aspektów postępowania lekarsko - weterynaryjnego na fermach produkcji zwierzęcej, w zakładach leczniczych dla zwierząt, rzeźniach oraz zakładach przetwórstwa produktów pochodzenia zwierzęcego i produkcji środków żywienia zwierząt, a także w zakresie unasienniania zwierząt.

Formy organizacyjne praktyk:

Student podczas odbywania praktyki wykonuje czynności lekarsko - weterynaryjne (w zależności od rodzaju praktyki) pod nadzorem opiekuna, zgodnie z programem praktyki. Opiekun ma obowiązek potwierdzenia w „Dzienniku praktyk studenta” obecności na praktyce oraz zakres czynności, wykonanych podczas praktyki.

Pełnomocnicy dziekana ds. praktyk są odpowiedzialni:

- przygotowanie sylabusów przedmiotów
- przygotowanie programów i zasad odbywania praktyk
- zawarcie porozumień z podmiotami gospodarczymi, w których studenci odbywają praktyki
- wydanie skierowań na praktykę oraz na badania lekarskie (sanitarно-epidemiologiczne) dla studentów
- kontrolę praktyk i rozliczenie kosztów delegacji
- rozstrzyganie sporów pomiędzy podmiotem, w którym odbywa się praktyka a studentem
- zaliczenie odbytej praktyki

Dziekan może zaliczyć jako praktykę, wykonywaną przez niego pracę zarobkową, jeżeli jej charakter spełnia wymagania programu praktyki. Może to być również praca za granicą, jednakże musi ona być realizowana na zasadach porozumienia między uczelnią a instytucją przyjmującą.

### Zasady/organizacja procesu dyplomowania

Podstawą obliczenia ostatecznego wyniku studiów magisterskich jednolitych jest średnia arytmetyczna wszystkich ocen uzyskanych z poszczególnych przedmiotów, w tym praktyk, z zaokrągleniem do dwóch miejsc po przecinku.

Na dyplomie ukończenia studiów magisterskich wpisuje się ostateczny wynik studiów w skali pięciostopniowej: 3,0; 3,5; 4,0; 4,5; 5,0, ustalony wg zasad określonych w obowiązującym Regulaminie studiów.

Data ukończenia studiów jest data złożenia ostatniego wymaganego programem studiów egzaminu.

## ECTS

Liczba punktów ECTS, którą student uzyska na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia i studentów	194
Liczba punktów ECTS, którą student uzyska w ramach zajęć z dziedziny nauk humanistycznych lub nauk społecznych **	5
Liczba punktów ECTS, którą student uzyska za zajęcia wybieralne	18
Liczba punktów ECTS przyporządkowana zajęciom związanym z prowadzoną w uczelni działalnością naukową w dyscyplinie lub dyscyplinach, do których przyporządkowany jest kierunek studiów	215
Liczba punktów ECTS przyporządkowana zajęciom kształtującym umiejętności praktyczne	105

\*\*) - dotyczy kierunków innych niż przypisane do dyscyplin nauk humanistycznych lub nauk społecznych

### Dopuszczalny deficyt punktów ECTS po poszczególnych semestrach

Semestr	Deficyt	Komentarz
1	4	
2	5	
3	4	
4	4	
5	3	
6	3	
7	3	
8	4	
9	3	
10	0	
11	0	

## Sekwencje przedmiotów

Semestr	Nazwa przedmiotu realizowanego	Nazwa przedmiotu poprzedzającego
2	Animal anatomy II	Animal anatomy I
2	Biochemistry I	Chemistry
2	Histology and embryology II	Histology and embryology I
3	Biochemistry II	Biochemistry I
3	Veterinary microbiology I	Biochemistry I
3	Animal physiology I	Histology and embryology II
4	Animal physiology II	Animal physiology I
4	Veterinary microbiology II	Veterinary microbiology I
4	Pathophysiology I	Biochemistry II
5	Veterinary pharmacology I	Veterinary immunology
5	Pathophysiology II	Animal physiology II
5	Pathophysiology II	Pathophysiology I
5	Clinical and laboratory diagnostics I	Biochemistry II
5	Pathomorphology I	Histology and embryology II
5	Clinical and laboratory diagnostics I	Veterinary microbiology II
6	Clinical and laboratory diagnostics II	Clinical and laboratory diagnostics I
6	Veterinary pharmacology II	Veterinary pharmacology I
6	Parasitology and invasiology I	Pathophysiology II
6	Pathomorphology II	Pathomorphology I
7	Diseases of farm animals	Veterinary pharmacology II
7	Parasitology and invasiology II	Parasitology and invasiology I
7	Slaughter animals and meat hygiene I	Veterinary microbiology II
8	Diseases of horses	Clinical and laboratory diagnostics II
8	Andrology and artificial insemination	Diseases of farm animals
8	Slaughter animals and meat hygiene II	Slaughter animals and meat hygiene I
8	Veterinary toxicology	Clinical and laboratory diagnostics II
8	Diseases of horses	Parasitology and invasiology II
9	Diseases of dogs and cats	Andrology and artificial insemination
9	Avian diseases	Veterinary toxicology
9	Slaughter animals and meat hygiene III	Slaughter animals and meat hygiene II
9	Preventive veterinary medicine I	Diseases of farm animals
9	Hygiene of food processing I	Slaughter animals and meat hygiene II
10	Hygiene of food processing II	Hygiene of food processing I
10	Preventive veterinary medicine II	Preventive veterinary medicine I
10	Diseases of dogs and cats - Clinical internship I	Diseases of dogs and cats

10	Diseases of horses - Clinical internship I	Diseases of horses
10	Avian diseases - Clinical internship	Avian diseases
10	Diseases of farm animals - Clinical internship I	Diseases of farm animals
11	Health herd management	Preventive veterinary medicine II
11	Health herd management	Hygiene of food processing II
11	Diseases of horses - Clinical internship II	Diseases of horses - Clinical internship I
11	Diseases of dogs and cats - Clinical internship II	Diseases of dogs and cats - Clinical internship I
11	Diseases of farm animals - Clinical internship II	Diseases of farm animals - Clinical internship I

# Efekty uczenia się

## Wiedza

### Ogólne

Absolwent zna i rozumie:

Kod	Treść
O.W1	Zasady i mechanizmy leżące u podstaw zdrowia zwierząt, a także powstawania chorób i ich terapii - od poziomu komórki przez narząd, zwierzę do całej populacji zwierząt
O.W2	Rozwój, budowę, funkcjonowanie, zachowania i mechanizmy fizjologiczne zwierząt w warunkach prawidłowych i mechanizmy zaburzeń w warunkach patologicznych
O.W3	Etiologię, patogenezę i objawy kliniczne chorób występujących u poszczególnych gatunków zwierząt oraz zasady postępowania terapeutycznego
O.W4	Sposoby postępowania diagnostycznego i terapeutycznego właściwe dla stanów chorobowych występujących u zwierząt
O.W5	Sposoby wykorzystania weterynaryjnych produktów leczniczych w celu profilaktyki i leczenia zwierząt, a także w celu zagwarantowania bezpieczeństwa łańcucha żywnościowego i ochrony środowiska
O.W6	Biologię czynników zakaźnych powodujących choroby przenoszone między zwierzętami oraz antropozoonozy, z uwzględnieniem mechanizmów przenoszenia choroby oraz mechanizmów obronnych makroorganizmu
O.W7	Zasady przeprowadzania badania klinicznego zgodnie z planem badania klinicznego, analizy objawów klinicznych i zmian anatomopatologicznych
O.W8	Zasady chowu i hodowli zwierząt, z uwzględnieniem zasad żywienia zwierząt, zasad zachowania ich dobrostanu oraz zasad ekonomiki produkcji
O.W9	Zasady zagospodarowywania i utylizacji produktów ubocznych i odpadów związanych z produkcją zwierzęcą
O.W10	Zasady badania zwierząt rzeźnych, mięsa i innych produktów pochodzenia zwierzęcego
O.W11	Zasady ochrony zdrowia konsumenta
O.W12	Zasady właściwego nadzoru nad produkcją środków spożywczych pochodzenia zwierzęcego
O.W13	Normy, zasady i uwarunkowania technologii produkcji zwierzęcej i utrzymania higieny procesu technologicznego
O.W14	Normy prawne związane z działalnością lekarzy weterynarii
O.W15	Podstawowe metody informatyczne i biostatystyczne wykorzystywane w medycynie weterynaryjnej

### Szczegółowe

#### A. Zajęcia w zakresie nauk podstawowych

Absolwent zna i rozumie:

Kod	Treść
A.W1	Strukturę organizmu zwierzęcego: komórek, tkanek, narządów i układów



<b>Kod</b>	<b>Treść</b>
<b>A.W2</b>	Budowę, czynność i mechanizmy regulacji narządów i układów organizmu zwierzęcego (oddechowego, pokarmowego, krążenia, wydalniczego, nerwowego, rozrodczego, hormonalnego, immunologicznego i powłok skórnych oraz ich integracji na poziomie organizmu)
<b>A.W3</b>	Rozwój narządów i całego organizmu zwierzęcego w relacji do organizmu dojrzałego
<b>A.W4</b>	Procesy metaboliczne na poziomie molekularnym, komórkowym, narządowym i ustrojowym
<b>A.W5</b>	Zasady działania gospodarki wodno-elektrolitowej, równowagi kwasowo-zasadowej organizmu zwierzęcego oraz mechanizm działania homeostazy ustrojowej
<b>A.W6</b>	Podstawowe reakcje związków organicznych i nieorganicznych w roztworach wodnych
<b>A.W7</b>	Prawa fizyczne opisujące przepływ cieczy oraz czynniki wpływające na opór naczyniowy przepływu krwi
<b>A.W8</b>	Fizykochemiczne i molekularne podstawy działania narządów zmysłów
<b>A.W9</b>	Mechanizm regulacji neurohormonalnej, reprodukcji, starzenia się i śmierci
<b>A.W10</b>	Zasady i mechanizmy leżące u podstaw zdrowia zwierząt, powstawania chorób i ich terapii - od poziomu komórki, przez narząd, zwierzę, stado zwierząt do całej populacji zwierząt
<b>A.W11</b>	Związek pomiędzy czynnikami zaburzającymi stan równowagi procesów biologicznych organizmu zwierzęcego a zmianami fizjologicznymi i patofizjologicznymi
<b>A.W12</b>	Zmiany patofizjologiczne komórek, tkanek, narządów i układów zwierząt oraz mechanizmy biologiczne, w tym immunologiczne, a także możliwości terapeutyczne umożliwiające powrót do zdrowia
<b>A.W13</b>	Biologię czynników zakaźnych wywołujących choroby przenoszone między zwierzętami oraz antropozoonozę, z uwzględnieniem mechanizmów przenoszenia choroby oraz mechanizmów obronnych organizmu
<b>A.W14</b>	Zasady i procesy dziedziczenia oraz zaburzenia genetyczne i podstawy inżynierii genetycznej
<b>A.W15</b>	Podstawy diagnostyki mikrobiologicznej
<b>A.W16</b>	Mechanizmy działania, losy w ustroju, działania niepożądane oraz wzajemne interakcje grup weterynaryjnych produktów leczniczych stosowanych u docelowych gatunków zwierząt
<b>A.W17</b>	Zastosowanie chemioterapii przeciwbakteryjnej i przeciw Pasożytniczej
<b>A.W18</b>	Mechanizmy nabywania lekooporności, w tym oporności wielolekowej przez drobnoustroje oraz komórki nowotworowe
<b>A.W19</b>	Procedury i elementy niezbędne do wystawienia recepty na weterynaryjne produkty lecznicze
<b>A.W20</b>	Polską i łacińską nomenklaturę medyczną
<b>A.W21</b>	Rodzaje zatruc występujących u zwierząt oraz zasady postępowania diagnostycznego i terapeutycznego w zatruciach
<b>A.W22</b>	Kodeks etyki lekarza weterynarii
<b>A.W23</b>	Pojęcia z zakresu ochrony własności intelektualnej

## **B. Zajęcia w zakresie kierunkowym**

Absolwent zna i rozumie:

<b>Kod</b>	<b>Treść</b>
<b>B.W1</b>	Zaburzenia na poziomie komórki, tkanki, narządu, układu i organizmu w przebiegu choroby
<b>B.W2</b>	Mechanizmy patologii narządowych i ustrojowych
<b>B.W3</b>	Przyczyny i objawy zmian anatomopatologicznych, zasady leczenia i zapobiegania w poszczególnych jednostkach chorobowych

<b>Kod</b>	<b>Treść</b>
<b>B.W4</b>	Zasady postępowania diagnostycznego, z uwzględnieniem diagnostyki różnicowej, oraz postępowania terapeutycznego
<b>B.W5</b>	Zasady przeprowadzania badania klinicznego i monitorowania stanu zdrowia zwierząt
<b>B.W6</b>	Sposób postępowania z danymi klinicznymi i wynikami badań laboratoryjnych i dodatkowych
<b>B.W7</b>	Przepisy prawa, zasady wydawania orzeczeń i sporządzania opinii na potrzeby sądów, organów administracji państwowej i samorządowej oraz samorządu zawodowego
<b>B.W8</b>	Sposób postępowania w przypadku podejrzenia lub stwierdzenia chorób podlegających obowiązkowi zwalczania lub rejestracji
<b>B.W9</b>	Zasady zapewniania dobrostanu zwierząt
<b>B.W10</b>	Zasadę funkcjonowania układu pasożyt-żywcicieli i podstawowe objawy chorobowe i zmiany anatomopatologiczne wywołane przez pasożyty w organizmie gospodarza
<b>B.W11</b>	Rasy w obrębie gatunków zwierząt oraz zasady chowu i hodowli zwierząt
<b>B.W12</b>	Założenia doboru zwierząt do kojarzeń, metody zapładniania i biotechnologii rozrodu oraz selekcji hodowlanej
<b>B.W13</b>	Zasady żywienia zwierząt z uwzględnieniem różnic gatunkowych i wieku
<b>B.W14</b>	Zasady układania i analizowania dawek pokarmowych
<b>B.W15</b>	Sposoby zagospodarowywania i utylizacji produktów ubocznych i odpadów związanych z produkcją zwierzęcą
<b>B.W16</b>	Zasady funkcjonowania Inspekcji Weterynaryjnej, także w aspekcie zdrowia publicznego
<b>B.W17</b>	Zasady ochrony zdrowia konsumenta zapewniane przez właściwy nadzór nad produkcją środków spożywczych pochodzenia zwierzęcego
<b>B.W18</b>	Systemy kontroli zgodne z procedurami HACCP (Hazard Analysis and Critical Control Points) - Systemu Analizy Zagrożeń i Krytycznych Punktów Kontroli
<b>B.W19</b>	Procedury badania przed- i poubojowego
<b>B.W20</b>	Warunki higieny i technologii produkcji zwierzęcej
<b>B.W21</b>	Zasady prawa żywnościowego
<b>B.W22</b>	Zasady ekonomiki produkcji zwierzęcej

### **C. Zajęcia uzupełniające**

Absolwent zna i rozumie:

<b>Kod</b>	<b>Treść</b>
<b>C.W1</b>	Słownictwo i struktury gramatyczne co najmniej jednego języka obcego będącego językiem komunikacji międzynarodowej na poziomie B2+ Europejskiego Systemu Opisu Kształcenia Językowego oraz specjalistyczną terminologię z zakresu weterynarii niezbędną w działalności zawodowej
<b>C.W2</b>	Funkcjonowanie instytucji powiązanych z działalnością weterynaryjną oraz społeczną rolę lekarza weterynarii
<b>C.W3</b>	Zasady bezpieczeństwa i higieny pracy w działalności weterynaryjnej

# Umiejętności

## Ogólne

Absolwent potrafi:

Kod	Treść
O.U1	Przeprowadzić badanie kliniczne zwierzęcia zgodnie z zasadami sztuki lekarskiej
O.U2	Analizować i interpretować objawy kliniczne, zmiany anatomopatologiczne oraz wyniki badań laboratoryjnych i dodatkowych, formułować rozpoznanie stanu chorobowego, z uwzględnieniem diagnostyki różnicowej, oraz podejmować czynności terapeutyczne lub profilaktyczne
O.U3	Zaplanować postępowanie diagnostyczne
O.U4	Monitorować stan zdrowia stada, a także podejmować działania w przypadku stwierdzenia choroby podlegającej obowiązkowi zwalczania lub rejestracji
O.U5	Przeprowadzić badanie przed- i poubojowe zwierząt rzeźnych oraz badanie mięsa i innych produktów pochodzenia zwierzęcego
O.U6	Wykonać czynności, które są związane z nadzorem weterynaryjnym, w tym nad obrotem zwierzętami, oraz warunkami sanitarno-weterynaryjnymi miejsc gromadzenia zwierząt i przetwarzania produktów pochodzenia zwierzęcego
O.U7	Wydać opinię i orzeczenie lekarsko-weterynaryjne
O.U8	Posługiwać się lekarską nomenklaturą łacińską w stopniu niezbędnym do rozumienia i opisywania czynności lekarskich, stanu zdrowia zwierząt, chorób oraz stanów i zmian patologicznych
O.U9	Korzystać z systemów informatycznych stosowanych do obsługi zakładu leczniczego dla zwierząt, stada oraz do analizy sytuacji epizootycznej
O.U10	Przeprowadzać podstawowe analizy statystyczne i posługiwać się odpowiednimi metodami przedstawiania wyników
O.U11	Posługiwać się słownictwem i strukturami gramatycznymi języka obcego będącego językiem komunikacji międzynarodowej w zakresie tworzenia i rozumienia wypowiedzi pisemnych i ustnych zarówno ogólnych, jak i specjalistycznych z zakresu weterynarii
O.U12	Utrzymać sprawność fizyczną wymaganą do pracy z niektórymi gatunkami zwierząt

## Szczegółowe

### A. Zajęcia w zakresie nauk podstawowych

Absolwent potrafi:

Kod	Treść
A.U1	Wykorzystywać znajomość praw fizyki do wyjaśnienia wpływu czynników zewnętrznych (temperatury, ciśnienia, pola elektromagnetycznego, promieniowania jonizującego) na organizm zwierzęcy
A.U2	Posługiwać się podstawowymi technikami laboratoryjnymi, takimi jak: analiza jakościowa, miareczkowanie, kolorymetria, pehametria, chromatografia oraz elektroforeza białek i kwasów nukleinowych
A.U3	Obliczyć stężenie molowe i procentowe substancji i związków w roztworach izosmotycznych
A.U4	Opisać zmiany funkcjonowania organizmu w sytuacji zaburzeń homeostazy
A.U5	Przewidywać kierunek procesów biochemicznych w zależności od stanu energetycznego komórek

Kod	Treść
A.U6	Wyjaśniać anatomiczne podstawy badania przedmiotowego, z uwzględnieniem poszczególnych gatunków zwierząt
A.U7	Definiować stan fizjologiczny jako adaptację zwierzęcia do zmieniających się czynników środowiska
A.U8	Rozpoznawać w obrazach z mikroskopu optycznego struktury histologiczne odpowiadające narządom, tkankom i komórkom, dokonywać ich opisu, interpretować ich budowę oraz relacje między ich budową a czynnością, uwzględniając gatunek zwierzęcia, z którego pochodzą
A.U9	Analizować krzyżówki genetyczne i rodowody cech osobników z poszczególnych gatunków
A.U10	Przeprowadzić podstawową diagnostykę mikrobiologiczną
A.U11	Wybrać i zastosować racjonalną chemioterapię przeciwbakteryjną empiryczną i celowaną, z uwzględnieniem docelowego gatunku zwierzęcia
A.U12	Komunikować się z klientami i z innymi lekarzami weterynarii
A.U13	Słuchać i udzielać odpowiedzi językiem zrozumiałym, odpowiednim do sytuacji
A.U14	Sporządzać przejrzyste opisy przypadków oraz prowadzić dokumentację, zgodnie z obowiązującymi w tym zakresie przepisami, w formie zrozumiałej dla właściciela zwierzęcia i czytelnej dla innych lekarzy weterynarii
A.U15	Pracować w zespole multidyscyplinarnym
A.U16	Interpretować odpowiedzialność lekarza weterynarii w stosunku do zwierzęcia i jego właściciela oraz w stosunku do społeczeństwa i środowiska przyrodniczego
A.U17	Szacować niebezpieczeństwo toksykologiczne w określonych grupach technologicznych zwierząt gospodarskich
A.U18	Oceniać ekonomiczne i społeczne uwarunkowania, w jakich jest wykonywany zawód lekarza weterynarii
A.U19	Wykorzystywać umiejętności zawodowe w celu podwyższania jakości opieki weterynaryjnej, dobrostanu zwierząt i zdrowia publicznego
A.U20	Organizować i prowadzić praktykę weterynaryjną, w tym dokonywać kalkulacji opłat i wystawiać faktury, prowadzić dokumentację finansową i lekarską oraz wykorzystywać systemy informatyczne do efektywnej komunikacji, zbierania, przetwarzania, przekazywania i analizy informacji
A.U21	Zrozumieć potrzebę kształcenia ustawicznego w celu ciągłego rozwoju zawodowego
A.U22	Dostosować się do zmieniającej się sytuacji na rynku pracy
A.U23	Korzystać z rady i pomocy wyspecjalizowanych jednostek organizacyjnych lub osób w rozwiązywaniu problemów

## B. Zajęcia w zakresie kierunkowym

Absolwent potrafi:

Kod	Treść
B.U1	Bezpiecznie i humanitarnie postępować ze zwierzętami oraz instruować innych w tym zakresie
B.U2	Przeprowadzić wywiad lekarsko-weterynaryjny w celu uzyskania dokładnej informacji o pojedynczym zwierzęciu lub grupie zwierząt oraz jego lub ich środowisku bytowania
B.U3	Przeprowadzać pełne badanie kliniczne zwierzęcia
B.U4	Udzielać pierwszej pomocy zwierzętom w przypadku krwotoku, ran, zaburzeń oddechowych, urazów oka i ucha, utraty przytomności, wyniszczenia, oparzenia, uszkodzenia tkanek, obrażeń wewnętrznych i zatrzymania pracy serca
B.U5	Oceniać stan odżywienia zwierzęcia oraz udzielać porad w tym zakresie

<b>Kod</b>	<b>Treść</b>
<b>B.U6</b>	Pobierać i zabezpieczać próbki do badań oraz wykonywać standardowe testy laboratoryjne, a także prawidłowo analizować i interpretować wyniki badań laboratoryjnych
<b>B.U7</b>	Stosować aparaturę diagnostyczną, w tym radiologiczną, ultrasonograficzną i endoskopową, zgodnie z jej przeznaczeniem i zasadami bezpieczeństwa dla zwierząt i ludzi oraz interpretować wyniki badań uzyskane po jej zastosowaniu
<b>B.U8</b>	Wdrażać właściwe procedury w przypadku stwierdzenia choroby podlegającej obowiązkowi zwalczania lub rejestracji
<b>B.U9</b>	Pozyskiwać i wykorzystywać informacje o weterynaryjnych produktach leczniczych dopuszczonych do obrotu
<b>B.U10</b>	Przepisywać i stosować weterynaryjne produkty lecznicze oraz materiały medyczne, z uwzględnieniem ich bezpiecznego przechowywania i utylizacji
<b>B.U11</b>	Stosować metody bezpiecznej sedacji, ogólnego i miejscowego znieczulenia oraz oceny i łagodzenia bólu
<b>B.U12</b>	Monitorować stan pacjenta w okresie śród- i pooperacyjnym w oparciu o podstawowe parametry życiowe
<b>B.U13</b>	Dobierać i stosować właściwe leczenie
<b>B.U14</b>	Wdrożyć zasady aseptyki i antyseptyki chirurgicznej oraz stosować właściwe metody sterylizacji sprzętu
<b>B.U15</b>	Ocenić konieczność przeprowadzenia eutanazji zwierzęcia i we właściwy sposób poinformować o tym jego właściciela, a także przeprowadzić eutanazję zwierzęcia zgodnie z zasadami etyki zawodowej oraz właściwego postępowania ze zwłokami
<b>B.U16</b>	Wykonać sekcję zwłok zwierzęcia wraz z opisem, pobrać próbki i zabezpieczyć je do transportu
<b>B.U17</b>	Wykonać badanie przed- i poubojowe
<b>B.U18</b>	Ocenić jakość produktów pochodzenia zwierzęcego
<b>B.U19</b>	Przeprowadzić dochodzenie epizootyczne w celu ustalenia okresu, w którym choroba zakaźna zwierząt mogła rozwijać się w gospodarstwie przed podejrzeniem lub stwierdzeniem jej wystąpienia, miejsca pochodzenia źródła choroby zakaźnej zwierząt wraz z ustaleniem innych gospodarstw oraz dróg przemieszczania się ludzi, zwierząt i przedmiotów, które mogły być przyczyną szerzenia się choroby zakaźnej do lub z gospodarstwa
<b>B.U20</b>	Korzystać ze zgromadzonych informacji związanych ze zdrowiem i dobrostanem zwierząt, a w wybranych przypadkach również z produktywnością stada
<b>B.U21</b>	Opracowywać i wprowadzać programy profilaktyczne właściwe dla poszczególnych gatunków zwierząt
<b>B.U22</b>	Oszacować ryzyko wystąpienia zagrożeń chemicznych i biologicznych w żywności pochodzenia zwierzęcego
<b>B.U23</b>	Pobrać próby do badań monitoringowych na obecność substancji niedozwolonych, pozostałości chemicznych, biologicznych, produktów leczniczych i skażeń promieniotwórczych u zwierząt, w ich wydzielinach, wydalinach, w tkankach lub narządach zwierząt, w produktach pochodzenia zwierzęcego, żywności, w wodzie przeznaczonej do pojenia zwierząt i w paszach
<b>B.U24</b>	Ocenić spełnienie wymagań ochrony zwierząt rzeźnych z uwzględnieniem różnych sposobów ubojów
<b>B.U25</b>	Ocenić ryzyko skażenia, zakażenia krzyżowego i akumulacji czynników chorobotwórczych w obiektach weterynaryjnych i w środowisku przyrodniczym oraz wprowadzić zalecenia minimalizujące to ryzyko

### **C. Zajęcia uzupełniające**

Absolwent potrafi:

Kod	Treść
C.U1	Posługiwać się co najmniej jednym językiem obcym będącym językiem komunikacji międzynarodowej na poziomie B2+ Europejskiego Systemu Opisu Kształcenia Językowego, w tym specjalistyczną terminologią z zakresu weterynarii niezbędną w działalności zawodowej;
C.U2	Krytycznie analizować piśmiennictwo weterynaryjne oraz wyciągać wnioski w oparciu o dostępną literaturę
C.U3	Wykorzystywać i przetwarzać informacje, stosując narzędzia informatyczne i korzystając z nowoczesnych źródeł wiedzy weterynaryjnej
C.U4	Efektywnie komunikować się z pracownikami organów i urzędów kontroli, administracji rządowej i samorządowej

## Kompetencje społeczne

### Ogólne

Absolwent jest gotów do:

Kod	Treść
O.K1	Wykazywania odpowiedzialności za podejmowane decyzje wobec ludzi, zwierząt i środowiska przyrodniczego
O.K2	Prezentowania postawy zgodnej z zasadami etycznymi i podejmowania działań w oparciu o kodeks etyki w praktyce zawodowej oraz do wykazywania tolerancji dla postaw i zachowań wynikających z odmiennych uwarunkowań społecznych i kulturowych
O.K3	Udziału w rozwiązywaniu konfliktów, a także wykazywania się elastycznością w reakcjach na zmiany społeczne
O.K4	Korzystania z obiektywnych źródeł informacji
O.K5	Formułowania wniosków z własnych pomiarów lub obserwacji
O.K6	Formułowania opinii dotyczących różnych aspektów działalności zawodowej
O.K7	Rzetelnej samooceny, formułowania konstruktywnej krytyki w zakresie praktyki weterynaryjnej, przyjmowania krytyki prezentowanych przez siebie rozwiązań, ustosunkowywania się do niej w sposób jasny i rzeczowy, także przy użyciu argumentów odwołujących się do dostępnego dorobku naukowego w dyscyplinie
O.K8	Pogłębiania wiedzy i doskonalenia umiejętności
O.K9	Komunikowania się ze współpracownikami i dzielenia się wiedzą
O.K10	Działania w warunkach niepewności i stresu
O.K11	Współpracy z przedstawicielami innych zawodów w zakresie ochrony zdrowia publicznego
O.K12	Angażowania się w działalność organizacji zawodowych i samorządowych

# Sylabusy



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal anatomy I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0068.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 9.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 75	

### Goals

C1	Understanding of animal anatomy
C2	Dissection of the corpses

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows the structure of the organism of dog, cat, horse, cow, pig	A.W1	test, participation in discussion



W2	knows the structure, activity and regulation mechanisms of organs and systems of the dog, cat, horse, cow, pig as well as their integration at the organism level. Describes and explains in detail the structure and classification of bones and muscles - head, neck, pectoral limb	A.W2	test, participation in discussion
W3	knows the Polish and Latin veterinary nomenclature regarding the anatomy of a dog, cat, horse, cow, pig	A.W20	participation in discussion
<b>Skills - Student can:</b>			
U1	knows explain the anatomical basis of physical examination, including the anatomical structure of a dog, cat, horse, cow, pig	A.U6	oral credit, observation of student's work, test, practical training report
U2	recognize in the images from the optical microscope the histological structures corresponding to organs, tissues and cells, describe them, interpret their structure and the relationship between their structure and function, in dogs, cats, horses, cows and pigs	A.U8	observation of student's work, practical training report
U3	listen and respond in a language that is understandable and appropriate to the situation	A.U13	observation of student's work, participation in discussion, practical training report
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work
K2	deepens of knowledge and improves skills	O.K8	observation of student's work
K3	communicates with the co-workers and shares of knowledge	O.K9	observation of student's work

## Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Anatomy concept</li> <li>2. Osteology (structure of bone tissue, axial skeleton) 1</li> <li>3. Osteology (peripheral skeleton) 2</li> <li>4. Osteology (peripheral skeleton) 3</li> <li>5. Osteology (development and structure of the skull) 4</li> <li>6. Syndesmology (general structure of the junctions) 1</li> <li>7. Syndesmology (detailed joints) 2</li> <li>8. Syndesmology 3 and test</li> <li>9. Myology (structure and types of muscles)</li> <li>10. Digestive apparatus (general structure and organisation) 1</li> <li>11. Digestive apparatus (oral cavity and oesophagus) 2</li> <li>12. Digestive apparatus (stomach) 3</li> <li>13. Digestive apparatus (intestine) 4</li> <li>14. Glands associated with the digestive tract</li> <li>15. Respiratory system (upper respiratory tract) 1</li> </ol>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Principles of the dissecting office</li> <li>2. Osteology - axial skeleton</li> <li>3. Osteology - thoracic limb 1</li> <li>4. Osteology of the thoracic limb 2</li> <li>5. Osteology - pelvic limb 1</li> <li>6. Osteology - pelvic limb 2</li> <li>7. Analysis of the material and test</li> <li>8. Osteology - skull 1</li> <li>9. Osteology - skull 2</li> <li>10. Osteology - skull 3</li> <li>11. Analysis of the material and test</li> <li>12. Neck and trunk muscles 1</li> <li>13. Neck and trunk muscles 2</li> <li>14. Neck and trunk muscles 3</li> <li>15. Neck and trunk muscles</li> <li>16. Analysis of the material and test</li> <li>17. Muscles, nerves and vessels of the thoracic limb 1</li> <li>18. Muscles, nerves, vessels of the thoracic limb 2</li> <li>19. Muscles, nerves and vessels of the thoracic limb 3</li> <li>20. Muscles, nerves and vessels of the thoracic limb 4</li> <li>21. Analysis of the material and test</li> </ol>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Biophysics

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0237.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

#### Goals

C1	The aim of the course is to present fundamental elements of Biophysics. Students gain basic biophysics knowledge and become able to continue the study in the professional career.
C2	Acquainting students with the influence of environmental factors (acceleration, temperature, pressure, field electromagnetic radiation, ionizing radiation) on a living organism.
C3	Acquainting students with modern physical methods used in the study of the properties of cells and organs.

#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	A student knows to an extensive degree and understands the physicochemical and molecular foundations of the operation of sensory organs. A student knows the physical laws describing the flow of fluids and factors affecting vascular resistance of blood flow.	A.W7, A.W8	written exam, observation of student's work, report, test
W2	The student knows and understands the effects of physical factors on organisms.	A.W11	written exam, project, observation of student's work, report, test
<b>Skills - Student can:</b>			
U1	A student is able to use the knowledge of the laws of physics in order to explain the impact of external factors (temperature, pressure, electromagnetic field, ionizing radiation) on the animal body.	A.U1	written exam, project
U2	A student understands the need for continuing education, in order to ensure continuous professional development.	A.U21	observation of student's work, report
<b>Social competences - Student is ready to:</b>			
K1	A student uses objective sources of information.	O.K4	observation of student's work
K2	A student formulates conclusions from his/her own measurements or observations.	O.K5	observation of student's work
K3	A student deepens his/her knowledge and improves skills.	O.K8	observation of student's work

## Study content

No.	Course content	Activities
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1.	<p>1. The biophysics subject. Mathematical foundation of biophysics. Definition and properties of vector quantities. Vector arithmetic – sum, difference, scalar, and vector products.</p> <p>2. Introduction to physical quantities and laws. Basic and derivative physical quantities. Vector and scalar intensive and extensive quantities, state function. Measurement of a physical quantity. SI system. Unit conversion.</p> <p>3. Description of motion. Kinematics elements: velocity, acceleration, uniform motion, uniform acceleration. Application of kinematics to describe animal movement. The projectiles as a description of jumping animals.</p> <p>4. Force. Example of forces. Newton's principles of dynamics. Inertial and non-inertial systems. Centrifugal force. The use of a centrifuge in laboratory tests. The principle of momentum conservation.</p> <p>5. Elements of animal statics. Center of gravity. Torque. One-sided and two-sided lever. The skeleton as a leverage system. The mechanical advantage of the lever. Impact of living conditions on the anatomical structure of animals. Stability condition.</p> <p>6. Determination of forces acting on selected skeleton elements on the example of the elbow and hip joints.</p> <p>7. Oscillatory movement – characteristics, physical and biological examples – heartbeat and breathing. Simple (harmonic) oscillating motion: harmonic oscillators, motion equation. Damped oscillations in the material medium and forced oscillations. The phenomenon of resonance in biological systems, its negative effect on organs.</p> <p>8. Wave motion. Types of waves and their properties, equation of a harmonic wave. Longitudinal and transverse waves. Basic wave phenomenon: superposition, diffraction and interference.</p> <p>9. Doppler effect. The application of the Doppler effect in the study of blood flow velocity. Acoustic waves (sounds) and their division; sounds heard by man and recorded by various animals. Speed of sound propagation in various media and tissues.</p> <p>10. Sound intensity. Ear. Sound source location methods. Sources of ultrasound and infrasound and their impact on animal organisms. The use of ultrasound in diagnostics (USG) and medical therapy (surgery using ultrasound). Polarization of the wave. Wave polarization methods. The use of polarization of waves by living organisms.</p> <p>11. Elements of geometrical optics – types of lenses and their parameters (refractive index, focus and focal length, a radius of curvature, and resolution). Eye biophysics. Mammal eye structure – sclera, choroid and retina functions. Retinal structure – photoreceptor and nerve cells (rods, suppositories and macula). Image construction in the eye - accommodative ability of the eye. Eyesight defects.</p> <p>12. Heat transport in organisms. Heat, temperature, specific heat of bodies and heat capacity of thermodynamic systems. The first principle of thermodynamic. Molecular mechanisms of heat transport: thermal conductivity – Fourier's law, convection, radiation – Stefan-Boltzmann and Wien law. Heat transport in organisms (convection and radiation) the importance of fur in animals and clothing in humans. Adaptation of animals to seasonal changes – examples.</p> <p>13. The transport of real liquid through pipes of various cross-sections - flow resistance. Real liquid properties - viscosity, capillarity. Laminar flow of viscous liquid - Poiseuille's law - flow rate and resistance caused by conduits. The law of continuity of the stream. Biophysics of the mammalian circulatory system.</p> <p>14. Elements of modern physics. Wave-particle duality. Photoelectric effect. Linear spectrum. De-Broglie waves – electron microscope. Natural and artificial radioactivity. Biological effects of radiation. Deterministic and stochastic effects.</p> <p>15. Modern physics in diagnostics. X-rays, biological impact. Computer tomography. Properties of elementary particles – spin use for magnetic resonance imaging. Annihilation phenomenon as the basis of positron tomography.</p>	lecture
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2.	<p>1. Introduction: division into teams and assigning exercises. Safety conditions. Laboratory regulations. Conditions for passing laboratory. Basics of laboratory data analysis.</p> <p>2. Hooke's law and measurement of Young's modulus. The aim of the exercise is to verify Hooke's law and measure Young's modulus of steel wire. In addition to substantive issues during this exercise, important methodological goals are achieved: a proper collection of measurements, paying attention to the correct set up of the measuring system, analysis of factors affecting the accuracy of measurements, construction of the results table, development of the chart.</p> <p>3. Liquid flow through horizontal pipes. The basic fluid dynamics laws are verified in the experiment: continuity law and Bernoulli's law. A narrowing horizontal pipe system is used for the measurements. During measurements, the fluid flow and static pressure drop in the constriction of the narrowing are tested.</p> <p>4. Humidity measurement. Using the psychrometric method and the dew point method, air humidity is determined.</p> <p>5. Viscosity. The exercise examines the properties of real liquid: water and highly viscous liquids. The viscosity coefficient of water is determined on the basis of Poiseuille's law measuring the flow rate of the water under the constant pressure. The measurement of the highly viscous liquid is done on the basis of Stoke's law measuring the velocity of the ball moving in the liquid.</p> <p>6. Measurement of the bone elasticity coefficient. The aim of the exercise is to study the elastic deformation of bones, subject to Hooke's law. The chicken bone placed on supports bends due to external forces. The deflection value is recorded with a micrometer sensor for various loads. Based on the results obtained, a graph is prepared, the deflection as a function of load, and then the bone elasticity factor is calculated.</p> <p>7. Determination of blood flow through the hand. Using the principle of heat balance, the volume of blood that flows through the hand is determined in relation to the volume of blood flowing through the whole body in one minute – blood flow. The specified volume of the hand is immersed in a calorimeter with water for 30 minutes. Three bodies take part in the heat balance: heat is transmitted by blood flowing to the palm of the hand, while heat is absorbed by the hand, water in the calorimeter and the calorimeter by heating. During the exercise, the water temperature in the calorimeter is measured and the average temperature rise of the bodies receiving heat is determined.</p> <p>8. Measurement of sugar concentration. The use of polarization phenomenon to determine the sugar concentration in a solution. In the exercise with a saccharimeter, the phenomenon of the plane polarization of the solution by a biologically active substance is observed.</p> <p>9. Discussion of experiment results and verification of learning objectives.</p>	laboratory classes
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### Entry requirements

None



# UNIwersytet Przyrodniczy we Wrocławiu

## Cell biology

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0336.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 1	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

#### Goals

C1	The aim of the course is to familiarize students with the latest knowledge about the cell - its manifestations of life and interaction of all intracellular structures. In addition, present the most recent data about how cells form tissues and how they interact with other cells.
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#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the structure of cell organelles and physiology of the connective, muscular and nervous tissue cells	A.W1	oral exam



W2	metabolic processes at the molecular level, the role of receptors and the transmission of signals to the cell, and the regulation of responses at the cell level.	A.W4	oral exam
W3	the mechanism of neurohormonal regulation, reproduction, cell cycle, aging, changes in the nucleus, cytoplasm and cell membrane during the aging process; the duration, course and mechanism of programmed cell death. Effects of harmful factors on the cell	A.W9	oral exam
<b>Skills - Student can:</b>			
U1	Recognize in images from an optical microscope cellular organelles, cells of muscle and nerve tissue, make their description, interpret their structure and the relationship between their structure and activity	A.U8	oral exam, presentation

### Study content

No.	Course content	Activities
1.	<p>1. Cell – definition, differences in cell structure and single cell organisms: eukarya, prokaryota, fungi, archezoa. - 1h</p> <p>2. Cell membranes (structure, membrane permeability, transport of ions and molecules, active transport, endocytosis and its types)- 1h</p> <p>3. Cell nucleus (structure, molecular basis for transcriptional chromatin activation, gene structure, mRNA synthesis and maturation, and rRNA, DNA replication, genetic engineering). 1h.</p> <p>4. RNA (RNA types, function, metabolism, DNA, translocation, splicing, microRNA, RNA interference) 1h.</p> <p>5. Golgi's complex – formation, disaggregation and role. Biosynthesis of proteins. Lysosomes and peroxisomes. - 1h</p> <p>6. Receptors and signal transduction (membrane receptors - ionic channel receptors, G protein activation receptors, adenyl cyclase signaling, activation of membrane phospholipases and tyrosine kinases, intracellular receptors, regulation of receptor responses). Structure of the basement membrane.- 2h</p> <p>7. Cytoskeleton. Structures dependent on motor proteins . - 1h</p> <p>8. Synthesis of extracellular matrix of connective tissue - its biological properties. -1h</p> <p>9. Polarization and depolarization of cell membrane (impulse transduction, structure and function of synapses, role in muscle cell function) -1h</p> <p>10. Cellular differentiation (invariance of the genome, determination, modulation, metaplasia, cell interactions in the differentiation process, regulation of the differentiation process)- 2h</p> <p>11. Aging and cell death. Changes in the nucleus, cytoplasm and cell membrane during aging; Necrosis and programmed cell death (apoptosis), duration, course and mechanism of programmed cell death (apoptosis). The action of harmful factors on the cell. -2h</p> <p>12. Basics of immunology: Innate and adaptive, cell mediated and humoral immunity. -1h</p>	lecture

2.	<p>1. The nucleus and nucleolus. Analysis of cells nuclei from photos and histological specimens. Cell Organelle. Structure and function of the endoplasmic reticulum, Golgi complex and lysosomes. -2h</p> <p>Biological membranes. The structure and function of Golgi's apparatus and lysosomes. Exocytosis, endocytosis, receptor endocytosis and transcytosis. Experiment with membrane fluidity. -2h</p> <p>3. Cytoskeleton and intercellular connections. Mitochondria - structure and function. of a preparation exhibiting mitochondrial activity -2h</p> <p>4. Cytophysiology of connective tissue cells. The phenomenon of synthesis of intercellular substance and the role of its components in tissue transformation processes. Movement in the cell - microscopic observation. -2h</p> <p>5. Cytophysiology of muscle tissue. Muscular contraction and hypertrophy. The role of MyoD in the process of differentiating muscle cells. -2h</p> <p>6. Cytophysiology of nerve and glial cells. Mechanism of conduction of stimuli. Synapse and secretion by synapse. -2h</p> <p>7. Cell cycle (mitotic, meiotic). Interphase - G1, S, G2 phase Enters the cell cycle. Cell cycle regulation. Isolation of an oocyte from the ovary. 3h</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Chemistry

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0359.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 1	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

#### Goals

C1	The aim of the course is to familiarize students with general chemistry (with special emphasis on chemical processes in aqueous solutions), with quantitative and qualitative analysis, as well as with calculations (concentrations, ionic equilibrium, buffers).
C2	Students will be familiarized with general principles of organic chemistry (atomic and molecular orbitals, nucleophilic substitution, elimination, and addition reaction, free radical reaction), structure and chemical properties of organic compounds with one functional group, carbohydrates, lipids, amines, aminoacids and proteins, nucleotides and bonds in nucleic acids.

#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	basal chemical processes concerning ionic equilibrium in aqueous solutions, basal principles of colligative properties of solutions.	A.W5	written exam, test
W2	the principles of buffer solutions and their importance for living organisms, basal principles of chemical reactions kinetic and thermodynamic.	A.W5	written exam, test
W3	basal chemical properties of organic compounds with one or two functional groups.	A.W6	written exam, test
W4	structures and names of chemical compounds, especially basic building blocks of living organisms and biologically active compounds.	A.W6	written exam, test
<b>Skills - Student can:</b>			
U1	use the common laboratory equipment.	A.U2	observation of student's work, active participation, performing tasks
U2	perform calculations concerning concentrations, pH, buffering properties, rate of chemical reactions, chemical equilibrium.	A.U3	test, performing tasks
U3	perform basic chemical quantitative determinations (titrations and colorimetric analyses).	A.U2	observation of student's work, active participation, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	interpretation of results of quantitative and qualitative chemical analysis.	O.K5	observation of student's work, active participation, performing tasks
K2	knowledge and practical skills sharing with other team members.	O.K7, O.K9	observation of student's work, active participation
K3	critical approach to his/her knowledge and its constant updating according to the current state of general knowledge.	O.K4, O.K8	observation of student's work

## Study content

No.	Course content	Activities
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1.	<p>General principles of solutions - true solutions and colloids, colligative properties, osmotic pressure and its biological significance. Ionic equilibrium in aqueous solution - the dissociation of ionic electrolytes, degree of dissociation, dissociation constant, pH, buffered solutions and their biological significance. Basal principles of chemical reactions kinetics.</p> <p>General principles of organic chemistry - atomic and molecular orbitals, hybridization and the nature of the chemical bonds, nomenclature and conformation of alkanes, van der Waals forces, chemical properties of alkanes - free radical chain reaction, cycloalkanes, aromatic alkanes, stereoisomers, nucleophilic substitution reaction, elimination reaction, addition reaction.</p> <p>Organic compounds with one functional group (structure and chemical properties) - alcohols, phenols, compounds with carbonyl group: aldehydes, ketones, esters; mechanism of nucleophilic addition to carbonyl group; carboxylic acids and their derivatives.</p> <p>Structure and chemical properties of carbohydrates. Biologically significant carbohydrate derivatives (glycosides).</p> <p>Structure and chemical properties of lipids (triglycerides, fatty acids, complex lipids, cholesterol and its derivatives). Structure and chemical properties of amines, and azo compounds. Biologically active amines (sulfa drugs, alkaloids, catecholamines). Principles of amino acids, peptide bond formation, proteins. Structure of nucleotides and nucleic acids.</p>	lecture
2.	<p>Qualitative analysis. Chemical calculations (degree of dissociation, dissociation constant, buffers, colligative properties). Quantitative analysis - titration (argentometry, redox titration, complexometric titration). Spectrophotometry - basic concepts (theoretical and practical).</p>	laboratory classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Histology and embryology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0884.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

### Goals

C1	The aim of the course is to familiarize students with the cell and tissue structure of pet organs and acquaintance with the basic aspects of their histophysiology. The student gains experience in use of microscope and the basics of histological techniques. The student is familiarized with embryonic and fetal development of animals from conception to the early postpartum period.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the microscopic structure, the related activities and mechanisms of regulation of organs and systems of the animal organism (respiratory, digestive, circulatory, excretory, nervous, reproductive, hormonal, immunological and skin integuments) and their integration at the level of the body	A.W2	written credit, Practical recognition of slides under microscope
W2	development of organs and the whole animal organism in relation to the mature organism, describes the stages of organ development	A.W3	written credit, Practical recognition of slides under microscope
W3	English and Latin medical nomenclaturee	A.W20	written credit
<b>Skills - Student can:</b>			
U1	recognize in images from an optical microscope the histological structures of cells and tissues, knows species differences	A.U8	Practical recognition of slides under microscope

### Study content

No.	Course content	Activities
1.	<p>1. Gametogenesis as a process preceding the formation of the beginning of a new organism. Egg formation – oogenesis, sperm formation – spermatogenesis. Hormonal regulation of gametogenesis, sexual cycle. -2 hours</p> <p>2. Processes of fertilization and fertilization. Stages of fertilization in mammals. Unusual and pathological ways of fertilization. Parthenogenesis. -3h</p> <p>3. Cleavage, types and meaning. Formation of morula, and then blastula as a result of furrowing. -2h 4. Gastrulation and formation of gastrula. Examples of gastrulation in different species. Formation of germ layers and primary embryonic organs.- 3h</p> <p>5. Formation of fetal membranes. Placentation in various species of domestic and wild animals. Placentation disorders. -2 hours</p> <p>6. Fetal circulation. Principles of fetal circulation. The development of the heart, blood vessels and the formation of blood. Vascular system in the fetus and after birth. -3 hours</p>	lecture

2.	<p>1. Principles of microscopy. Free cell and cell in the team (frog blood cell and cubic epithelial cells). -2 hours</p> <p>2. Epithelial tissue single-layer flat epithelium, ankle single-layer epithelium, single-layer cylindrical epithelium, single-layer multi-row epithelium, transitional single-layer epithelium, flat multilayer epithelium, glandular and sensory epithelium. -8 hours</p> <p>3. Connective tissue - mature gelatinous tissue, reticular connective tissue, adipose connective tissue, blood, flaccid connective tissue, compact connective tissue (convoluted, tendonous, resilient), cartilage tissue: glassy and resilient. Lamellar bone tissue. Chondrogenesis and osteogenesis. - 10 hours</p> <p>4. Muscle tissue: smooth muscle tissue, striated skeletal muscle tissue, striated cardiac muscle tissue. -2 hours</p> <p>5. Nerve tissue: sensory nerve cell, motor nerve cell, glial cell, nerve fiber. - 2 hours</p> <p>6. Circulatory system - artery of elastic types, artery and vein of muscular type, capillary vessel, lymph node, spleen, thymus, Fabricius bag. -4 hours</p> <p>7. Endocrine system - pituitary gland, thyroid with parathyroid gland, adrenal glands.-2 hours</p>	laboratory classes
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### Entry requirements

Biology and chemistry on college level





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Latin

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.1139.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> foreign language (course): 30	

#### Goals

C1	The course aims to present the rules of pronunciation, inflection and correct usage of Latin veterinary nomenclature, especially anatomical terminology, which is obligatory during first year of veterinary studies. During the course students will learn all the declension patterns of Latin substantives and adjectives using the whole material of animal anatomy vocabulary, they learn correct inflection of complex anatomical terms and basics of translation from Latin into English. They also conduct a critical analysis of sentence and recognize differences and similarities between Polish and Latin veterinary nomenclature. Finally, they acquire informations about science and culture of Antiquity, Medieval and Modern age, suitable for their profile.
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#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;	C.W1	observation of student's work, active participation, test, performing tasks
<b>Skills - Student can:</b>			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks
U2	Critically analyses veterinary literature and draws conclusions on the basis of available literature	C.U2	observation of student's work, active participation, test, performing tasks

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Organizational class - course requirements and specification</li> <li>2. Accent and pronunciation in Latin language, grammar repetition</li> <li>3. 1st and 2nd declension of substantives, numerals</li> <li>4. 1st, 2nd and 3rd declension of adjectives, basics of veterinary nomenclature</li> <li>5. 3rd declension of substantives, adjective gradation</li> <li>6. 4th and 5th declension of substantives, participles</li> <li>7. Repetition class - 1st-5th declension of substantives, 1st-3rd declension of adjectives</li> <li>8. Test - 1st-5th declension of substantives, 1st-3rd declension of adjectives</li> <li>9. Cultural class - Latin culture in Europe</li> <li>10. Basics of Latin syntax and translation into English</li> <li>11. Basics of word-building - Latin and Greek word-prefixes and suffixes, Greek alphabet</li> <li>12. Basic Latin veterinary texts reading I</li> <li>13. Basic Latin veterinary texts reading II</li> <li>14. Basic Latin veterinary texts reading III</li> <li>15. Summary class - 1st-5th declension of substantives, 1st-3rd declension of adjectives, translations, word-building</li> </ol>	foreign language (course)



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Agronomy Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0014.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	1. To make students familiar with the organization of field crop production, including fodder production
C2	2. Characteristics of crops with high forage importance

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the basics of growing crops of high fodder importance and how to use animal manure in fertilizing crops	O.W8, O.W9	written credit
<b>Skills - Student can:</b>			

U1	consult the extent of crop production on the farm to ensure the proper quantity and quality of feed for animals	A.U16, A.U21	written credit
<b>Social competences - Student is ready to:</b>			
K1	to take responsible decisions concerning organization of feed production and protection of the natural environment against contamination with animal faeces	O.K1, O.K4	active participation

### Study content

No.	Course content	Activities
1.	Methods of field crop production. Farm as agroecosystem - farm animals as a link in the food chain. Crops and environment, climatic factors in field crop production. Topographic and biotic factor. Water and soil as environmental factors. Soil tillage. Fertilization of field crops, the importance of fertilizers of animal origin. Weed and their harmfulness for crops and animals. Weed control. Characteristics of main groups of field crops, their importance as feed for livestock: cereals, root crops, industrial crops, grain legumes, pasture legumes. Cover crops as a source of fodder and soil organic matter. Contemporary agricultural systems, negative effects of industrialization of livestock production.	lecture

### Entry requirements

biology, physics, chemistry



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Environmental protection Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0631.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, laboratory classes: 20	

### Goals

C1	The aim of the course is to introduce students with the links of cause - and effect of problems related to consumer and professional burdening the environment and adverse global and local ecological phenomena.
C2	Teachers make students aware of basic problems of environmental protection, the source of the pollution and emission reduction methods and neutralization of hazardous substances and also ecotoxicological risks associated with industrial production, agriculture and animal breeding.
C3	Lecturers provide students with knowledge in the field of regulations on environmental protection in Poland, EU and in the world and the structure of the systems of environmental protection in Poland.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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<b>Knowledge - Student knows and understands:</b>			
W1	the relationship of cause-and-effect problems associated with consumer and professional burdering the environment and the adverse global and local environmental phenomena	O.W5, O.W9	written credit, presentation
W2	the outline of legislation on environmental protection in Poland and in the world.	O.W14	written credit
<b>Skills - Student can:</b>			
U1	critically analyze the scientific literature and media reports in the field of environmental protection and draw correct conclusions, especially with regard to consumer behavior	C.U2	written credit, presentation, participation in discussion
U2	discuss current problems of environmental protection with the use of modern multimedia tools	C.U3	presentation, participation in discussion
U3	Interpret the responsibility of veterinarian towards the natural environment	A.U16	written credit, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	presentation, participation in discussion
K2	use the objective sources of information in the field of environmental protection	O.K4	presentation, participation in discussion
K3	get involved in the activities of professional and local government organisations in the interest of environmental protection	O.K12	presentation, participation in discussion

## Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<p>1. History and the action program in the field of environmental protection in Poland and world. International conventions on environmental protection. Environmental protection in the light of the laws of Poland and the EU.</p> <p>2. International ecological organizations. Areas of ecological risks in Poland and in the world, the types of threats. The organic compounds of ecotoxicological importance (dioxins, nitrofurans, biphenyls, polycyclic aromatic hydrocarbons, plastics).</p> <p>3. Metal pollution and its effects on human and animal health. The main causes of environmental change caused by industrial production. Global circulation of mercury.</p> <p>4. Environmental pollution by pesticides and their impact on human and animal health. The main causes of environmental change caused by agricultural production, breeding and veterinary. The fate of the antibiotics in the environment.</p> <p>5. Environmental impact of pharmaceutical and personal care products. Law challenged the Environmental Protection act lawfully European Union. System and environmental protection organization in Poland (environment monitoring).</p>	lecture

2.	<p>1. Basic definitions associated with environment: ecology, zoology, biocenosis, biotope, biosphere, habitat, ecosystem, population, ecological niche, eutrophication, biodegradation, recycling. Basic ecosystems of the world.</p> <p>2. Sources and types of atmosphere pollution. Emission of SO<sub>2</sub>, CO and nitric oxides.</p> <p>3. Photochemical and "classical" smog as a result of atmosphere pollution. Acid rains - mechanism of development, influence on plants and animals.</p> <p>4. Freons and the decrease of ozone layer as a global phenomenon associated with air pollution. The greenhouse effect - mechanisms and results of development.</p> <p>5. Sources and types of water pollution (oceans, seas, rivers, lakes, aquacultures). Polish water resources in comparison to other European countries and the world.</p> <p>6. Sewage - types, content, threat to the environment, methods of treating and water conditioning.</p> <p>7. Causes of soil degradation (desertification, terrain malformation, chemical contamination, erosion). Ways of soil protection - reclamation, treatment against erosion.</p> <p>8. Types of wastes, recycling, storage and neutralization.</p> <p>9. Threats to the environment associated with agriculture (pesticides, fertilizers, animal farming).</p> <p>10. Global environmental problems associated with overpopulation, taking into account the difficulties in obtaining food from natural sources as an example of overexploitation of the seas and oceans - overfishing. Repetition of material and final test.</p>	laboratory classes
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# UNIwersytet Przyrodniczy we Wrocławiu

## Biostatistics and methods of data collection Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine  <b>Speciality</b> -  <b>Department</b> The Faculty of Veterinary Medicine  <b>Study level</b> Long-cycle programme  <b>Study form</b> Full-time  <b>Education profile</b> General academic	<b>Education cycle</b> 2022/23  <b>Subject code</b> WMWMMW-AJS.J1BO.3219.22  <b>Lecture languages</b> English  <b>Mandatory</b> mandatory  <b>Block</b> major subjects (conducted) in foreign languages  <b>Subject related to scientific research</b> No  <b>Subject shaping practical skills</b> No
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<b>Period</b> Semester 1	<b>Examination</b> graded credit  <b>Activities and hours</b> laboratory classes: 30	<b>Number of ECTS points</b> 2.0
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### Goals

C1	The overall purpose of the course is to provide students with theoretical knowledge and practical skills (application of the SAS computer system for statistical analyses of data) concerning biostatistical methods used when collecting and describing a data set (descriptive statistics) and hypotheses testing (parametric and non-parametric tests). Moreover, correlation and linear regression as well as analysis of variance is taught.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	presents the basic IT and biostatistic methods used in veterinary medicine.	O.W15	test



<b>Skills - Student can:</b>			
U1	performs basic statistical analysis and uses appropriate methods for presentation of the results	O.U10	project
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	project
K2	formulates conclusions from own measurements or observations	O.K5	project

## Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<p>1. Descriptive biostatistics (1) - basic definitions and concepts; measures of central tendency; measures of variability; random variables and their distributions; methods of data collection</p> <p>2. Descriptive biostatistics (2) - basic definitions and concepts; measures of central tendency; measures of variability; random variables and their distributions; methods of data collection</p> <p>3. The SAS computer system (Statistical Analysis System) - an introduction.</p> <p>4. The SAS computer system - data management.</p> <p>5. The SAS computer system - basic procedures (descriptive statistics).</p> <p>6. Testing hypotheses (1) - basic definitions and concepts; types of hypotheses; significance level; critical value; rejection region; type I and II errors, power of the statistical test.</p> <p>7. Testing hypotheses (2) - parametric tests; t-test (single sample; two independent samples; two paired samples).</p> <p>8. Testing hypotheses (3) - non-parametric tests; chi-square test (one-way classification, two-way classification).</p> <p>9. Correlation and linear regression.</p> <p>10. Analysis of variance.</p> <p>11. The SAS computer system - using the SAS system to test hypotheses - t-test; Duncan test; ch-square test.</p> <p>12. The SAS computer system - using the SAS system to compute correlation coefficients and construct linear regression equation.</p> <p>13. The SAS computer system - using the SAS system to perform analysis of variance.</p> <p>14. Written test - using the SAS system for calculating descriptive statistics, hypotheses testing, computing correlation and regression and perform analysis of variance.</p> <p>15. Final project presentation.</p>	laboratory classes

## Entry requirements

mathematics, computer science



# UNIwersytet Przyrodniczy we Wrocławiu

## Ergonomy, intellectual protection and work safety Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.0646.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	Presentation of safety and comfortable conditions of work (both at professional and non-professional activities). The basic information about ergonomics will be also presented. The use of ergonomics at the designing and improvement of workplaces will shown. Moreover, the overall information about protection of intellectual property will be presented.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	describes the rules of occupational health and safety in veterinary activities	C.W3	written credit

W2	presents the concepts in the scope of intellectual property protection	A.W23	written credit
<b>Skills - Student can:</b>			
U1	is able to use the advice and help of specialised organisational units or persons in the scope of problem solving	A.U23	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work

## Study content

No.	Course content	Activities
1.	<p>Titles of lectures:</p> <ol style="list-style-type: none"> <li>1. Basic definitions of occupational health and safety. Overall characteristics of factors at the workplaces.</li> <li>2. Dangerous factors at the workplaces: threats related to movement of people. Mechanical threats.</li> <li>3. Dangerous factors at the workplaces: the fire and explosion, fire protection.</li> <li>4. Dangerous factors at the workplaces: the protection against electrical shock.</li> <li>5. Risk of accidents. The definition of occupational accident. Procedures after the accidents, protection against accidents.</li> <li>6. The harmful and onerous factors; vibrations and their impact on human. Minimization of vibration effects at the workplaces.</li> <li>7. Dangerous, harmful and onerous factors at the works at animals.</li> <li>8. The harmful and onerous factors; exposure to audible noise at the workplaces.</li> <li>9. Microclimate. The temperature and air pressure at the workplaces.</li> <li>10. Introduction to ergonomics, basis definitions, historical background.</li> <li>11. Basic ergonomic system. Anthropometry – geometric shaping of workplaces.</li> <li>12. Workload evaluation – energy expenditure of human organism.</li> <li>13. Workload evaluation – static loads on the musculo-skeletal system. Repetitive works and monotype.</li> <li>14. Protection of intellectual property. The types and features of copyright laws. The ways to correct use of intellectual property.</li> <li>15. Protection of intellectual property. Industrial property.</li> </ol>	lecture



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary economy Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J1BO.2640.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 15	

### Goals

C1	Showing to the students basic knowledge about economy on global and country level. Giving the knowledge in the area of business functioning. Making the students aware of many issues concerning own business running in the free market environment.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	economical background of animal production	B.W22, O.W8	written credit, active participation

W2	how to run effective company in the field of production and service	O.W15	written credit
W3	law regulations regarding veterinarians on the free market	O.W14	written credit, active participation
<b>Skills - Student can:</b>			
U1	to use basic data available on the farm and in veterinary practice	A.U20, O.U10	written credit
<b>Social competences - Student is ready to:</b>			
K1	to make up the decisions based on economical background	O.K5	observation of student's work
K2	a proper use of objective data	O.K4	observation of student's work

### Study content

No.	Course content	Activities
1.	<p>Macroeconomy - national income ,Gross national income, national product, market balance, national budget, national authorities interaction with the free market.</p> <p>Microeconomy - income and property, demand and supply rule, curie, demand and supply of veterinary service.</p> <p>Market - definition, role, function, veterinary service market area, competitors, market surroundings.</p> <p>Economic account - profit and profitability, veterinary service evaluation and calculation, planning, investment In vet bussines.</p> <p>Cost of veterinary practice and service - fixe, variable, direct indirect costs, cost analysis, cost minimazing methods.</p> <p>Vet servis economics - disease In economical aspects, cost of health and cost of therapy In Animals production and In pet area, prophylaxis in economical aspects.</p> <p>Private practice - categories of veterinary practices, staff cqualifications, licencing.</p>	laboratory classes



# UNIwersytet Przyrodniczy we Wrocławiu

## OHS and fire protection training Educational subject description sheet

### Basic information

<b>Field of study</b> all	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> UPWrWS.J1A.1493.22
<b>Department</b> Wrocław University of Environmental and Life Sciences	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> general subjects
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 1	<b>Examination</b> credit	<b>Number of ECTS points</b> 0.0
	<b>Activities and hours</b> e-learning lecture: 4	

### Goals

C1	To familiarize students with the principles of health and safety and fire protection during their stay at the university, preventing and protecting students against accidents
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			
U1	be cautious at the university, identify and counteract hazards effectively, and identify harmful and nuisance factors in laboratories and rooms		written credit

U2	provide first aid to victims in certain accidents, behave properly in situations of danger to health and life		written credit
U3	behave properly in the event of a fire and evacuate yourself and other persons at risk from the building		written credit
<b>Social competences - Student is ready to:</b>			
K1	recognise the importance of the impact of their behaviour on their own safety and that of other students/employees of the university		written credit
K2	understanding the importance of health and safety and fire protection for the health and life of students / university employees		written credit
K3	understand the consequences of non-compliance with health and safety rules		written credit

### Study content

No.	Course content	Activities
1.	<p>The subject matter of the course is health and safety at work in terms of legal basis and prevention activities, first aid, as well as organization of fire protection at the University.</p> <p>The subject is conducted in the form of a blended learning course on the Moodle platform. The course includes four modules:</p> <ul style="list-style-type: none"> <li>- Module 1: Selected legal issues</li> <li>- Module 2 Health and Life Threats</li> <li>- Module 3 First Aid</li> <li>- Module 4 Fire protection</li> </ul>	e-learning lecture





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal anatomy II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.0069.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 2	<b>Examination</b> exam	<b>Number of ECTS points</b> 8.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 60	

### Goals

C1	Understanding of animal anatomy
C2	Dissection of the corpses

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows the structure of the organism of dog, cat, horse, cow, pig	A.W1	test, participation in discussion

W2	knows the structure, activity and regulation mechanisms of organs and systems of the dog, cat, horse, cow, pig as well as their integration at the organism level	A.W2	test, participation in discussion
W3	knows the Polish and Latin veterinary nomenclature regarding the anatomy of a dog, cat, horse, cow, pig	A.W20	test, participation in discussion
<b>Skills - Student can:</b>			
U1	knows explain the anatomical basis of physical examination, including the anatomical structure of a dog, cat, horse, cow, pig	A.U6	oral credit, observation of student's work, test, practical training report
U2	recognize in the images from the optical microscope the histological structures corresponding to organs, tissues and cells, describe them, interpret their structure and the relationship between their structure and function, in dogs, cats, horses, cows and pigs	A.U8	observation of student's work, practical training report
U3	listen and respond in a language that is understandable and appropriate to the situation	A.U13	observation of student's work, participation in discussion, practical training report
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work
K2	deepens of knowledge and improves skills	O.K8	observation of student's work
K3	communicates with the co-workers and shares of knowledge	O.K9	observation of student's work

## Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Respiratory system (lower respiratory tract) 2</li> <li>2. Urinary organs</li> <li>3. Male sex organs</li> <li>4. Female sex organs</li> <li>5. Vascular system (structure of the blood vessels, heart and blood vessels of the chest) 1</li> <li>6. Vascular system 2</li> <li>7. Nervous system (general structure and function of nervous system) 1</li> <li>8. Nervous system (brain) 2</li> <li>9. Nervous system (spinal cord and spinal nerves) 3</li> <li>10. Nervous system (autonomic nervous system) 4</li> <li>11. Endocrine glands</li> <li>12. Eye</li> <li>13. Vestibulocochlear organ</li> <li>14. Immune system and lymph organs</li> <li>15. Integument common</li> </ol>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Pelvic limb muscles, nerves and vessels 1</li> <li>2. Pelvic limb muscles, nerves and vessels 2</li> <li>3. Pelvic limb muscles, nerves and vessels 3</li> <li>4. Pelvic limb muscles, nerves and vessels 4</li> <li>5. Pelvic limb muscles nerves and vessels 5</li> <li>6. Analysis of the material and test</li> <li>7. Chest 1</li> <li>8. Chest 2</li> <li>9. Chest 3</li> <li>10. Chest 4</li> <li>11. Analysis of the material and test</li> <li>12. Abdominal cavity 1</li> <li>13. Abdominal cavity 2</li> <li>14. Abdominal cavity 3</li> <li>15. Abdominal cavity 4</li> <li>16. Abdominal cavity 5</li> <li>17. Analysis of the material and test</li> <li>18. Pelvic cavity 1</li> <li>19. Pelvic cavity 2</li> <li>20. Pelvic cavity 3</li> <li>21. Pelvic cavity 4</li> <li>22. Analysis of the material and test</li> <li>23. Head spanchnology 1</li> <li>24. Head spanchnology 2</li> <li>25. Head spanchnology 3</li> <li>26. Head spanchnology 4</li> <li>27. Head spanchnology 5</li> <li>28. Analysis of the material and test</li> </ol>	laboratory classes
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### **Entry requirements**

Animal anatomy I



# UNIwersytet Przyrodniczy we Wrocławiu

## Biochemistry I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.0168.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 6.0
	<b>Activities and hours</b> lecture: 45, laboratory classes: 45	

### Goals

C1	The course provides students with the knowledge on chemical structure and biological properties of proteins, nucleic acids, carbohydrates and lipids, basic metabolic pathways in animal cells, their energetics and regulatory mechanisms as well as basic information pathways and recombinant DNA technology. The course provides some practical training in basic laboratory procedures. After completing the course student acquires the knowledge and terminology necessary to understand biochemistry, molecular biology, physiology, genetics, microbiology, etc.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	characterises in detail the metabolic processes at the molecular, cellular, organ and system levels	A.W4	written credit, test
W2	knows to an extensive degree and understands the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, herd of animals, to the entire animal population;	A.W10	written credit, test
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, test
U2	uses the basic laboratory techniques, such as: qualitative analysis, titration, colourimetry, pH-metry, chromatography and electrophoresis of proteins and nucleic acids	A.U2	observation of student's work, test
U3	predicts the direction of biochemical processes, depending on the energy state of the cells	A.U5	observation of student's work, test
U4	calculate molar and percentage concentrations of glucose, triglycerides, cholesterol in body fluids	A.U3	observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work, test
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work, test

## Study content

No.	Course content	Activities
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1.	<p>1. Amino acids, peptides and proteins (peptide bond and the primary structure of proteins, proteins' secondary, tertiary and quaternary structure, examples of fibrillar proteins, the relationship between structure and function, myoglobin - oxygen storage mechanism, structure of hemoglobin, mechanism of oxygen transfer of by hemoglobin, allostery and cooperation mechanisms, Bohr effect).</p> <p>2. Nucleic acids (structure and nomenclature of nucleotides, structure of DNA and RNA, the genetic code and its properties, DNA mutations - general knowledge, haemoglobinopathies).</p> <p>3. Biological membranes (structure and properties of the membrane lipids, structure and properties of the membrane proteins, glycoproteins, mosaic model of biological membranes, cell signaling; membrane signal transduction mechanism, membrane transport and its types, transporters, channels and membrane pumps).</p> <p>4. Enzymes (the definitions of the free energy and the activation energy, difference between the chemical catalysis and biocatalysis, general structure, classification and nomenclature of enzymes, small molecule cofactors of an enzyme activity, enzyme kinetics, regulatory mechanism of the enzyme action, the main types of enzyme inhibition).</p> <p>5. Bioenergetics (basic concepts and definitions, the "high energy" compounds, and other energy stores in the animal organism - chemical properties, distribution, functions and significance, the mitochondrial respiratory chain - its structural basis and its function, oxidative phosphorylation, Krebs cycle - the course, adjustable, meaning).</p> <p>6. The carbohydrate metabolism (structure, classification and properties of carbohydrates, glycolysis - meaning, mileage, regulation, the pyruvate metabolism, gluconeogenesis - meaning, mileage, regulation, the metabolism of glycogen - glycogenolysis course and glycogen synthesis, regulation of glycogenolysis and glycogen synthesis, protein kinases, lactose synthesis in mammary gland, and its catabolic pathway in animals and bacteria, the pentose-phosphate pathway - meaning, mileage, regulation, cellulose fermentation processes in animals).</p>	lecture
2.	<p>1. Physical and chemical properties of proteins, useful in laboratory analyses. Colorimetric determination of protein content.</p> <p>2. Separation techniques (gel filtration- determination of haemoglobin molecular weight, separation of proteins with use of ion exchange chromatography, protein electrophoresis).</p> <p>3. Enzymology- practical use in veterinary medicine (Identification of the serum protein fraction, which contains trypsin inhibitor and <math>\alpha</math>-glucosidase).</p> <p>4. Carbohydrates- identification and determination of their concentration in solution (Identification of unknown carbohydrate in solution).</p>	laboratory classes

### Entry requirements

General and organic chemistry, biophysics



# UNIwersytet Przyrodniczy we Wrocławiu

## Biology

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.0227.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

#### Goals

C1	The aim of the course is to acquaint students with basic processes occurring in animate environment. This course will fill the gaps and expand the knowledge in the field of general rules and theories of biological sciences such as definition of organism (e.g. distinguishing parasitic and free-living organisms, description and comparison of the development cycles of parasitic forms, characteristics of selected groups of plants [also in the terms of biologically active substances], morphological and anatomical structure), evolution of organic world and structural organisation of life. Understanding the relationship between structure and function at the level of cells, tissues and organs.
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#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	the structure of single and multicellular organisms as well as morphology, structure and taxonomy	A.W2	presentation, test
W2	the systematic division, structure and development of selected taxonomic groups in comparison to a mature organism.	A.W3	presentation, test
<b>Skills - Student can:</b>			
U1	recognise (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate;	A.U8	observation of student's work, presentation, test
U2	listen and respond in a language that is understandable and appropriate to the situation	A.U13	observation of student's work, participation in discussion
U3	work in a multidisciplinary team	A.U15	observation of student's work, presentation
<b>Social competences - Student is ready to:</b>			
K1	showing responsibility for decisions made towards people, animals and the natural environment	O.K1	observation of student's work, participation in discussion
K2	using objective sources of information as well as extending knowledge and improving skills	O.K4, O.K8	observation of student's work, participation in discussion

## Study content

No.	Course content	Activities
1.	1. Basic definitions in biology 2. Overview of systematics and taxonomy, part 1 3. Overview of systematics and taxonomy, part 2 4. Phylogeny and evolution, part 1 5. Phylogeny and evolution, part 2 6. Overview of selected taxa (Protists) 7. Overview of selected taxa (Plants) 8. Overview of selected taxa (Metazoa) 9. Introduction to ecology, part 1 10. Introduction to ecology, part 2 11. Basic concepts in conservation biology 12-15. Animal's and plant's basic physiological processes	lecture

2.	<ol style="list-style-type: none"> <li>1. Concepts and definitions in cell biology</li> <li>2. Overview of Protists</li> <li>3. Overview of Metazoa: Porifera and Cnidaria</li> <li>4. Overview of Metazoa: Platyhelminthes</li> <li>5. Overview of Metazoa: Nematoda</li> <li>6. Overview of Metazoa: Annelida</li> <li>7. Overview of Metazoa: Arthropoda</li> <li>8. Collection of Arthropods in the field</li> <li>9. Identification of Arthropods</li> <li>10. Overview of Metazoa: Mollusca</li> <li>11. Overview of Metazoa: Chordata, part 1</li> <li>12. Overview of Metazoa: Chordata, part 2</li> <li>13. Overview of Metazoa: Chordata, part 3</li> <li>14. Plant diversity, part 1</li> <li>15. Plant diversity, part 2</li> </ol>	laboratory classes
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# UNIwersytet Przyrodniczy we Wrocławiu

IT

## Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2AO.1026.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> general subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	The overall purpose of the course is to provide students with the basics of computer processing different types of data. They learn about usage of tools and services including Internet methods
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	presents the basic IT and biostatistic methods used in veterinary medicine.	O.W15	test
<b>Skills - Student can:</b>			

U1	uses and processes information with the use of IT tools and modern sources of veterinary knowledge	C.U3	test
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	test
K2	deepens his/her knowledge and improves skills	O.K8	test
K3	communicates with the co-workers and shares knowledge	O.K9	test

## Study content

No.	Course content	Activities
1.	<p>1. Subject of IT; types of data; data processing history; structure and evolution of the computer hardware</p> <p>2. Operating system of the personal computer (goals, construction, examples); computer-human interaction (history and overview); Operating system installation on the PC (selected Linux distribution); software included in the OS; Basics of author law and kinds of computer software licences</p> <p>3. Text editing application (Writer/LibreOffice package) – environment, page/document formatting (breaks, symbols, header&amp;footer, fields, footnotes, page numbering, margins, etc.), tables, graphical objects, embedding objects from external sources, hypertext, mail merge</p> <p>4. Spreadsheet (Calc/LibreOffice package) – environment, cell formatting, conditional formatting, references, functions (math, text, logical), data sorting, charts, pivot tables, subtotals</p> <p>5. Computer graphics – types and representing methods (bitmap, vector, file formats, compression), color space), sample applications (GIMP, Inkscape)</p> <p>6. Internet – history, network services and their evolution, Internet tools and resources, security in network, data confidentiality</p> <p>7. Databases – types, relational databases, database query languages, examples</p> <p>8. New data processing techniques – artificial intelligence, Big Data, machine learning, chances and dangers</p> <p>9. Methods and measurements of the scientific articles/journals – national and international classifications systems and their base, pros and cons of rankings; knowledge bases – practical usage with Internet access</p>	laboratory classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## General and veterinary genetics Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.0756.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	During the course students learn rules of inheritance and mechanisms generating genetic diversity. The aim of the course is to familiarize students with the rules of inheritance of innate traits, mechanisms of genetic diversity generation at the level of a single organism and population, the importance of genetics in the diagnostics of animal and human diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	principles of inheritance of monogenic diseases, qualitative and quantitative traits, the concept of gene linkage and sex linkage, and the basics of molecular biology used in the process of genetic disorders diagnostics.	A.W14	active participation, test, performing tasks
<b>Skills - Student can:</b>			
U1	conduct an experiment using mating of various fruit fly strains and, based on them, analyze the traits' inheritance pattern.	A.U9	project, active participation, performing tasks
U2	analyze trait pedigrees of people and individuals from other animal species.	A.U9	active participation, test
U3	perform a statistical analysis of the results of genetic crosses using the Chi <sup>2</sup> test and prepare a report on the conducted breeding experiment.	O.U10	project, active participation, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	critically analyze sources of information in the field of genetics in order to identify the reliable sources.	O.K4	observation of student's work, active participation
K2	independently formulate conclusions based on the results of a breeding experiment including an analysis of the inheritance of a selected phenotype determined by one or two genes.	O.K5	observation of student's work, active participation
K3	efficient cooperation in a group during experiment setup and report preparation, and comprehensively present her/his ideas for solving problems in the field of genetics.	O.K9	observation of student's work, active participation

### Study content

No.	Course content	Activities
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1.	<p>1. Introduction to genetics. The history of genetics including key theories that led to its development. Definitions of basic concepts, among others, gene, genome, genotype, phenotype homozygote, heterozygote. Mendel laws. Basic knowledge of the chemical structure of genes. Organizational information.</p> <p>2. The chromosomal theory of inheritance. Differences between prokaryotic and eukaryotic chromosome. Structure and morphology of the metaphase chromosome. Karyotypes and idiogramy selected livestock and pet. The use of differentiating staining. Feedback features, map distance. The concept of alleles. Cell division with a particular indication of meiosis as a source of genetic variation. Gametogenesis.</p> <p>3. . General features of inheritance. Complete, incomplete dominance, heterozygote advantage, codominance. Multiple alleles, lethal and sub-lethal alleles, examples of synthetic lethality in animals and humans. Testing carrier lethal alleles. Mapping of chromosomes. Calculating distances mapped using crosses 2- and 3 points. Sex determination in mammals, birds and other animals.</p> <p>4. Deviations from the laws of Mendel and chemical basis of heredity. Complementarity epistasis, gene complementation, modifier genes, examples of their presence in animals. Chemical structure of DNA and RNA, molecular processes leading to copy the genetic information and expression of phenotypes. Types of RNA. The genetic code.</p> <p>5. Regulation of gene expression and quantitative traits. The levels of gene expression. Mechanisms of action of transcription factors. Hox genes. Epigenetics, genetic imprinting. Inactivation of X chromosome, cumulative genes. Calculations of phenotypic fission using Pascal's triangle. Transgression and heritability.</p> <p>6. Mutations. Types of chromosome mutations, gene and point mutations. Mosaicism. Causes of mutations. Physical and chemical mutagens. The concept carcinogen. Recombination and DNA repair. Markers of recombination. Biochemical phenotypes. Organization of mitochondrial genomes.</p> <p>7. Introduction to population genetics. Basic concepts (population, the incidence of an allele). Law Hardy-Weinberg equilibrium. Factors affecting the frequency of alleles in a population.</p>	lecture
2.	<p>1. Genetic calculations. Mono-, dihybrid crosses and the crosses of larger numbers of genes. Mendelian genetics calculation. Complete and incomplete dominance. Chi<sup>2</sup> test.</p> <p>2. Fruit fly as a model organism for genetic research. Morphology, culture conditions, sexual dimorphism, life cycle and developmental stages. The stereoscopic microscope use. Anesthetizing the flies, observation of the mutant strains' phenotypes, setting up the new cultures.</p> <p>3. Preparation and staining of the polytenic chromosomes from fruit fly larvae salivary glands. Chromosome structure, different types of chromosomes. Setting up the cross of two different strains of fruit flies.</p> <p>4. The molecular diagnostics of the ivermectin hypersensitivity in dogs. Polymerase chain reaction, agarose gel electrophoresis. Phenotyping of the progeny (F1) of crossed fruit fly strains. Transferring of the fruit fly progeny to the new culture tube (F1x F1).</p> <p>5. Phenotyping and counting of the fruit fly second generation (F2). Creating phenotypic ratios. Preparation of lab reports and calculations. Population genetics calculation practice examples.</p>	laboratory classes

### Entry requirements

General knowledge of genetics on the high-school level as expected for the classes of biology/chemistry profile.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Histology and embryology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.0885.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 2	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	The aim of the course is to familiarize students with the organs structure and acquaintance with the basic aspects of their histophysiology. The student gains experience in use of microscope and histological techniques. The student is familiarized with embryonic and fetal development of animals from conception to the early postpartum period.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the microscopic structure, activities and mechanisms of regulation of organs and systems of the animal organism and their integration at the level of the body	A.W2	written exam, written credit, Recognition microscope slides



W2	the development of organs and the whole animal organism in relation to a mature organism, describes and understands embryogenesis	A.W3	written exam, written credit, Recognition microscope slides
W3	English and Latin medical nomenclature	A.W20	written exam, written credit
<b>Skills - Student can:</b>			
U1	recognize in images from an optical microscope histological structures corresponding to organs, tissues and cells discussed during classes, recognizes species differences i.e digestive and respiratory systems of mammals and birds	A.U8	Recognition microscope slides

### Study content

No.	Course content	Activities
1.	<p>1. Circulatory system. Histological structure of the heart, arteries, capillaries and veins. Organs thrown into the course of body fluids. Hematocytopenia. -3 hours</p> <p>2. Endocrine system. Hypothalamic-pituitary system. Gill-derived endocrine glands. Adrenal glands and ganglia. Areas of endocrine cells in the gonads and in the pancreas. Unicellular endocrine glands (APUD cells).-4 hours</p> <p>3. Digestive system. Histological structure of individual sections of the gastrointestinal tract. Intramural and extramural glands. Structures involved in the processes of digestion and absorption. Structures involved in the regulation of the functions of the gastrointestinal tract.-4 hours</p> <p>4. Respiratory system. Histological structure of the nasal cavity, larynx, trachea and lungs. Blood-air barrier. Lungs of birds. - 2 hours</p> <p>5. Urinary system. Histological structure of the kidney. Ultrafiltration barrier. Urine exit roads. -3 hours</p> <p>6. Male reproductive system. Histological structure of the male gonad. -3 hours</p> <p>7. Female reproductive system. Histological structure of the female gonad, fallopian tube and uterus. Ovarian cycle and uterine cycle. -3 hours</p> <p>8. Nervous system. Histological structure of the organs of the central and peripheral nervous system. Nervous synapses. Formation of nerve fibers. -4 hours</p> <p>9. Histological structure of the skin. Skin glands and keratinized derivatives of the skin.- 4 hours</p>	lecture

2.	<ol style="list-style-type: none"> <li>1. Endocrine system - pituitary gland, thyroid with parathyroid gland, adrenal glands.- 3 hours</li> <li>2. Digestive system - tongue, taste buds, salivary glands, tooth, esophagus, hypogastrics, stomach, small intestine: duodenum, jejunum, iliac intestine, large intestine: colon; pancreas, liver. -10h</li> <li>3. Respiratory system - trachea, lungs - 2 hours</li> <li>4. Urinary system - kidney, ureter, bladder.- 3 hours</li> <li>5. Female reproductive system - ovary, fallopian tube, uterus. - 3 hours</li> <li>6. Male reproductive system - testicle with epididymis, vas deferens.- 3 hours</li> <li>7. Nervous system, intervertebral ganglion, spinal cord, cerebellum, brain, sense organs eye (anterior part), eye (posterior part). -3 hours</li> <li>8. Outer shells of the body - skin, hair, hoof, mammary gland. -3 hours</li> </ol>	laboratory classes
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### **Entry requirements**

Biology and chemistry at basic level. Histology I course



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary history and deontology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J2BO.2642.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	The course aims to present students with information concerning veterinary history, its development and achievements from Antiquity until today as well as instilling passion and pride for their future profession. Students also obtain essential information on professional ethics as well as rights and obligations of veterinary surgeon in contemporary professional and social life.
C2	Students identify and describe the crucial persons and events during the medicine development process.
C3	Students understand the close relation between veterinary and human medicine history.
C4	Students understand the role of ethic and veterinary deontology in veterinary practices.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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<b>Knowledge - Student knows and understands:</b>			
W1	describes legal standards associated with the activities of veterinary physicians; describes the history and development of veterinary as a branch of science and profession, presents the functioning of institutions associated with veterinary activities and the social role of a veterinary physician	O.W14	presentation, test
W2	knows and understands the English and Latin medical nomenclature	A.W20	test
W3	knows and understands the veterinary physician's code of ethics	A.W22	test
W4	presents the concepts in the scope of intellectual property protection	A.W23	test
W5	The functioning of the institution of activity with veterinary activities and the task of a doctor veterinary	O.W14	test
<b>Skills - Student can:</b>			
U1	communicates with the clients and other veterinary physicians	A.U12	observation of student's work
U2	is able to listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	observation of student's work, presentation
U3	is able to work in a multidisciplinary team	A.U15	observation of student's work, presentation
U4	interprets the responsibility of veterinary physician in regard to the animal, its owner, society, as well as the natural environment	A.U16	test
U5	assesses the economic and social conditions, in which the profession of veterinary physician is performed	A.U18	test
U6	understands the need of continuing education, in order to ensure continuous professional development	A.U21	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	observation of student's work
K4	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work
K5	gets involved in the activities of professional and local government organisations	O.K12	observation of student's work

## Study content

No.	Course content	Activities
1.	<p>Lecture I - Introduction, myth and symbol in history of medicine and veterinary. Ancient Greece mythology and medicine.</p> <p>Lecture II - Ancient Mesopotamia - The first receipts and veterinarians. Ancient Egypt - animal mummies, medicine, veterinary and breeding.</p> <p>Lecture III - Ancient Rome - Empire, medicus veterinarius, Roman science organization, Byzantine Empire - the main bridge between ancient and medieval world.</p> <p>Lecture IV - Medieval - Is it dark enough in Middle Ages? Humanity and sciences in medieval Europe. Arabic medical sciences.</p> <p>Lecture V - Renaissance - New spring of old scientific tradition. Scientific transfer form Antiquity to Modernity.</p> <p>Lecture VI - Towards Modernity - Early modern discoveries in biological and medical sciences.</p> <p>Lecture VII - 1st partial exam (Antiquity to Medieval - Lectures I - VI).</p> <p>Lecture VIII - Modernity - New discoveries and inventions of XIX century, development and perspectives of medicine.</p> <p>Lecture IX - Early modern biological and medical literature in Poland. The rise, development and fall of strange country in the middle of Europe.</p> <p>Lecture X - The birth of modern veterinary sciences. Schools for veterinarians in Europe.</p> <p>Lecture XI - The history of polish veterinary schools, basic historic context. Lemberg-Wroclaw tradition.</p> <p>Lecture XII - Meat and animal products history. Slaughter and slaughter houses.</p> <p>Lecture XII - History of veterinary journals and veterinarians organization, Polish example - between Prussia, Austria and Russia.</p> <p>Lecture XIII - Main problems of veterinary deontology.</p> <p>Lecture XIV - 2nd partial exam (Modernity to Deontology - Lectures VIII - XIII).</p> <p>Lecture XV - Archaeozoology - between history and modernity, animal-human-environment relation in time. 2nd term of all partial exams.</p>	lecture



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Physical education-Sports Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J6AO.1570.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> general subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Periods</b> Semester 2, Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 0.0
	<b>Activities and hours</b> physical education PE: 30	

### Goals

C1	Developing skills in assessing own physical fitness.
C2	Increasing the awareness around healthy lifestyle.
C3	Introduction to health and safety rules during physical activity.
C4	Developing personal and social skills enhancing lifelong physical activity.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			

U1	maintains physical fitness that is required for the work with certain animal species	O.U12	observation of student's work, active participation
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### Study content

No.	Course content	Activities
1.	Students choose the type of class before the semester start from the offer available on the webpage of Department of Physical Education and Sport as well as the USOS system. Registration is done via the electronic system in place. Particular classes are designed based on the chosen sport discipline and is enhanced by additional elements such as warm-up or stretching exercises. Detailed list of available classes can be found on this webpage: <a href="http://swfis.upwr.edu.pl/zajecia-dydaktyczne/">http://swfis.upwr.edu.pl/zajecia-dydaktyczne/</a>	physical education PE

### Entry requirements

No medical contraindications to participate in physical education classes.



# UNIwersytet Przyrodniczy we Wrocławiu

## Introduction to Polish culture Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J6HS.0993.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> humanities and social sciences
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15	

<b>Period</b> Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 30	

### Goals

C1	The course focuses on Polish history, traditions and culture in order to become an ambassador of Poland.
C2	It aims at discussing the influence of the past as well as globalisation on the contemporary condition of Polish society.
C3	The course should influence its participants to develop their intercultural awareness and to promote a stereotype-free cooperation.



## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	Presents the functioning of institutions associated with veterinary activities and the social role of veterinary physician.	C.W2	written credit
<b>Skills - Student can:</b>			
U1	Effectively communicates with employees of control bodies and offices as well as central and local government administration.	C.U4	active participation
<b>Social competences - Student is ready to:</b>			
K1	Takes responsibility for his/her decisions and exhibits flexibility in reactions to social changes; deepens his/her knowledge and constantly improves social skills	O.K1, O.K8	active participation
K2	Deepens his/her knowledge and improves skills	O.K8	written credit
K3	Communicates with the co-workers and shares knowledge	O.K9	active participation
K4	Formulates conclusions from own measurements or observations	O.K5	active participation

## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Polish symbols and archetypes.</li> <li>2. History of Poland and Wrocław.</li> <li>3. Polish customs and traditions.</li> <li>4. Polish art and literature.</li> <li>5. Contemporary Polish society - its structure, institutions and relationships.</li> <li>6. International perception of Poland and its culture.</li> </ol>	lecture



# UNIwersytet Przyrodniczy we Wrocławiu

## Spanish language Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.JEJO.2352.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Periods</b> Semester 2, Semester 3, Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> e-learning: 4, foreign language (course): 26	

### Goals

C1	The student is made acquainted with Spanish medical and veterinary teaching contents required at the minimum B2+ level for the purpose of achieving the relevant language competences enabling him/her to function properly both in the working environment and in the academia.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			

U1	uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	written credit, oral credit, observation of student's work, active participation, presentation, test, practical training report
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### Study content

No.	Course content	Activities
1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

### Entry requirements

Adequate level of language is required

Group level	Minimum level
B1	--> A2, B1
B2	--> B1, B2
C1	--> B2, C1



# UNIwersytet Przyrodniczy we Wrocławiu

## German language Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.JEJO.0803.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Periods</b> Semester 2, Semester 3, Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> e-learning: 4, foreign language (course): 26	

### Goals

C1	Objectives The student is made acquainted with German medical and veterinary teaching contents required at the minimum B2 level for the purpose of achieving the relevant language competences enabling him/her to function properly both in the working environment and in the academia.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;	C.W1	observation of student's work, active participation, test, performing tasks
<b>Skills - Student can:</b>			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks
U2	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	observation of student's work, active participation, test, performing tasks

### Study content

No.	Course content	Activities
1.	E-learning classes The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	Contents The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

### Entry requirements

#### Prerequisites

Adequate level of language is required

Group level      Minimum level

B1                    --> A2, B1

B2                    --> B1, B2

C1                    --> B2, C1



# UNIwersytet Przyrodniczy we Wrocławiu

## Polish language Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine  <b>Speciality</b> -  <b>Department</b> The Faculty of Veterinary Medicine  <b>Study level</b> Long-cycle programme  <b>Study form</b> Full-time  <b>Education profile</b> General academic	<b>Education cycle</b> 2022/23  <b>Subject code</b> WMWMMW-AJS.JEJO.1732.22  <b>Lecture languages</b> English  <b>Mandatory</b> optional  <b>Block</b> foreign languages  <b>Subject related to scientific research</b> No  <b>Subject shaping practical skills</b> No
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<b>Periods</b> Semester 2, Semester 3, Semester 4	<b>Examination</b> graded credit  <b>Activities and hours</b> e-learning: 4, foreign language (course): 26	<b>Number of ECTS points</b> 2.0
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### Goals

C1	The student is made acquainted with educational contents required at A1 level of the Polish language for the purpose of achieving the relevant language competence.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			
U1	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	observation of student's work, active participation, test, performing tasks

<b>Social competences - Student is ready to:</b>			
K1	Communicates with the co-workers and shares knowledge in everyday situations.	O.K9	observation of student's work, active participation, performing tasks

### **Study content**

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)
2.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning

### **Entry requirements**

Adequate level of language is required.

Group level	Min. level
A1	--> 0, A1
A2	--> A1, A2
B1	--> A2, B1
B2	--> B1, B2
C1	--> B2, C1



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Biochemistry II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J4BO.0169.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	The course provides students with the knowledge on chemical structure and biological properties of proteins, nucleic acids, carbohydrates and lipids, basic metabolic pathways in animal cells, their energetics and regulatory mechanisms as well as basic information pathways and recombinant DNA technology. The course provides some practical training in basic laboratory procedures. After completing the course student acquires the knowledge and terminology necessary to understand biochemistry, molecular biology, physiology, genetics, microbiology, etc.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			



W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written exam, written credit, test
<b>Skills - Student can:</b>			
U1	performs basic statistical analysis and uses appropriate methods for presentation of the results	O.U10	observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work

### Study content

No.	Course content	Activities
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1.	<p>The lipid metabolism (catabolism of fatty acids/<math>\beta</math>-oxidation - meaning, mileage, regulation, ketone bodies - formation, importance, biosynthesis of fatty acids - meaning, mileage, regulation, fatty acid derivatives - eicosanoids, the synthesis and breakdown of triacylglycerols, the synthesis of complex lipids, phospholipases and biologically active derivatives of inositol, steroidogenesis - importance, mileage, regulation, transport of cholesterol and triglycerides, bile acids, steroid hormones, vitamin D - structure and biological role).</p> <p>2. The nitrogen compound metabolism (amino acid deamination reactions, oxidative deamination, urea cycle, catabolism of the amino acid carbon skeletons, the synthesis of nonessential amino acids, metabolism of one-carbon groups, amino acids as substrates for the synthesis of other physiologically important metabolites or hormones, porphyrin and heme metabolism, synthesis of purine nucleotides - adenylate, guanylate, synthesis of pyrimidine nucleotides - cytydylate, thymidylate and urydylate, catabolism of purine and pyrimidine nucleotides).</p> <p>3. DNA replication (replicative fork - structure and function, DNA polymerases and other proteins comprising the replisome in Prokaryotes, DNA polymerases in Eukaryotes, types of mutations and their causes, mutagenesis and carcinogenesis, repairing systems of the DNA).</p> <p>4. RNA synthesis and post-translational processing (transcription in Prokaryotes, transcription in Eukaryotes, post-transcriptional RNA processing in Eukaryotes, alternative splicing and its significance, differences in transcription between Prokaryotes and Eukaryotes).</p> <p>5. Protein biosynthesis (structure and function of ribosomes and tRNA, synthesis of aminoacyl-tRNA, initiation of translation, elongation and termination of translation).</p> <p>6. Protein targeting and their catabolism (signal sequences present in various proteins, transport of membrane, secretory and lysosomal proteins, chaperones and their role).</p> <p>7. Regulation of gene expression in Prokaryotes and Eukaryotes (operon model of regulation of the gene expression, the lac operon as an example of the induced and negatively controlled operon, positive control by the catabolic repression - ara operon, negative control - trp operon, transcription attenuation, multi-level structure of chromatin, the gene regulatory sequences, transcription factors, combinatorial model of gene regulation, regulation of gene expression by steroid hormone).</p> <p>8. Gene rearrangements (homologous recombination, site specific recombination, rearrangements of genes for L and H chains of immunoglobulins, transposons).</p> <p>9. Recombinant DNA technology (tools in recombinant DNA technology, cloning using plasmid vectors, cDNA and genomic DNA libraries, expression vectors, recombinant proteins, DNA analysis by Southern and Northern blotting and restriction fragment length polymorphism (RFLP), DNA sequencing, polymerase chain reaction (PCR) and its use in the diagnostics, transgenic animals, somatic cloning, gene Therapy</p>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Classification of lipids, methods of detection and quantification (determination of cholesterol and triglycerides levels in blood serum).</li> <li>2. Nucleic acids- isolation and methods of analysis (isolation of DNA and gel electrophoresis).</li> <li>3. Restriction enzymes and their use in DNA recombination (digestion of DNA with restriction enzymes).</li> <li>4. Immunological techniques in biochemistry (determination of bovine albumin levels with enzyme-linked immunosorbent assay (ELISA)).</li> <li>5. Basic concepts in clinical biochemistry (analysis of selected urine and blood components).</li> </ol>	laboratory classes
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### **Entry requirements**

General and organic chemistry, biophysics BIOCHEMISTRY I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal breeding Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J4BO.0070.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 4, practical classes: 26	

### Goals

C1	The aim of the course is to familiarize Students with issues of livestock breeding and husbandry.
C2	During the course are discussed problems related to usefulness of particular utility types and selected breeds of livestock to specific livestock production.
C3	Students learn important methods of husbandry and breeding for cattle, sheep, horses, pigs and poultry as well as modern production technologies of milk, meat, wool and eggs.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the principles of cattle, sheep, horses, swine and poultry breeding and husbandry, including livestock feeding, animal welfare and rules of production economics;	O.W8	written exam, written credit
W2	the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;	O.W13	written exam, written credit
W3	breeds of different animal species: cattle, sheep, horses and poultry, as well as rules of livestock breeding and husbandry;	B.W11	written exam, written credit
W4	how to plan breeding work, the rules of next generation parents selection, biotechnologies used in reproduction;	B.W12	written exam, written credit
W5	the conditions of hygiene and technology of dairy, meat, wool and eggs production;	B.W20	written exam, written credit
W6	conditions necessary to meet farm animal welfare requirements based on the principle of "five freedoms";	B.W9	written exam, written credit
W7	principles of cattle, sheep, horses, pigs and poultry nutrition during various periods of life and production stages;	B.W13	written exam, written credit
<b>Skills - Student can:</b>			
U1	use the collected information associated with livestock health and welfare, and with productivity of the herd;	B.U20	written exam, written credit, observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made related to livestock breeding, including production, in regard to people, animals and the natural environment;	O.K1	observation of student's work, active participation
K2	deepen his/her knowledge and improve skills in the field of livestock breeding;	O.K8	observation of student's work, active participation

## Study content

No.	Course content	Activities
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1.	<p>1. Economical importance and current situation of livestock farming in Poland and European Union (1h).</p> <p>2. Dairy cattle husbandry. Characteristics of cattle breeds and utility types (1h).</p> <p>3. Characteristics of housing and feeding systems for cattle. Cattle behaviour and welfare (1h).</p> <p>4. Dairy utility of cattle. Technology, hygiene and conditions of milk production (1h).</p> <p>5. Reproduction performance of a cattle herd. Reproduction methods and breeding documentation (1h).</p> <p>6. Beef cattle husbandry. Technology of beef cattle production (1h).</p> <p>7. Sheep and goats breeding and husbandry. Basic breeds and utility types of small ruminants (1h).</p> <p>8. Technologies of sheep production. Housing systems for small ruminants (1h).</p> <p>9. Species, breeds and lines of birds known as poultry, different types of poultry production (1h).</p> <p>10. Organization of poultry breeding and production. Advantage of poultry production and its product (eggs and meat) (1h).</p> <p>11. Role of an egg in embryonic development and influence of microclimate conditions during egg incubation (1h).</p> <p>12. Breeds and utility types of pigs (1h).</p> <p>13. Performance evaluation and breeding value evaluation of pigs. Crossing breeds for fattening. Housing systems for pigs (1h).</p> <p>14. Horse breeding and husbandry in EU and the World. Breeding programs for horses in Poland (1h).</p> <p>15. Horse breeding value evaluation - performance tests (1h).</p>	lecture
2.	<p>1. An overview of cattle herd and nutrition. Breeding and husbandry conditions evaluation at barn. Cattle taming and care (2h).</p> <p>2. Artificial hatching. Factors affecting the ability of hatching. Biological analysis of hatching (2h).</p>	laboratory classes

3.	<p>1. Basics of breeding in a cattle herd. Selection and crossing methods in cattle. Mating rules in cattle. Selection indices in dairy cattle (2h).</p> <p>2. Breeding and management in large-scale cattle farming (2h).</p> <p>3. Methods of raw milk production at a dairy farm. The efficiency of cow's feeding and milk production (2h).</p> <p>4. Organization of reproduction in a dairy cattle herd. Consequences of feeding mistakes in dairy cattle farm (2h).</p> <p>5. Rearing young cattle. Beef utility of cattle and evaluation of beef performance (2h).</p> <p>6. Sheep reproduction and rearing offspring (2h).</p> <p>7. Beef and dairy utility of sheep (2h).</p> <p>8. Exterior characteristics of different species of poultry. Morphological traits indicating productiveness and health of poultry (2h).</p> <p>9. Characteristics of production indicators of different species and utility types of birds (2h).</p> <p>10. Organization of breeding at a pedigree swine farm (2h).</p> <p>11. Organization (planning) of swine production in an industrial piggery. Classification of swine carcasses using EUROP method (2h).</p> <p>12. Exterior evaluation and identification of horses. Reproduction of horses and rearing of foals (2h).</p> <p>13. Horse utility types. Buildings and facilities for housing horses (2h).</p>	practical classes
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## Entry requirements

Animal anatomy



# UNIwersytet Przyrodniczy we Wrocławiu

## Veterinary microbiology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J4BO.2644.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 45	

### Goals

C1	The aim of the course is to provide students with basic knowledge on the biology of viruses, bacteria and fungi, classification of microorganisms, phenomena occurring in the microbial world and interactions between macro- and microorganisms. In addition the course gives the insight into elementary diagnostic methods used for the identification of pathogenic microorganisms as well as methods of the elimination of microorganisms from the environment (sterilization, disinfection) and techniques for the examination of bacterial susceptibility to antimicrobials.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			



W1	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	oral credit, test
W2	explains the correlation between factors that disturb the balance of biological processes of the animal body and physiological and pathophysiological changes	A.W11	oral credit, test
W3	knows to an extensive degree the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the organism	A.W13	oral credit, presentation, test
W4	knows to an extensive degree and presents the basics of microbiological diagnostics	A.W15	oral credit, observation of student's work, active participation, presentation, test, performing tasks
W5	presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms	A.W18	oral credit, test
<b>Skills - Student can:</b>			
U1	plans the diagnostic procedure	O.U3	oral credit, observation of student's work, test, participation in discussion
U2	performs basic microbiological diagnostics	A.U10	oral credit, observation of student's work, active participation, test, participation in discussion, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, active participation
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

## Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Historical evolution of microbiology as a scientific discipline</li> <li>2. Organization and structure of bacteria</li> <li>3. Bacterial growth and metabolism</li> <li>4. Bacterial genetics. Classification and nomenclature of bacteria</li> <li>5. Interactions between microorganisms and higher animals. Virulence factors of pathogenic microorganisms</li> <li>6. Main groups of pathogenic bacteria. Gram positive cocci (Staphylococcus, Streptococcus, Enterococcus)</li> <li>7. Gram negative bacteria: Moraxella. Neisseria. The family Enterobacteriaceae (1)</li> <li>8. Gram negative bacteria (cont'd): The family Enterobacteriaceae (2): Salmonella</li> <li>9. Gram negative bacteria (cont'd): The family Enterobacteriaceae (3): Escherichia. Other Gram negative bacteria: Bordetella, Burkholderia</li> <li>10. Gram negative bacteria (cont'd): The family Pasteurellaceae. Taylorella</li> <li>11. Epidemiology of brucellosis</li> <li>12. Gram negative bacteria (cont'd): Legionella, Bartonella, Francisella, ORT, Riemerella</li> <li>13. Gram negative bacteria (cont'd): Aeromonas, Vibrio. Anaerobic rods (Dichelobacter, Fusobacterium, Bacteroides)</li> <li>14. Gram positive aerobic rods: Corynebacterium, Rhodococcus, Trueperella, Actinomyces, Nocardia, Dermatophilus</li> <li>15. The genus Mycobacterium</li> </ol>	lecture
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2.	<p>1. Safety in the microbiology laboratory. Laboratory equipment. Diagnostic methods used in bacteriology. Microscopic investigation. Preparing and staining of bacteriological slides</p> <p>2. Microscopic investigation (cont'd). Gram stain method. Capsule staining (Burri's and Loeffler' methods). Examination of bacterial motility (hanging drop preparation)</p> <p>3. Bacterial culture. Culture media – types and methods of their preparation. Ordinary media. Enriched media. Selective media. Methods of inoculation on solid liquid media</p> <p>4. Bacterial culture (cont'd). Description of bacterial growth on liquid and solid media. Reading of culture media. Enumeration of bacteria. The viable plate count method</p> <p>5. Bacterial culture (cont'd). Differential media. Biochemical examination of bacteria. Carbohydrate fermentation tests. Urease-, catalase-, indole-, H<sub>2</sub>S-, and DN-ase tests. Miniaturized identification tests (the API system)</p> <p>6. Influence of physical and chemical factors on microorganisms. Sterilization and disinfection. Evaluation of bactericidal activity of disinfectants through test inoculations</p> <p>7. Evaluation of bactericidal activity of disinfectants (cont'd). Antimicrobial susceptibility testing. Serology. Definition of “antigen” and “antibody”</p> <p>8. Reading of antimicrobial susceptibility plates. Serology (cont'd). Basic serological methods. Slide agglutination test. Tube agglutination test. Complement fixation test. Immunofluorescence assay. Antiglobulin (Cooombs) test</p> <p>9. EXAM IN GENERAL BACTERIOLOGY AND SEROLOGY (PARTIAL EXAM I) – practical and theoretical</p> <p>10. Gram-positive spherical bacteria. The genera Staphylococcus and Streptococcus. Morphology, growth characteristics. Laboratory diagnostics</p> <p>11. Gram-positive cylindrical bacteria. The genera: Listeria, Lactobacillus, Erysipelothrix. Morphology, and growth characteristics. Laboratory diagnostics</p> <p>12. Gram-negative cylindrical bacteria. The genus: Pseudomonas. The genera Pasteurella and Mannheimia. Morphology, growth characteristics. Laboratory diagnostics</p> <p>13. The family Enterobacteriaceae – laboratory diagnostics. The genera: Escherichia, Salmonella. Proteus</p> <p>14. The family Enterobacteriaceae (cont'd). Reading of inoculated plates and biochemical tests. The genus Brucella. Modified Ziehl-Neelson method. Bacteriological and serological diagnosis of brucellosis</p> <p>15. Completion of the winter semester. Receiving grades</p>	laboratory classes
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## Entry requirements

Biology, biochemistry



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Ethology and animal welfare Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J4BO.0650.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> practical classes: 15, lecture: 15	

### Goals

C1	The goal of the course is to introduce general principles of ethology and basic issues associated with the welfare of animals kept by humans. During the course the students gain knowledge about behavioural needs of farm animals and pets and learn to interpret their behaviours. Methods of assessing animal welfare are introduced as well as main problems associated with transport and slaughter of farm animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	defines basic behavioural laws and phenomena	A.W11, B.W9, O.W2	project, observation of student's work, report, presentation, test

W2	identifies patterns of proper behavior and communication of farm animals (horse, cow, sheep, goat, pig) and accompanying animals (dog, cat)	B.W9, O.W8	project, observation of student's work, report, presentation, test
<b>Skills - Student can:</b>			
U1	recognizes and correctly interprets the behaviour of healthy and sick domestic animals	A.U7, B.U1	project, observation of student's work, report, presentation, test
U2	recognizes behavioural disorders in animals	A.U7, B.U1, B.U20	project, observation of student's work, report, presentation, test
U3	classifies the welfare parameters of domestic animals	A.U4, A.U7	report, presentation, test
<b>Social competences - Student is ready to:</b>			
K1	is able to use modern methods of animal welfare assessment in the assessment of the farm animal breeding facility	O.K1, O.K2, O.K4, O.K8	project, observation of student's work, report, presentation
K2	is able to use knowledge about the most common behavioral disorders of dogs and cats in order to correctly identify the causes of the problem and provide initial help in cases requiring therapy	O.K4, O.K5, O.K8	project, observation of student's work, report, presentation

### Study content

No.	Course content	Activities
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1.	<p>1. Selection of themes to be prepared by students. Methods of studying and evaluation of animal behaviour. Definitions of ethology and welfare. Phases of analysing the behaviour. Phases of behavioural reaction. Key stimuli. The law of heterogenic summation. Loosing behaviour. Symptoms of crossing over the ability to adaptation. Basic forms of animal behaviour (according to Hafez). Methods of learning.</p> <p>2. Characterization and recognizing of normal and abnormal canine behaviour. Methods of welfare improvement. Topics presented by students: 1) Communication of dogs 2) Raising of a puppy - the role ant methods of socialization. 3) Common aggression-types in dogs (fear-based aggression, interdogs aggression, resource guarding) 4) Problems related to separation (fear, destructiveness, excessive barking, house soiling) 5) Behavioural tools used in dog training</p> <p>3. Characterization and recognizing of normal and abnormal feline behaviour. Methods of welfare improvement. Topics presented by students: 1) Natural feline behaviour, methods of communication between individuals. 2) Problems associated with defecation and urination at home. 3) Aggression -types. 4) Destruction caused by scratching. 5) Nutritional disturbances and stereotypies.</p> <p>4. Test I (written)</p> <p>5. Characterization and recognizing of normal and abnormal horse behaviour. Methods of welfare improvement.. Topics presented by students: 1) Natural organisation of horse herds, methods of communication between individuals. 2) Normal and abnormal sexual behaviour. 3) Associated with ageing changes in behavioural pattern, limitations in keeping conditions as the cause of behavioural disturbances. 4) Stereotypies (weaving, wing sucking, tongue playing). 5) Other stereotypies.</p> <p>6. Characterization and recognizing of normal and abnormal bovine behaviour. Methods of welfare improvement. Topics presented by students: 1) Natural organisation of bovine herd, methods of communication between individuals. 2) Nutrition of cattle, changers associated with ageing. 3) Limitations of presenting the normal behaviour in farm conditions, their influence of abnormal behaviour. 4) Proper sexual behaviour of cattle, the influence of keeping conditions on expression of natural behaviour. 5)Stereotypies.</p> <p>7. Characterization and recognizing of normal and abnormal swine behaviour. Methods of welfare improvement. Methods of welfare improvement. Topics presented by students: 1. 1.Natural, social organisation of pigs. 2. Methods of swine keeping 3. Inappropriate behaviour of sows as the cause of losses in piglets. 4. limitations that exist in large farm swine keeping as the cause of behavioural disturbances in pigs. 5. Stereotypies.</p> <p>8. Scheme of complex evaluation of animal behaviour in large farms. Quiz based on self made photos /movies. Test II (written).</p>	practical classes
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2.	<p>1. Associations between behaviour and welfare. Basic features of behaviour. The role of senses in the behaviour of different animal species. Phases of behavioural act. Innate releasing mechanism. Behavioural chain. Innate and adaptative factors influencing the animal behaviour.</p> <p>2. Definition of animal welfare. Five freedoms. Limitations of welfare in pets and farm animals. Methods of evaluation of farm animal welfare. Partitioning of abnormal behaviour. Typical limitations of environment of intensive animal production. Suffering versus health. Limits of adaptation abilities.</p> <p>3. Normal and abnormal behaviours of dogs. Natural behavioural patterns, methods of communication, senses. Novel theories in the field of dogs' behaviour and training. Scientific basics of animal training.</p> <p>4. Normal and abnormal cat behaviour. Natural behavioural pattern, means of communication; senses; territorialism of cats and their situation at home; kinds of behavioural problems; urination and defecation at home; damage of furnitures, objects associated with scratching need; prevention of urine spraying; aggression problem in cats; occurrence of stereotypies.</p> <p>5. Normal and abnormal horse behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; hierarchic behaviour; factors affecting the occurrence of stereotypies in horses; types of stereotypic behavior, diagnosis, causes, course, consequences, prevention.</p> <p>6. Normal and abnormal cattle behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; the role of the hierarchy and problems associated with in group housing. Relations between the individuals in horned and decornized herds; proper behaviour of humans in relation to cattle; recognition of proper and inappropriate relations between human and cows; types of stereotypies, their diagnosis, causes, course consequences and prevention.</p> <p>7. Normal and abnormal pig behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; limitations associated with group housing in large farms; pigsty according to Stolba – the possibilities of modeling the pig behaviour; types of stereotypies, their diagnosis, causes, course consequences and prevention; periparturient abnormal behaviour of sows.</p> <p>8. Normal and abnormal sheep behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; breed associated differences in herd organisation, practical aspects; „sheep rush“- importance of the phenomenon, threats in keeping conditions; offsprings' care; types of stereotypies their diagnosis, causes, course consequences and prevention.</p> <p>9. Normal and abnormal goat behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; hierarchic problems in conditions of poor welfare; offsprings' care; sex behaviour; basic requirements associated with the welfare of goats.</p> <p>10. Evaluation of animal welfare – clinical methods. Factors that influence the human-animal relations. Methodical clinical examination and registration of problems. Ethological parameters. How to recognize proper and inappropriate relations between the animals and the human based on animal behaviour and human behaviour. How to achieve the good relations with cows? What causes bad relations with cows?</p> <p>11. Evaluation of animal welfare – laboratory methods. Types of physiological parameters in the monitoring of animal welfare. Changes of selected blood parameters in the poor welfare. Utilization of acute phase proteins. The determination of cortisol and its metabolites. Immunological parametrs. Production parameters.</p> <p>12. Evaluation of animal welfare – the influence of environment and production management. Factors affecting the welfare of cows in farm conditions. Problem of technopaties. Features of high level of animal welfare. Features of low level of animal welfare. Comprehensive evaluation of welfare of tethered cows farms.</p> <p>13. Methods of evaluation of insufficient welfare, pain, suffering, injury, and stress in animals. Examples of human-animal relations. The interpretation of intentions of animals in different situations in large farms.</p> <p>14. How to improve the animal welfare in selected species of farm animals. Technical indices of the keeping conditions. Index of Animal Welfare.</p> <p>15. Welfare of slaughter animals. Methods of protecting the pigs before slaughter. Ways of moving the animals in slaughterhouse. Leading with light. Smels. Factors affecting meat quality. Symptoms of failures at electrical stunning of slaughtered pigs.</p>	lecture
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## **Entry requirements**

Animal Anatomy, Biochemistry, Animal Physiology, Professional Ethics





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal hygiene Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J4BO.0072.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	The aim of the course is to present the basic knowledge in the field of animal hygiene and animal welfare. The topics cover the environmental and living conditions for farm animals and includes: microclimatic conditions (UV radiation, lighting, air temperature and humidity, air movement, gas mixtures, dustiness, noise) on the health and productivity of animals, methods for optimizing environmental conditions in animal buildings (ventilation, heat balance in livestock buildings, heat protection and functionality of animal beddings), livestock keeping systems taking into account aspects of welfare, biosecurity, hygiene and environmental protection, principles of Good Breeding Practice in animal production as well as the animal transport.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit
W3	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	written credit
<b>Skills - Student can:</b>			
U1	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	project, observation of student's work, active participation, presentation
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	project, observation of student's work, active participation, presentation
U3	uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	project, observation of student's work, active participation, presentation
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	project, observation of student's work, active participation, presentation
K2	uses the objective sources of information	O.K4	project, observation of student's work, active participation, presentation
K3	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	project, observation of student's work, active participation, presentation

### Study content

No.	Course content	Activities
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1.	<p>Lecture 1 (2h): Introduction to animal hygiene and its role in veterinary sciences. The importance of zoohygiene and animal welfare in the protection of animal and public health.</p> <p>Lecture 2 (2h): The importance of welfare in animal husbandry and breeding. Criterias and valuation of animal welfare.</p> <p>Lecture 3 (2h): Impact of microclimatic factors on farm animals, with particular emphasis on lighting and thermo-humidity parameters.</p> <p>Lecture 4 (2h): Livestock systems and technological and functional conditions in livestock buildings. Ventilation in livestock buildings (ventilation, noise, sewerage, floors).</p> <p>Lecture 5 (2h): Disinfection, disinsection and deratization and their role in ensuring animal hygiene and welfare.</p> <p>Lecture 6 (2h): Biosecurity of farms. Methods for effective protection of livestock herds against infectious agents.</p> <p>Lecture 7 (2h): Legal basics of animal transport in Poland and European Union member states.</p> <p>Lecture 8 (1h): Summary of living conditions for selected farm animal species.</p>	lecture
2.	<p>Classes 1 (2h): Infrared and ultraviolet radiation (actinometry, radiometry, UV, infrared radiation). UV fractions, their measurement and calculation of the UV-C disinfection potential.</p> <p>Classes 2 (2h): Visible light and its role in the prevention and breeding of farm animals. Visible light measurements and calculations of illuminance for chosen species of farm animals.</p> <p>Classes 3 (2h): Thermometry and heat indifference zone. Temperature measurement methods using the minimum and maximum thermomentres, pyrometers and thermographic cameras. Calculation of thermo-humidity index (THI).</p> <p>Classes 4 (2h): Psychrometry and hygrometry. Basic hygrometric indicators and thermal-humidity systems, humidity measurement.</p> <p>Classes 5 (2h): Air movement. Anemometry and cataterometry. Measurement and calculation of air velocity, catatermometric cooling and thermal comfort.</p> <p>Classes 6 (2h): Heat balance and heat protection in livestock buildings. Objectives and principles of calculating the index of thermal properties of rooms.</p> <p>Classes 7 (3h): Practical methods of zoohygienic assessment of livestock buildings - SPIWET (field classes at RZD Swojec). Air pollution (mechanical, chemical and biological). Conimetry, gasometry, gas measurements i.e. ammonia, hydrogen sulfide, carbon dioxide. Olfaktometria.</p>	laboratory classes

### Entry requirements

none



# UNIwersytet Przyrodniczy we Wrocławiu

## Animal physiology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine  <b>Speciality</b> -  <b>Department</b> The Faculty of Veterinary Medicine  <b>Study level</b> Long-cycle programme  <b>Study form</b> Full-time  <b>Education profile</b> General academic	<b>Education cycle</b> 2022/23  <b>Subject code</b> WMWMMW-AJS.J4BO.0076.22  <b>Lecture languages</b> English  <b>Mandatory</b> mandatory  <b>Block</b> major subjects (conducted) in foreign languages  <b>Subject related to scientific research</b> Yes  <b>Subject shaping practical skills</b> No
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<b>Period</b> Semester 3	<b>Examination</b> graded credit  <b>Activities and hours</b> lecture: 30, laboratory classes: 45	<b>Number of ECTS points</b> 4.0
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### Goals

C1	The subject of Animal physiology provides knowledge about the processes occurring in living organisms at the cellular and organ level and their regulation.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the way of functioning of individual cell structures/systems / organs such as central and peripheral nervous system, smooth and skeletal muscles, heart muscle, circulatory system, respiratory system, excretory system, reproductive system.	O.W2	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study

W2	the action of mechanisms regulating the activities of the nervous, motor, circulatory, respiratory, excretory, and reproductive systems in the animal organism.	A.W2	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W3	mechanisms integrating the functioning of the organism and maintaining the organism's homeostasis (CNS, AUN, neurotransmitters in the nervous system, neurohormonal regulation, circulatory system).	A.W9	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
<b>Skills - Student can:</b>			
U1	indicate how the discussed organs / systems can influence each other and what are the consequences for the functioning of the organism.	A.U7	written credit, test, participation in discussion, performing tasks, case study
U2	explains the physiological mechanisms of sensation and perception, movement and maintenance of body posture, the physiological basis of behavior, endocrinology (hypothalamic-pituitary axis, peripheral endocrine glands, and tissue hormones), regulation of blood flow in the vessels, gas exchange.	A.U4	written credit, presentation, test, participation in discussion, performing tasks, case study
U3	performs tests of parameters determining the physiological state of the body: the nervous system (reflexes), physiological parameters of the circulatory system (blood pressure, heart rate, auscultation of heart tones, ECG), spirometry, urine tests.	O.U2	written credit, observation of student's work, presentation, test, participation in discussion, performing tasks, case study
<b>Social competences - Student is ready to:</b>			
K1	assessment and interpretation of the body's functioning based on the measurements of physiological parameters concerning the nervous system, skeletal and smooth muscles, the circulatory system, the sensory organs, and the respiratory system.	O.K5	observation of student's work, participation in discussion, case study
K2	approaches knowledge critically and constantly updates it with the latest state of general knowledge, using scientific sources to expand their knowledge.	O.K8	observation of student's work, participation in discussion, case study
K3	is willing to cooperate - to consult others and share his knowledge with others.	O.K9	observation of student's work, participation in discussion, case study

## Study content

No.	Course content	Activities
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1.	<p>Lecture 1-2: Biological definition of life, functional organization of living organisms, physiology of the cell</p> <p>Lecture 3-4: Body compartments, homeostasis and principles of regulatory systems in the multicellular organisms</p> <p>Lecture 5-6: Nervous system physiology 1 - General physiology of the nervous system</p> <p>Lecture 7-8: Nervous system physiology 2 - Central nervous system physiology</p> <p>Lecture 9-10: Nervous system physiology 3 - Sensory nervous system physiology</p> <p>Lecture 11-12: Nervous system physiology 4 - Motor nervous system physiology</p> <p>Lecture 13-14: Nervous system physiology 5 - Autonomic nervous system physiology</p> <p>Lecture 15-16: Special senses physiology 1</p> <p>Lecture 17-18: Special senses physiology 2</p> <p>Lecture 19-20: Endocrine system physiology 1 - Endocrine system organisation, general aspects of endocrine system physiology, hypothalamus and pituitary gland</p> <p>Lecture 21-22: Endocrine system physiology 2 - Thyroid gland and Adrenal cortex</p> <p>Lecture 23-24: Endocrine system physiology 3 - Adrenal medulla, exocrine pancreas</p> <p>Lecture 25-26: Cardiovascular system physiology 1 - General aspects of circulation</p> <p>Lecture 27-28: Cardiovascular system physiology 2 - Neurohumoral regulation</p> <p>Lecture 29-30: Cardiovascular system physiology 3 - Circulation in particular organ systems</p>	lecture
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2.	<p>Laboratory 1. Resting and action potentials. Functions of peripheral nerves. Nerve transmission.</p> <p>Laboratory 2. Analysis of reflex arc. Examination of reflexes in human and animals. Stenson's experiment. Skin receptors - examination.</p> <p>Laboratory 3. Excitation and inhibition processes in Central Nervous System. Animal hypnosis. Experiment with strychnine.</p> <p>Laboratory 4. Physiological properties of striated and smooth muscles. Skeletal muscle twitch: recording the single muscle twitch, recording the incomplete tetanus and complete tetanus. Recording the smooth muscle twitch. Muscle contraction types: isotonic, isometric and auxotonic. Determination of absolute skeletal muscle strength.</p> <p>Laboratory 5. Physiological properties of cardiac muscle. Cardiogram. Effect of hormones, thermal factor and vagus nerve on heart rate. Blood flow in vessels. Localization of venous valves.</p> <p>Laboratory 6. Cardiac cycle - hemodynamics. Auscultation of heart sounds. Test pulse rate. Recording of pulse curve.</p> <p>Laboratory 7. Cardiac action potential. Structure and functions of the mammalian cardiac conducting system. Stannius' Ties. Electrocardiography. Analysis of electrocardiograms. Activities of heart.</p> <p>Laboratory 8. Test (lab. 1-6). Solving problem tasks from learned material.</p> <p>Laboratory 9. Measurement of blood pressure. Examination of the cardiovascular system: Nervous and humoral regulation of blood pressure. Analysis of blood pressure curve. Circulation blood.</p> <p>Laboratory 10. Spirometry. Mechanism of lung ventilation.</p> <p>Laboratory 11. Recording of chest breathing movements. Determination of respiratory rate before and after exercise. Mechanism of respiratory regulation. Examination of the respiratory system.</p> <p>Laboratory 12. Analysis of selected parameters of exercise physiology in humans and animals.</p> <p>Laboratory 13. Physiology of female reproductive system. Pregnancy and parturition. Evaluation of canine vaginal cytology during the estrus cycle.</p> <p>Laboratory 14. Urine composition. Determining of physical properties of urine. Chemical properties of urine - evaluation using commercial test strips.</p> <p>Laboratory 15. Test (lab. 8-14). Solving problem tasks from learned material. Protocols correction and final evaluation. Credit.</p>	laboratory classes
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### Entry requirements

Cell biology, Chemistry, Biophysics, Animal anatomy I and II, Biochemistry I, Histology and embryology I and II



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Topographical anatomy Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMWW-AJS.J4BO.2590.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 3	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	



## Goals

C1	The objective of the course is to teach the species specific location of anatomical structures and internal organs within domesticated animals body (dog, cat, cattle and horses) together with their clinical importance. The course describes: the role of topographical anatomy in veterinary sciences, animal body partition into body parts, basic terminology (axis, plane, region, subregion, skeletotomy, syntopy and holotomy), detailed topographical anatomy of subsequent parts and regions of animal body with clinical importance.
C2	Additionally, the aim of the course is to present: basic information on the domestic birds anatomy (anatomical structures comparison in mammals and birds), the common integument morphology and the locomotor system structure in horse (staying apparatus).
C3	The course provides elementary information for the studying of pathological anatomy, physiology, clinical diagnostics of animals, animal husbandry and slaughter animals hygiene.
C4	Students know stratygraphy, skeletptopy, holotomy, syntopy of the structures and the organs of the domesticated animals, assess the regularity of morphology of the animals, indicate differences between species and breeds including the anatomical features of certain structures and organs.
C5	Students perform the topographical partition of animal body parts using visible and palpable osseous points, help lines, planes, regions borders, stratigraphy and indicate the clinical important regions and points of animal body.
C6	Students understand the anatomical background of veterinary diagnostic procedures.
C7	Students understand the anatomical background of veterinary manipulations.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems	A.W1	written credit, presentation
W2	knows to an extensive degree, describes in detail and explains the structure, prenatal development of organs and systems of the animal organism (respiratory, digestive, circulatory, excretory, nervous, reproductive, hormonal, immune system and skin), as well as their integration at the organism level;	A.W2, A.W3	written credit
W3	knows and understands the English and Latin medical nomenclature	A.W20	written credit
W4	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population	O.W1	written credit
<b>Skills - Student can:</b>			
U1	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
U2	explains the anatomical basis of physical examination, taking into account the individual animal species	A.U6	written credit
U3	is able to work in a multidisciplinary team	A.U15	observation of student's work, presentation

U4	communicates with the clients and other veterinary physicians	A.U12	written credit
U5	understands the need of continuing education, in order to ensure continuous professional development	A.U21	observation of student's work
U6	Is able to listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	observation of student's work, presentation
<b>Social competences - Student is ready to:</b>			
K1	communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K2	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K3	Formulates conclusions from own measurements or observations	O.K5	observation of student's work
K4	Deepens his/her knowledge and improves skills	O.K8	observation of student's work

### Study content

No.	Course content	Activities
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1.	<p>Lecture I - Introduction, role of topographical anatomy in veterinary sciences. Animal body partition into body parts, basic terminology (axis, planes, regions, subregions, skeletotopy, syntopy and holotopy).</p> <p>Lecture II - Topographical anatomy of the abdomen I (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, stratigraphy of body wall, location of the digestive tract organs, location of spleen).</p> <p>Lecture III - Topographical anatomy of the abdomen II (location of liver, pancreas and kidneys, retro- intra- and extraperitoneal location of organs, injection points and abdominal cavity imagination methods). Topographical anatomy of the pelvis (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, location of the urogenital organs, perineum and external genital organs, inguinal canal).</p> <p>Lecture IV - Topographical anatomy of the thoracic limb I (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, joint injections)</p> <p>Lecture V - Topographical anatomy of the thoracic limb II (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, joint structure and joint injections, local anesthesia of peripheral sensory nerves).</p> <p>Lecture VI - Topographical anatomy of the pelvic limb (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, joint structure and joint injections, local anesthesia of peripheral sensory nerves).</p> <p>Lecture VII - Topographical anatomy of the thorax I (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, location of lungs, structure of thoracic cavity)</p> <p>Lecture VIII - Topographical anatomy of the thorax II (Location of heart, puncta maxima of heart, injection points, thorax percussion methods, normal radiography of thoracic cavity).</p> <p>Lecture IX - Topographical anatomy of the head (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions and local anesthesia injection points, masticatory apparatus, pharynx, larynx and neighbouring structures).</p> <p>Lecture X - Topographical anatomy of the neck (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions and injection points, structure of the jugular groove and jugular fossa).</p> <p>Lecture XI - Basic birds anatomy I (general taxonomy, flight ability dependent changes in head, neck, pelvic and thoracic limb, tail and trunk morphology)</p> <p>Lecture XII - Basic birds anatomy II (basic anatomy of the skeletal system, muscles, digestive tract, respiratory apparatus, urogenital apparatus, circulatory system, common integument in birds, egg structure and production).</p> <p>Lecture XIII - Common integument I (the morphology of skin, hair and horn).</p> <p>Lecture XVI - Common integument II (the morphology of pads, hoof and skin glands).</p> <p>Lecture XV - Locomotor system and staying apparatus in horse.</p>	lecture
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2.	<p>Practical labs I - Introduction, curriculum, course organization, students safety and protection during practical labs. Topographical anatomy in living animal (cow); practical labs take place in Research and Training Station - Swojczyce - <a href="https://upwr.edu.pl/en/university/structure/index,research-and-training-station---swojczyce.html">https://upwr.edu.pl/en/university/structure/index,research-and-training-station---swojczyce.html</a></p> <p>Practical labs II - Topographical anatomy of horse's head, regions, clinical importances; practical labs take place in Division of Animal Anatomy, Section room, Kożuchowska 5.</p> <p>Practical labs III - Sonographic imagination in topographical anatomy in dog; practical labs take place in Division of Animal Anatomy, Treatment room, Kożuchowska 1.</p> <p>All subsequent practical labs take place in Division of Animal Anatomy, Section room, Kożuchowska 5.</p> <p>Practical labs IV - 1st partial exam (topographical anatomy of abdomen and pelvis).</p> <p>Practical labs IV - Topographical anatomy of the thoracic limb (joint structure and injections in thoracic limb of dog).</p> <p>Practical labs V - Topographical anatomy of the pelvic limb (joint structure and injection in pelvic limb of dog).</p> <p>Practical labs VI - Topographical anatomy of the digital organ in horse (joint structure and injection, anatomical preparation of horse's digit).</p> <p>Practical labs VII - 2nd partial exam (topographical anatomy of limbs).</p> <p>Practical labs VIII - Topographical anatomy of the head in dog (regions, perineural injections, clinical importance).</p> <p>Practical labs IX - 3rd partial exam (topography of the thorax, neck and head).</p> <p>Practical labs X - Basic birds Anatomy (presentations on skeletal system, muscles, digestive tract, respiratory apparatus, urogenital apparatus, circulatory system)</p> <p>Practical labs XI - Bird dissection</p> <p>Practical labs XII - 4th partial exam (basic birds anatomy).</p> <p>Practical labs XIII - Locomotor system and staying apparatus in horse thoracic limb.</p> <p>Practical labs XIV - Locomotor system and staying apparatus in horse pelvic limb.</p> <p>Practical labs XV - 2nd term of all partial exams</p>	laboratory classes
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## Entry requirements

Animal Anatomy I and II, Histology and Embryology I and II



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal physiology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.0077.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 4	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 45	

### Goals

C1	The subject of Animal physiology provides knowledge about the processes occurring in living organisms at the cellular and organ level and their regulation.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the composition and function of blood and the mechanisms of homeostasis related to it, physiology and regulatory mechanisms of the cardiovascular, respiratory, reproductive, excretory and digestive systems (digestion and absorption, gastrointestinal motility, the role of the microbiome).	A.W2, O.W2	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W2	species differences in the functioning of systems and their physiological parameters (digestive system - specificity of digestion in ruminants, thermoregulation, kidney, reproductive system, pregnancy and lactation, bird physiology).	A.W2	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W3	mechanisms integrating the functioning of the whole organism and maintaining the organism's homeostasis (thermoregulation, water and electrolyte balance, acid-base balance, metabolism and energy).	A.W5	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
<b>Skills - Student can:</b>			
U1	explain the physiological mechanisms / molecular mechanisms of cellular structures / organs / systems such as: cardiovascular system, digestive system, respiratory system, kidney, female and male reproductive systems, selected issues from bird physiology.	A.U7	written exam, written credit, presentation, participation in discussion, performing tasks, case study
U2	recognizes (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate.	A.U8	written exam, written credit, presentation, participation in discussion, performing tasks, case study
U3	perform basic blood laboratory tests and define the physiological state of the body based on the results obtained	O.U2	observation of student's work, participation in discussion, performing tasks, case study
<b>Social competences - Student is ready to:</b>			
K1	assessment and interpretation of the body's functioning based on the measurements of physiological parameters concerning the nervous system, skeletal and smooth muscles, the circulatory system, the sensory organs, and the respiratory system.	O.K5	observation of student's work, participation in discussion, case study
K2	continuous deepening of acquired knowledge and skills and using them in further stages of education.	O.K8	observation of student's work, participation in discussion
K3	working in a team on solving problem tasks related to the case study, using knowledge about the known physiological mechanisms in animals and using additional sources of information.	O.K4, O.K7, O.K9	observation of student's work, participation in discussion

## Study content

No.	Course content	Activities
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1.	<p>Lecture 1-2: Cardiovascular system physiology 4 - Heart physiology</p> <p>Lecture 3-4: Respiratory system physiology 1 - Ventilation and gas exchange</p> <p>Lecture 5-6: Respiratory system physiology 2 - Respiratory center and regulation of respiration, role of respiratory system in acid-base balance maintenance</p> <p>Lecture 7-8: Reproductive system physiology 1 - Gonads as endocrine glands, reproductive physiology of non-pregnant female</p> <p>Lecture 9-10: Reproductive tract physiology 2 - Pregnancy, parturition and lactation</p> <p>Lecture 11-12: Reproductive system physiology 3 - reproductive physiology of male</p> <p>Lecture 13-14: Thermoregulation</p> <p>Lecture 15-16: Urinary system physiology 1 - General organisation of urinary system, kidney as an endocrine organ, nephron, glomerular filtration</p> <p>Lecture 17-18: Urinary system physiology 2 - Reabsorption and secretion in the tubules of the nephron, production of final urine</p> <p>Lecture 19-20: Urinary system physiology 3 - Role of the kidney in acid-base balance regulation and lower urinary tract physiology - storage and micturition</p> <p>Lecture 21-22: Gastrointestinal tract physiology 1 - Motility of the gastrointestinal tract</p> <p>Lecture 23-24: Gastrointestinal tract physiology 2 - Digestion and absorption in the GI tract</p> <p>Lecture 25-26: Gastrointestinal tract physiology 3 - Ruminant digestive physiology</p> <p>Lecture 27-28: Calcium-phosphorus homeostasis and absorption of microelements and vitamins</p> <p>Lecture 29-30: Selected topics on birds physiology.</p>	lecture
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2.	<p>Laboratory 1. Functions and composition of blood. Methods of blood collection. Red blood cells of a mammal, bird and amphibian.</p> <p>Laboratory 2. Effect of osmotic pressure on red blood cells. Hemolysis of red blood cells. Determination of osmotic resistance of erythrocytes. Determination of erythrocyte sedimentation rate.</p> <p>Laboratory 3. Construction of the hemocytometer. 3. Counting of erythrocytes using Thoma cell counting chamber. Erythropoiesis.</p> <p>Laboratory 4. Leukopoiesis. Counting of leukocytes using Thoma cell counting chamber.</p> <p>Laboratory 5. Preparation and staining of peripheral blood smear. Identification of the leukocyte subpopulations in peripheral blood smear.</p> <p>Laboratory 6. Determine the percentage of individual forms of leukocyte. Counting of absolute number of leukocyte subpopulations in whole blood using microscope.</p> <p>Laboratory 7. Physiology of hemostasis. Screening test for evaluation primary and secondary hemostasis. Effect of calcium ions on blood clotting.</p> <p>Laboratory 8. Test (lab. 1-7) Solving problem tasks from learned material.</p> <p>Laboratory 9. Blood types in humans and animals. Blood crossmatch.</p> <p>Laboratory 10. Determination of hemoglobin by spectrophotometric method. Determination of hematocrit. Calculation of red blood cells indices: MCV, MHC, MCHC. Method of hemoglobin saturation using pulse oximeter. Teichmann crystals.</p> <p>Laboratory 11. Basic processes in the rumen. Watching the protozoa in the rumen fluid. Counting of protozoa.</p> <p>Laboratory 12. Gastrointestinal motility: rumen, stomach, small and thick intestine.</p> <p>Laboratory 13. Composition and production of saliva and gastric juice. Examination of pepsin activity in different environmental condition.</p> <p>Laboratory 14. Physiological role of the pancreas. Examination of pancreatic exocrine activity.</p> <p>Laboratory 15. Test (lab. 9-14) Solving problem tasks from converted material. Protocols correction and final evaluation. Credit.</p>	laboratory classes
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### Entry requirements

Animal physiology I, Cell biology, Chemistry, Biophysics, Animal anatomy I and II, Biochemistry I, Histology and embryology I and II





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary immunology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.2643.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 4	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

### Goals

C1	The aim of the course is to achieve by the students the basic knowledge on the role of integrative role of defense mechanisms, the rules governing of self-non-self recognition, the principles of migration, communication and co-operation of immune cells. Subject presents the basic clinical disorders resulting from dysregulation of defense mechanisms, immune and inflammatory nature of tissue repair, types of hypersensitivity, and also the ways of immune-modulation in the prevention of infectious diseases in a patient and in the herd.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the structure of the immune system of mammals and birds	A.W1	written exam, oral exam, test

W2	structure, activity and mechanisms of regulation of the immune system and its integration with other systems at the organism level	A.W2	written exam, oral exam, test
W3	immune mechanisms related to infection and inflammation, and anti-inflammatory processes	A.W12	written exam, oral exam, test
W4	the course of the immune response in the case of viral, bacterial and fungal infections, the use of serological tests in the diagnosis of infectious diseases	A.W13	written exam, oral exam, test
<b>Skills - Student can:</b>			
U1	analyze and interpret clinical symptoms and test results in the context of immune disorders and undertake therapeutic or prophylactic measures	O.U2	test
U2	plan diagnostic procedures in case of suspected infectious diseases and diseases of the immune system	O.U3	written exam, oral exam, test
U3	use basic immunodiagnostic techniques such as: qualitative and quantitative analysis	A.U2	test, performing tasks
U4	describe changes in the functioning of the organism in the situation of disturbed homeostasis in the context of immune disorders, inflammations and infections	A.U4	written exam, oral exam, test
U5	listen and respond in a language that is understandable, appropriate to the situation, using the known nomenclature regarding the immune response	A.U13	oral exam, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	use of objective sources of information regarding knowledge in the field of immunology	O.K4	observation of student's work, active participation
K2	formulating conclusions from own measurements or observations, analysis of the obtained results	O.K5	observation of student's work, active participation
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student's work, active participation
K4	Demonstrating responsibility for diagnostic decisions made in relation to people, animals and the natural environment	O.K1	observation of student's work, active participation

## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. The structure of the immune system. Peripheral lymphatic organs, localization of Ag recognition. Lymphocyte circulation and migration.</li> <li>2. Immunological recognition. Receptors of immune recognition. Main histocompatibility complex (MHC). Antigen presentation . T cell receptor (TCR structure and Ag recognition</li> <li>3. Immunological recognition cont.- BCR. Development and differentiation of T and B lymphocytes.</li> <li>4. Cytokines. Regulation of immune response. Inflammation.</li> <li>5. Cellular cytotoxicity in immune reactions. Immune response in viral, bacterial and fungal infections.</li> <li>6. Hypersensitivity reactions.</li> <li>7. Innate immunity. Mucosal immunity.</li> <li>8. Immunological basis of animal vaccination. Active and passive immunization.</li> </ol>	lecture

2.	<ol style="list-style-type: none"> <li>1. Antigen (Ag) - antibody (Ab) reactions - Immunoprecipitation tests</li> <li>2. Antigen (Ag) - antibody (Ab) reactions - Enzyme immunoassays (ELISA, Western blotting). Monoclonal antibodies.</li> <li>3. Antigen (Ag) - antibody (Ab) reactions - Agglutination and hemolytic reaction. Blood group antigens.</li> <li>4. Examination of granulocyte function.</li> <li>5. Examination of lymphocyte function.</li> <li>6. Advanced methods of immunofenotypisation. Flow Cytometry.</li> <li>7. Application of immunological tests in scientific research and clinical case analysis.</li> <li>8. Experimental immunology. Animal models of immunological diseases</li> </ol>	laboratory classes
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### **Entry requirements**

the course in sequence, requires passed exam in animal anatomy I and II, Histology and embryology I and II, biochemistry I and II



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary microbiology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.2645.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 4	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	The aim of the course is to provide students with basic knowledge on the biology of viruses, bacteria and fungi, classification of microorganisms, phenomena occurring in the microbial world and interactions between macro- and microorganisms. In addition the course gives the insight into elementary diagnostic methods used for the identification of pathogenic microorganisms as well as methods of the elimination of microorganisms from the environment (sterilization, disinfection) and techniques for the examination of bacterial susceptibility to antimicrobials.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	oral exam, test
W2	knows the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	A.W13	oral exam, test
W3	knows to an extensive degree and presents the basics of microbiological diagnostics	A.W15	oral exam, oral credit, active participation, test
W4	presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms	A.W18	oral exam, test
W5	explains disturbances of the balance of biological processes in the animal body caused by microorganisms	A.W11	oral credit
<b>Skills - Student can:</b>			
U1	plans the diagnostic procedure	O.U3	oral exam, observation of student's work
U2	performs basic microbiological diagnostics	A.U10	oral exam, oral credit, observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, active participation
K3	draws conclusions from his/her own experiments and observations	O.K5	observation of student's work, active participation

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Gram positive spore-forming rods. Bacillus anthracis - epidemiology and virulence factors. Clostridium - pathogenicity</li> <li>2. Curved and spiral bacteria (Campylobacter, Helicobacter, Brachyspira, Treponema, Borrelia, Leptospira)</li> <li>3. Bacteria without cell wall (Mycoplasma, Ureaplasma)</li> <li>4. Obligate intracellular bacteria (Coxiella burnetii, Chlamydiales, Rickettsiales)</li> <li>5. Development of virology as a scientific discipline. AIDS: history of AIDS research, origin of the disease, taxonomy, morphology and epidemiology of HIV, AIDS treatment and prevention</li> <li>6. Virus taxonomy. Morphology of viruses. Size and shape of viruses. Bacteriophages</li> <li>7. Virus replication. Stages of cell infection: virus receptors, virus penetration, early protein synthesis, eclipse stage and release of virus from the cell</li> <li>8. Immunological mechanisms in viral infection. Types of viral infections, portal of entry of the virus, persistent viral infection, virus interference phenomenon. Immunoprophylaxis. Antivirus vaccines</li> <li>9. Methods of virus cultivation. Laboratory animals. Embryonated eggs. Cell cultures. Techniques of virus isolation. Identification of viruses</li> <li>10. The family Poxviridae. Taxonomy and morphology of pox viruses. Avian and mammalian pox. Orf. Myxomatosis</li> <li>11. The families Asfarviridae and Flaviviridae. Taxonomy and morphology of the viruses. African and classical swine fever.</li> <li>12. The family Adenoviridae. Taxonomy and morphology of the viruses. Rubarth disease. Human adenovirus 36 infection</li> <li>13. The family Orthomyxoviridae. Taxonomy and morphology of the viruses. Influenza</li> <li>14. Exotic, vector-borne, zoonotic viruses - the threat to Europe and Poland: West Nile Fever virus, Crimean-Kongo hemorrhagic fever virus and Rift Valley fever virus</li> <li>15. The family Rhabdoviridae. Rabies - diagnostic methods</li> </ol>	lecture
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2.	<p>1. Gram-positive spore-forming rods. The genus <i>Bacillus</i>. Laboratory diagnosis of anthrax. The genus <i>Clostridium</i>. Characteristics of Gram-positive anaerobic rods. Laboratory identification of infections caused by <i>Clostridia</i></p> <p>2. The genus <i>Mycobacterium</i>. <i>Mycobacterium tuberculosis</i> complex (MTC). Atypical mycobacteria. Laboratory diagnostics of tuberculosis. Microscopic investigation of mycobacteria – the Ziehl-Neelsen method</p> <p>3. MYCOLOGY (1). The pathogenic fungi. Methods of mycological investigation. The dermatophytes – mycological investigation. The genera <i>Trichophyton</i> and <i>Microsporum</i>. The moulds. The genus <i>Aspergillus</i></p> <p>4. MYCOLOGY (2). The yeasts and yeast-like fungi. The genera <i>Candida</i>, <i>Cryptococcus</i>, <i>Geotrichum</i> and <i>Malassezia</i>. Laboratory diagnosis of yeasts infections. Macroscopic- and microscopic assessment of fungal cultures. The germ tube test</p> <p>5. EXAM IN MEDICAL BACTERIOLOGY AND MYCOLOGY (PARTIAL EXAM II) – practical and theoretical</p> <p>6. VIROLOGY. Safety precautions in virological laboratory. Biosafety levels. Aseptic techniques. Laboratory equipment (biosafety cabinets, CO2 incubator, inverted microscopes)</p> <p>7. Collection of samples from living and dead animals. Preparation of tissue suspensions for virus isolation</p> <p>8. Methods of virus isolation. Experimental animals. Isolation of viruses in embryonated eggs</p> <p>9. Collection of the virus harvest from embryonated chicken eggs. Hemagglutination assay. The family <i>Paramyxoviridae</i> (Newcastle disease virus, bovine parainfluenza-3 virus, canine distemper virus)</p> <p>10. Cell culture techniques. Primary cell cultures. Continuous cell lines. Cytopathic effect (CPE) - microscopic observation. The family <i>Herpesviridae</i> (equine herpesviruses 1, 3 and 4; gallid herpesviruses 1 and 2)</p> <p>11. Virus neutralisation test: application for the identification of virus and for quantification of antibodies. Immunofluorescence assay. The family <i>Parvoviridae</i> (feline panleukopenia virus, canine parvovirus, porcine parvovirus)</p> <p>12. The family <i>Arteriviridae</i>. Equine viral arteritis – diagnostic techniques. Virus isolation in cell cultures. Virus neutralisation test – interpretation. Cytopathic effect caused by EAV – a microscopic observation. Porcine Reproduction and Respiratory Syndrome (PRRS) virus.</p> <p>13. Hemagglutination inhibition assay. The family <i>Picornaviridae</i>. Virological and serological diagnostics of foot and mouth disease. Swine vesicular disease</p> <p>14. EXAM IN VIROLOGY (PARTIAL EXAM III) – theoretical</p> <p>Completion of the summer semester. Receiving grades</p>	laboratory classes
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## Entry requirements

Biology, Biochemistry, Veterinary microbiology I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Pathophysiology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.1559.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 30	

### Goals

C1	to familiarize students with basic paradigms and concepts related to the science of disease and disorders of homeostasis, dynamics of the processes determining the development of the disease.
C2	to familiarize students with the pathogenic effect of selected etiological factors and pathogenesis of diseases caused by them.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written credit
W2	selected systemic disorders in pathological conditions.	O.W2	written credit
W3	the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure.	O.W3	written credit
W4	the mechanism of neurohormonal regulation, aging and death.	A.W9	written credit
W5	the principles and mechanisms underlying animal health and disease formation at the level of cell, the organ and the entire animal body.	A.W10	written credit
W6	the correlation between factors (e.g. temperature, electricity, electromagnetic ionization, altitude) that disturb the balance between biological processes of the animal body and pathophysiological changes.	A.W11	written credit
W7	the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery.	A.W12	written credit
W8	the Polish and Latin medical nomenclature in Pathophysiology.	A.W20	written credit
<b>Skills - Student can:</b>			
U1	use the knowledge of the laws of physics in order to explain the impact of external factors (temperature, pressure, electromagnetic field, ionizing radiation) on the animal body.	A.U1	written credit
U2	describe changes in functioning of the organism in the situation of homeostasis disorders caused by exogenous and endogenous factors.	A.U4	written credit
U3	define physiological state as the animal's adaptation to the changing environmental factors.	A.U7	written credit
U4	listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	written credit
U5	understand the need of continuing education, in order to ensure continuous professional development	A.U21	written credit
U6	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment.	O.K1	written credit
K2	use the objective sources of information related to pathophysiology.	O.K4	written credit
K3	deepen his/her knowledge and improve skill in pathophysiology.	O.K8	written credit

K4	communicate with the co-workers and share knowledge	O.K9	written credit
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## Study content

No.	Course content	Activities
1.	<p>Pathophysiology as a science that integrates all knowledge about the disease and shapes "medical thinking".</p> <p>Nosology - disease science in general.</p> <p>The health and the disease. Kinetics of functional and disease regulation, compensation, adaptation. The disease as a disorder in the regulation of body functions and the correlation of these functions, including the mechanisms of the "vicious circle" of regulation.</p> <p>Pathogenesis, sanogenesis, the development of the disease.</p> <p>Etiology of diseases. Main, side, exogenous and endogenous causes as factors causing and shaping the picture of the disease.</p> <p>Mechanical factors as disease causes - kinetosis, hypokinesis, akinesia.</p> <p>Thermal factors. Pathogenesis of burn disease.</p> <p>Electromagnetic radiation - the influence on the animal body.</p> <p>Electric current and sound waves (infrasound, audible sounds, ultrasound) - the influence on the animal body.</p> <p>Macro- and microclimatic conditions determining the occurrence of diseases. Pathogenesis of acute and chronic altitude sicknesses.</p> <p>Participation of genetic factors in the etiopathogenesis of diseases. Constitution, condition and emergence of diseases. Predisposition to the occurrence of diseases.</p> <p>Aging and death. Aging, homeostasis and the occurrence of diseases. Specificity of veterinary geriatrics.</p> <p>Thermoregulation; disorders and their determinants. Hypothermia, hyperthermia - systemic alterations and their consequences.</p> <p>Fever as an adaptation process. Etiopathogenesis, systemic alterations, positive and negative aspects of the fever.</p> <p>Metabolic disorders. Tissue priority in access to nutrients. Endogenous and exogenous causes of metabolism disorders in animals.</p> <p>The contribution of trace elements to allostasis. Etiopathogenesis and signs of micronutrient deficiencies in animals.</p>	lecture

## Entry requirements

Completion of the course in: biochemistry, cell biology, histology and embryology, animal anatomy, animal physiology.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Animal nutrition and feed quality Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.0073.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 4	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 45	

### Goals

C1	Students will be introduced to the principles of determining the chemical composition of feed, criteria for the division of feed materials, digestion, absorption and utilization of individual nutrients depending on the digestive tract anatomy.
C2	Students will learn to balance diets and complete mixtures recipes depending on the animal species and kind of production, as well as various systems and techniques of animal feeding.
C3	Students will be familiarized with metabolic disorders caused by dietary errors and methods of their prevention.
C4	Students will be presented with methods of modification of the chemical composition of animal products on nutritional way and methods of reducing the emission of unused nutrients to the environment.
C5	Students will be acquainted with the physiological basics of feeding various groups of farm animals.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the rules for sampling feed materials for analysis, is able to name and define individual feed fractions, as well as knows the basic methods of their determination	B.W13, B.W14, O.W13, O.W8	written exam, test, performing tasks
W2	digestion, absorption and utilization of basic nutrients, vitamins and minerals in monogastric and ruminant animals	B.W13	written exam
W3	the classification of feed materials; characteristic of basic feeds in terms of their nutritional value, nutritional suitability or the presence of anti-nutritional substances	B.W14, B.W15, O.W8	written exam, test
W4	technologies of production, storage and processing of feed materials	B.W13, O.W3, O.W8	written exam
W5	the etiology of metabolic disorders resulting from nutritional mistakes - knows their symptoms and methods of preventing them	B.W13, B.W14, B.W6	written exam
W6	physiological basis of the nutrition of different species / technological groups of farm animals	B.W13, B.W14, O.W13, O.W8	written exam
<b>Skills - Student can:</b>			
U1	interpret the results of chemical analyzes of feed materials and estimate their nutritional value and suitability for animal nutrition	A.U2, B.U5, B.U6	written credit, test, performing tasks
U2	select the appropriate feed for various animal species, knowing their characteristics and taking into account their impact on the physiology and economics of nutrition; can choose the right feed additives	B.U5, B.U6	written credit, test, performing tasks
U3	arrange / optimize a diet and mixtures for various species of farm animals (ruminants and monogastric animals), taking into account the directions of the animal production	B.U5	written credit, test, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	taking responsibility for decisions made in the field of proper animal nutrition and the consequences of dietary mistakes made	O.K1	active participation
K2	is aware of the effects of the environmental pollution related to animal nutrition - production of greenhouse gases, emission of unused metabolites - and strives, through appropriate nutritional measures, to minimize them	O.K1	active participation
K3	constantly expand and update knowledge in the field of animal nutrition physiology and animal feed science	O.K4, O.K8	active participation

## Study content

No.	Course content	Activities
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1.	<p>1. Feeds and their ingredients. Sampling of various feed materials for analysis (sampling methods, labels, packaging, storage and transport methods). Classification of feed ingredients. Basic and extended analysis of feeds - presentation of analytical methods for the determination of basic nutrients.</p> <p>2. Classification and nutritional importance of carbohydrates. Digestion, absorption and utilization of carbohydrates in monogastric animals and ruminants.</p> <p>3. Classification and nutritional importance of proteins. Digestion, absorption and utilization of proteins in monogastric animals and ruminants. Other nitrogen compounds present in feed materials. Evaluation of the biological value of proteins, the concept of ideal protein and protected protein / amino acids.</p> <p>4. Classification and nutritional importance of lipids. Digestion, absorption and utilization of lipids in monogastric animals and ruminants.</p> <p>5. Classification and importance of minerals. Role, symptoms of deficiency and /or toxicity of individual macro- and micronutrients. Synergism and antagonism between individual mineral components. Bioavailability of minerals from feed materials and commercial mineral additives. Methods for determining animals requirement for minerals.</p> <p>6. Classification and importance of vitamins. Role, symptoms of deficiency and/or toxicity of individual vitamins. Factors affecting the stability/activity of vitamins in feed components and mineral-vitamin mixtures. Absorption of vitamins from the gastrointestinal tract.</p> <p>7. Mechanisms regulating the feed intake in animals (mechanical, physiological). Classification and nomenclature of feed materials. Nutritive value and nutritional importance of roughage.</p> <p>8. Nutritional value and nutritional importance of concentrates. Feed additives - division, purpose of application, applicable legal regulations. Anti-nutritive substances in feed materials -occurrence, impact on the health and productivity of animals, methods of inactivation of the activity of anti-nutritional substances.</p> <p>9. Feed preparation methods and their effect on the digestibility of nutrients. The method of feed preparation depending on the species of animals for which they are intended. Feed preservation methods.</p> <p>10. Physiological fundamentals of dairy cattle nutrition - nutritive value of feeds in dairy cow, feeding systems - nutrition techniques. Metabolic disorders resulting from incorrect feeding of dairy cows.</p> <p>11. Feeding of fattening and breeding cattle. Feedstuffs used in fattening, physiological conditions of the fattening process, feeding systems for fattening.</p> <p>12. Feeding the calves. Basics of physiological feeding of calves, development of the gastrointestinal tract, milk replacers, digestive and metabolic disorders in calves.</p> <p>13. Physiological fundamentals of pigs feeding: sows, piglets and weaners, pigs for fattening. Demand of individual groups for nutrients. Pig feeding systems, swine feeding diseases - causes, symptoms and prevention.</p> <p>14. Physiological fundamentals of poultry nutrition: specification of the keeping and feeding of laying hens (composition of eggs, influence of feeding on laying and nutritional methods of modifying the composition of eggs); feeding of chickens for slaughter - the demand for energy and nutrients, methods for improving the use of feed, the use of feed additives. Diseases of laying hens and broiler chickens caused by nutritional mistakes.</p> <p>15. Hygiene and safety of feed production. Ways of modifying the chemical composition and quality of animal products on the nutritional way - functional foods.</p>	lecture
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2.	<p>1. Calculation of the content of individual nutrients in fresh material and in dry matter based on the results of chemical analyzes. Interpretation of the results obtained.</p> <p>2. Feed digestibility coefficients (apparent and true digestibility). Methodology for determination of digestibility: biological methods - in vivo (balance method, the difference technique, in sacco and in situ methods) and chemical methods. Calculation of apparent digestibility coefficients based on numerical data. Interpretation of the results obtained.</p> <p>3. Metabolic balance - calculation of the production effect of feed on the basis of C and N balance. Assessment methods the biological value of feed protein. Calculation of the biological value of feed protein by chemical methods - Osera and Block-Mitchela method.</p> <p>4. Principles of the use of non-protein (synthetic) nitrogen compounds in the feeding of ruminants. Calculation of the amount of the addition of various nitrogen sources from non-protein nitrogen compounds to feeds depending on the extent of the desired coverage of the needs in terms of the general protein. Interpretation of the results obtained.</p> <p>5. Energy values for feed. Metabolism of energy in the body: from gross energy to net energy. Food/energy units used in various feeding systems of monogastric animals (European for poultry, pigs, horses) and energy value according to the NEL system - for ruminants. Calculation based on numerical data in accordance with the relevant mathematical formulas: net lactation energy values - for dairy cows; metabolic energy for pigs and energy digestible for horses.</p> <p>6. Diet formulation for ruminants in the INRA system. Basic concepts: energy system - UFL and UFV, protein system (PDIA, PDIMN, PDIME, PDIN, PDIE), fill unit system, forage fill value, feed intake capacity).</p> <p>7. Formulation of diet for fattening bull (selected breeds) in accordance with the recommendations of the INRA system - work with standards, determination of animal requirement, selection of feed materials, optimization of the feed ration (paper standards + computer program INRAtion).</p> <p>8. Formulation of diet for breeding heifers (selected breeds) in accordance with the recommendations of the INRA system - work with standards, determination of animal requirement, selection of feed materials, optimization of the feed ration (paper standards + computer program INRAtion).</p> <p>9. Balancing a diet for ruminating animals in the DLG system. Basic concepts related to the system: feeding standards for dairy cows, estimation of nutritional value of feeds, rules for determining the need for crude protein available in the small intestine and rules for calculating nCP values in feedingstuffs, energy demand (MJ-NEL). Calculation the diet for a dairy cow ("paper" standards + WinPasz computer program)</p> <p>10. Dietary standards for pigs feeding. Principles of feeding pigs - fattening pigs.</p> <p>11. Calculation of doses and recipes of complete mixtures for fattening pigs in individual phases of fattening ("paper" standards + WinPasz computer program).</p> <p>12. The rules of feeding sows in different phases of the reproductive cycle.</p> <p>13. Calculation of doses and recipes of complete mixtures for sows in individual phases of the cycle ("paper" standards + WinPasz computer program).</p> <p>14. Feeding of poultry. Recommended shares of individual feed components due to the presence of "anti-nutritional" substances.</p> <p>15. Calculation of the recipe for a complete mixture for poultry - broiler chickens and layers (WinPasz computer program).</p>	laboratory classes
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## Entry requirements

Animal physiology



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Technologies in animal production Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.2557.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	familiarizing students with the specifics of large-scale production and the principles of its existing
C2	presentation how to evaluate different technologies used at farms and examples of some modernization resolutions for working/old farms
C3	indication how to assess animal welfare and health status using various technological solutions/tools.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	basic patterns of behaviour in healthy and sick animals	B.W9, O.W2	written credit, test
W2	basic requirements of animals regarding the conditions of maintenance and nutrition	B.W11, B.W13, B.W15, B.W9, O.W8, O.W9	written credit, active participation, test
W3	relationships between management and technology and its influence on production results	B.W20, B.W22, B.W9, O.W13, O.W2, O.W8	written credit, test
<b>Skills - Student can:</b>			
U1	assess the adaptation of animal production technology to animals' requirements related to the direction of production and genotype	B.U20, B.U5, O.U4	active participation, test
U2	propose and evaluate a maintenance of animals in different production groups depending on their genotype and size of the herd	B.U2, B.U20, B.U21, B.U5	report, test
U3	prepare a herd turnover and on this basis evaluate the results achieved on the farm	B.U20, O.U10	observation of student's work, active participation, test
<b>Social competences - Student is ready to:</b>			
K1	cooperation with farmers and other people working in livestock area	O.K1, O.K4, O.K8	observation of student's work, active participation, report
K2	cooperation with stockmen	O.K1, O.K5, O.K9	observation of student's work, active participation, report

### Study content

No.	Course content	Activities
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1.	<p>1. Animal production meaning and course of action. (presentation of large scale animal production specificity, option of different animal maintenance technology depending on their potential yield and high health status, ergonomical aspects, technological details, physiological needs, environment protection aspects, basic concepts in animal breeding field, herd and its structure, production and technological group, description of production groups of different species)</p> <p>2. Characteristic of industry farms. (presentation of basic animal production details, industry farm characteristic; factors influencing on optimal production efectivity; common organization mistakes; farm localization; basis rules of biosecurity: outside and inside factors, new animals introducing, comparition of open and close production cycle; presentation of different maintenance systems: intensive/extensive, indoor, outdoor, pasture, with straw, without straw, with deep straw, individual and group pens)</p> <p>3. Organisation of animal production. (characteristic of livestock building, production rhythm, description of relationships: barn-animal/ introducing, moving/ feaces- sale of final products, characteristic of different animal feeding systems basis on pigs and cattle examples: feeding ad libitum/restricted - different types of feeders, biofix, hydromix, feeding station, TMR feeder mixer, drinking systems)</p> <p>4. Detailed technology in pigs production: farrowings- farrow pens, piglets rearing, nursery, fattenings, organisation of production sectors, reproduction. (review of different maintenance systems and pens for respective production groups, faults and profits of different resolutions, basis requirements in livestock buildings, work schedule in different production sectors, creating the technological groups and animals moving, farm care routine (weaning, mating, pregnancy test etc.), scheme of daily and sporadic activities)</p> <p>5. Detailed technology in cattle production: stall and freestall barns, with and without bedding material, calf and heifers maintenance, mechanical milking. (review of different maintenance systems and pens for particular production groups, drying, calving, maintenance in lactation faults and profits of different resolutions, basis requirements in livestock buildings, review of different milking systems and halls, work schedule in different production sectors, creating of technological groups and animals moving, farm care routine scheme of daily and sporadic activities)</p>	lecture
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2.	<p>1. Mating and farrowing/calving schedule in farms with pigs or cattle. Calculation of predicted/planned farm productivity, timetable for occupation of farrowing pens with different farrowing/calving frequency during the year. According to obtained data (number of sows/cows, mating / farrowing / weaning date ) with usage of heat calendars students have to create technological groups and count number of required pens.</p> <p>2. Production schedule at cattle farm Basis on obtained data (number of animal at farm, % of calving and losses in different production groups) students have to calculate production at farm, they have to calculate number of cows in technological groups, stock capacity, average state during the year. For obtained results students have to prepare: simple, expanded and decreasing production schedule.</p> <p>3. Production schedule at pig farm. Basis on obtained data (number of animals at farm, length of lactation, number of empty days, fertility, losses in different production groups) students have to calculate farm and sow production, they have to calculate number of technological groups, number of required pens and they have to prepare production turnover for farm working in a continuous or seasonal cycle.</p> <p>4. Students present reports on given subjects consist with cattle farm and discussion on them.</p> <p>5. Students present reports on given subjects consist with pigs farm and discussion on them.</p> <p>6. Repetitory</p>	laboratory classes
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### **Entry requirements**

Sequential subject, before taking part in „Technology in animal production“ a student should be after courses: Animal breeding, Animal nutrition, Animal hygiene, Ethology and animal welfare



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Summer practical training: Farm practice Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.2406.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> practical training: 80	

### Goals

C1	The aim of the farm practice is to become familiar with the specificity of high production herds/ breeding herds/breeding stables
C2	The aim is to learn the principles of animal production and feeding routine. The student should learn basic procedures carried out on animals depending on group and production specificity.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	presents the principles of planning and analysing the feed doses	B.W14	oral credit

W2	care and production treatments carried out on animals	B.W20	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
W3	breeds and breeding rules (within animal species with which the student practices)	O.W8	oral credit
W4	rules of animal nutrition, taking into account the requirements of the group production (within animal species with which the student practices)	O.W8	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
<b>Skills - Student can:</b>			
U1	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
U2	recognize the feed components used in animal nutrition and evaluate the quality and suitability of ration components in feeding animals to maintain health and welfare.	B.U20	oral credit
<b>Social competences - Student is ready to:</b>			
K1	cooperation with the farm staff	O.K2	Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Getting familiar with specificity, work organization, and safety procedures on the farm. Student is learning about zones and production sectors on the farm, as well work organization.</li> <li>2. Getting familiar with rules of filling the records and different kind of records.</li> <li>3. Getting familiar with production level and its results. Analysis of production on the farm.</li> <li>4. Getting familiar with organization of feeding (food components, sources of food and rules for storing). Learning the food components and technology of feeding depending on the physiological state and production level.</li> <li>5. Preparation of food components and feed ration depending on production group.</li> <li>6. Getting familiar with restrain methods and moving animals from group to group depending on the group and animal keeping system.</li> <li>7. Getting familiar with responsibility on each position concerning working with animals.</li> <li>8. Getting familiar with basic operations carried out on animals by farm workers and farm veterinarian.</li> <li>9. Getting familiar with technical aspect of boxes/pen preparation depending on animal age; cleaning procedures and way of dung and feces storing.</li> </ol>	practical training
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### **Entry requirements**

Knowledge from following subjects is required: Animal breeding, Animal nutrition and feed quality, Technologies in animal production, Animal Hygiene, Ethology and animal welfare.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Ecology of game animals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J8BO.0536.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 4	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> practical classes: 15	

### Goals

C1	The aim of teaching the course is to provide students with the basic knowledge of the mechanisms regulating the functioning of ecosystems, and bionomics and physiology of game animals occurring in Poland and Europe. The course presents both ethical aspects of human-animal interactions and adaptations of animals to live in specific biocenoses, as well as data on morphological characteristics, feeding and functioning of the digestive system, sensory organs and information exchange, and reproduction of individual animal species. The influence of anthropopressure on transformations occurring in modern ecosystems is also discussed. Aspects of first aid for wild animals are also presented.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	aspects of human-animal interaction and the adaptation of animals to particular biocoenoses and of the morphological characteristics, feeding and digestive functions, sensory organs and information exchange and reproduction of animal species.	O.W2	written credit
<b>Skills - Student can:</b>			
U1	Define physiological state as an animal's adaptation to changing environmental factors, mechanisms regulating the functioning of ecosystems, and the bionomy and physiology of game animals found in Poland and Europe.	A.U7	written credit
U2	Perform a clinical examination of a wild animal and administer first aid to the animal	B.U4	written credit, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	Exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	participation in discussion

### Study content

No.	Course content	Activities
1.	<p>Topics:</p> <ol style="list-style-type: none"> <li>1. Different faces of ecology and human-animal relations 2h</li> <li>2. Ethology and physiology of roe deer (<i>Capreolus capreolus</i>) 2h</li> <li>3. Ecology and physiology of sika deer (<i>Cervus nipon</i>), ethology and physiology of fallow deer (<i>Dama dama</i>) 2h</li> <li>4. Ethology and physiology of fox (<i>Vulpes vulpes</i>) and other predatory mammals 2h</li> <li>5. Ethology and physiology of wild boar (<i>Sus strofa</i>) 2h</li> <li>6. Ethology and physiology of hare (<i>Lepus europaeus</i>) 2h</li> <li>7. Ethology and physiology of grey partridge (<i>Perdix perdix</i>) and common pheasant (<i>Phasianus colchicus</i>). Medical treatment and first aid for wild animals 2h</li> <li>8 Credit of the course</li> </ol>	practical classes

### Entry requirements

Biology, animal anatomy, histology and embryology





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical and laboratory diagnostics I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.0406.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, clinical classes: 30	

### Goals

C1	To acquaint students with the methods and methods of diagnostic testing of individual systems
C2	Transfer of knowledge in the field of practical clinical examination and additional tests, including laboratory tests, and interpretation of results.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, test
W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, test
W3	principles of diagnostic procedure, including differential diagnosis, and therapeutic procedure	B.W4	oral credit, test
W4	rules for conducting a clinical trial and animal health monitoring	B.W5, B.W6	oral credit, test
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, active participation
U2	plans the diagnostic procedure	O.U3	oral credit, active participation
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit, active participation
U4	act safely and humanely with animals and instruct others in this regard	B.U1	oral credit, active participation
U5	conduct a medical and veterinary interview in order get accurate information about a single the animal or group of animals and his or theirs living environment	B.U2	oral credit, active participation
U6	conduct a complete clinical examination of the animal	B.U3	oral credit, active participation
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	oral credit, active participation
K2	deepens his/her knowledge and improves skills	O.K8	oral credit, active participation

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Definition of the diagnostics. Clinical methods and ways of animal examination. Division of the clinical signs. Division of the clinical diagnosis.</li> <li>2. A description of each species into account the specificities of the various species breed, coat color and animal identification</li> <li>3. Condition. Constitutional types of species. Disorders of animal behavior and much diagnostic.</li> <li>4. The temperature inside and outside the body (hypothermia, hyperthermia, fever)</li> <li>5. Description and diagnostic significance mucosal lesions</li> <li>6. Description and diagnostic significance of changes of lymph nodes and lymph vessels</li> <li>7. Description and diagnostic significance of changes of the skin and its products</li> <li>8. Description and diagnostic significance of changes of the skin and its products continued Additional tests used in dermatological diagnosis.</li> <li>9. Description and diagnostic significance of changes the shape of the chest.</li> <li>10. Description and diagnostic significance of changes in the nose, sinuses, throat, and guttural pouch.</li> <li>11. Description and diagnostic significance of changes within the larynx, trachea and bronchi</li> <li>12. Description and diagnostic significance of changes of lung</li> <li>13. Additional methods used in the diagnosis of respiratory diseases</li> <li>14. Diagnosis of heart disease. Description and diagnostic significance of changes indicative of heart insufficiency.</li> <li>15. Presentation of abnormal noise in various heart diseases</li> </ol>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Animal handling</li> <li>2. History and signalment</li> <li>3. Status praesens: body building, condition, constitution, behavior, body temperature, pulse, respiration</li> <li>4. Mucosal membrane examination</li> <li>5. Lymphnodes examination</li> <li>6. Skin examination</li> <li>7. TEST</li> <li>8. Upper respiratory tract examination</li> <li>9. Lower respiratory tract examination</li> <li>10. Chest percussion in horse and cattle</li> <li>11. Chest percussion in other animals</li> <li>12. Chest auscultation in horse and cattle</li> <li>13. Chest auscultation in other animals</li> <li>14. TEST ,Repetition on clinical cases</li> <li>15. Blood examination (CBC), test improvement</li> </ol>	clinical classes
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### Entry requirements

completion of basic subjects:

Animal anatomy II, II,

Biochemistry I, II,

Histology and embryology I, II,

Veterinary microbiology I, II,

Veterinary immunology,

Animal nutrition and feed science,

Animal physiology I, II.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Pathophysiology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.1560.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 5	<b>Examination</b> exam	<b>Number of ECTS points</b> 6.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 45	

### Goals

C1	to familiarize students with functional mechanisms responsible for disturbances in selected organs and systems.
C2	to familiarize students with the aetiopathogenesis and the development of the disease process and selected systemic disorders.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written exam, test, participation in discussion
W2	mechanisms of selected systemic disorders in pathological conditions; hormonal and vitamin disorders, water-electrolyte imbalance, disturbances in cardiovascular and haemopoietic systems.	O.W2	written exam, test, participation in discussion
W3	the etiology, pathogenesis and clinical symptoms of selected systemic and organ disorders occurring in animals.	O.W3	written exam, test, participation in discussion
W4	the principles and mechanisms underlying animal health, disease formation at the level of cells, the organ and the entire animal.	A.W10	written exam, test, participation in discussion
W5	the correlation between factors (e.g. hormonal and vitamin disorders, water-electrolyte imbalance, disturbances in cardiovascular and haemopoietic systems) disturbing the balance of biological processes of the animal body and pathophysiological changes.	A.W11	written exam, test, participation in discussion
W6	the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery.	A.W12	written exam, test, participation in discussion
W7	the Polish and Latin medical nomenclature in etiology and pathogenesis of general processes and disorders of selected organs and systems.	A.W20	written exam, test, participation in discussion
<b>Skills - Student can:</b>			
U1	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions.	O.U8	written exam, test
U2	describe changes in functioning of the organism in the situation of homeostasis disorders caused by exogenous and endogenous factors.	A.U4	written exam, test
U3	define physiological state as the animal's adaptation to the changing environmental factors.	A.U7	written exam, test
U4	listen and provide answers with the use of understandable language, appropriate to the given situation.	A.U13	observation of student's work, active participation, participation in discussion
U5	understand the need of continuing education, in order to ensure continuous professional development.	A.U21	observation of student's work, active participation, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment.	O.K1	observation of student's work, active participation, participation in discussion

K2	use the objective sources of information.	O.K4	observation of student's work, active participation, participation in discussion
K3	formulate conclusions from own measurements or observations.	O.K5	observation of student's work, active participation, participation in discussion
K4	deepen his/her knowledge and improve skills in pathophysiology.	O.K8	observation of student's work, active participation, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student's work, active participation, participation in discussion

### **Study content**

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
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1.	<p>Pathophysiology of cardiovascular system - selected issues :</p> <p>Disorders of circulating blood volume. The issue of shock and its etiopathogenesis.</p> <p>Vitamin metabolism disorders in animals:</p> <p>Vitamins and their participation in the regulation of systemic pathways. Factors determining vitamin demands . Hypovitaminoses and hypervitaminoses. Factors favoring disorders in vitamin metabolism and consequences of vitamin deficiencies in various animal species.</p> <p>Disorders of hormonal regulation:</p> <p>Hypo- and hyperfunction of endocrine glands. Mechanisms underlying the development of primary and secondary disorders of the endocrine glands.</p> <p>Hypothalamus and pituitary gland: etiopathogenesis of pituitary endocrinopathies in animals - diabetes insipidus, pituitary dwarfism.</p> <p>Endocrine thyroid disorders: systemic consequences of hyperthyroidism and hypothyroidism. The contribution of environmental factors to the regulation of thyroid function in animals. Goitrogens.</p> <p>Pathophysiology of parathyroid glands: the relationship with the regulation of calcium and phosphate metabolism.</p> <p>Hypoparathyroidism. Etiopathogenesis of primary and secondary hyperparathyroidism in animals</p> <p>Endocrine disorders of adrenal glands; functional and metabolic consequences of adrenal endocrinopathies.</p> <p>Stress and adaptation. Metabolic and functional consequences of stress in animals. Stress and the activity of the immune system.</p> <p>Consciousness disorders, pathophysiology of pain . Pain in veterinary practice and protection of animal welfare.</p> <p>Etiopathogenesis of water and electrolyte imbalances; dehydration, overhydration.</p> <p>Etiopathogenesis of acid-base balance imbalances; metabolic and respiratory acidoses, metabolic and respiratory alkaloses.</p> <p>Pathophysiology of respiratory system - selected issues; gas exchange disorders, primary and secondary respiratory failures.</p>	lecture
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2.	<p>Microcirculation; functional disorders (ischemia, passive hyperemia, active hyperemia, embolism, infarctus) and their consequences.</p> <p>Pathophysiology of hemostasis - primary and secondary hemostasis, fibrinolysis; disorders and the results of them.</p> <p>Etiopathogenesis of inflammation.</p> <p>Plasma protein pathophysiology. Assessment and interpretation of proteinograms from animals in state of the various diseases.</p> <p>Disorders in peripheral circulation and their consequences. Reaction of the circulatory and hematopoietic systems to acute and chronic blood loss. Pathogenesis of hypovolemic shock.</p> <p>Pathophysiology of the white blood cell count; leukopoiesis, its regulation and disorders. Quantitative and qualitative alterations of leukocytes.</p> <p>Assessment of the dynamics of changes in the white blood cell morphology and function in animals in the course of various diseases: in acute fever processes, in diseases with a typical course - the biological curve of leukocytes.</p> <p>Disorders in the red blood cells - part I.</p> <p>Erythropoiesis - regulation, disorders; quantitative and qualitative changes of erythrocytes. Evaluation of bone marrow and peripheral blood smears - the interpretation of changes.</p> <p>Red blood cell disorders - part II: anemia and polycythemia. Blood smears analysis from anemized rats, reticulocyte count assessment.</p> <p>Etiopathogenesis of neoplasms.</p> <p>Pancreas; endocrine disorders, etiopathogenesis of diabetes mellitus in animals.</p> <p>Hypersensitivity as an expression of altered immune system reactivity: types of hypersensitivity reactions. Dydactic film: Anaphylactic shock (guinea pig model).</p> <p>Stress and adaptation - observation of systemic changes in the course of stress. Analysis of metabolic and hematological changes in a rabbit after LPS or ACTH intravenous administration.</p>	laboratory classes
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### Entry requirements

Completion of the course in: biochemistry, cell biology, histology and embryology, animal anatomy, animal physiology, veterinary microbiology, veterinary immunology, pathophysiology I.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary Pharmacy Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.2651.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 15	

### Goals

C1	The aim of the course is to introduce students with legal aspects concerning supply and the use of veterinary medicines, the issue of registration of veterinary pharmaceuticals, as well as topics connected with establishment of withdrawal period; to introduce students with different dosage forms of drugs used in animals and issues of medicated feed.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit
W2	legal standards concerning the usage of drugs in animals;	O.W14	written credit
W3	the procedures and elements necessary to issue a prescription for medicinal products used in animals	A.W19	written credit
W4	English and Latin medical nomenclature necessary for prescription writing	A.W20	written credit
<b>Skills - Student can:</b>			
U1	keep documentation concerning drugs administered to animals, in accordance with regulations applicable in this scope, in the form understandable to the animal owner and legible to other veterinary physicians	A.U14	written credit, active participation
U2	interpret the responsibility of veterinary physician related to the usage of drugs in animals, in regard to the animal, its owner, society, as well as the natural environment	A.U16	written credit, participation in discussion
U3	understand the need of continuing education, in the field of drugs for use in animals, in order to ensure continuous professional development	A.U21	participation in discussion
U4	use the advice and help of specialised organisational units or persons in the scope of problem solving concerning usage of drugs in animals	A.U23	participation in discussion
U5	obtain and use information on authorised veterinary medicinal products	B.U9	active participation
U6	prescribe and use veterinary medicinal products, taking into account their safe storage and utilisation	B.U10	active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions, related to the usage of drugs in animals, made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	use the objective sources of information concerning usage of drugs in animals	O.K4	active participation, participation in discussion
K3	deepen his/her knowledge and improves skills concerning usage of drugs in animals	O.K8	participation in discussion
K4	cooperate with representatives of other professions due to usage of drugs in animals in the scope of public health protection	O.K11	participation in discussion

### Study content

No.	Course content	Activities
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1.	<p>1. Legal aspects concerning supply and the use of medicines in animals. Introduction into the issue of registration of veterinary pharmaceuticals in EU and Poland. Veterinary prescription.</p> <p>Overview of the most important legal acts concerning the use of drugs in animals in Poland and the EU. Legal problems regarding registration process of veterinary medicinal products (types of registration procedures, methods of presenting of the documentation for registration of veterinary medicinal product). The rules of usage of psychotropic medicinal products by veterinarians. The rules of veterinary prescription writing. The rules for creating Latin nomenclature with regard to pharmaceutical raw materials.</p> <p>2. Determination of the withdrawal period. Pharmaceutical equivalence and bioequivalence of the drugs. Different pharmaceutical forms, excipients. Pharmacovigilance.</p> <p>Presentation of issues related to determination the withdrawal period (NOAEL, ADI, MRL, substances allowed and prohibited for use in animals whose tissues or products are intended for human consumption). Discussion of issues related to biological and pharmaceutical equivalence (pharmaceutical availability, bioavailability, reference drug). Classification of the dosage forms. Excipients and their influence on the drug bioavailability. Pharmacovigilance.</p> <p>3. Solid dosage forms.</p> <p>Presentation of solid dosage forms (powders, granulates, tablets, capsules, intraruminal systems, transdermal systems, implants, rectal suppositories, pessaries, sticks) according to Pharmacopoeia: definitions, properties, routes of administration. Basic issues related to the production of the dosage forms, examples of excipients used in their production.</p> <p>4. Semi-solid and liquid dosage forms.</p> <p>Presentation of semi-solid (ointments, pastes, gels, creams) and liquid (solutions, suspensions, emulsions) dosage forms according to Pharmacopoeia: definitions, properties, routes of administration. Basic issues related to the production of the dosage forms, examples of excipients used in their production. Discussion of individual dosage forms in the context of the routes of administration.</p> <p>5. Usage of drugs in farm animals. Premixes for production of medicated feed.</p> <p>Overview of the terms: medicated premix, intermediate product, medicated feed. Overview of the most important legal acts concerning the marketing and use of medicated feed. Issues related to the order for making medicated feed. Calculation of the content of active substances in medicated feed.</p> <p>Colloquium (written).</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary pharmacology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.2649.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	The aim of the course is to acquaint students with the issues of general pharmacology and the principal groups of drugs. During the course is presented the characteristic of the antibacterial, antifungal, antiparasitic and anticancer groups of drugs used in veterinary medicine: effects and mechanism of action (pharmacodynamics), disposition and fate of drugs in the body (pharmacokinetics), basic indications and contraindications to use particular groups of drugs in animals (foundations of pharmacotherapy), route of administration, adverse effect of drugs and pharmacodynamic and pharmacokinetic interactions of the agents. Students learn prescribe the all pharmaceutical forms of drugs used in animals (veterinary prescriptions).
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	describes in detail the application of antibacterial and antiparasitic chemotherapy;	A.W17	written credit, observation of student's work
W2	presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms and cancer cells;	A.W18	written credit, observation of student's work
W3	knows to an extensive degree the procedures and elements necessary to issue a prescription for veterinary medicinal products;	A.W19	written credit, observation of student's work
<b>Skills - Student can:</b>			
U1	is able to choose and apply rational empirical and targeted antibacterial chemotherapy, taking into account the target species of animals;	A.U11	written credit, observation of student's work
U2	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation;	B.U10	written credit, observation of student's work
U3	how to obtain and use information on authorised veterinary medicinal products;	B.U9	written credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information, critically analyses veterinary literature and draws conclusions on the basis of available literature	O.K4	observation of student's work, active participation, participation in discussion
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation, participation in discussion

## Study content

No.	Course content	Activities
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1.	<p>Titles of lectures:</p> <ol style="list-style-type: none"> <li>1. Pharmacology sections. Basic definitions and issues connected with drug effects. Definitions: drug, general pharmacology, detailed pharmacology, pharmacodynamics, pharmacokinetics, causative and symptomatic treatment, therapeutic index, drug adverse and toxic effects → 2 hours</li> <li>2. Cellular and molecular mechanisms of drug action, basic receptor parameters, receptor agonist and antagonist, receptor types, drug-receptor reaction, drug as an enzyme inducer or inhibitor → 2 hours</li> <li>3. Pharmacokinetic properties of the drug, basic definitions of pharmacokinetic indices, drug absorption from various routes of administration; drug transport across membranes; distribution of the drug in the body; drug binding to the proteins; the notion of a compartment; specialized barriers (blood-brain, placental); drug metabolism; first pass effect; elimination of the drug from the body. Definitions: drug bioavailability, volume of distribution, elimination constant, biological half-life. Cumulation. Steady-state drug concentration → 2 hours</li> <li>4. Pharmacokinetic properties of the drug, basic definitions of pharmacokinetic indices, drug absorption from various routes of administration; drug transport across membranes; distribution of the drug in the body; drug binding to the proteins; the notion of a compartment; specialized barriers (blood-brain, placental); drug metabolism; first pass effect; elimination of the drug from the body. Definitions: drug bioavailability, volume of distribution, elimination constant, biological half-life. Cumulation. Steady-state drug concentration → 2 hours</li> <li>5. Monotherapy and polytherapy; pharmaceutical drug interactions, pharmacodynamics and pharmacokinetics → 2 hours</li> <li>6. Insensitivity and hypersensitivity of the body to the effects of drugs; tachyphylaxis, including mutation in the MDR1 gene in dogs, and tolerance; idiosyncrasy and allergy. Drugs as haptens, allergens, histamine liberators. → 2 hours</li> <li>7. Antifungal drugs → 2 hours</li> <li>8. Antifungal drugs → 2 hours</li> <li>9. Antiprotozoal drugs → 2 hours</li> <li>10. Antitrematodal drugs and anticestodal agents → 2 hours</li> <li>11. Nematocides: tetrahydropyrimidines, imidazothiazoles, aminoacetonitrile derivatives, heterocyclic compounds, pro and benzoimidazoles, endectocides → 2 hours</li> <li>12. Nematocides: tetrahydropyrimidines, imidazothiazoles, aminoacetonitrile derivatives, heterocyclic compounds, pro and benzoimidazoles, endectocides → 2 hours</li> <li>13. Nematocides: tetrahydropyrimidines, imidazothiazoles, aminoacetonitrile derivatives, heterocyclic compounds, pro and benzoimidazoles, endectocides → 2 hours</li> <li>14. Systemic and contact ectoparasiticides → 2 hours</li> <li>15. Anticancer drugs → 2 hours</li> </ol>	lecture
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2.	<p>Titles of classes:</p> <ol style="list-style-type: none"> <li>1. Drug dosing, dosage types, routes of administration, drug excretion routes.</li> <li>2. Antiseptics and disinfectants. Nitrofuranes and nitroimidazoles.</li> <li>3. Sulfonamides and potentiated sulfonamides.</li> <li>4. Quinolones and fluoroquinolones.</li> <li>5. Classification of antibiotics.</li> <li>6. Beta-lactam antibiotics - penicillins.</li> <li>7. Beta-lactam antibiotics - cephalosporins, carbapenems and monobactams.</li> <li>8. Aminoglycosides and aminocyclitoles. Polypeptide antibiotics, glycopeptides and streptogramins.</li> <li>9. Macrolides, lincosamides, phenicols.</li> <li>10. Tetracyclines. Principles of antimicrobial drug selection and use. Antimicrobial drug combination.</li> <li>11. The rules of veterinary prescription.</li> <li>12. Solid medicine forms: dosage and prescription writing.</li> <li>13. Semi-solid medicine forms: dosage and prescription writing.</li> <li>14. Liquid medicine forms: dosage and prescription writing.</li> <li>15. Liquid medicine forms: dosage and prescription writing.</li> </ol>	laboratory classes
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### **Entry requirements**

animal anatomy, cell biology, biochemistry, immunology, animal physiology, pathophysiology, veterinary microbiology





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Pathomorphology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.1557.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 7.0
	<b>Activities and hours</b> lecture: 45, laboratory classes: 45	

### Goals

C1	The aim of the course is to provide students with basic knowledge of regressive changes, circulatory disorders, inflammatory pathology, progressive changes, pathomorphology of cancer and diseases of particular organs and systems of the body as well as domestic animal infectious diseases. Subject shows the autopsy techniques, rules for the collection and protection of material for histopathological, microbiological and serological tests, and also indicates the possibility of the use of knowledge in the diagnosis of diseases, including infectious diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	written credit
W3	knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems	B.W1	written credit
W4	characterises in detail the metabolic processes at the molecular, cellular, organ and system levels	B.W1	written credit
W5	describes and interprets the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery	B.W1	written credit
W6	knows and understands the Polish and Latin medical nomenclature	B.W2	written credit
<b>Skills - Student can:</b>			
U1	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
U2	describes changes in functioning of the organism in the situation of homeostasis disorders	O.U8	written credit
U3	recognises (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate;	O.U8	written credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	written credit
K2	deepens his/her knowledge and improves skills	O.K8	written credit
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student's work

### Study content

No.	Course content	Activities
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1.	<p>Cell structure, cell injury, cloudy swelling, cell death, types of necrosis, apoptosis. Hypertrophy, hyperplasia, atrophy, metaplasia, intracellular and tissue accumulation.</p> <p>Vascular disorders.</p> <p>Inflammation.</p> <p>Acute exudative inflammation.</p> <p>Chronic inflammation.</p> <p>Neoplasia and tumor spread.</p> <p>Pathology of alimentary system.</p> <p>Pathology of respiratory system.</p> <p>Pathology of cardiovascular system.</p> <p>Pathology of urinary system.</p> <p>Pathology of endocrine system.</p> <p>Pathology of lymphatic system.</p> <p>Pathology of nervous system.</p>	lecture
2.	<p>Cell injury: acute cloudy swelling of liver, cloudy swelling of kidney, fat (Balsler's) necrosis, Zenker's necrosis of muscles.</p> <p>Intracellular accumulation: fatty liver (hepatic lipidosis), kidney lipidosis, glycogen deposition in the liver, intracellular inclusion bodies.</p> <p>Extracellular accumulation: spleen amyloidosis, gout of the kidney, cholesterol clefts, metastatic calcification of the kidney, dystrophic calcification of the kidney.</p> <p>Pigment changes: pulmonary anthracosis, anthracosis of the lymph node, pulmonary melanosis, lung haemosiderosis, icterus.</p> <p>Vascular disorders I: congestion of the liver, pulmonary oedema, oedema of stomach wall, hemorrhagic focus of the liver.</p> <p>Vascular disorders II: thrombosis of the stomach wall vessels, early stage of myocardial infarction, infarction in the kidney, infarct sequestration.</p> <p>Inflammation I: bronchopneumonia, fibrinous pneumonia, purulent pneumonia, purulent hepatitis.</p> <p>Inflammation II: acute interstitial myositis, chronic interstitial nephritis, lymphocytic encephalitis, granulation tissue.</p> <p>Inflammation III: tuberculosis, botryomycosis, aspergillosis, actinomycosis</p> <p>Neoplasms I: soft fibroma, lipoma, osteochondroma, leiomyoma, papilloma.</p> <p>Neoplasms II: haemangioma, fibrosarcoma, lymphoma of the kidney, lymphoma of the myocardium, malignant melanoma .</p> <p>Neoplasms III: basal cell carcinoma, keratinizing squamous cell carcinoma, mammary adenocarcinoma, mixed tumor of mammary gland.</p> <p>Parasitic diseases: lung helminthiasis, sarcosporidiosis, trichinellosis, coccidiosis.</p> <p>Principles of cytological diagnosis: lipoma, mast cell tumor, adenocarcinoma, lymphoma, purulent inflammation.</p>	laboratory classes

### Entry requirements

anatomy, histology, cell biology, biochemistry, physiology and pathophysiology



# UNIwersytet Przyrodniczy we Wrocławiu

## Veterinary Epidemiology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.2641.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	The subjects contains: rules and epidemiological models of outbreak and spreading of infectious diseases. The rules of epidemiological investigation and the standard of immunoprofilaxis, treatment and diagnostic in infection diseases of animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	the biology of infectious agents that cause diseases that are transmitted between animals and anthrozoones, taking into account the mechanisms of disease transmission and the defense mechanisms of the macroorganism	O.W6	written credit, test
W2	basic information and biostatistics methods used in epidemiological research	O.W15	written credit, test
W3	principles and mechanisms underlying animal health, infectious disease development and therapy - from the cell level, through organ, animal to animal and from herd to animal population	O.W1	written credit, test
<b>Skills - Student can:</b>			
U1	collect and preserve samples for testing analyze and interpret the results to monitor the health status of the animals in the herd in terms of infectious diseases	O.U6	written credit, test
U2	conduct an epizootic investigation to determine the period of an infectious disease in animals and to identify the source of an infectious disease for the farm / farms and the routes of human movement, means of transport that could be the cause of the spread of the infectious diseases	B.U19	written credit, test
U3	use professional skills to improve the quality of veterinary care, animal welfare and public health	B.U23	written credit, test
U4	assess the risk of pathogens, perform basic statistical analyzes and use appropriate methods of presenting the results in epidemiological studies to introduce recommendations to minimise the risk of infection	B.U25	written credit, test
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit
K2	uses the objective sources of information	O.K11	written credit

### Study content

No.	Course content	Activities
1.	Students learn the rules and epidemiological models of outbreak and spreading of infectious diseases. Students learn the rules of epidemiological investigation, phenomenon of immunity in infectious diseases, the standard of immunoprofilaxis, treatment and diagnostic in infection diseases of animals.	laboratory classes

### Entry requirements

Student know the Veterinary natomy, Biology, Veterinary histology, Statistic, Vet. microbiology



# UNIwersytet Przyrodniczy we Wrocławiu

## Spanish language (exam) Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10JO.2353.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> exam	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> e-learning: 4, foreign language (course): 26	

### Goals

C1	The student is made acquainted with Spanish medical and veterinary teaching contents required at the minimum B2+ level for the purpose of achieving the relevant language competences enabling him/her to pass the medical and veterinary foreign language exam at the required level.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			

U1	uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	written exam, oral exam, observation of student's work, active participation, test, performing tasks
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### Study content

No.	Course content	Activities
1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)



# UNIwersytet Przyrodniczy we Wrocławiu

## German language (exam) Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10JO.0804.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 5	<b>Examination</b> exam	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> e-learning: 4, foreign language (course): 26	

### Goals

C1	Objectives The student is made acquainted with German medical and veterinary teaching contents required at the minimum B2 level for the purpose of achieving the relevant language competences enabling him/her to pass the medical and veterinary foreign language exam at the required level.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;	C.W1	written exam, oral exam, observation of student's work, active participation, test, performing tasks
<b>Skills - Student can:</b>			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	written exam, oral exam, observation of student's work, active participation, test, performing tasks
U2	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	written exam, oral exam, observation of student's work, active participation, test, performing tasks

### Study content

No.	Course content	Activities
1.	E-learning classes The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	Content Foreign language classes The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

### Entry requirements

#### Prerequisites

Adequate level of language is required

Group level      Minimum level

B2                    --> B1, B2

C1                    --> B2, C1



# UNIwersytet Przyrodniczy we Wrocławiu

## Polish language (exam) Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10JO.1733.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 5	<b>Examination</b> exam	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> e-learning: 4, foreign language (course): 26	

### Goals

C1	The student is made acquainted with the Polish as a foreign language educational contents required at the A1 level for the purpose of achieving the relevant language competence enabling to pass the examination at the required level.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Skills - Student can:</b>			

U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks, exam
<b>Social competences - Student is ready to:</b>			
K1	Communicates with the co-workers and shares knowledge in everyday situations.	O.K9	observation of student's work, active participation, performing tasks

### Study content

No.	Course content	Activities
1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents are available on the SJOiNHS website.	foreign language (course)

### Entry requirements

Adequate level of language is required

Group level      Min. level

A1                      --> A1



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Fodder hygiene Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J10BO.0722.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 5	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	The course in Fodder hygiene deals with the most common "feeding" reasons for diseases of farm and wild animals. In the course the natural noxious factors present in animal feeds are discussed – bacteria, viruses, fungi and their metabolites, as well as feeding mistakes constituting etiological factor of animal diseases – excess and deficiency of nutrients, feed incompatible with animal species, sex, age and physiological condition. The students also study Polish and European Union legally binding regulations about animal nutrition and methods of evaluation of fodder healthful properties.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	principles of animal nutrition taking into account species differences and division into age groups. He knows the rules of arranging and analyzing food doses	B.W13, B.W14	test
W2	principles of animal nutrition taking into account specific physiological and production states	B.W20	test
<b>Skills - Student can:</b>			
U1	plan a diagnostic procedure	O.U3	observation of student's work, active participation, participation in discussion, case study
U2	use the collected information related to the health and welfare of animals, on this basis to estimate the productivity of the herd	B.U20	observation of student's work
U3	Takes samples for monitoring tests for the presence of various prohibited substances in water intended for animal watering and in animal feed	B.U23	observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, active participation, participation in discussion
K2	consciously using objective sources of information	O.K4	observation of student's work
K3	formulating conclusions from own measurements or observations as well as opinions on various aspects of professional activity	O.K5	observation of student's work, case study

## Study content

No.	Course content	Activities
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1.	<p>Lectures</p> <ol style="list-style-type: none"> <li>1. Feed hygiene in farm and domestic animals as a health factor in humans and animals. Fodder materials as entry pathways for pathogens to the digestive tract, the concept „ from field to table”, 2. Legal basis for supervision of fodders and nutrition of animals in Poland and the Euorepean Union (legally binding regulations).</li> <li>2. Basic legal terms (used in regulations of veterinary services) concerning fodders: feeds, fodder materials, fodder additives, premix, fodder mixes - mixtures, full portion fodder mixture, supplementary fodder mixture, dietary fodder mixture, feed quality, turnover, the grace period, undesirable substance, animals, farm animals, domestic animals.</li> <li>3. Application of genetically modified plants (GMO) in production of feeds and nutrition of farm animals. Transgenic plants: transgenesis of 1st, 2nd and 3rd generation . Procedures and legal regulations allowing evaluation of risk of using feeds containing genetically modified material in Poland, other countries in the European Union and the world. Presentation of results obtained worlwide concerning the effect of consumed GMO on the body and muscular tissue of animals. Methods of GMO content examinations in fodders in Poland. Veterinary Inspectorate as the official control authority for GMO.</li> <li>4. Mycotoxins in animal feeds. Mould fungi metabolites as undesirable substances. Safety of food and fodders. Mould fungi which constitute the main threat in Poland. Control of fodder toxicity; methods of detoxication, adsorbents - kinds of and methods of application. Mycotoxic poisoning with lupin.</li> <li>5. Specificity of cattle nutrition. The physical and physiological development of the digestive tract in calves - effect of fodder on development of the mucosa in the rumen and distal digestive tract parts. Nutrition and mineral-vitamin requirements in milk cattle depending on the lactation phase: perinatal period, drying period, milking period, full lactation period</li> <li>6. Cattle diseases caused by feeding mistakes. Definition of the disease caused by feeding factors, prevalence, signficance, clinical signs, diagnostics, treatment, prevention. The skin diseases related to nutrition: acquired zinc deficiency - definition, causes, prevalence, clinical signs, prognosis, differential diagnosis, treatment, prevention. Diseases of the subcutaneous tissue related to nutrition deficiencies: mucous oedema related to iodine deficiency - definition, causes, prevalence, clinical signs, prognosis, therapy, prevention.</li> <li>7. Cattle diseases caused by feeding mistakes: the heart diseases related to nutrition: the heart damage by calcium ions, cardiotoxic effect of products derived from cotton seeds (gossypol): clinical signs, course of the disease, diagnosis, treatment, prevention. The vascular diseases related to nutrition: hypervitaminosis D: clinical signs, course of the disease, diagnosis, treatment, prevention.</li> <li>8. Cattle diseases caused by feeding mistakes: Blood diseases caused by feeding mistakes: iron deficiency, cobalt deficiency, hypophosphoremia ( beetroot leaves anaemia), anaemia related to consumption of cabbage , anaemia related to consumption of onion, poisoning with Pteridium aquilinum (L) Kuhn- clinical signs, course of the disease, diagnosis, treatment. Immunosuppression caused by mycotoxins - poisoning with trichocens: causes, prevalence, course of the disease, diagnosis, therapy, prevention.</li> <li>9. Diseases of the respiratory system and eyes in cattle caused by feeding mistakes: iodine rhinitis; vitamin A deficiency: definition, causes, prevalence, diagnostics, pathogenesis, prognosis, treatment, prevention. The content of vitamin A and karoten in the blood and tissues in the case of suspected nutrition deficiencies. Hypersensitivity to soya protein. Multiorgan diseases related to nutrition.</li> <li>10. Nutrition diseases in horses. Specific character of digestion and nutrition of horses. Frequency of feeding and volume of the stomach and caecum. The volume of the stomach and caecum as a factor in occurrence of colic diseases. Nutrition of pregnant and lactating mares. Necessity of monitoring Ca, P, Mg concentration in the serum of lactating mares. Specific nutrition and maintainance of older horses. Nutrition needs of an aging horse; caloric value and structure of the fodder, prevention of the gastric mucosa ulcerations and depositing of sand in the digestive tract.</li> <li>11. Specific nutrition of pigs. The physical and physiological development of the digestive tract in pigs after birth- effect of fodder on the development of the digestive tract. The health status of the digestive tract - role of the intestines as a barrier against pathogens, colonization of the digestive tract with microorganisms, bacterial flora of the separate digestive tract segments in piglets.</li> <li>12. Problems resulting from withdrawal of antibiotic growth stimulators in pigs nutrition. Phytogetic feeds supplements for piglets; mechanism of action: antioxidative and antibacterial activity, effect on consumption of fodder and functioning of the intestines, use of phytogetic additives as growth stimulators. Yeast preparations in pigs nutrition: effect on the digestion process and nonspecific immunity.</li> <li>13. Feeding mistakes as a cause of exotic animals` diseases. The world trends in nutrition of wild animals in home conditions. Observation of feeding habits of tortoises as a prerequisite for their good health. The most common feeding mistakes in nutrition of tortoises and turtles and related diseases. Metabolic bone disease - MBD - the most common disease related to nutrition. Avitaminosis A, problem of overfeeding, fatty diarrhea.</li> <li>14. Feeding mistakes as a cause of diseases affecting rabbits, guinea pigs, hamsters, chinchillas, dormice, ferrets. Observation of feeding habits as a prerequisite for maintaining good health. Milk substitute preparations - composition, administration.</li> </ol> <p>Basic knowledge and notions (digestibility and energy of fodder) related to the need of domestic animals for nutrients (aminoacids, fats, saccharides). The effect of fodders on quality of products of animal origin. Basic methods of fodder examination and health evaluation of volume and substantial fodders.</p>	lecture
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2.	<p>Classes</p> <ol style="list-style-type: none"> <li>1. Fodder as an etiological factor in animal diseases – Part I. Poisonous and noxious plants. Students get to know poisonous and noxious plants growing on pastures in Poland – the plants are shown and discussed during classes. The clinical signs of different plants poisoning and basic treatment are discussed. Students are also given access to materials about poisonous (decorative) plants poisonings in companion animals. Practical part: examination of hay according to legally binding regulations and norms</li> <li>2. Fodder as an etiological factor in animal diseases – Part II. Fodders spoilt by bacteria ,the most common bacteria in fodders - fodders as a source of contagious diseases. Pathogenic epiphytes present in the soil and on plants are discussed, as well as conditions in which their number grows – humidity, temperature of storage, etc. Conditions on which sick plants can be used for feeding animals. Practical part: examination of bulb and root plants.</li> <li>3. Fodder as an etiological factor in animal diseases – Part III. Fodders spoilt by fungi. The mould fungi, most common in fodders, and their metabolites - mycotoxins are discussed. Students become familiar with the most important mycotoxicoses in cattle, pigs and poultry. The conditions of development and pathogenicity of aflatoxin, fumonisins, zearalenon, ochratoxins, and prophylaxis of mycotoxicoses are discussed in a detailed way, as well as principles of fodder quality evaluation in relation to mould fungi and collection of samples for examination. . Students are also given access to materials about poisonings with mycotoxins in companion animals.</li> <li>4. Feeding mistakes as an etiological factor in animal diseases – Part I. Diseases of calves and cows in the prenatal period caused by feeding mistakes. The basic rules of hygiene related to feeding calves and proper temperature of liquid fodders are discussed. The protocol of introducing solid fodder, amount of its contents (hay, silage, carrot, greens) and its effect on development of the digestive tract, as well as effect of excessive feeding of hifers on their later health condition are discussed. Practical part: examination and evaluation of silages according to the legally binding regulations and norms.</li> <li>5. Feeding mistakes as an etiological factor in animal diseases – Part II. Cattle disease caused by feeding mistakes. Calcium and phosphorus balance, homeostasis and disturbances are discussed – rickets, osteomalacia, - diagnostics, prevention, therapy. The problem of calcium and phosphorus supply in the prenatal period in milk cows and prevention of birth palsy are discussed in a detailed way. Students also learn about magnesium balance disturbances – pasture tetany, causes, laboratory diagnostics and prevention</li> <li>6. Feeding mistakes as an etiological factor in animal diseases – Part III. Pigs diseases caused by feeding mistakes. Problems of energy deficiency, hypoglycaemia and anaemia in piglets are discussed. Other topics include diseases of the digestive tract related to a change of fodder in the weaning time and acidification of fodder, mechanism of action and application of probiotics, prebiotics and synbiotics in pigs, occurrence,diagnostics and therapy of stomach ulcers in pigs.</li> <li>7. Skin diseases related to nutrition in goats, sheep and pigs: zinc-dependant dermatitis, vitamin E, A, biotin, niacin, pantothenic acid, riboflavin, selenium, iodine, sulphur and cobalt deficiencies. Discussion of particular disease units caused by mineral-vitamin deficiencies in individual farm animal species ; characteristics, clinical signs, treatment. The demand of farm animals for water , requirements concerning water for farm animals.Practical part: examination of water.</li> </ol>	laboratory classes
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## Entry requirements

Animal anatomy, Animal physiology, Biochemistry



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Surgery and anaesthesiology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.2408.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 6	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 16, clinical classes: 14	

### Goals

C1	The aim of the course is to familiarize students with the basics of animal anesthesia for surgical and diagnostic procedures. The goal is to provide knowledge about the types and properties of sedation drugs, anesthetics, and local anesthetics as well as techniques for general anesthesia in dogs and cats, farm animals and horses
C2	The aim of the course is also to provide knowledge on the issues of general surgery in the field of treatment of injuries, wounds, internal and external injuries, principles of management of musculoskeletal diseases, surgical treatment of specific inflammations, hernias and resection of cancerous tumors.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	Knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit, oral credit, observation of student's work, test
W2	Explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, oral credit, observation of student's work, test
W3	Presents the principles of conducting clinical examination and monitoring animal health	B.W5	written credit, oral credit, observation of student's work, test
W4	range of clinical data and the results of laboratory and additional tests	B.W6	written credit, oral credit, observation of student's work, test
W5	Knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems	A.W1	written credit, oral credit, observation of student's work, test
W6	Knows to an extensive degree and understands the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, herd of animals, to the entire animal population;	A.W10	written credit, oral credit, observation of student's work, test
<b>Skills - Student can:</b>			
U1	Conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit, oral credit, observation of student's work, test
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit, oral credit, observation of student's work, test
U3	Plans the diagnostic procedure	O.U3	written credit, oral credit, observation of student's work, test
U4	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	written credit, oral credit, observation of student's work, test
U5	Provide first aid to animals in case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, and cardiac arrest	B.U4	written credit, oral credit, observation of student's work, test
U6	Performs a full clinical examination of the animal	B.U3	written credit, oral credit, observation of student's work, test
U7	Explains the anatomical basis of physical examination, taking into account the individual animal species;	A.U6	written credit, oral credit, observation of student's work, test
U8	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	written credit, oral credit, observation of student's work, test

U9	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	written credit, oral credit, observation of student's work, test
U10	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	written credit, oral credit, observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit, oral credit, observation of student's work, test
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	written credit, oral credit, observation of student's work, test
K3	Is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	written credit, oral credit, observation of student's work, test

## Study content

No.	Course content	Activities
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1.	<p>1. Surgery, surgical cleanliness.</p> <p>Infrastructure of surgical clinic with ambulatory, facilities where animals are prepared for surgery and anaesthesia. Today's requirements for the structure and operating room equipment, preparation of surgical field, surgical instruments, hand washing and preparation of the surgical team for surgery. Rules of aseptic and antiseptic conduct in the operating theatre</p> <p>2. Traumatology- trauma, wounds and their treatment.</p> <p>Sharp and blunt trauma in veterinary medicine - abrasion, tear, wound. Wound breakdown due to their etiology and ways of healing by primary adhesion, granulation, and the under the scab (sanatio per primam et per secundam et sub crustacea intentionem ). Principles of wound treatment - excision of primary and secondary. Ways to suture wounds using absorbable and non-absorbable materials for sewing. Autogenous grafts of skin.</p> <p>3. External and internal injuries - bleeding, haematoma, contusion, concussion, and their treatment</p> <p>The modalities of conservative and surgical treatment in arterial and venous haemorrhage. Rules of preparing dressing in haemorrhage in various parts of the body in animals. Methods of treating haematomas. The use of physiotherapy techniques in the treatment of bruises after a traffic accident. Post-traumatic concussion - diagnosis and therapy. The pathology of frostbite and burns in animals and their treatment</p> <p>4. Specific inflammation of bacterial and fungal etiology.</p> <p>Principles of surgical treatment of abscess and empyema. Paracenteza and optimal incision and evacuation of pus. Modern antiseptics and drains used for irrigation and run off purulent exudate. Pyaemia and phlegmon in animals and their treatment. The occurrence of actinomycosis in animals and methods of diagnosis and surgical treatment. Iatrogenic complications after castration in the form of sander - conservative and surgical treatment</p> <p>5. Surgical musculoskeletal disorders</p> <p>Consequences of twisting in the joints and methods for their treatment of physiotherapy and medication. The most common dislocation in animals, diagnostics, methods of conservative treatment for dislocation and the use of surgical methods. Fractures of long and flat bones, and vertebres in small and large animal. Divisions of bone fractures in different categories of eligibility. Methods and basic principles of conservative and surgical treatment of fractures</p> <p>6. Hernias and cancers.</p> <p>General definition of hernias and their types. Division of hernia due to their causes. Symptoms, consequences and diagnosis of hernias. Complications at various hernias caused by lack of surgical intervention. The methods of surgery in the treatment of hernias and pseudohernias. Occurrence of tumors in animals. Cancers of soft tissue and bone. Principles of surgical removal of cancerous tumors</p> <p>7. Preparation of animals to the anaesthesia and surgical procedures.</p> <p>Development and progress in veterinary surgery. The most important inventions in the field of anaesthesia in large and small animals . The introduction of the principles of antiseptics and asepsis in medicine. Preparation of animals to the anaesthesia and surgery. Indications for pharmacological immobilization of the animal. Tranquilizers used for pharmacological sedation: fenotiazyn derivatives, alpha-2 agonists, benzodiazepines, and derivatives of butyrofenon. Analgesic treatment in patients during and after surgery with the use of opioids and nonsteroidal anti-inflammatory drugs</p> <p>8. Induction anaesthesia, the essence and indications.</p> <p>Definition of basic sleep and characteristics of drugs inducing this state. Hypnotics from Hypnotica group. Venous cannulation technique. Drugs causing miorelaxation having central and peripheral action. Laying large animals by using mechanical and pharmacological methods.</p> <p>9. Maintenance of surgery tolerance - general infusion anaesthesia .</p> <p>Totally intravenous anaesthesia - TIVA. Characteristics of barbiturates short and medium long-acting. Advantages and dangers of barbiturates in anaesthesia of large and small animals . Dissociative anaesthesia with ketamine hydrochloride in combination with other hypnotic drugs. Infusion anaesthesia with propofol for treatment of animals with increased risk of anaesthesia. The use of fentanyl in a painful surgical operations.</p> <p>10. Maintenance of surgery tolerance - general inhalation anaesthesia .</p> <p>Rules of intubation with tracheotubus and possible complications resulting from obstruction of the upper respiratory tract. The use of oral facial masks. Characteristics of drugs for inhalation anaesthesia. The most commonly used anaesthetic systems for anaesthesia of large and small animals. Procedures ad hoc or planned tracheotomy or tracheostomy</p> <p>11. Local anaesthesia.</p> <p>The most commonly used analgesics for surface anaesthesia of the mucous membranes. Methods of infiltration anaesthesia. Perineural anaesthesia in large and small animals . Regional anaesthesia.</p> <p>12. Complications of anaesthesia.</p> <p>Complications of local and general anaesthesia. CNS respiratory failure. Obstructive respiratory insufficiency. Restrictive respiratory failure. IPPV artificial respiration</p> <p>13. Complications of cardiac anaesthesia.</p> <p>Causes of complications related to cardiovascular failure. Cardiovascular depression resulting in hypoglycemia and oligovolemia the rise of a shock. Therapeutic modalities for bradycardia and tachycardia. Algorithm for cardiac and respiratory arrest</p> <p>14. Resuscitation and cardiopulmonary resuscitation CPR</p> <p>The use of mechanical-assisted breathing. Heart massage -directly and indirectly. Fluid management in the hipo and oligovolemia caused by anaesthesia and the cardiovascular system failure. Vasopresors as drugs that improve blood circulation. Positive inotropic drugs that increase capacity ejection.</p> <p>15. Supervision algorithms of the animals in anaesthesia and during postoperative period.</p> <p>Principles of non-invasive and invasive monitoring techniques . Ethical aspects of resuscitation and euthanasia of animals. Oversight of the nervous and cardiopulmonary system by an anaesthesiologist. Monitoring the anesthetized patient with capnometer and pulse oximeter. Measurement of blood pressure, central venous pressure and gas analysis based on performance evaluation of the patient during anaesthesia</p>	lecture
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2.	<p>1. Handling of animals.</p> <p>Rules of conduct and safety working with large and small animals. Methods of restraining large and small animals with the use of mechanical and pharmacological methods. The use of instruments and cables to stabilize the head and limbs. The use of mechanical devices to repress the cattle and horses. Ambulatory and the operating theatre - the principle of mobility, equipment and supplies, medicines</p> <p>2. Asepsis and antiseptics in surgery.</p> <p>Getting familiar with the construction and operation of autoclave and ethylene oxide sterilizer. Practical Application of the principles of asepsis and antiseptics in the operating room. Getting know the most commonly used disinfectants. The rules for hand washing and dressing the surgical clothing and methods of wearing gloves. Anaesthetic preparation of the patient for operation and preparation of the operating field. Preparing the operating room and support staff to carry out surgery</p> <p>3. Surgical Instruments</p> <p>A set of basic tools to carry out operations on soft tissues. Demonstration of administration and use of instruments during surgery. Special tools used in thoracic surgery, urology, aural, ophthalmic. Instruments for orthopaedic surgery and demonstration of osteosynthesis implants. Demonstration of an electric knife, operation sucker, pulse oximeter and the general principles for using the apparatus for inhalation anaesthesia.</p> <p>4. Surgical techniques</p> <p>Techniques of tissue preparation, methods of hemostasis. Practical basic skin sutures on phantoms. Tying surgical knots manually and with the use of instruments.</p> <p>5. test</p> <p>6. Anaesthesiology 1</p> <p>Anesthesiology Basics - Steps of anesthetic protocol: medical history, physical exam, anesthesia (phases: premedication, induction, maintenance, recovery). Drugs in premedication: phenothiazine, benzodiazepines, alpha-2 agonist, opioids. Monitoring.</p> <p>7. Anaesthesiology 2</p> <p>Induction and maintenance of general anesthesia: drugs, methods - injectable, inhalant. Inhalant anesthesia - principles and mechanism. Monitoring.</p> <p>8. Anaesthesiology 3</p> <p>Local anesthesia - techniques, drugs in small animals, ruminants, horses.</p> <p>9. Test</p>	laboratory classes
3.	<p>Clinical labs in ambulatory and operating rooms for large and small animals and in laboratory and radiology lab (digital radiography, ultrasound, endoscopy).</p> <p>Active participation and cooperation of students under the supervision of a veterinarian in diagnostic procedures of patients. Active preparing of animals by the students for surgery (clipping, shaving, intramuscular injections, cannulation of the vein and connecting of the infusion set under medical supervision). Active student participation in anaesthetic procedures under medical supervision and monitoring of the patient (pulse oximetry, capnometry, EKG, intubation, fluid management, control the level of general anaesthesia, mucous membrane colour, pulse, respiration, blood oxygenation, blood pressure, capillary filling time and completed the protocol of anaesthesia, use of recording equipment</p>	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Beneficial insects diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.0129.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 6	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, laboratory classes: 14, clinical classes: 6	

### Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about: ecology, anatomy, physiology and honey bee pathology.
C2	They learn about the etiology, pathogenesis, treatment, and rules for the control of viral, bacterial, fungal and parasitic diseases, with a particular focus compulsorily notifiable diseases and reporting
C3	Classes will also include practical work in an apiary, reviews of bee colonies and assessment of their health.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation, and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	test, participation in discussion, performing tasks
W2	knows the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	A.W13, A.W17, O.W4	test, participation in discussion, performing tasks
W3	explains and interprets the etiology, pathogenesis, and clinical symptoms of diseases occurring in individual animal species and know the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	B.W10, B.W4, B.W5, B.W8, O.W4	test, participation in discussion, performing tasks
<b>Skills - Student can:</b>			
U1	knows how to monitor the health of the herd, as well as take action in the event of finding a disease that is subject to mandatory control or registration	A.U14, A.U17, O.U4	observation of student's work, participation in discussion, performing tasks
U2	conducts a clinical examination of the animal in accordance with the principles of medical art;	B.U1, B.U3, B.U8, O.U1	observation of student's work, participation in discussion, performing tasks
U3	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulate the diagnosis of a given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	A.U14, B.U6, O.U2	observation of student's work, participation in discussion, performing tasks
U4	is able to conduct a medical and veterinary interview in order to obtain detailed information about a single animal or a group of animals and its or their habitat	A.U13, B.U2, O.U12	observation of student's work, participation in discussion, performing tasks
U5	knows how to carry out an epizootic investigation in order to determine the period in which an infectious animal disease could develop on the farm before suspecting or confirming its occurrence, the place of origin of the infectious disease of animals together with the determination of other farms and the routes of movement of people, animals, and objects that could be spread of an infectious disease to or from the farm	B.U19	observation of student's work, participation in discussion, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, participation in discussion, performing tasks
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviors resulting from various social and cultural conditions	O.K2	observation of student's work, participation in discussion, performing tasks
K3	uses the objective sources of information	O.K4	observation of student's work, participation in discussion, performing tasks

K4	deepens his/her knowledge and improves skills	O.K8	observation of student's work, participation in discussion, performing tasks
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### Study content

No.	Course content	Activities
1.	<p>1. Systematic of bees. The honey bee species in Europe and in the world. The role of bees in environment. Bee as a pollinator. Biology of honey bee and of colony of honey bees. Basic topic about the breeding of honey bee.</p> <p>2. Biology of bees and bee family. Fundamentals of the economy apiary. Types of hives, beekeeping equipment. Types of apiary management.</p> <p>3. Honey bee immunology. Genetic and physiologic agents of honey bee resistance.</p> <p>4. The role of epizootiology in honey bee diseases. Control of honey bee diseases. EU and Polish regulations for control of bee diseases. The general principle of treating an infected apiary.</p> <p>5. The basic information of the silk worm breeding and pathology. The conduct of the silk worm larvae rearing. Silk worm disease: white and green muscardine disease, Nosema disease, nuclear and cytoplasmatic polyhedrosis. Etiology, pathology, control of diseases.</p>	lecture
2.	<p>1. Anatomy and physiology of bees, part. I. External anatomy. head, backs, abdomen, legs, wings, organs of the senses. Anatomy and physiology of bees part. II. Internal anatomy. the digestive system, nervous system, reproductive system. Basic physiology of bees. Preparation and observation of the anatomical detail. Dissection of the honey bee.</p> <p>2. Embryonic development of the bees. Nosema disease, amoeba disease, acariasis of bees. Etiology, pathogenesis, control, eradication, and prevention. Laboratory and differential diagnosis.</p> <p>3. Varroa disease. Viral diseases: APV, CPV, BQCV, CWV. Etiology, pathogenesis, control, eradication, and prevention. Invasion of Aethina tumida. Monitoring research, methods, and evaluation.</p> <p>4. American foulbrood, European foulbrood, chalkbrood, sacbrood, stonebrood. Etiology, pathogenesis, control, eradication and prevention. Administrative proceedings in diseases controlled by law. Methods of decontamination of hives and beekeeping equipment in infectious diseases. The invasion of Vespa velutina, as a new threat to Europe's apiaries.</p>	laboratory classes
3.	<p>1. Training (practice) in apiary. Type of hives. Examination of hives. Receiving of honey bee and brood probes for laboratory tests.</p> <p>2. Training (practice) in apiary. Individual perlustration of the bee colonies. Principles of therapy colonies.</p>	clinical classes

### Entry requirements

biology, veterinary bacteriology, virology, parasitology, epidemiology



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of fur-bearing animals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.3614.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 6	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, laboratory classes: 15	

### Goals

C1	The aim of the course is to familiarize students with the biology and breeding of fur animals (foxes, mink, rabbits, chinchillas). Diseases of fur animals, principles of therapy, and prevention programs will be discussed and presented.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	characterizes principles of fur animal raising and husbandry	B.W11	written credit



W2	explains and interprets the etiology, pathogenesis, and clinical symptoms of diseases occurring in fur animals and knows the principles of therapeutic procedures	O.W3	written credit
W3	knows the principles of diagnostic and therapeutic procedures, appropriate for the diseases occurring in fur animals	O.W4	written credit
W4	specifies the principles of conducting the clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms, and anatomopathological changes found in fur animals	O.W7	written credit
W5	describes in detail the application of antibacterial and antiparasitic chemotherapy in fur animals	A.W17	written credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the selected fur animals in accordance with the principles of medical art	O.U1	written credit
U2	analyses and interprets clinical symptoms, anatomopathological changes and results of laboratory tests and additional tests, formulates the diagnosis of a given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions in fur animals	O.U2	written credit
U3	communicates with the clients and other veterinary physicians	A.U12	written credit
U4	conducts a medical-veterinary interview in order to obtain precise information regarding the group of fur animals and their living environment	B.U2	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation

### Study content

No.	Course content	Activities
1.	<p>Selected issues in biology, breeding, and care of fur animals (foxes, minks, rabbits, chinchillas).</p> <p>Diseases caused by vitamin and mineral deficiencies, and metabolic disorders.</p> <p>Viral, bacterial, fungal, and parasitic diseases of carnivorous fur animals.</p> <p>Viral, bacterial, fungal, and parasitic diseases of herbivorous fur animals (rabbits, chinchillas).</p>	lecture

2.	<p>Nutrition rules, normalization, and sanitary evaluation of feed for carnivorous and herbivorous fur animals.</p> <p>Drug management on a fur farm. Targeted epizootiological investigation.</p> <p>Rules for the treatment of fur animals. Drugs and methods of drug administration, preventive actions, immunoprophylaxis.</p> <p>Clinical examination of fur animals, sample collection, injections (s.c., i.m., i.v., etc.).</p> <p>Fur animal necropsy.</p> <p>Basic treatments on herbivorous fur animals in farm breeding.</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical and laboratory diagnostics II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.0407.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 6	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, clinical classes: 30	

### Goals

C1	To acquaint students with the methods and methods of diagnostic testing of individual systems
C2	Transfer of knowledge in the field of practical clinical examination and additional tests, including laboratory tests, and interpretation of results.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, test
W2	Specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, test
W3	principles of diagnostic procedure, including differential diagnosis, and therapeutic procedure	B.W4	oral credit, test
W4	rules for conducting a clinical trial and animal health monitoring	B.W5, B.W6	oral credit, test
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, test
U2	plans the diagnostic procedure	O.U3	observation of student's work, test
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	observation of student's work, test
U4	act safely and humanely with animals and instruct others in this regard	B.U1	observation of student's work, test
U5	conduct a medical and veterinary interview in order get accurate information about a single the animal or group of animals and his or theirs living environment	B.U8	observation of student's work, test
U6	conduct a complete clinical examination of the animal	B.U3, B.U7	observation of student's work, test
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	oral credit, observation of student's work
K2	deepens his/her knowledge and improves skills	O.K8	oral credit, observation of student's work

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Description and diagnostic significance of arterial disorders and venous pulse</li> <li>2. Additional methods used in the diagnosis of cardiovascular disease</li> <li>3. Eating disorders. Description and diagnostic significance of changes within the animal stomatitis</li> <li>4. Description and diagnostic significance of changes in the pharynx and esophagus</li> <li>5. Description and diagnostic significance of impaired rumen.</li> <li>6. Description and diagnostic significance of impaired reticulum and abomasum.</li> <li>7. Description and diagnostic significance of renal abomasum and stomach in monogastric animals.</li> <li>8. Description and diagnostic significance of bowel dysfunction.</li> <li>9. Description and diagnostic significance of liver disease</li> <li>10. Description and diagnostic significance of changes of the pancreas, spleen, abnormal fecal excretion</li> <li>11. Description and diagnostic importance of desire and function disorders of the urinary tract</li> <li>12. Description and diagnostic significance of impaired consciousness. Clinical studies and additional ways of the nervous system examination</li> <li>13. Description and diagnostic value of cranial nerve dysfunction. Description and diagnostic value of epileptic symptoms.</li> <li>14. Description and diagnostic significance of dysfunction of the peripheral nervous system.</li> <li>15. Description and importance of diagnostic problems within the musculoskeletal system.</li> </ol>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Heart examination - inspection, palpation, percussion, auscultation in horse and cattle</li> <li>2. Heart examination - inspection, palpation, percussion, auscultation in other animals</li> <li>3. Examination of blood vessels</li> <li>4. TEST, Recurrent Laryngeal Neuropathy - RLN in horses</li> <li>5. Examination of oral cavity</li> <li>6. Examination of larynx and esophagus</li> <li>7. Examination of abdomen (topography of abdominal organs)</li> <li>8. Examination of rumen and reticulum</li> <li>9. Examination of omasum and abomasum.</li> <li>10. Examination of liver and pancreas</li> <li>11. Examination of urinary tract, urine test</li> <li>12. Examination of neurological and movement system</li> <li>13. TEST, clinical cases</li> <li>14. Examination of cerebrospinal fluid. Test.</li> <li>15. Handling with : horse (mare with foal), cattle, sheep, goat, pig (sow with piglets), dogs, cats</li> </ol>	clinical classes
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### **Entry requirements**

The student should have finished the following subject Clinical Diagnosis of Animals I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diagnostic imaging Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine  <b>Speciality</b> -  <b>Department</b> The Faculty of Veterinary Medicine  <b>Study level</b> Long-cycle programme  <b>Study form</b> Full-time  <b>Education profile</b> General academic	<b>Education cycle</b> 2022/23  <b>Subject code</b> WMWMMW-AJS.J20BO.0451.22  <b>Lecture languages</b> English  <b>Mandatory</b> mandatory  <b>Block</b> major subjects (conducted) in foreign languages  <b>Subject related to scientific research</b> Yes  <b>Subject shaping practical skills</b> Yes
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<b>Period</b> Semester 6	<b>Examination</b> graded credit  <b>Activities and hours</b> lecture: 15, laboratory classes: 45	<b>Number of ECTS points</b> 4.0
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### Goals

C1	Learning of physical basics of diagnostics imaging modalities used in veterinary medicine and indications to use the imaging methods in small and large animal diseases, especially in skeletal, thoracic and abdominal disorders
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written credit, oral credit, active participation, test

W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit, oral credit, active participation, test
W3	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written credit, oral credit, active participation, test
W4	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written credit, oral credit, active participation, test
W5	Describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written credit, oral credit, active participation, test
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit, test
U2	plans the diagnostic procedure	O.U3	oral credit, test
U3	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, test
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student's work
K2	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work
K4	communicates with the co-workers and shares knowledge	O.K9	observation of student's work

## Study content

No.	Course content	Activities
1.	The X-rays (definition, discovery, properties, theory of radiograph creation). Principles of radiological safety. Other diagnostic imaging methods in veterinary medicine (ultrasound, computed tomography, magnetic resonance, fluoroscopy). Analysis of the quality of radiographs. Using of contrast media. Radiographic image of animal tissues. The general basics of the small animal abdominal ultrasound.	lecture



2.	Construction of the X-ray unit. Diagnostic imaging room equipment. Preparing the patient for the examination. Basics of performing the radiographic examinations. Basic pathological changes in appendicular skeletal system. Radiographic diagnosis in thoracic and abdominal diseases. Diagnostic imaging of the head and spine.	laboratory classes
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### **Entry requirements**

Normal anatomy of cats and dogs, histology, biophysics, pathology



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary pharmacology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.2650.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 6	<b>Examination</b> exam	<b>Number of ECTS points</b> 6.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 45	

### Goals

C1	The aim of the course is to familiarize students with the issues of detailed pharmacology concerning drugs affecting individual systems of the animal's organism. The course presents the characteristics of individual groups of drugs (symptomatic drugs, their effects and mechanisms of action (pharmacodynamics of drugs) and their fate in the living organism (pharmacokinetics of drugs), basic indications and contraindications for the use of particular groups of drugs in various animal species (basics of pharmacotherapy) and adverse drug reactions, and pharmacodynamic and pharmacokinetic drug interactions.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written exam, written credit
W2	knows to an extensive degree and understands the mechanisms of operation, activity in the system, side effects and mutual interactions of the groups of veterinary medicinal products used in target animal species;	A.W16	written exam, written credit
W3	knows to an extensive degree the procedures and elements necessary to issue a prescription for medicinal products;	A.W19	written exam, written credit
<b>Skills - Student can:</b>			
U1	obtains and uses information on authorised veterinary medicinal products;	B.U9	written exam, written credit
U2	knows the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain;	B.U11	written exam, written credit
U3	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation;	B.U10	written exam, written credit
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information; critically analyses veterinary literature and draws conclusions on the basis of available literature;	O.K4	active participation, participation in discussion
K2	deepens his/her knowledge and improves skills;	O.K8	active participation, participation in discussion

### Study content

No.	Course content	Activities
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1.	<p>Titles of lectures:</p> <ol style="list-style-type: none"> <li>1. Behavior modifying drugs → 1 hours</li> <li>2. Behavior modifying drugs → 1 hours</li> <li>3. Behavior modifying drugs → 1 hours</li> <li>4. Anticonvulsant agents → 1 hours</li> <li>5. Anticonvulsant agents → 1 hours</li> <li>6. Immunosuppressive agents → 1 hours</li> <li>7. Immunosuppressive agents → 1 hours</li> <li>8. Immunomodulatory drugs → 1 hours</li> <li>9. Immunomodulatory drugs → 1 hours</li> <li>10. Chondroprotective drugs →1 hour</li> <li>11. Drugs used to control hyperadrenocorticism and hypoadrenocorticism → 1 hours</li> <li>12. Drugs used to control hyperadrenocorticism and hypoadrenocorticism → 1 hours</li> <li>13. Thyroid gland pharmacology →1 hours</li> <li>14. Antidiabetic agents →1 hour</li> <li>15. Drugs used in veterinary ophthalmology →1 hour</li> </ol>	lecture
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2.	<p>Titles of classes:</p> <ol style="list-style-type: none"> <li>1. Pharmacology of cholinergic system.</li> <li>2. Pharmacology of adrenergic system.</li> <li>3. Pharmacology of smooth muscle. Skeletal muscle relaxants.</li> <li>4. Sedatives drugs.</li> <li>5. Opioid agonists and antagonists. Drugs used in the treatment of neuropathic pain. Local anaesthetics.</li> <li>6. Premedication. Inhalation and injectable anesthetics. Analeptic agents.</li> <li>7. Non-steroidal anti-inflammatory drugs (NSAIDs). Irritants (irritantia).</li> <li>8. Steroidal anti-inflammatory drugs. Antihistamines drugs.</li> <li>9. Drug acting on the cardiovascular system (positive inotropic drugs, antiarrhythmic agents, coronary blood vessels relaxants, drugs affecting renin-angiotensin-aldosterone system).</li> <li>10. Drug acting on blood and blood elements. Fluidotherapy. Pharmacotherapy of shock.</li> <li>11. Diuretics. Drugs affecting the respiratory system.</li> <li>12. Drugs affecting gastrointestinal function.</li> <li>13. Drugs affecting reproduction.</li> <li>14. Rules governing of prescription writing - repetition.</li> <li>15. Rules governing of prescription writing - repetition.</li> </ol>	laboratory classes
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### Entry requirements

anatomy, cell biology, biochemistry, immunology, physiology, pathophysiology, microbiology, veterinary pharmacology I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Pathomorphology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.1558.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 6	<b>Examination</b> exam	<b>Number of ECTS points</b> 6.0
	<b>Activities and hours</b> lecture: 45, laboratory classes: 45	

### Goals

C1	The aim of the course is to provide students with basic knowledge of regressive changes, circulatory disorders, inflammatory pathology, progressive changes, pathomorphology of cancer and diseases of particular organs and systems of the body as well as domestic animal infectious diseases. Subject shows the autopsy techniques, rules for the collection and protection of material for histopathological, microbiological and serological tests, and also indicates the possibility of the use of knowledge in the diagnosis of diseases, including infectious diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
	<b>Knowledge - Student knows and understands:</b>		

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written exam
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	written exam
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written exam
W4	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	written exam
W5	explains the mechanisms of organ and systemic pathologies	B.W2	written exam
W6	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written exam
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam
U2	issues veterinary medical opinion and certificate	O.U7	written exam
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written exam
U4	performs a full clinical examination of the animal	B.U3	practical training report
U5	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	practical training report
U6	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	practical training report
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	written exam
K2	deepens his/her knowledge and improves skills	O.K8	written exam
K3	communicates with the co-workers and shares knowledge	O.K9	practical training report

## Study content

No.	Course content	Activities
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1.	Pathology of skeletal muscles. Pathology of bone and joints. Pathology of skin. Skin neoplasms. Pathology of female reproductive system. Pathology of mammary gland. Male reproductive system. Pathology of eye. Morphology of swine diseases. Morphology of cattle diseases. Morphology of sheep and goat diseases. Morphology of dogs and cats diseases.	lecture
2.	Make up for the absence and final test of histopathology knowledge. Introduction, PM room and PM examination tools, PM technique. PM technique and PM examination report. PM examination of current cases x 2 Presentation and discussion of former cases and PM examination of current cases x 10 Final credit for a class.	laboratory classes

### **Entry requirements**

anatomy, histology, cell biology, biochemistry, physiology and pathophysiology, Pathomorphology I





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Public health protection in a state of disaster Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.2160.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 6	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	To provide students with properties of microorganisms, toxins and different types of radiation - potential agents of bioterrorist attack.
C2	To familiarize students with the possibilities of counteraction against the effects of bioterrorist attacks.
C3	To provide students with knowledge of the influence of ionizing radiation on biological material, routes of contamination with radioactive elements, metabolism and distribution of radionuclides in the body and the effects of acute and chronic irradiation.
C4	To familiarize students with the tasks of the veterinary service in radiological protection.
C5	Providing students with basic knowledge of dosimetry, assessment of radioactive contamination of feed and products of animal origin and methods of decontamination, taking into account external and internal contamination.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the principles and mechanisms underlying animal health, disease formation because of microbiological and radiological contamination and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written credit
W2	the mechanisms of disorders because of microbiological and radiological contamination.	O.W2	written credit
W3	the etiology, pathogenesis and clinical symptoms of diseases occurring because of microbiological and radiological contamination in individual animal species, and knows the principles of therapeutic procedures.	O.W3	written credit
W4	the principles of diagnostic methods and therapeutic procedure for diseases occurring because of microbiological and radiological contamination.	O.W4	written credit
W5	the principles of conducting clinical examination of disorders caused by microbiological and radiological contamination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes.	O.W7	written credit
W6	in detail the principles of management and utilisation of animal by-products and waste associated with animal production in a situation of microbiological and radiological contamination.	O.W9	written credit
W7	the principles of examination of the slaughter animals, meat and other animal products in a situation of microbiological and radiological contamination.	O.W10	written credit
W8	the principles of consumer health protection in a situation of microbiological and radiological contamination.	O.W11	written credit
W9	the principles of appropriate supervision over the production of foodstuffs of animal origin in a situation of microbiological and radiological contamination.	O.W12	written credit
W10	legal standards associated with the activities of veterinary physicians in a situation of microbiological and radiological contamination.	O.W14	written credit
W11	disorders at the cellular, tissue, organ, body level in disease caused by microbiological and radiological contamination.	B.W1	written credit
W12	the correlation between microbiological and radiation factors that disturb the balance of biological processes of the animal body and physiological and pathophysiological changes.	A.W11	written credit
<b>Skills - Student can:</b>			

U1	analyse and interpret pathological changes and results of laboratory tests and additional tests, taking into account the differential diagnostics, and undertake prophylactic actions in a situation of microbiological and radiological contamination.	O.U2	written credit
U2	perform activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin in a situation of microbiological and radiological contamination.	O.U6	written credit, participation in discussion
U3	use the knowledge of the laws of physics in order to explain the impact of ionizing radiation on the animal body.	A.U1	written credit
U4	communicate with the clients and other veterinary physicians.	A.U12	participation in discussion
U5	work in a multidisciplinary team.	A.U15	participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment in a situation of microbiological and radiological contamination.	O.K1	participation in discussion
K2	use the objective sources of information on potential factors of a bioterrorist attack.	O.K4	participation in discussion
K3	formulate conclusions from own measurements or observations.	O.K5	participation in discussion
K4	communicate with the co-workers and shares knowledge.	O.K9	participation in discussion
K5	to act in the conditions of uncertainty and stress.	O.K10	participation in discussion
K6	cooperate with representatives of other professions in the scope of public health protection in a situation of microbiological and radiological contamination.	O.K11	participation in discussion

### Study content

No.	Course content	Activities
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1.	<p>1. Bioterrorism: definition and types of bioterrorism. Categories of bioterrorist attack agents according to the Centers of Disease Control and Prevention (CDC). Properties of an "ideal" agent. Signs of bioterrorist attack. Viral agents of Category A (according to CDC): smallpox virus.</p> <p>2. Viral agents of category A (cont'd): viral hemorrhagic fevers (viruses: Marburg, Ebola, Lassa, Junin, Machupo, Sabia). Viral agents of category B: venezuelan equine encephalitis virus. Viral agents of category C (Nipah virus, Hanta virus, yellow fever virus).</p> <p>3. Bacterial agents of category A: Bacillus anthracis, Yersinia pestis, Francisella tularensis.</p> <p>4. Bacterial agents of category B: Coxiella burnetii, Salmonella sp., Escherichia coli O157:H7, Shigella sp., Vibrio cholerae, Brucella sp., Burkholderia mallei.</p> <p>5. Biological toxins as agents of bioterrorist attack: botulin toxin, enterotoxins of Staphylococcus aureus, epsilon toxin of Clostridium perfringens, ricin, trichotecenes.</p> <p>6. Agroterrorism. Potential threats of bioterrorist attack for agriculture. Possible agents of agroterrorism. Threats for food processing. Genetically modified food as a potential bioweapon.</p> <p>7. Identification of a bioterrorist attack. Situations constituting evidence of a bioterrorist attack. Identification of bioterrorist attack agents. Present-day diagnostic methods. Biosafety levels of microbiological laboratories.</p> <p>8. The radioactivity phenomenon; the characteristic of ionizing radiation. Sources of ionizing radiation in the environment. The natural background of ionizing radiation. The artificial background of ionizing radiation. The tasks and role of veterinary services in the organization of preventive system against radiation.</p> <p>9. Dosimetry of ionizing radiation; the radiation rate, the radionuclides activity, doses: exposed dose, absorbed dose, limit dose. Practical calculations and use of radioactivity units.</p> <p>10. Radiation detectors and measurement equipment.</p> <p>11. The influence of ionizing radiation on biological material; the hermetic effect of ionizing radiation, an ionization phenomenon, the target theory, the radiochemical theory. The radio-toxicity of radioactive nuclides. Cellular changes caused by ionizing radiation. The radiosensitivity of tissues and organs. Factors influencing the effect of ionizing radiation on organism.</p> <p>12. Human and animal body response to the ionizing irradiation; acute syndrome, stochastic effects.</p> <p>13. Contamination of animals by radionuclides; routes of contamination, critical organs, distribution and metabolism of selected radionuclides in animal body. Contamination of feed and food of animal origin by radionuclides.</p> <p>14. Decontamination; methods for elimination of the external and internal contamination of animals. Procedures in the case of radioactive contamination, the organization of animal decontamination.</p>	laboratory classes
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### Entry requirements

Completion of the courses: Chemistry, Biophysics, Biochemistry, Animal anatomy, Histology and embryology, Cell biology, Animal physiology, Pathophysiology, Veterinary immunology, Veterinary microbiology.



# UNIwersytet Przyrodniczy we Wrocławiu

## Parasitology and invasiology I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J20BO.1545.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 6	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	The aim of the course is to teach students to identify different species of parasites and to assess the related threats to animals and humans. Students learn the basic concepts and terms in parasitology, zoological systematics, morphology and life cycles of parasites, clinical symptoms and pathological changes during the course of parasitic infection in different animal species (cows, sheep, goats, horses, pigs, dogs, cats, laboratory animals, poultry, fish). Students learn basic diagnostic methods and the principles of treatment, control and prophylaxis parasitic infection. Students learn about the zoonotic effects of eating infected animal products such as raw fish, meat or internal organs. Issues of cooperation with animal breeders and veterinary administrative services in the control of animal parasitic diseases are also discussed during the course.
C2	Parasites of domestic and wild animals (Protozoa and Platyhelminthes), their morphology, biology, life cycles and epizootic and epidemiological role. Interactions between hosts and parasites, diagnostic methods, anti-parasitic drugs, prevention and control of invasion.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	species characteristics of parasitic protozoa and flatworms, knows their biology, describes and explains their developmental cycles and the spread of the diseases they cause, identifies parasites and specifies the dangers they pose to health and to humans.	B.W10, B.W3, O.W3, O.W6	written credit, active participation, test
W2	clinical signs and anatomopathological changes in infected animals and suggests prophylaxis and treatment for invasive diseases caused by protozoa and flatworms	B.W4, O.W4, O.W5	written credit, active participation, test
<b>Skills - Student can:</b>			
U1	recognise clinical signs of parasitic infections	O.U2	active participation, test
U2	select the optimum management strategy for dealing with individual parasites	O.U3	active participation, test
U3	implement appropriate treatment and preventive measures	B.U13	active participation, test
<b>Social competences - Student is ready to:</b>			
K1	use the knowledge gained to plan the optimal strategy for dealing with individual invasions	O.K1, O.K8	observation of student's work, active participation
K2	cooperation with the animal owner and consultation on parasitological cases	O.K11	observation of student's work, active participation

## Study content

No.	Course content	Activities

1.	<ol style="list-style-type: none"> <li>1. Definition and types of parasitism. Host – parasite relationships. Ways of infection, life cycle of parasites. Morphological, physiological and behavioral adaptation to the parasitic lifestyle.</li> <li>2. Characteristics of Sarcostigophora - blood and tissues parasites. Human and animal trypanosomiasis, ways of infection, clinical signs, pathology, epidemiology, treatment and control. Leishmaniasis of humans and animals.</li> <li>3. Characteristics of Sarcostigophora -protozoan of digestive and reproductive tracts of domestic and wild animals (Giardia spp., Trichomonas spp., Histomonas spp., Entamoeba spp.)</li> <li>4. Diseases caused by protozoa (type Apicomplexa) of gastrointestinal tract and other tissues. (Cryptosporidium sp, Eimeria spp., Isospora spp., Sarcocystis sp). Coccidiosis: -ways of infection, pathogenesis diagnosis, prevention, therapy.</li> <li>5. Toxoplasmosis of humans and animals. Neospora caninum - morphology, life cycle, the course of the infection in dogs and cattle. The infection of Sarcocystis sp. and Balantidium coli</li> <li>6. Haemosporidiosis - caused by the Apicomplexa protozoans ( Babesia spp., Theileria spp., Plasmodium spp.)</li> <li>7. Biology and pathogenicity of trematodes. General characteristics, biology, the role of tegument, larval forms, routes of infection. Pathology and immunobiology of infection caused by Fasciolidae, Dicrocoelidae and Paramphistomatidae</li> <li>8. Parasitic diseases of animals and humans caused by trematodes of the families Opistorchidae, Schistosomatidae, Diplostomatidae and Prosthogonimidae.</li> <li>9. Tapeworms infection . General characteristics of Cestoda; biology, larval forms, the role of tegument in biology and pathogenicity. Diphyllobothriasis, fish tapeworms.</li> <li>10. Pathology, immunobiology and epidemiology of infections caused by tapeworms of the Taeniidae family in intermediate and definitive hosts. The zoonotic significance of Taeniidae.</li> <li>11. The Nematodes - morphology and biology . - Characteristics of eggs and larval forms. Diseases caused by nematodes of Ascaridoidea &amp; Anisakidae (Ascaris suum, Parascaris equorum, Neoascaris vitulorum, Toxocara canis. Toxocarosis- zoonotic potential - Other nematodes of the Anisakidae family. Parasitic nematodes of poultry. Pathogenesis of infection caused by pinworms (Oxyuroidea in equids).</li> <li>12. Nematodes of the respiratory tract of ruminants, poultry, and carnivores. Dictyocaulosis of cattle and horses, protostrongylosis of ruminants, metastrongylosis of pigs, angiostrongylosis of dogs syngamosis of poultry. (Pathogenesis, prevention of infection with Syngamidae, Metastrongylidae &amp; Protostrongylidae.</li> <li>13. The strongyles infections of horses ruminants and pigs. The prevalence, pathogenesis and preventive measurements against large strongyles (Strongylus vulgaris, S. equinus, S. edentatus) and small (- subfamilies Cyathostominae) infections. Chabertia sp infection of sheep. oesophagostomosis of sheep, cattle and pigs.</li> <li>14. Characteristics of Strongyloidea &amp; Ancylostomatoidaea. The incidence of infection (Strongyloides spp) in farm animals. The prevalence of hookworm (family Ancylostomatidae) in carnivores - epidemiology, the phenomenon of dormant larvae, ways of infection. The hookworm zoonotic importance ( cutaneous larva migrans) Bunostomum spp infections of cattle and sheep.</li> <li>15. The gastrointestinal nematodes ( Trichostrongylidae) infections in ruminants, horses, poultry, rabbit , hares. The prevalence and significance of Ostertagia ostertagi, Haemonchus contortus, Trichostrongylus sp, Nematodirus sp infection in ruminants. The phenomena observed in the life cycle (self cure, spring rise).</li> </ol>	lecture
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2.	<p>Lab.1</p> <p>Protozoa</p> <p>Order: Trypanosomatida; Family: Trypanosomatidae /Trypanosoma equiperdum , Trypanosoma brucei , Trypanosoma gambiense , Trypanosoma rhodesiense , Trypanosoma evansi , Trypanosoma cruzi , Leishmania infantum</p> <p>Lab. 2</p> <p>Parabasalia; Order: Trichomonadida, Family: Trichomonadidae/ Tritrichomonas foetus, Trichomonas vaginalis</p> <p>Phylum: Fornicata; Family: Giardiidae/Giardia duodenalis</p> <p>Lab. 3</p> <p>Phylum: Amebozoa, Order: Amoebida , Family: Entamoebidae /Entamoeba histolytica ,Entamoeba coli</p> <p>Family: Acantamoebidae /Acanthamoeba castellani ,Family: Vahlkampfiidae /Naegleria fowleri</p> <p>Lab. 4</p> <p>Phylum: Apicomplexa; Order: Eucoccidiorida, Family: Eimeriida/ Eimeria tenella, Eimeria stiedai, Cystoisospora felis, Cystoisospora canis, Isospora suis</p> <p>Lab. 5</p> <p>Family: Sarcocystidae / Sarcocystis miescheriana , Sarcocystis sui hominis ,Sarcocystis porcifelis, Sarcocystis arieticanis ,Sarcocystis gigantea Sarcocystis tenella, Sarcocystis cruzi ,Sarcocystis hirsuta ,Sarcocystis hominis , Toxoplasma gondii</p> <p>Family: Cryptosporidiidae /Cryptosporidium parvum</p> <p>Lab. 6</p> <p>Order: Haemospororida, Family: Plasmodiidae / Plasmodium vivax ,Plasmodium falciparum, Plasmodium malariae, Plasmodium gallinaceum</p> <p>Order: Piroplasmorida, Family: Babesiidae /Babesia divergens, Babesia canis</p> <p>Phylum: Ciliophora ,Family: Balantidiidae/ Balantidium coli Family: Pycnotrichidae/ Buxtonella sulcata</p> <p>Lab. 7</p> <p>Test: Protozoa</p> <p>Lab. 8</p> <p>Plathelminthes - flatworms</p> <p>Class: Trematoda ,Family: Dicrocoeliidae/Dicrocoelium dendriticum, Family: Paragonimidae/Paragonimus westermani, Family: Prosthogonimidae/Prosthogonimus pellucidus ,Family: Opisthorchiidae/Opisthorchis felinus ,Clonorchis sinensis</p> <p>Lab. 9</p> <p>Order: Echinostomida; Family: Fasciolidae/Fasciola hepatica, Fasciolopsis buski ,Family: Paramphistomidae/Paramphistomum cervi</p> <p>Lab. 10</p> <p>Order: Echinostomida , Family: Echinostomatidae/Echinostoma revolutum, Echinochasmus perfoliatus</p> <p>Order: Strigeidida , Family: Diplostomatidae/Alaria alata ; Family: Schistosomatidae/ Schistosoma mansoni, Schistosoma japonicum, Schistosoma haematobium</p> <p>Lab. 11</p> <p>Class: Cestoda</p> <p>Family: Caryophyllaeidae/Caryophyllaeus laticeps</p> <p>Family: Diphyllbothriidae / Diphyllbothrium latum</p> <p>Family: Mesocestoididae/ Mesocestoides lineatus</p> <p>Family: Hymenolepididae/Hymenolepis nana,, Drepanidotaenia lanceolata</p> <p>Family: Davaineidae/ Raillietina cesticillus</p> <p>Lab. 12</p> <p>Class: Cestodea</p> <p>Order: Cyclophyllidea; Family: Taeniidae / Taenia solium ,Taenia saginata, Taenia pisiformis, Taenia hydatigena, Taenia (Hydatigera) taeniaeformis ,Echinococcus granulosus, Echinococcus multilocularis</p> <p>Lab. 13</p> <p>Family: Dipylidae/Dipylidium caninum ; Family: Anoplocephalidae/Anoplocephala magna, Anoplocephala perfoliate, Paranoplocephala mamillana, Moniezia expansa, Moniezia benedeni, Cittotaenia denticulata</p> <p>Lab. 14</p> <p>Test : Trematoda and Cestoda</p> <p>Lab. 15</p> <p>Completing overdue Labs. Credit</p>	laboratory classes
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## **Entry requirements**

Biology, Clinical and Laboratory Diagnostics, Pathophysiology, Pathomorphology, Veterinary Pharmacology



# UNIwersytet Przyrodniczy we Wrocławiu

## Diseases of farm animals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.0496.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 7	<b>Examination</b> exam	<b>Number of ECTS points</b> 18.0
	<b>Activities and hours</b> lecture: 125, laboratory classes: 50, clinical classes: 75	

### Goals

C1	The aim of the course is to provide students with basic knowledge about the etiological factors, caused clinical signs, necessary or possible additional tests, the final interpretation of the purpose of diagnosis, differential diagnosis, treatment and prevention of use of farm animal diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows in depth and describes in detail the principles and mechanisms underlying the health of farm animals, the formation of diseases and their therapy.	O.W1	written exam, test

W2	the etiology, pathogenesis and clinical symptoms of livestock diseases and knows the principles of therapeutic and diagnostic procedures appropriate for disease states occurring in farm animals.	O.W3, O.W4	written exam, test
W3	in detail the methods of using veterinary medicinal products for the prevention and treatment of farm animals.	O.W5	written exam, test
W4	the mechanisms regulating the health and diseases of farm animals.	A.W10	written exam, test
W5	the principles of conducting a clinical examination and monitoring the health of farm animals as well as the principles of diagnostic and therapeutic procedures.	B.W4, B.W5	written exam, test
W6	how to handle clinical data and the results of laboratory and additional tests to assess the health status and pathology of farm animals.	B.W6	written exam, test
W7	the assumptions of the selection of animals for mating, methods of fertilization and biotechnology of reproduction and breeding selection.	B.W12	written exam, test
W8	the principles of the economics of animal production.	B.W22	written exam, test
<b>Skills - Student can:</b>			
U1	carry out a clinical examination of various species of farm animals in accordance with the principles of medical practice.	O.U1	test, performing tasks
U2	analyse and interpret pathological changes and the results of laboratory and additional tests, formulates the diagnosis of the disease, including differential diagnosis, and takes therapeutic or preventive measures in various species of farm animals.	O.U2	test, performing tasks
U3	monitor the health of the herd, and also takes action in the event of finding a disease that is subject to mandatory eradication or registration.	O.U4	test, performing tasks
U4	determine and apply rational and targeted antibacterial chemotherapy in the treatment of farm animals.	A.U11	test, performing tasks
U5	up documentation regarding the case in the form of intelligible to other veterinarians and for animal owners.	A.U14	test, performing tasks
U6	use professional skills to increase the quality of veterinary care and the welfare of farm animals.	A.U19	test, performing tasks
U7	deal with animals safely and humanely and instructs others to do so.	B.U1	test, performing tasks
U8	carry out a veterinary interview in order to obtain precise information about a single animal or group of animals and its or their habitat.	B.U2	test, performing tasks
U9	carry out a complete clinical examination of the animal.	B.U3	test, performing tasks
U10	give first aid to animals in the event of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries and cardiac arrest.	B.U4	test, performing tasks

U11	evaluate the animal's nutritional status and provides advice in this regard.	B.U5	test, performing tasks
U12	collect and secure samples for research and performs standard laboratory tests, as well as correctly analyzes and interprets the results of laboratory tests.	B.U6	test, performing tasks
U13	use diagnostic equipment, including radiological, ultrasound and endoscopic equipment, in accordance with its intended use and safety rules for animals and humans, and interprets test results obtained after its use.	B.U7	test, performing tasks
U14	implement appropriate procedures in the case of finding a disease that is subject to compulsory eradication or registration.	B.U8	test, performing tasks
U15	prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and disposal.	B.U10	test, performing tasks
U16	use methods of safe sedation, general and local anesthesia as well as assessment and pain relief.	B.U11	test, performing tasks
U17	monitor the patient's condition in the intra- and postoperative period based on the basic vital signs.	B.U12	test, performing tasks
U18	select and implement appropriate treatment different for different species of farm animals, is aware of the grace period.	B.U13	test, performing tasks
U19	implement the principles of aseptics and surgical antiseptics and applies appropriate sterilization methods of used equipment.	B.U14	test, performing tasks
U20	evaluate the need to euthanize the animal and properly informs its owner about it, and performs euthanasia of the animal in accordance with the principles of professional ethics and proper handling of the carcass	B.U15	test, performing tasks
U21	carry out an epizootic investigation to establish the period during which an infectious animal disease may have developed on the farm before its suspicion or confirmation, the origin of the infectious disease in animals, along with other farms and the routes of movement of people, animals and objects that may have been the cause spread of an infectious disease to or from the farm.	B.U19	test, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	showing responsibility for decisions made towards people, animals and the natural environment.	O.K1	observation of student's work, active participation
K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions.	O.K2	observation of student's work, active participation
K3	cooperation with representatives of other professions in the field of public health protection.	O.K11	observation of student's work, active participation

# Study content

No.	Course content	Activities
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1.	<p>Internal medicine:</p> <ol style="list-style-type: none"> <li>Diseases of oral cavity, Inflammations of the mouth and throat: stomatitis cheilitis, glossitis, gingivitis, pharyngitis, tonsillitis.</li> <li>Differential diagnosis of noninfectious and infectious lesions in oral cavity. Selected diseases of the esophagus.</li> <li>Fore stomach diseases - indigestion. Acidosis and alkalosis of the rumen.</li> <li>Rumen overloading, omasum obstruction, acute and chronic bloat of the rumen, rumen, hyperkeratosis, peritonitis.</li> <li>Hoflund's syndrome, traumatic reticulitis, foreign bodies indigestion., acute and chronic abomasal indigestion and torsion of abomasum. Peritonitis.</li> <li>Hepathopathies, pancreas diseases., Bovine myoglobinuria, shipping fever.</li> <li>Bovine and ovine ketosis, hepatolipidosis syndrome. Negative energy balance in dairy cows.</li> <li>Mineral imbalance, macroelements deficiency Hypocalcemia, Hypophosphatemia, Hypomagneseemia.</li> <li>Mineral imbalances in bones of farm animals, osteopathies (osteoporosis, osteopetrisis, osteomalacia, rachitis epiphyseolysis).</li> <li>Physiological anemia in piglets, hypoglycemia in piglets.</li> <li>Trace elements, vitamins - antioxidants - a role for health of farm animals and their productivity.</li> <li>Consequences of trace elements vitamins and electrolytes deficiency - imbalance (shortage or excess).</li> <li>Respiratory system diseases- Acute and chronic pulmonary vesicular emphysema. Interstitial pulmonary emphysema. Lung oedema. Hyperaemia and lung oedema. Pulmonary thrombosis and embolism.</li> <li>Bronchopneumonia, chronic interstitial pneumonia, fibrosing pneumonia, fungal pneumonia, Pleuritis.</li> <li>Nephritis, kidney cirrhosis, pyelonephritis.</li> <li>Cystitis, haematuria, paroxysmal haemoglobinuria, puerperal haemoglobinuria, urinary bladder paralysis, urinary bladder dislocation.</li> <li>Neurological examination. Neurological lesion localisation.</li> <li>Encephalitis, Meningitis, Brain abscesses, Pituitary abscesses, Differential diagnostics by non infectious and infectious diseases.</li> <li>Thiamine insufficiency, Lead poisoning, Sulfur poisoning, Salt intoxication, Nervous Ketosis. Spinal cord diseases - Inflammation, Compressive disease.</li> <li>Trauma, Abscessation. Degenerative Myeloencephalopathy (Weaver Syndrome). Peripheral nerve injury.</li> <li>Dermatological health problems in farm animals</li> <li>Differential diagnostics of noninfectious and infectious diseases of the skin.</li> <li>Environmental and nutritional aspects of health and health problems of pigs.</li> <li>Organisation of the health protection on pigs farms.</li> <li>Cardiac diseases - traumatic pericarditis, myocarditis, Endocarditis, vasculature disease.</li> </ol> <p>Infectious diseases</p> <ol style="list-style-type: none"> <li>Foot and mouth disease and other vesicular diseases.</li> <li>Ruminant tuberculosis.</li> <li>Notifiable and reportable bovine diseases (bovine pleuropneumonia, rinderpest, pastereiosis).</li> <li>Notifiable and reportable (bovine leukemia, infections reovirusowe (BTV, Hemorrhagic disease of deer)</li> <li>Controlled and registered bovine diseases (BSE, rabies, anthrax).</li> <li>Viral and bacterial diseases of sheep part 1. (adenomatosis, Maedi-Visna, Caseous lymphadenitis - CLA, paratuberculosis).</li> <li>Viral and bacterial diseases of sheep part 2. (PPV, Lumpy skin disease, Scrapie, Border disease).</li> <li>Swine diseases (ASF, CSF).</li> <li>Swine diseases (rabies, brucellosis, leptospirosis, anthrax, erysipelas).</li> <li>PRDC part 1 (AD, PRRS, SI, pleuropneumonia).</li> <li>PRDC part 2 (PCV-2, streptococcosis, Glasser disease)</li> <li>PIDC (viral and bacterial alimentary diseases in pigs)</li> <li>Infectious diseases affect pigs reproduction.</li> <li>Exotic disease of farm animals.</li> <li>The lecture given by visiting profesor - Ruminant infectious diseases in Europe - actual problems.</li> </ol> <p>Reproduction</p> <ol style="list-style-type: none"> <li>Physiology of the bovine reproductive tract and specificity of bovine reproduction.</li> <li>Induction and synchronization of estrus in cows and heifers, embriotransfer in cattle.</li> <li>Functional ovary disorders and abnormal oestrus cycle in cattle part. I.</li> <li>Functional ovary disorders and abnormal oestrus cycle in cattle part. II.</li> <li>Uterus infections and disorders in cattle.</li> <li>Effect of nutrition on fertility.</li> <li>Disorders of pregnancy in cattle part. I. (death of embryos, non-infectious disorders of pregnancy - including abnormalities of pregnancy development, fetal anomalies, estrus during gestation, pregnancy uterus hernia, pregnancy oedema, pregnancy toxemia, mummification, fetal maceration and putrefaction).</li> <li>Disorders of pregnancy in cattle part. II. (infectious and non-infectious causes of abortion, induced abortion, induction of parturition, parturition recumbency).</li> <li>Disorders of the postpartum period part. I. (uterine prolapse, postpartum hemorrhage, uterine rupture, prolapse of the bladder, tissue damage during parturition, postnatal peripheral nerve paralysis).</li> <li>Disorders of the postpartum period part. II. (Retained fetal membranes, postpartum recumbency and milk fever).</li> <li>Etiopathogenesis of mastitis in cattle.</li> <li>Treatment and prevention of mastitis in the herd.</li> <li>Supervision of the reproduction in the large swine farm.</li> <li>Fertility disorders in pigs.</li> <li>Fertility disorders in seep and goats.</li> </ol> <p>Surgery</p> <ol style="list-style-type: none"> <li>Principles of general and local anesthesia in ruminants</li> <li>Principles of general and local anesthesia in pigs</li> <li>Bovine orthopedics: Physiology and pathology of posture and limbs built. Physiology and pathology of bovine hoof</li> <li>Diagnosis of locomotor diseases, lameness and their categories</li> <li>Disease of cattle fingers part I: discontinuity of hoof capsule, separated wall, double sole, laminitis, bruised and nail hole of corium, inflammation and necrosis of the wall and planter corium</li> <li>Disease of cattle fingers part II: deep purulent inflammation of corium, pads, skin of claw crack, corona, distal phalanx, limax.</li> <li>Treatments and preventive care in ruminant orthopedics: correction of the claws, the treatment baths of legs, the role of diet and health monitoring of reproductive organs, the mammary gland and digestive track to reduce diseases of limbs.</li> <li>Bovine traumatology: bones of the skull and fractures of mandible, the cornual process, spine (vertebrae, sacrum), pelvis, long bones, torticollis.</li> <li>Ruminants: dislocation and degeneration of joints (shoulder, hip, patella) bone actinomycosis.</li> <li>Ruminants: paralysis and inflammation of nerves (brachial plexus, radial n., ulnar n., median n., fibular n.), spastic paralysis, rupture of muscles, ligaments.</li> <li>Ruminants: inflammation of muscles, nerves, bursa (bursitis hydrops, precarpal, intertubercular, popliteal, calcaneal bursitis), shoulder and hip lame.</li> <li>Traumatic reticulopericarditis, abscess drainage, thoracotomy.</li> <li>Surgical diseases of the abomasum. Conservative and operational repositioning. Fixation of abomasum to the abdominal wall on the animal standing and lying.</li> <li>Surgical diseases of pigs I: osteoarthritis and fingers phlegmon, anal atresia prolapse of the anus, ear hematoma, displacement of the bladder</li> <li>Surgical diseases of pigs II: castration of piglets and boars, cryptorchidism, umbilical hernia, inguinal h., scrotal h., finger and tail amputation, teeth cutting, vasectomy.</li> </ol>	lecture
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2.	<p><b>Surgery</b></p> <ol style="list-style-type: none"> <li>1. Small ruminants, pigs. Anesthesia: a practical training: intravenous and intra-arterial injection, fixation of animals, pharmacological immobilization of animals, local anesthetic infiltration and perineural for the head, abdomen, groin, perineum, tail, limbs surgery treatments. Surgery treatments to choose : removal of the horns, caudotomy, amputation of a finger, tongue.</li> <li>2. Bovine orthopedics part I: interdigital anesthesia, local intravenous analgesia. Surgery: periodic correction of claw, treatment of sole ulcer, resection of the deep digital flexor tendon and distal interphalangeal joint tissue.</li> <li>3. Bovine orthopedics part II. Distal interphalangeal arthrodesis, low and high amputation of a finger, the presentation of other diseases of movement apparatus.</li> <li>4. Rumenotomy. Paravertebral and epidural anaesthesia (high and low). Surgery: laparotomy with left-side method Goetze's, Weingard's, Kulczycki's.</li> <li>5. Displacement and torsion of abomasum in cattle. Surgery treatments: repositioning, omento- and abomasopexy.</li> <li>6. Swine surgery: castration, cryptorchidism, hernia, shortening of the teeth, restoration of the anus, ear hematoma, caudotomy.</li> <li>7. Demonstration of anesthesia and surgery in cows: perineural and epidural blockade; head, rumen and abomasum surgery.</li> <li>8. Credits</li> </ol> <p><b>Reproduction</b></p> <ol style="list-style-type: none"> <li>1. Gynecological examination of cows and heifers, part. 1 - anatomy and physiology of genital organs - practical aspects, rectal evaluation of uterus and ovaries.</li> <li>2. Gynecological examination of cows and heifers, part. 2 - examination - external and per vaginam, pregnancy diagnosis in cows and heifers, catheterization of the bladder.</li> <li>3. Obstetric aid in cattle part I (obstetrics examination, fetal-maternal disproportion, abnormal fetal postures).</li> <li>4. Obstetric aid in cattle part II (abnormal fetal positions and postures, uterine torsion).</li> <li>5. Test I (2 h)</li> <li>6. Ultrasound of bovine genital track - practice.</li> <li>7. Cesarean section in cattle (isolated organs). Obstetric instruments.</li> <li>8. Clinical examination of the mammary gland. Field and laboratory milk tests.</li> <li>9. Interpretation of tests results. Surgery of mammary gland (isolated organs).</li> <li>10. Diagnosis of porcine reproductive disorders (clinical examination, USG).</li> <li>11. Diagnosis of ovine and caprine reproductive disorders (clinical examination, USG).</li> <li>12. Test II. Credits.</li> </ol>	laboratory classes
3.	<p><b>Internal Medicine</b></p> <ol style="list-style-type: none"> <li>1. Clinical general examination and rectal examination in cattle.</li> <li>2. Collection and examination of the rumen fluid in cattle.</li> <li>3. Arterial and venous blood sampling for laboratory tests and drugs administration in cattle.</li> <li>4. Acid base balance in venous and arterial blood.</li> <li>5. Practical aspects of health protection in cattle farms. Examples of monitoring and therapy of metabolic diseases in highly productive dairy cows.</li> <li>6. Urine sampling in cattle and sheep. Diagnostic puncture - rumen, omasum, thorax, pericardial sac, liver. Examination of samples.</li> <li>7. Urinary bladder endoscopy.</li> <li>8. Clinical general examination in other farm animals (sheep, goats and pigs). Techniques of blood sampling and drugs administration in these animals.</li> <li>9. Practical aspects of health protection in swine farms. Examples of monitoring and therapy.</li> <li>10. Examination of feces.</li> <li>11. Neurological examination in farm animals.</li> <li>12. Dermatological examination in cattle, sheep, goats and pigs. Collection of samples.</li> <li>13. Dermatological examination - continuation. Discussion of clinical lesions observed in selected diseases in ruminants and pigs.</li> <li>14. Echocardiography in cattle. Electrocardiography (ECG) Clinical cases, examples in farm animals, recording in medical documentation.</li> <li>15. Completing a course, corrections of tests, complementation of grades.</li> </ol> <p><b>Infectious diseases</b></p> <ol style="list-style-type: none"> <li>1. Infectious diseases of farm animals (lists of notifiable and reportable diseases in Poland. Proceedings in case of outbreak of contagious disease). Class includes: reading the list of diseases occurring in Poland, medical and veterinary procedures in the event of an outbreak of infectious disease.</li> <li>2. Bovine herpesvirus infection (BHV-1, Bovine malignant catarrh, BHV-2). Class includes: etiology, pathogenesis, route of infection, and clinical signs BHV-1 infection and the ability to diagnose and treatment.</li> <li>3. Viral diarrhea and mucosal disease (BVD / MD), Pink eye (IBK). Class includes: etiology, pathogenesis, route of infection and the clinical signs of BVDV infection and IBK and the ability to recognize and control.</li> <li>4. Chlamydia, chlamydia, bovine and sheep Q fever (query fever). Class includes: etiology, pathogenesis, route of infection, and clinical signs the diagnosis, treatment and control.</li> <li>5. Fungal diseases in cattle, sheep and pigs. Test I. Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>6. Viral and bacterial diseases of bovine respiratory system (BRSV, PI-3, Adeno-, reovirus, Rhinovirus, mycoplasmosis, pastereiosis). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>7. Viral and bacterial diseases of bovine gastrointestinal tract (rota- and koronawiroza, kolibakterioza, salmonellosis, infection). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>8. Viral and bacterial diseases of sheep (sheep paronychia, contagious ecthyma, sheep pox). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>9. Viral and bacterial diseases of sheep (Clostridium spp infections, ). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>10. Viral and bacterial diseases of cattle and sheep (listeriosis, leptospirosis). Test II. Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>11. Viral and bacterial diseases of swine respiratory tract (swine mycoplasmosis, bordetellosis, atrophical rinitis). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>12. Infections of the swine gastrointestinal tract (E. coli, Salmonella, Rotavirus and coronavirus). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>13. Infections of the swine gastrointestinal tract (dysentery, spirochetosis, adenomatosis). Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>14. Viral and bacterial diseases of pigs (Picorna-infection, corona-, entero-, herpesvirus). Test III. Class includes: etiology, pathogenesis, route of infection, and clinical signs, diagnosis, treatment and control.</li> <li>15. Making up for classes and credit</li> </ol> <p><b>Reproduction</b></p> <ol style="list-style-type: none"> <li>1. Rectal palpation of the bovine genital organs - practice on a simulator.</li> <li>2. Rectal palpation of the bovine genital organs - practice.</li> <li>3. Vaginal examination, application of intravaginal devices - practice.</li> <li>4. Surgical procedures on vagina and vulva (isolated organs). Gynecological instruments.</li> </ol>	clinical classes

## Entry requirements

Completion of courses : animal anatomy I and II, biochemistry, histology and embryology, veterinary microbiology, animal physiology, pathomorphology, pathophysiology, clinical and laboratory diagnostics, veterinary pharmacology.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Fish diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.0689.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, laboratory classes: 15	

### Goals

C1	This course offers students basic issues of fish anatomy, immunology, correct diagnosis of fish diseases based on the clinical and postmortem examination of fish. During the course student should acquire the theoretical knowledge and practical skills necessary to diagnose fish disease, taking samples for laboratory test and treat diseases in fish. Student acquires both basic and detailed information and knowledge in the field of fish production.
C2	Student has a basic knowledge of anatomy and topography of different species of fish. Student is able to diagnose the most common contagious disease. Student has knowledge about major diseases in fish and principles of disease prevention.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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<b>Knowledge - Student knows and understands:</b>			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, test
W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written credit, test
W3	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit, test
W4	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit, test
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit, test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit, test
U3	plans the diagnostic procedure	O.U3	written credit, test
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	written credit, test
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit, test
K2	formulates conclusions from own measurements or observations	O.K5	written credit, test
K3	deepens his/her knowledge and improves skills	O.K8	written credit, test

## Study content

No.	Course content	Activities

1.	<p>1. Species, anatomy and physiology of cyprinid and salmonid fish. Identity biological features, anatomy, physiology habitat and biology of salmonid fish. Identity biological features, anatomy and physiology, habitat and biology of cyprinid fish. Fish reproduction and fertilization, incubation of fish eggs.</p> <p>2. Production cycle of salmonid and cyprinid fish . History of common carp in Poland. Intoduction of rainbow trout in Poland. Responsible aquacultures practices. Pond fish culture. Characteristic of common carp polyculture. Types of ponds. Feeding systems. Natural and artificial reproduction of fish.</p> <p>3. Fish immunology. Modulation of the immune response. Vaccines. Types of vaccines. Methods of vaccine administration. Fish managment healt.</p> <p>4. Bacterial diseases. Enteric Redmouth Disease -Yersinia ruckeri, Bacterial Kidney Disease - Renibacterium salmoninarum, Columnaris Infection - Flavobacterium columnare, Bacterial Cold Water Disease Flavobacterium psychrophilum Infection, Bacterial Gill Disease - Flavobacterium branchiophilum, Motile Aeromonad Infection, Aeromonas salmonicida Infection, Carp erythrodermatitis (CE), Edwardsiella tarda, Streptococcosis. ). Etiopathology, clinical signs, prevention, treatment. Virial diseases of fish. Spring Viremia of Carp (SVC), Koi Herpesvirus (KHV), Infectious pancreatic necrosis (IPN), Viral hemorrhagic septicemia (VHS), Infectious hematopoietic necrosis (IHN). Etiopathology, clinical signs, prevention, treatment.</p> <p>5. Environmental diseases . Environmental hypoxia. Gas bubbles disease. Ammonia poisoning. Nitrite poisoning. Sterss due to variations in pH values. Fish toxicology.</p>	lecture
2.	<p>1. Methods for diagnosis fish disease. Clinical examination, taking the history, water ananysis biopsy techniques (mucus smear, fin biopsy, gill biopsy, kidney biopsy).</p> <p>2. Clinical examination and procedures II. External examination and internal examination. Fish disease diagnosis form.</p> <p>3. Fungal disease - Typical Water Mold Infection, Branchiomycosis, Ichthyophonus. Protozoan disease- (ciliates and flagellates), Trypanoplasma, Trichodinosis, Chilodonella, Ichthyobodo, Ichthyophthirius multifiliis, Cryptocaryonosis, Myxozoan Infection. Etiopathology, clinical signs, prevention, treatment.</p> <p>4. Monogenean Infestation- Dactylogyrus sp. Gyrodactylus sp. Diplozoon sp. Digenea flukes - Sanguinicola sp., Diplostomum sp., Posthodiplostomum cuticola.</p> <p>5. Tapeworm Infection - Bothriocephalus acheilognathi, Caryophyllaeus laticeps (cloverworm) . Khawia sinensis (khawiosis), Ligula intestinalis. Etiopathology, clinical signs, prevention, treatment.</p> <p>6. Nematode Infection. Anisakis simplex, Capillaria sp., Philometra lusiana. Acanthocephalan Infection. Acanthocephalus sp.. Neoechinorhynchus sp. Echinorhynchus sp. Pomporhynchus sp. Copepoda Infestation. Argulus foliaceus, Ergasilus sieboldi, Lernaea cyprinacea Leech Infestation Etiopathology, clinical signs, prevention, treatment.</p> <p>7. Fish production management. Water management, hatchery management, pond management, feed and feeding management, security management, labour management. Zoonoses associated with fish. Test.</p>	laboratory classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Food sanitary law Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.0730.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, practical classes: 15	

### Goals

C1	Classification and structure of European Union and national law instruments, promulgation authority, principles of laws promulgation, basic concepts of law, the classification of legal rules and principles, administrative decision and appeal procedure, national law acts governing the structure of inspection and supervision over the production, processing, distribution and marketing of food of animal origin. National and UE legislation in the field of veterinary public health in the area of hazard coming from food of animal origin. Rights and responsibilities of veterinarians performing the tasks in area of supervision of food.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	explains in detail the principles of consumer health protection	O.W11	written credit
W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit
W3	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit
W4	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written credit
W5	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	written credit
W6	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written credit
<b>Skills - Student can:</b>			
U1	issues veterinary medical opinion and certificate	O.U7	written credit
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	written credit
U3	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit
K2	formulates conclusions from own measurements or observations	O.K5	written credit
K3	uses the objective sources of information	O.K4	written credit

## Study content

No.	Course content	Activities
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1.	<p>1. Why do we need law in the society? The concept and content of state and law. The right to health and food safety in the context of public health protection. EU law on food safety issues.</p> <p>2. The definition of state, the state apparatus, the government agency, legal entity, legal person, natural person. Categories of law, legislation, rule of law, legal provision. Criteria for the division and hierarchy of legal acts. The European Union history, organization, tasks</p> <p>3. EU rules of interpretation, the law-making procedures. Permanent and advisory committees acting on behalf of the EU veterinary and other organizations associated with the veterinarian profession.</p> <p>4. Sources of international law in relation to food. Sources of national laws in relation to food.</p> <p>5. The main objectives of regulation EC Regulation No. 178/2002 laying down general principles of food law in the EU.</p> <p>6. Regulation No. 178/2002 of the organization and tasks of EFSA. Regulation No. 178/2002, Proceedings in cases of crises (failure), to establish a uniform policy on hygiene requirements for all types of food all the operators in the chain of manufacture</p> <p>7. Consumer protection under the law. Veterinary Inspection - the organization, the legal basis: Act of 29 January 2004 at the State Veterinary Service.</p>	lecture
2.	<p>1. The main objectives of regulation EC Regulation 852/2004 on the hygiene of foodstuffs</p> <p>2. The main objectives of regulation EC Regulation 853/2004 laying down specific hygiene rules for on the hygiene of foodstuff</p> <p>3. The main objectives of new law:</p> <p>Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017</p> <p>Commission Implementing Regulation (EU) 2019/627 of 15 March 2019</p> <p>5. The main objectives of regulation EC Regulation 1441/2007 on microbiological criteria for foodstuffs</p> <p>6. Food additives under the law (REGULATION (EC) No 1333/2008)</p> <p>7. Veterinary drugs. Antibiotics and other residues. Max levels allowed in food. Pharmaceutical Law.</p>	practical classes

### Entry requirements

- Knowledge of the structure and tasks supervised by the Veterinary Inspection.
- Knowledge of infectious diseases from OIE list A and B.
- Basics of livestock breeding.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Parasitology and invasiology II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.1546.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 7	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

### Goals

C1	The aim of the course is to acquaint students with identification of different species of parasites. Student learns the basic concepts and terms in the field of parasitology, life cycles of parasites and zoological systematics. Student acquires knowledge concerning symptoms and pathological changes of parasitic diseases that occur in various species of animals. The course covers bases of epidemiology, clinical and laboratory diagnostics, control and preventive measurements of parasitic diseases.
C2	Parasites of domestic and wild animals (Nematoda and Arthropods), their morphology, biology, life cycles and epizootic and epidemiological role. Interactions between hosts and parasites, diagnostic methods, anti-parasitic drugs, prevention and control of invasion.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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<b>Knowledge - Student knows and understands:</b>			
W1	species characteristics of parasitic nematodes and arthropods, knows their biology, describes and explains their life cycles and the spread of the diseases they cause, identifies parasites and specifies the dangers they pose to health and to humans	B.W10, B.W3, O.W3, O.W6	written exam, active participation, test
W2	clinical signs and anatomopathological changes in infected animals and suggests prophylaxis and treatment for invasive diseases caused by nematodes and arthropods	B.W4, O.W4, O.W5	written exam, active participation, test
<b>Skills - Student can:</b>			
U1	recognise clinical signs of parasitic infections	O.U2	active participation, test
U2	select the optimum management strategy for dealing with individual parasites	O.U3	active participation, test
U3	implement appropriate treatment and preventive measures	B.U10, B.U3	active participation, test
<b>Social competences - Student is ready to:</b>			
K1	use the knowledge gained to plan the optimal strategy for dealing with individual invasions	O.K1, O.K8	observation of student's work
K2	cooperation with the animal owner and consultation on parasitological cases	O.K11	observation of student's work

## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Epidemiology, pathology and clinical course of <i>Trichinella</i> spp. infections in animals and humans. The prevalence, pathology and immunobiology of Trichuroidea family (<i>Trichuris</i> sp, <i>Capillaria</i> sp) infection in birds.</li> <li>2. Diseases caused by nematodes of families Spiruroidea; (<i>Parafilaria</i> sp, <i>Onchocerca</i> sp, <i>Dirofilaria immitis</i> and <i>D. repens</i>) and Filarioidea (<i>Spirocerca</i> sp, <i>Habronema</i> sp, <i>Draschia</i> sp, <i>Thelazia</i> sp., <i>Gongylonema</i> sp )</li> <li>3. Parasitic Arthropods - : general characteristics, biology, larval forms, role in the transmission of infectious diseases. Characteristics of Ixodidae and vectored diseases. Local and systemic symptoms observed in the subsequent stages of the infection. Ticks as a vector of viral, bacterial and protozoan diseases.</li> <li>4. Infection of - Argasidae. Acaroses in birds. Pathology caused by mites infection in birds. Zoonotic importance of birds mites</li> <li>5. Scabies of ungulates and carnivores. The infection caused by <i>Demodex</i> spp. and <i>Cheyletiella</i> sp</li> <li>6. Infestations of parasitic Diptera: Tabanidae, Hippoboscidae, Simuliidae, Culicidae. The inflammatory and necrotic lesions of skin in animals affected by flies' larvae (<i>Lucilla</i> sp., <i>Calliphora</i> sp.). Gasterophilosis in horses: prevalence, clinical signs, prophylactic action. The prevalence of <i>Oestrus ovis</i> infections. Hypodermosis in cattle.</li> <li>7. The lice infections in mammals and birds . Fleas invasion of poultry and carnivores. The importance of the flea vector diseases. Allergens of fleas.</li> <li>8. Immunology of parasitic invasion. Prevention and treatment of parasitic diseases.</li> </ol>	lecture

2.	<p>Lab. 1</p> <p>Phylum: Nematelminthes; Class: Nematoda; Family: Ascarididae/Ascaris suum, Parascaris equorum, Toxocara canis, Toxocara cati, Toxascaris leonina; Family: Ascarididae/Ascaridia galli; Family: Heterakidae/Heterakis gallinarum, Family: Oxyuridae/Enterobius vermicularis, Oxyuris equi, Passalurus ambiguus, Skrjabinema ovis</p> <p>Lab. 2</p> <p>Order: Strongylida</p> <p>Family: Metastrongylidae/Metastrongylus elongatus, Family: Dictyocaulidae/Dictyocaulus filaria, Dictyocaulus viviparus</p> <p>Order: Protostrongylidae/ Protostrongylus spp.; Family: Syngamidae/ Syngamus trachea</p> <p>Lab.3</p> <p>Order: Rhabditida; Family: Strongyloididae/Strongyloides ransomi</p> <p>Order: Spirurida; Family: Filaridae/Dirofilaria immitis, Dirofilaria repens</p> <p>Order: Strongylida; Family: Ancylostomatidae/Uncinaria stenocephala, Bunostomum trigonocephalum</p> <p>Lab.4</p> <p>Order: Strongylida; Family: Strongylidae; Subfamily: Strongyliinae/Strongylus equinus, Strongylus edentates, Strongylus vulgaris</p> <p>Subfamily: Chabertiinae/ Chabertia ovina; Subfamily: Oesophagostominae / Oesophagostomum radiatum, Oesophagostomum dentatum.</p> <p>Lab. 5</p> <p>Family: Trichostrongylidae/Haemonchus contortus, Ostertagia ostertagi</p> <p>Family: Molineidae/Nematodirus filicollis</p> <p>Lab.6</p> <p>Family: Trichinellidae/Trichinella spiralis</p> <p>Family: Trichuridae/ Trichuris suis, Capillaria spp</p> <p>Lab.7</p> <p>Test Nematoda</p> <p>Lab. 8</p> <p>Phylum: Arthropoda</p> <p>Class: Arachnida; Subclass: Acaria; Family: Ixodidae/Ixodes Ricinus, Hyalomma spp., Dermacentor reticulatus</p> <p>Family: Argasidae/Argas reflexus</p> <p>Lab. 9</p> <p>Order: Gamasida Family: Dermanyssidae/Dermanyssus gallinae; Family: Varroidae/Varroa destructor</p> <p>Order: Actinedida; Family: Tarsonemidae/Acarapis woodi. Family: Myobidae/Myobia muscui, Family: Cheyletiellidae/ Cheyletiella blakei ,Cheyletiella yasguri</p> <p>Lab. 10</p> <p>Family: Demodicidae, Demodex canis</p> <p>Order: Acaridida, Family: Sarcoptidae, Sarcoptes scabiei, Notoedres cati</p> <p>Family: Knemidocoptidae, Knemidocoptes mutans</p> <p>Family: Psoroptidae, Psoroptes communis v. ovis, Chorioptes equi, Otodectes cynotis</p> <p>Lab. 11</p> <p>Class: Insecta , Order: Diptera , Family: Ceratopogonidae, Culicoides spp.</p> <p>Family: Simuliidae, Simulium spp.</p> <p>Family: Phlebotomidae, Phlebotomus spp.</p> <p>Family: Culicidae, Culex spp., Anopheles spp., Aedes spp.</p> <p>Family: Tabanidae, Tabanus spp.</p> <p>Family: Muscidae, Stomoxys calcitrans</p> <p>Family: Glossinidae, Glossina palpalis</p> <p>Family: Calliphoridae, Lucila serricata</p> <p>Lab. 12</p> <p>Order: Diptera ; Hypoderma bovis, Oestrus ovis , Gasterophilus intestinalis</p> <p>Family: Hippoboscidae, Melophagus ovinus</p> <p>Order: Hemiptera , Family: Cimicidae, Cimex lectularius</p> <p>Lab. 13</p> <p>Order: Anoplura ; Pediculus humanus ,Phtirus pubis, Haematopinus suis , Linognathus setosus</p> <p>Order: Amblycera: Menopon gallinae, Columbicola colombe</p> <p>Family: Trichodectidae, Bovicola bovis</p> <p>Order: Siphonaptera , Pulex irritans, Ctenocephalides canis, Xenopsylla cheopis</p> <p>Lab. 14</p> <p>Test: Arthropoda</p> <p>Lab. 15</p> <p>Completing overdue classes. Credit</p>	laboratory classes
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## **Entry requirements**

Parasitology and Invasiology I, Biology, Clinical and Laboratory Diagnostics, Pathophysiology, Pathomorphology, Veterinary Pharmacology,



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Slaughter animals and meat hygiene I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.2335.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

### Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the principles of consumer health protection	O.W11	written credit, oral credit

W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit, oral credit
W3	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written credit, oral credit
W4	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	written credit, oral credit
W5	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written credit, oral credit
W6	Presents in detail the principles of examination of the slaughter animals, meat and other animal products	O.W10	written credit, oral credit

### Skills - Student can:

U1	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	oral credit
U2	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit
U3	Is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	written credit, oral credit

### Social competences - Student is ready to:

K1	communicates with the co-workers and shares knowledge	O.K9	oral credit
K2	deepens his/her knowledge and improves skills	O.K8	oral credit
K3	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral credit
K4	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit

## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Food hygiene - definition, concept, content, scope. The legal basis: Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety</li> <li>2. Protect the health of the consumer, commodity risks slaughter microbiological factors, parazytologicznymi, chemicals. The risk analysis.</li> <li>3. Food chain: feed hygiene, slaughtering, cutting, processing, distribution, transport of animals, transport of meat. Plumbing Package: EU Regulation 852, 853, 854 and 882 in 2004.</li> <li>4. Monitoring, control, audit, monitoring. Role and tasks of IW. The Act of 29 January 2004 on Veterinary Inspection.</li> <li>5. Slaughterhouse - definition, design, structure, functions, requirements and structure of the plant production of meat and meat products. Species specificity, equipment, technological lines</li> <li>6. GMP / GHP / HACCP in meat processing plants - concepts, objectives of, well, rules. Chapter zones for clean and dirty. Principles of movement between zones, hygiene staff.</li> <li>7. Animals for slaughter. Rotation, identification and marking of animals. Act of 2 April 2004 on the identification and registration of animals</li> <li>8. Animal welfare, ante-mortem inspection, slaughter - Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97 .</li> <li>9. Meat - definitions. The slaughter of animals for slaughter - definition, types, methods. Technology slaughter of animals for slaughter. Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin</li> <li>10. Slaughter of pigs. Stunning, exsanguinations, scalding, odszczepianie, evisceration, post-mortem inspection of meat samples for laboratory tests.</li> <li>11. Slaughter stunning, exsanguination, skinning, evisceration, the division of the carcass, meat post-mortem inspection, sampling for laboratory tests.</li> <li>12. Slaughter of horses. Stunning, exsanguination, skinning, evisceration, the division of the carcass, meat post-mortem inspection, sampling for laboratory tests.</li> <li>13. The slaughter of poultry, rabbits, game animals farmed</li> <li>14. Venison, definition, conduct a fishery, veterinary examination, evaluation. Proceedings in the fishery, collection game, the base game, pathological changes.</li> <li>15. Rating meat after slaughter, veterinary seal character patterns, methods, and rules on labeling. Handling the meat after slaughter. Cooling, cutting, distribution.</li> </ol>	lecture

2.	<p>1. HACCP - system of food safety of animal origin. Part 1.</p> <ul style="list-style-type: none"> <li>- management of safety and quality of food of animal origin</li> <li>- idea of HACCP</li> <li>- prerequisites of system implementing</li> <li>- 7 principals</li> <li>- basic concepts</li> <li>- structure of documentation</li> </ul> <p>2. HACCP - system of food safety of animal origin. Part 2.</p> <ul style="list-style-type: none"> <li>- principles for the drafting of a system</li> <li>- description of the product</li> <li>- block diagram</li> <li>- analysis of hazards and CCP assessment</li> <li>- monitoring system</li> <li>- loop quality</li> <li>- system verification</li> </ul> <p>3. Cleaning and disinfection</p> <ul style="list-style-type: none"> <li>- goals of washing and disinfection</li> <li>- washing agents</li> <li>- disinfectants</li> <li>- washing and disinfecting techniques</li> <li>- effectiveness of cleaning and disinfection</li> </ul> <p>4. Control of the general conditions of production hygiene.</p> <ul style="list-style-type: none"> <li>- law basis Decision 2001/471 EC</li> <li>- sampling methods for microbiological testing</li> <li>- rules for the collection of samples for microbiological testing</li> <li>- analysis of results</li> <li>- decisions</li> </ul> <p>5. The task of the veterinary supervision of food establishments</p> <ul style="list-style-type: none"> <li>- law basis: Instruction GLW no GIWhig 500-7/07</li> <li>- microbiological testing conducted at the premises</li> <li>- rules and methods of sampling to test</li> <li>- results of analysis and evaluation</li> </ul> <p>6. Microbiological quantitative testing</p> <ul style="list-style-type: none"> <li>- MPN</li> <li>- total viable counts</li> <li>- rules for calculating results</li> </ul> <p>7. The study of food in the direction of <i>Listeria monocytogenes</i></p> <ul style="list-style-type: none"> <li>- food in jeopardy</li> <li>- law basis: Regulation 1441/2007</li> <li>- microbiological mediums</li> <li>- methodology for microbiological testing of food</li> </ul> <p>8. Study of food in the direction of Enterobacteriaceae part 1.</p> <ul style="list-style-type: none"> <li>- food in jeopardy</li> <li>- systematics</li> <li>- law basis Regulation 1441/2007</li> <li>- mediums</li> <li>- methodology for the microbiological testing of food</li> <li>- spreading</li> </ul> <p>8. Study of food in the direction of Enterobacteriaceae part 2</p> <ul style="list-style-type: none"> <li>- analyses of incubated tests</li> <li>- interpretation of results</li> <li>- treats for consumers</li> </ul> <p>10. Study of food in the direction of pathogenic Streptococci part 1.</p> <ul style="list-style-type: none"> <li>- food in jeopardy</li> <li>- systematics</li> <li>- law basis: Regulation 1441/2007</li> <li>- mediums</li> <li>- methodology for the microbiological testing of food</li> <li>- spreading</li> </ul> <p>11. The study of food in the direction of pathogenic Streptococci part 2</p> <ul style="list-style-type: none"> <li>- analyses of incubated tests</li> <li>- interpretation of results</li> <li>- treats for consumers</li> </ul> <p>12. The study of food in the direction of pathogenic Staphylococci. Part 1</p> <ul style="list-style-type: none"> <li>- food in jeopardy</li> <li>- systematics</li> <li>- law basis: Regulation 1441/2007</li> <li>- mediums</li> <li>- methodology for the microbiological testing of food</li> <li>- spreading</li> </ul> <p>13. The study of food in the direction of pathogenic Staphylococci. Part 2</p> <ul style="list-style-type: none"> <li>- analyses of incubated tests</li> <li>- interpretation of results</li> <li>- treats for consumers</li> </ul> <p>14. The study of food in the direction of pathogenic bacteria.</p> <ul style="list-style-type: none"> <li>- food in jeopardy</li> <li>- systematics</li> <li>- law basis: Regulation 1441/2007</li> <li>- mediums</li> <li>- methodology for the microbiological testing of food</li> <li>- spreading</li> </ul> <p>15. The study of food in the direction of pathogenic bacteria. cz. 2.</p> <ul style="list-style-type: none"> <li>- analyses of incubated tests</li> <li>- interpretation of results</li> <li>- treats for consumers</li> </ul>	laboratory classes
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## **Entry requirements**

basics of microbiology, basics of livestock breeding, knowledge of the structure and tasks of the Veterinary Inspection



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Advanced pathogenesis of diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.3572.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> practical classes: 30	

### Goals

C1	to familiarize students with the influence of harmful factors and uncomfortable conditions on the processes taking place in the animal body.
C2	to familiarize students with issues related to the detailed pathogenesis of local and/or systemic processes occurring in the animal body during the disease.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the principles and mechanisms underlying the disease development - from the level of cells, through tissues, organs to the animal's body.	O.W1	test, participation in discussion
W2	disturbances of the mechanisms ensuring the proper functioning of the animal organism and the mechanisms activated in pathological conditions.	O.W2	test, participation in discussion
W3	the etiology and pathogenesis of clinical symptoms of the disease.	O.W3	test, participation in discussion
W4	the correlation between factors that disturb the balance of biological processes of the animal body and pathophysiological changes.	A.W11	test, participation in discussion
W5	the morphological and functional changes occurring in the cells, tissues, organs of animal organism occurring in the disease and the mechanisms of recovery after the disease.	A.W12	test, participation in discussion
<b>Skills - Student can:</b>			
U1	describe the alterations in the function of the organism in disturbances in mechanisms of adaptation and in disturbances in the mechanisms maintaining the state of body homeostasis.	A.U4	test, participation in discussion
U2	define changes in the function of the organism and changes in the behavior of the animal ensuring adaptation to the environmental factors challenge.	A.U7	test, participation in discussion
U3	listen and provide answers with the use of understandable language, appropriate to the given situation.	A.U13	test, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people and animals.	O.K1	observation of student's work, participation in discussion
K2	use the objective sources of information related to the pathogenesis of diseases and their results.	O.K4	observation of student's work, participation in discussion
K3	formulate conclusions from the observation of the impact of harmful factors on the body and the resulting consequences.	O.K5	observation of student's work, participation in discussion
K4	deepen his/her knowledge in the advanced pathogenesis and consequences of diseases.	O.K8	observation of student's work, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student's work, participation in discussion

## Study content

No.	Course content	Activities
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1.	<p>I. Advanced pathogenesis of systemic diseases - molecular and cellular mechanisms.</p> <p>Disorders of mechanisms participating in regulation of physiologic processes in cells and consequences of them:</p> <ol style="list-style-type: none"> <li>1. alterations of regulatory protein composition and function,</li> <li>2. disturbances in membranous transport,</li> <li>3. disturbances in transmission and transduction of the cellular signal,</li> <li>4. energetic disorders,</li> <li>5. alterations in the cell cycle,</li> <li>6. alterations in cell maturation.</li> </ol> <p>Relationship disorders:</p> <ol style="list-style-type: none"> <li>1. anabolism - catabolism,</li> <li>2. carbohydrate-lipid-protein metabolism,</li> <li>3. water spaces,</li> <li>4. intracellular and extracellular pH.</li> </ol> <p>II. Advanced pathogenesis of systemic diseases - presentation of the relationship between the mechanism and the symptom based on the analysis of selected clinical cases.</p> <p>Knowledge of detailed ethiopathogenesis as the basis for correct diagnosis and effective therapy: cause-pathomechanism-effect and symptom-therapy, monitoring and prognosis.</p> <p>The gastrointestinal tract:</p> <ol style="list-style-type: none"> <li>1. pancreatitis and hepatitis: triaditis, icterus,</li> <li>2. enteritis, IBD, lymphoma.</li> </ol> <p>Endocrine glands:</p> <ol style="list-style-type: none"> <li>1. hyperfunction and hypofunction of the thyroid gland,</li> <li>2. Cushing's syndrome and Addison's disease,</li> <li>3. endocrine disfunction of pancreas and pancreatic tumors,</li> <li>4. male feminizing syndrome,</li> <li>5. multiple endocrinopathies.</li> </ol> <p>The respiratory system:</p> <ol style="list-style-type: none"> <li>1. dyspnea,</li> <li>2. pulmonary oedema,</li> <li>3. relationship between the respiratory system and the cardiovascular system.</li> </ol> <p>Renal and urologic systems:</p> <ol style="list-style-type: none"> <li>1. the chronic renal failure,</li> <li>2. glomerular nephritis and interstitial nephritis, FLUTD,</li> <li>3. Fanconi-like syndrome.</li> </ol> <p>The immunological system:</p> <ol style="list-style-type: none"> <li>1. miastenia gravis,</li> <li>2. IMHA,</li> <li>3. sarcoidosis and amyloidosis</li> <li>4. immunodeficiencies and autoimmune diseases.</li> </ol> <p>Neoplastic diseases:</p> <ol style="list-style-type: none"> <li>1. neoplasms and disturbances of general metabolic processes,</li> <li>2. neoplasms and male castration /ovariohysterectomy.</li> </ol>	practical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Anatomical propedeutics in hippiatry Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.0063.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	To familiarize students with the specifics of the horse's anatomy.
C2	To make listeners aware of the relationship between the horse's anatomy and diagnostic and therapeutic options in this species.
C3	Transfer of knowledge in the field of diseases occurring in horses in relation to their anatomy.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	anatomy of the horse and clinically relevant morphological aspects typical of this species.	O.W2	written credit
W2	diagnostic and therapeutic methods appropriate for horses, resulting from their species-specific anatomy.	O.W4	written credit
<b>Skills - Student can:</b>			
U1	analyze and initially interpret clinical symptoms in terms of diseases typical for horses resulting from the specificity of their anatomy.	O.U2	active participation
U2	pre-plan the diagnostic procedure, taking into account the procedures typical for the examination of horses.	O.U3	active participation
<b>Social competences - Student is ready to:</b>			
K1	use objective sources of information, with particular emphasis on current scientific publications in the field of hypiatrics and textbooks by leading authors in the field.	O.K4	report
K2	expand knowledge and improve skills with the awareness of the advances in equine medicine and the resulting need for continuous education.	O.K8	report

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Anatomical basis on injections.</li> <li>2. Clinical anatomy of the hoof.</li> <li>3. Frontimb - anatomy, biomechanics, diseases, diagnostics and treatment.</li> <li>4. Hindlimb - anatomy, biomechanics, diseases, diagnostics and treatment.</li> <li>5. Digit - anatomy, biomechanics, diseases, diagnostics and treatment.</li> <li>6. Neck and back - anatomy, biomechanics, diseases, diagnostics and treatment.</li> <li>7. Paranasal sinuses - anatomy, diseases, anatomical basis of trephination, sinuscopy and tooth extraction.</li> <li>8. Respiratory tract and guttural pouches - anatomy, diseases, anatomical basis of endoscopy and radiology.</li> <li>9. Gastrointestinal tract - anatomy, anatomical basis of colic, treatment p.1</li> <li>10. Gastrointestinal tract - anatomy, anatomical basis of colic, treatment p. 2</li> <li>11. Heart - anatomy, species specificity of heart diseases and diagnostics.</li> <li>12. Reproductive tract - anatomy, anatomical basis of medical interventions.p.1</li> <li>13. Reproductive tract - anatomy, anatomical basis of medical interventions.p.2</li> <li>14. Urinary tract - anatomy, anatomical basis of catheterization in mares and stallions, ultrasonography p.1</li> <li>15. Urinary tract - anatomy, anatomical basis of catheterization in mares and stallions, ultrasonography p.2</li> </ol>	laboratory classes

## **Entry requirements**

The knowledge of the anatomy of organs and systems in domestic mammals. Two semesters of Animal anatomy successfully completed.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Immunohistochemistry in pathomorphology and cancer diagnostics Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMWW-AJS.J40BO.0939.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 11, laboratory classes: 4	

### Goals

C1	In lectures and exercises, students will be presented with changes at the cellular level during the development of the cancer process. Changes in cell nucleus, cytoplasm and cell membrane. This will be presented in the form of immunohistochemical reactions and their results showing both normal cell structures and those changed by the disease process. Specific tumor antigens that are used in the differential diagnosis of cancer and its treatment will be presented. Interpretation of the results and, on their basis, estimation of the prognosis for the patient will be discussed.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	changes in the cell at the level of cell membrane, cytoplasm and nucleus initiating neoplastic processes and cell apoptosis	O.W1	oral credit
W2	Procedures involved in the production of antibodies used in immunohistochemical diagnosis	B.W1	oral credit
<b>Skills - Student can:</b>			
U1	analyze and interpret the results of immunohistochemical tests, make a diagnosis of cancer on the basis of the obtained results including differential diagnosis	O.U2	oral credit
U2	plan immunohistochemical examination with selection of appropriate antibodies	O.U3	oral credit
<b>Social competences - Student is ready to:</b>			
K1	use of objective sources of information, mainly scientific journals	O.K4	oral credit
K2	draw conclusions from their own assessment of the situation	O.K5	oral credit
K3	Improve knowledge and skills necessary to correctly interpret results	O.K8	oral credit

### Study content

No.	Course content	Activities
1.	<p>Titles of lectures:</p> <p>1. introduction to immunohistochemical methods. Types of immunohistochemical reactions. Preparation of material for immunohistochemical staining.</p> <p>2. Apoptosis - detection using immunohistochemical methods. Immunohistochemistry in cancer diagnosis and histogenesis- the importance of immunohistochemical studies in cancer diagnosis.</p> <p>3. Immunohistochemistry in diagnosis and histogenesis of cancer- selection of chemical reactions. Immunohistochemistry in the diagnosis and histogenesis of cancer- the role of immunohistochemistry in determining tumor origin.</p> <p>4. Immunohistochemistry in diagnosis and histogenesis of cancer- specific markers for certain types of cancer. Immunohistochemistry in the diagnosis and histogenesis of cancer- the importance of immunohistochemical findings in determining predictive and prognostic factors of certain cancers.</p> <p>Translated with <a href="http://www.DeepL.com/Translator">www.DeepL.com/Translator</a> (free version)</p>	lecture

2.	<p>Titles of classes:</p> <ol style="list-style-type: none"> <li>1. Markers used in immunohistochemical methods. Analysis of selected histopathological preparations - own work with microscope.</li> <li>2. Antibodies (detection, characterization, obtaining). Analysis of selected histopathological preparations - own work with microscope.</li> <li>3. Types of immunohistochemical reactions. Analysis of selected histopathological preparations - own work with microscope.</li> <li>4. Fixation of the material. Preparation of tissue. Making paraffin scrapings. Analysis of selected histopathological preparations - own work with microscope.</li> <li>5. Performing immunoperoxidase reaction. Detection of marker enzymes. Control reactions. Analysis of selected histopathological preparations - own work with microscope.</li> <li>6. Evaluation of immunohistochemical reactions. Methodical problems in immunohistochemistry (no reaction, artifacts, trace reaction, background). Analysis of selected histopathological preparations - own work with the microscope.</li> <li>7. Immunohistochemical and related techniques used in the detection of apoptosis. Analysis of selected histopathological preparations - own work with microscope.</li> <li>8. Immunohistochemistry in diagnosis and histogenesis of cancer. Analysis of selected histopathological preparations - own work with microscope.</li> <li>9. Independent interpretation of selected histopathological preparations stained by classical (hematoxylin-eosin) and immunohistochemical methods.</li> <li>10 and 11. credit of the course.</li> </ol>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Laboratory diagnostics in veterinary mycology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.1133.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 15	

### Goals

C1	The aim of the course is to provide students with knowledge on fungi pathogenic to animals and humans as well as with methods used for laboratory identification of fungi.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of fungal diseases occurring in animals	O.W3	written credit



W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W4	observation of student's work, active participation
W3	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	written credit
W4	knows to an extensive degree and presents the basics of microbiological diagnostics	A.W15	written credit, observation of student's work, active participation
<b>Skills - Student can:</b>			
U1	plans the diagnostic procedure	O.U3	observation of student's work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	observation of student's work, active participation
U3	performs basic microbiological diagnostics	A.U10	written credit, observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

## Study content

No.	Course content	Activities
1.	<p>1-2. Classification of fungi and mycoses. Factors favouring fungal infections. Pathomechanism of fungal infections</p> <p>3. Identification scheme for fungi of clinical importance. Diagnostic techniques used in clinical mycology</p> <p>4-7. Dermatophytes - characteristics of the group, sampling methods, identification scheme, differential diagnosis. Dermatomycoses - clinical manifestations, infections in various animal species</p> <p>8-11. Yeasts/Yeast-like fungi - characteristics of the group, sampling methods, identification scheme with quantitative growth assessment, differential diagnosis. Infections caused by yeasts - superficial mycoses, systemic mycoses, infections in various animal species</p> <p>12-13. Filamentous saprophytic fungi. Mycotoxins and mycotoxicoses</p> <p>14. Dimorphic fungi and exotic mycoses</p> <p>15. Mycoses in humans. Mycoses as zoonoses</p>	laboratory classes

## Entry requirements

Veterinary microbiology



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Physiological basis of nephrology and renal replacement therapies Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J40BO.1571.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 7	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 6, practical classes: 9	

### Goals

C1	To broaden the knowledge of the excretory system physiology and methods used to assess the function of the excretory system.
C2	To learn to analyze the results of urine and blood tests in relation to the function of the excretory system.
C3	To familiarize with the modalities of renal replacement therapies and indications for renal replacement treatment in veterinary patients.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree, describes in detail and explains the structure, functioning, and physiological mechanisms in the excretory system of companion animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	B.W1, O.W2	written credit
W2	knows to an extensive degree and describes in detail the principles and mechanisms underlying health of the excretory system in animals, diseases formation in this system and their treatment	A.W10, O.W1	written credit
W3	knows the principles of therapeutic procedures, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases of the excretory system occurring in animals;	B.W6, O.W4	written credit, performing tasks
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease regarding the excretory system of companion animals	A.U4, O.U2	written credit, performing tasks
U2	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests associated with diagnostics of excretory system in companion animals	B.U6	written credit, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	deepens his/her knowledge and improves skills in animal nephrology	O.K8	performing tasks

### Study content

No.	Course content	Activities
1.	<p>Students carry out urinalysis, prepare urine sediment and assess it, and compare the obtained results with the reference values for a given animal species. They become acquainted with the physical processes used during extracorporeal purification of the blood and with the construction of the hemodialysis machine and the necessary disposables and auxiliary devices.</p> <p>Lab 1-2: Urinalysis 1- evaluation of sensory, physical and chemical parameters of urine</p> <p>Lab. 3-4: Urinalysis 2 - urine sediment evaluation</p> <p>Lab. 5-6: Renal replacement therapy - the hemodialysis machine and disposables; methods to obtain vascular access, demonstration of hemodialysis in vitro.</p>	laboratory classes

2.	<p>During the course, students broaden their knowledge of the physiology of the excretory system, including the role of kidneys in the regulation of calcium-phosphorus metabolism, erythropoiesis, blood pressure, and water-electrolyte and acid-base balance. They correlate normal physiological processes with the spectrum of symptoms occurring in the diseases of the excretory system and with the diagnostic and therapeutic strategies. Students learn the value of laboratory and functional tests for the assessment of the excretory system, get acquainted with the reference ranges of test results. Students become acquainted with the modalities of renal replacement therapy used in veterinary medicine and the differences between them. They learn about the indications and contraindications for renal replacement therapies in veterinary medicine.</p> <p>1: Structure of the urinary system - clinical implications. Glomerular filtration - description of the process, methods of testing, regulating factors.</p> <p>2-3: The role of kidney tubules in the formation of final urine. Possibilities of regulation of the processes occurring in the renal tubules, methods of evaluating renal tubule function.</p> <p>4-5: Kidney as an endocrine organ - erythropoietin, renin, calcitriol. Regulation of the secretion of humoral substances by the kidney, methods of the assessment of renal endocrine function.</p> <p>6: The role of the excretory system in maintaining the acid-base balance, methods for the assessment of acid-base balance.</p> <p>7-8: Renal replacement therapies - modalities of renal replacement therapies and extracorporeal blood purification, veterinary indications for renal replacement therapy. Basic physical processes used in extracorporeal cleansing. Basics of dialysis prescription.</p> <p>9: Peritoneal dialysis. Credit test</p>	practical classes
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# UNIwersytet Przyrodniczy we Wrocławiu

## The basics of archaeozoology with palaeopathology Karta opisu przedmiotu

### Informacje podstawowe

<b>Kierunek studiów</b> Weterynaria (Veterinary Medicine)	<b>Cykl kształcenia</b> 2022/23
<b>Specjalność</b> -	<b>Kod przedmiotu</b> WMWMMW-AJS.J40BO.3138.22
<b>Jednostka organizacyjna</b> Wydział Medycyny Weterynaryjnej	<b>Języki wykładowe</b> Angielski
<b>Poziom studiów</b> jednolite studia magisterskie	<b>Obligatoryjność</b> Fakultatywny
<b>Forma studiów</b> Stacjonarne	<b>Blok zajęciowy</b> Przedmioty kierunkowe prowadzone w językach obcych
<b>Profil studiów</b> ogólnoakademicki	<b>Przedmiot powiązany z badaniami naukowymi</b> Nie
	<b>Przedmiot kształtujący umiejętności praktyczne</b> Tak

<b>Okres</b> Semestr 7	<b>Forma zaliczenia</b> Zaliczenie na ocenę	<b>Liczba punktów ECTS</b> 2.0
	<b>Forma prowadzenia i godziny zajęć</b> Wykład: 15, Ćwiczenia laboratoryjne: 15	

### Cele kształcenia dla przedmiotu

C1	Celem przedmiotu jest zapoznanie studentów z wybranymi zagadnieniami archeozoologii oraz paleopatologii, dynamicznie rozwijających się nauk interdyscyplinarnych, których metody badawcze mają powszechne zastosowanie przy rekonstrukcji relacji człowieka ze zwierzętami w pradziejach i czasach historycznych.
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### Efekty uczenia się dla przedmiotu

Kod	Efekty uczenia się w zakresie	Kierunkowe efekty uczenia się	Metody weryfikacji
<b>Wiedzy - Student zna i rozumie:</b>			
W1	W1-student ma wiedzę teoretyczną i praktyczną z zakresu archeozoologii i paleopatologii zwierząt udomowionych.	O.W1	Zaliczenie ustne

W2	W2- student identyfikuje typy szczątków, wykonuje ich analizy ilościowe, umie rozpoznać i nazwać występujące na kościach i zębach patologie.	O.W3	Zaliczenie ustne
W3	W3- Przetwarzanie i analiza zebranych danych.	O.W15	Zaliczenie ustne
<b>Umiejętności - Student potrafi:</b>			
U1	U1- student potrafi wykonać identyfikację gatunkową na podstawie mierzalnych i niemierzalnych szczątków zwierzęcych.	O.U3	egzamin praktyczny
U2	U2- samodzielnie potrafi przeprowadzić identyfikację szczątków zwierzęcych.	O.U3	egzamin praktyczny
U3	U3- student ma umiejętność wykorzystania zdobytej wiedzy teoretycznej i praktycznej podczas eksploracji stanowisk archeologicznych oraz paleontologicznych, a także w dalszej pracy naukowej.	O.U10	egzamin praktyczny
U4	U4- student posługuje się mianownictwem stosowanym w naukach biologicznych, rolniczych i weterynaryjnych.	O.U8	egzamin praktyczny
<b>Kompetencje społecznych - Student jest gotów do:</b>			
K1	K1- rozumie potrzebę pogłębiania wiedzy i doskonalenia umiejętności przez całe życie.	O.K8	Obserwacja pracy studenta
K2	K2- zna metodykę badawczą stosowaną w archeozoologii i paleopatologii, pozwalającą na oszacowanie wysokości w kłębie, określenie rodzaju przebytych chorób, płci, wieku oraz kierunku użytkowania na podstawie pozostałości kostnych i zębowych zwierząt. Student jest gotów do korzystania z obiektywnych źródeł informacji.	O.K4	Obserwacja pracy studenta
K3	K3- potrafi w sposób świadomy i odpowiedzialny prowadzić analizę szczątków zwierzęcych, w oparciu o zdobyte na zajęciach informacje i umiejętności. Student jest gotów do formułowania wniosków z własnych obserwacji.	O.K5	Obserwacja pracy studenta

## Treści programowe

Lp.	Treści programowe	Formy prowadzenia zajęć
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1.	<p>1. Archeozoologia i jej cele. 2. Metody eksploracji szczątków zwierzęcych. 3. Charakterystyka i typy szczątków pochodzących z materiałów wykopaliskowych. 4. Powszechnie stosowane metody badawcze w archeozoologii, część pierwsza -osteometria. 5. Powszechnie stosowane metody badawcze w archeozoologii, część druga -określanie wieku, sezonu, płci oraz interpretacja śladów na kościach. 6. Powszechnie stosowane metody badawcze w archeozoologii, część trzecia - określanie typu morfologicznego, szacowanie wysokości w kłębie oraz ocena zmian patologicznych. 7. Powszechnie stosowane metody badawcze w archeozoologii, część czwarta -ilościowa ocena szczątków. 8. Historia udomowienia zwierząt, część pierwsza - czas i miejsce domestykacji. 9. Historia udomowienia zwierząt, część druga - warunki i cechy domestykacji. 10. Najczęściej spotykane zmiany patologiczne na szczątkach kostnych. 11. Zmiany patologiczne w kontekście uwarunkowań socjalno-kulturowych. 12. Ssaki-charakterystyka wybranych rodzin (Equidae, Bovidae, Cervidae). 13. Ssaki-charakterystyka wybranych rodzin (Canidae, Felidae, Suidae). 14. Ptaki-charakterystyka wybranych gatunków (Gallus gallus f. domestica, Numida meleagris f.domestica, Meleagris gallopavo f.domestica, Anser anser f. domestica, Anas platyrhynchos f. domestica, Columbia livia f. domestica). 15. Innowacyjne metody badań w archeozoologii (datowanie radiowęglowe, analiza pierwiastkowa, analiza kopalnego DNA- aDNA).</p>	Wykład
2.	<p>1. Identyfikacja gatunkowa szczątków zwierzęcych. Określenie typu szczątków zwierzęcych. 2. Odróżnianie zwierząt udomowionych od ich dzikich przodków - część pierwsza. 3. Odróżnianie zwierząt udomowionych od ich dzikich przodków- część druga. 4. Osteometria, określanie wieku, płci oraz określanie typu morfologicznego, szacowanie wysokości w kłębie -koń, osioł, muł. 5. Osteometria, określanie wieku, płci oraz określanie typu morfologicznego, szacowanie wysokości w kłębie -krowa, owca, koza. 6. Osteometria, określanie wieku, płci oraz określanie typu morfologicznego, szacowanie wysokości w kłębie - pies, wilk. 7. Osteometria, określanie wieku, płci oraz określanie typu morfologicznego, szacowanie wysokości w kłębie -świnia, dzik. 8. Osteometria na wybranych przedstawicielach rodzin Canidae i Felidae. 9. Odontometria na przykładzie wybranych gatunków ssaków. Osteometria-ptaki, wybrane gatunki. 10. Identyfikacja najczęstszych patologii na kościach ssaków i ptaków. Zaliczenie ćwiczeń.</p>	Ćwiczenia laboratoryjne

### Wymagania wstępne

Anatomia zwierząt, Anatomia topograficzna, Biostatystyka i metody dokumentacji





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary neonatology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine  <b>Speciality</b> -  <b>Department</b> The Faculty of Veterinary Medicine  <b>Study level</b> Long-cycle programme  <b>Study form</b> Full-time  <b>Education profile</b> General academic	<b>Education cycle</b> 2022/23  <b>Subject code</b> WMWMMW-AJS.J40BO.2646.22  <b>Lecture languages</b> English  <b>Mandatory</b> optional  <b>Block</b> major subjects (conducted) in foreign languages  <b>Subject related to scientific research</b> Yes  <b>Subject shaping practical skills</b> Yes
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<b>Period</b> Semester 7	<b>Examination</b> graded credit  <b>Activities and hours</b> lecture: 16, laboratory classes: 14	<b>Number of ECTS points</b> 2.0
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### Goals

C1	Familiarization with the specificity of neonatal physiology and the basic problems of neonatal period. To pay attention on differences between newborn and adult animals' physiology. Preparation to unassisted treatment of newborn puppies, kittens, foals, calves, piglets, lambs and goat kids. Preparation to unassisted recognizing the problems and starting proper improving procedures in life-threatening conditions.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	Is able to show the main differences in metabolism of the neonate in comparison to adult animals	A.W3, O.W1, O.W2	project, observation of student's work, active participation, report

W2	Possesses the knowledge about care on healthy and problem neonate	A.W3, B.W6, O.W2	project, observation of student's work, active participation, report
W3	understands the causes of worsened vitality in weak neonates	A.W5, O.W2, O.W3	project, observation of student's work, active participation, report
<b>Skills - Student can:</b>			
U1	Is able to evaluate the vitality of the neonate	A.U7, B.U3, O.U2	project, observation of student's work, active participation, report
U2	Is able to take care on weak neonate	A.U4, A.U7, B.U1, B.U13	project, observation of student's work, active participation, report
U3	Diagnoses the most common disturbances and malformations in the neonates of domestic mammals	A.U4, B.U2, O.U1	observation of student's work, active participation, report
<b>Social competences - Student is ready to:</b>			
K1	Can evaluate the correctness of neonatal care in livestock farms	O.K1, O.K4, O.K5	project, observation of student's work, active participation
K2	Is able to perform anamnesis about methods of neonatal care in the herd	O.K4, O.K5, O.K8	project, observation of student's work, active participation

## Study content

No.	Course content	Activities
1.	<p>1-2. Development of the embryo and the fetus. Stages of the development of immune system. The influence of maternal immunity on the immune response of the neonate.</p> <p>3-4. Development and maturation of alimentary tract of the neonate. Anatomical and physiological characteristics.</p> <p>5-6. Maturation of respiratory tract. Anatomical and physiological characteristics.</p> <p>7-8. Physiology of the urinary system of the neonate. Regulation of diuresis. Neonatal proteinuria.</p> <p>9-10. Regulation of fluid and elektrolyte metabolism in the neonate. Differences in comparison to adult animals.</p> <p>11-12. Adaptation of the neonate to environment. Physiological processes in the perinatal period.</p> <p>13-14. Differences in the levels of physiological parameters between neonates and adult animals.</p> <p>15-16. Associations between pregnant dams' pathology and problems of the neonate. Weak neonate problem and perinatal mortality.</p>	lecture

2.	<p>1-2. Principles of the puppies care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions.</p> <p>3-4. Principles of the kittens care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions.</p> <p>5-6. Principles of the neonatal foal care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions.</p> <p>7-8. Principles of the neonatal calves care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems.</p> <p>9-10. Principles of the neonatal piglets care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems.</p> <p>11-12. Principles of the neonatal lambs care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems.</p> <p>13-14. Principles of the neonatal goat kids care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems.</p>	laboratory classes
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### **Entry requirements**

Ethology, Welfare and Animal Protection, Animal Physiology, Clinical diagnostics, Technologies in Animal Production



# UNIwersytet Przyrodniczy we Wrocławiu

## Diseases of horses Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.0500.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> exam	<b>Number of ECTS points</b> 15.0
	<b>Activities and hours</b> lecture: 90, laboratory classes: 45, clinical classes: 85	

### Goals

C1	The aim of the course is to provide students with basic knowledge about the etiological factors, caused clinical signs, necessary or possible additional tests, the final interpretation of the purpose of diagnosis, differential diagnosis, treatment and prevention of use of equine diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W4	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W5	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W6	presents the principles of conducting clinical examination and monitoring animal health	B.W5	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W7	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, performing tasks
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, written credit, oral credit, performing tasks
U3	plans the diagnostic procedure	O.U3	written exam, written credit, oral credit, performing tasks
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	written exam, written credit, oral credit, performing tasks

<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, active participation
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work, active participation
K3	uses the objective sources of information	O.K4	observation of student's work, active participation
K4	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

### **Study content**

No.	Course content	Activities

1.	<p>Internal medicine:</p> <ol style="list-style-type: none"> <li>1. Diseases of the digestive tract part 1.</li> <li>2. Diseases of the digestive tract part 2</li> <li>3. Colic in horses - etiology, diagnostics.</li> <li>4. Colic in horses - treatment.</li> <li>5. Upper respiratory tract diseases</li> <li>6. Lower airway diseases part 1</li> <li>7. Lower airway diseases part 2</li> <li>8. Liver diseases</li> <li>9. Metabolic and endocrine diseases of horses.</li> <li>10. Selected diseases of the nervous system.</li> <li>11. Tying up syndrome</li> <li>12. Skin disease</li> <li>13. Diseases of the urinary tract</li> <li>14. Cardiovascular and hematologic diseases.</li> <li>15. Emergency in horses.</li> </ol> <p style="text-align: center;">Infectious diseases</p> <ol style="list-style-type: none"> <li>1. Diseases of horses to be reported and fighting - African horse sickness</li> <li>2. Diseases of horses to be reported and fighting - horses tuberculosis, brucellosis horses</li> <li>3. Diseases of horses to be reported - viral equine encephalitis (WEE, EEE, VEE, Japanese encephalitis)</li> <li>4. Infectious diseases of bacterial horses - CEM, Lyme disease</li> <li>5. Infectious diseases of bacterial horses - pleuropneumonia, bacterial air sacs</li> <li>6. Equine infectious diseases of bacterial - infection caused by Clostridium sp</li> <li>7. Infectious diseases of bacterial horses - colibacillosis, salmonellosis, adenomatosis</li> <li>8. Equine infectious diseases of viral etiology - EHV-1, -2, -4, EAV, reo- and rhinovirus</li> <li>9. Equine infectious diseases of viral etiology - adenovirus, rotavirus, coronavirus</li> <li>10. Equine infectious diseases of viral etiology - West Nile fever, a disease Bornaska, equine rabies</li> <li>11. Infectious diseases of horses - rodokokkoza</li> <li>12. Infectious diseases of horses - ehrlichiosis, anaplasmosis</li> <li>13. Infectious diseases of horses in international trade</li> <li>14. Diagnosis and prevention of infectious diseases of horses</li> </ol> <p style="text-align: center;">Reproduction</p> <ol style="list-style-type: none"> <li>1. Neurohormonal regulation and conduct of the estrous cycle in mares. Seasonality of breeding horses. The role of light. Anestrus and transition periods. Wave follicular growth and differentiation. Signs of heat. Effects on reproductive performance condition</li> <li>2. Control and synchronization of oestrus and ovulation. The importance of synchronization of oestrus and ovulation. Induction heat through shortening of the luteal phase cycle (prostaglandin F2α). The extension of the luteal phase with progestogen. Induction of ovulation and hCG using GnRH-analogue deslorelin (Ovuplant)</li> <li>3. Preparing the mare for mating and artificial insemination. Care mare headed for mating and artificial insemination. Determining the date of insemination. Differences in the insemination procedure depending on the type of seed. Allergic reaction to semen frozen.</li> <li>4. Embryo transfer in horses. The importance of Embryo in breeding horses. Acquisition of embryos and transfer them. Factors affecting the efficiency of embryo.</li> <li>5. Physiology of pregnancy. The duration of the pregnancy. Fertilization. Mobility embryos. Additional corpora lutea. Endometrial cups, the role of eCG. Progestogens and estrogens in the course of physiological pregnancy.</li> <li>6. Pathology of pregnancy. Early embryonic death. Abortion (Infectious against fungal-related injuries, and others). Inflammation of the bearing.</li> <li>7. Twin pregnancy. The causes, predisposing factors. Effects on fertility twins horses. One twin pregnancy and oburozona. Dealing with a twin pregnancy.</li> <li>8. Childbirth and caring mare. Trailers birth. Physiology of labor. Parturition. Premature separation of placenta (red bag). Research bearing.</li> <li>9. Stop bearing. The definition of predisposing factors. Methods of treatment (manual peeler and others)</li> <li>10. Study after foaling mares. Puerperium. The problems associated with childbirth. Postpartum Hemorrhage. Prolapse of the uterus. Colic associated with childbirth. Postpartum metritis. Treatment of mares affected by postpartum complications.</li> <li>11. Care of the newborn foal. Colostrum and its importance. Artificial feeding. Physiological parameters of the newborn foal. Toilet navel. Stop meconium. Problems associated with lactation.</li> <li>12. Introduction to infertility horses. What is normal fertility in horses.</li> <li>13. Endometritis (chronic and subclinical forms). The cause, diagnosis, treatment.</li> <li>14. Endometriosis (impact on fertility, incidence, predisposing factors, diagnosis, treatment). Endometrial Cysts (diagnosis, incidence, effects on reproduction)</li> <li>15. Dysfunction of the ovaries. Chromosome aberrations. Anovulatory, passing luteinization bubbles. Ovarian hematomas. Persistent corpus luteum. Ovarian tumors in mares.</li> </ol> <p>Surgery</p> <ol style="list-style-type: none"> <li>1. Equine anesthesiology. Preparation of horses for anesthesia. Indications for pharmacological immobilization. Tranquilizers used for pharmacological sedation (phenothiazines, alpha 2 agonists, benzodiazepines, and butyrophenone derivatives. Local, perineural, general infusion and inhalation anesthesia. The most commonly used anesthetic systems for equine anesthesia.</li> <li>2. Equine ophthalmology. Eye diseases and their treatment. Eyelid and anterior eye pole diseases with post-traumatic and infectious etiology in horses. Corneal pathologies with dystrophic, bacterial and fungal background. Periodic uveitis (monthly blindness).</li> <li>3. Hernias and their surgical treatment. Characteristics and diagnosis of true and pseudo hernias in horses. Methods of surgical treatment of umbilical, scrotal, inguinal and traumatic abdominal hernias. Male genital diseases. castration of a stallion. Methods of surgical treatment of cryptorchidism. Castration with closed and open method. Handling after castration and treatment of post-castration complications (scrotal edema, edema and prolapse of the penis, botriomyositis).</li> <li>4. Diseases of the front limbs - part I. Horse anatomy and its influence on hooves, clinical anatomy of hooves. Posture defects of the limbs and their effect on the hooves and gait of the horse. Orthopedic shoeing at faulty horse gaits. Bucked shins in racehorses and methods of their treatment with cooling and warming compresses or cryoapplication. Sesamoiditis and navicular disease. Navicular syndrome - diagnosis and treatment.</li> <li>5. Diseases of the front limbs - part II. Diagnosis and treatment of acute and chronic laminitis. Acute and chronic diseases of flexor tendons and tendon sheaths. Causes of tendon diseases. Tendon diseases in draft and racing horses. Tendinitis and tendon sheaths inflammation in horses. Physiotherapeutic and surgical methods of tendon treatment. Cryotherapy. Surgical methods of treatment of tendon contractures.</li> <li>6. Diseases of the hind limbs - part I. Diagnosis and treatment of chronic inflammation of the hock (bone spavin). Diagnosis of inflammation in the area of the hock. Surgical treatment of hoof cancer. Upward patella fixation. Desmotomy.</li> <li>7. Diseases of the hind limbs - part II. Diseases of the fetlock, pastern and coffin joint - symptoms, recognition. Aseptic and septic arthritis and methods of their treatment. Flat and convex hoof. Sprained fetlockjoint. Treatment of the wounds in the toe region. Neurectomy in a horse.</li> <li>8. Diseases of the oral cavity, teeth, tongue, mandible and maxillary bone. Examination of the oral cavity and teeth. Oral cavity inflammation. Equine dental occlusion. Determination, identification and disorders of tooth exchange. Dental diseases. Tooth extraction. Tongue diseases (wounds, inflammation, paralysis, cancer). Fractures of the maxillary and mandible bone, and methods of osteosynthesis.</li> <li>9. Throat, larynx and esophagus diseases. Pharyngitis and foreign bodies in the throat, wounds and abscesses. Laryngeal hemiplegia in horses and methods of its treatment. Esophageal wounds and fistulas. Stenosis and obstruction of the esophagus.</li> <li>10. Diseases of the skull, spine and pelvis. Skull fractures, maxillary sinusitis and guttural pouches diseases. Diseases of the neck and withers (bursitis). Diseases of the cervical spine (torticollis, developmental disorders, desmopathy of the nuchal ligament attachment). Diseases of the thoracolumbar spine (wounds, fractures, spondylosis and spondyloarthritis, withers fistula).</li> <li>11. Management of colic horses. Gastric and intestinal colic - etiology, symptoms, diagnostics and therapeutic management. Clinical and detailed research. Gastric intubation and rectal examination, ultrasound examination of the abdomen. Abdominal puncture. Indications for colic surgery.</li> <li>12. Gastric and intestinal colic. Stomach enlargement and rupture. Small, large intestine, cecum and large and small colon obstruction. White line laparotomy . Intestinal displacement (duodenal torsion, torsion and cecum fold, large colon torsion).</li> <li>13. Small and large intestine displacement. Small intestine obstruction: mechanical (obstructive and strangulative) and functional ( ileus: paralytic or spastic). Methods of conservative and surgical treatment.</li> </ol>	lecture
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2.	<p>Infectious diseases</p> <ol style="list-style-type: none"> <li>1 Viral infections of the respiratory and reproductive horses (EHV1-4, EAV) Exercise involves the viral respiratory diseases including infection, depending on the environment, etiology, pathogenesis and clinical changes and differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection and treatment and prophylaxis.</li> <li>2 Influenza, and strangles in horses, equine plague chest exercise involves the bacterial respiratory diseases including infection, depending on the environment, etiology, pathogenesis and clinical changes and differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection, treatment and prophylaxis non-specific and specific.</li> <li>3 Glanders equine specific prevention of infectious diseases of horses exercise includes the glanders, etiology, pathogenesis and clinical changes, and depending on the infected species, differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection and handling of horses suspected of glanders and malleinisation.</li> <li>4 Diseases of horses no anaerobic exercise include the infections in horses: Clostridium spp, Fusobacterium necrophorum, Bacteroides spp in the context of: aetiology, pathogenesis and clinical changes, differential diagnosis, laboratory tests with the principles of sample collection for research.</li> <li>5 Fungal diseases of horses - fungal infections of the skin and organ mycosis exercise involves about ringworm and fungal organ, etiology, pathogenesis and changes in clinical laboratory tests, taking into account the type of material and the method of its collection, treatment of horses with fungal infection and prophylaxis.</li> <li>6 Infectious diseases of horses - SCA, leptospirosis exercise includes the SCA and leptospirosis, etiology, pathogenesis and changes in clinical laboratory tests, taking into account the type of material and how to download, depending on the form of the disease, treatment, treatment of horses.</li> <li>7 The differential diagnosis of infectious diseases of horses</li> <li>8 Catching-up, completion exercises</li> </ol> <p>Reproduction:</p> <ol style="list-style-type: none"> <li>1 Clinical aspects of genital anatomy mares (classes on isolated organs).</li> <li>2 The study mares towards fertility. Interview, external research, preparing mares for rectal examination, rectal examination rules.</li> <li>3 Ultrasound genital mares. Principles, meaning, equipment, technology research, interpretation of images).</li> <li>4 Rectal examination and transrectal ultrasound genital mares (in live animals).</li> <li>5 Catheterisation uterine cervix in mares, technology, indication. Sampling of the uterus for laboratory tests (smears, biopsy, cytology, uterine lavage. (Classes on isolated organs)</li> <li>6 Diagnosis of pregnancy (pregnancy symptoms, hormone testing, rectal palpation, ultrasound-interpretation of images)</li> <li>7 Consultation and credit.</li> <li>8 Rectal examination and transrectal ultrasound genital mares (in live animals).</li> <li>9 Heavy parturition in mares. Improper alignment. Methods of procedure. Classes on the phantom.</li> <li>10 Heavy parturition in mares. Abnormal position and attitude. Classes on the phantom.</li> <li>11 Fetotomia. Classes on the dead fetus.</li> <li>12 Cesarean section in mares. Indications. Methods of anesthesia and surgery. Sewing isolated uterus.</li> <li>13 Hysteroscopy. Indications. Equipment. Preparing the mare to hysteroscopy. (Address on live animals)</li> </ol>	laboratory classes
3.	<p>Internal Medicine</p> <ol style="list-style-type: none"> <li>1. Clinical examination of horses</li> <li>2. Dermatologic examination of horses</li> <li>3. Rectal examination of horses p. I</li> <li>4. Endoscopy of airways in horses</li> <li>5. Nasogastric intubation in horses</li> <li>6. Neurologic examination of horses. Cerebrospinal fluid examination in horses.</li> <li>7. Injections and blood sampling in horses</li> <li>8. Test</li> <li>9. Additional diagnostic procedures in horses</li> <li>10. Rectal examination of horses p. II</li> <li>11. Ultrasound techniques in horses p.I</li> <li>12. Electrocardiography, Holter test and echokardiography in horses</li> <li>13. Ultrasound techniques in horses p.II</li> <li>14. Test</li> <li>15. Clinical cases discussion</li> </ol> <p>Surgery</p> <ol style="list-style-type: none"> <li>1. Hoof correction and opening of the hoof capsule. On cadaver distal limbs students will perform shortening of the excessively grown hoof horn, partial removal of the hoof wall and sole, antiseptic dressings for wound and exposed laminae.</li> <li>2. Diagnostic and therapeutic joint injections, perineural anesthesia and basics of arthroscopy. Perineural high and low nerve anesthesia of the toe, diagnostic injections of the fetlock, pastern and coffin joint. Demonstration of operation and use of arthroscopy equipment in equine joint surgery.</li> <li>3. Aseptic and septic inflammation of the hoof laminae. Practical exercises on cadaver horses' distal limbs. Methods of opening the hoof capsule, debilitating cuts, removing the hoof wall, and applying dressings.</li> <li>4. Removal of soles, frog, hoof wall, pressure dressing. Deep digital flexor tendon necrosis, partial removal of the hoof capsule with superficial and deep inflammation of the hoof laminae.</li> <li>5. Hoof cartilage diseases, ceratoma, hoof canker (cuts burdening the hoof capsule, pressure dressing). Surgical approaches to the hoof cartilage and methods of their resection. Removing the front wall of the hoof (removing ceratoma). Cutting burdening the hoof capsule (Lungwitz, Collin, Bayer). Practice of cadaver hoofs.</li> <li>6. Diseases of tendons and tendon sheaths (ultrasound, resection of the deep flexor tendon insertion, drainage of tendon sheaths and toe joints). Clinical and ultrasound examination of the SDFT and DDFT and SL. Demonstration on slaughterhouse limb preparations tenotomy of the flexor tendons and their additional attachments. Practical exercises of injecting drugs into the toe joints.</li> <li>7. Diseases of the SDFT and DDFT and SL. Injection of regenerative drugs, application of stem cells, blistering, cryotherapy, tenotomy. Orthopedic examination in tendon diseases. Demonstration of cooling and warming dressings in tendon diseases and blister demonstration. Tendon splitting. Injection of regenerative and anti-inflammatory drugs in tendon diseases.</li> <li>8. Assessment.</li> <li>9. Equine orthopedic examination. Examination of the lame horse in the outpatient clinic and in open space by students in the walk and trot. Algorithms for the diagnosis of lameness in a horse.</li> <li>10. Equine orthopedic examination cont. Methods of orthopedic examination with the location of lameness in the horse's thoracic and pelvic limb. Assessment of correct and incorrect attitudes and their impact on the shape of the hoof capsule.</li> <li>11. Rules for farrier job - shoeing. Demonstration of a horseshoe made by a farrier and shoeing a horse.</li> <li>12. Pathologies of the limbs leading to a change in the shape of the hoof capsule. Abnormal posture of the limbs. Demonstration of correct and incorrect hooves on preparations. Demonstration of standard and orthopedic shoeing.</li> <li>13. Diagnostics of diseases of the horse's bone and ligament system. Osteitis, bucked shins, fractures of the toe bones, dislocations, inflammation of the sesamoid and navicular bones. Conservative and surgical treatment methods.</li> <li>14. Equine joint disease. Aseptic and septic arthritis of the toe joint - clinical and ultrasound examination. Methods of diagnosis and treatment of bone spavin in horses. Upward patellar fixation - diagnosis and surgery.</li> <li>15. Assessment.</li> </ol>	clinical classes



## **Entry requirements**

completion of core subjects: anatomy of animals, Biochemistry, Histology and Embryology, Veterinary Microbiology, Animal Physiology, Clinical and Laboratory Diagnostics, Veterinary Pharmacology, Andrology



# UNIwersytet Przyrodniczy we Wrocławiu

## Andrology and artificial insemination Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.0066.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 12, clinical classes: 18	

### Goals

C1	The aim of teaching the course is to provide students with knowledge about the physiology and pathology of the genital organ of male domesticated (and some wild) animals, the principles of male exploitation and their examination for fertility, as well as management of reproductive disorders.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the activities of the male reproductive system, knows the species differences. He knows the etiology, pathogenesis and clinical symptoms of diseases of the reproductive system in individual animal species: bull and other ruminants, stallion, boar dog. He knows the rules of therapeutic procedures.	O.W4	written exam, test
W2	the mechanisms of the pathology of the reproductive system in individual species of animals.	B.W2	written exam, test
W3	the principles of conducting a clinical examination and monitoring the health and pathology of the sexual organ of male domesticated animals, some wild, dealing with reproductive disorders.	B.W5	written exam, test
W4	the assumptions of the selection of animals for mating, the methods of fertilization and biotechnology of reproduction as well as breeding selection in individual species of animals including wild lab. Biotechnics used in bird reproduction.	B.W12	written exam, test
<b>Skills - Student can:</b>			
U1	carry out a clinical examination of the animal in accordance with the principles of medical practice.	O.U1	active participation, test, performing tasks
U2	analyze and interpret clinical symptoms, pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease state, including differential diagnosis, and undertake therapeutic or prophylactic measures.	O.U2	active participation, test, performing tasks
U3	collect and preserve samples for semen analysis, obtain male gametes and perform laboratory tests and additional examinations, analyze and interpret the results of research to assess the state of physiology and pathology of the genital organ.	B.U7	active participation, test, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	showing responsibility for decisions made towards people, animals and the natural environment.	O.K1	observation of student's work, active participation
K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions.	O.K2	observation of student's work, active participation
K3	cooperation with representatives of other professions in the field of public health protection.	O.K11	observation of student's work, active participation

## Study content

No.	Course content	Activities
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1.	<p>1. Male genital organs, clinical aspects of endocrine regulation of male reproductive processes, species specificity, puberty, breeding and somatic maturity in various species of domestic animal: Clinical aspects of sex differentiation process, disorder in sex differentiation and their diagnostics, description of axis hypothalamus-hypophysis-gonads functioning, feedback of endocrine axis, role of additional sexual glands, relationship between age, management, nutrition and male sexual use.</p> <p>2. Spermatogenesis, physiology of fertilization process: Clinical aspects of male gametes production and maturation, practical aspects of assessment of spermatozoal features and morphometry, endocrine regulation of spermatogenesis, cycle of seminiferous epithelium, transport and reservoir of spermatozoa in female reproductive system, practical aspects of in vivo and in vitro capacitation, cryocapacitation and acrosome reaction, physiology of fertilization process.</p> <p>3. Diseases of genital organs in bull: Decreased libido sexualis, disorders of ejaculation, endo- and exogenous disorders of reproduction, influence of diseases of locomotory system on the reproductive potential, diseases precluded penis protrusion and insertion, diseases resulting from a decrease of blood inflow into corpus cavernosum, diseases resulting from abnormal blood retention in corpus cavernosum</p> <p>4. Infertility, „impotentia generandi“, disorders in development of bull's reproductive system segments, segmental aplasia of Wolffian duct, cryptorchidism, testicular aplasia, monorchism, orchitis, epididymitis, degeneration of testicular tissue.</p> <p>5. Diseases of genital organs in bull and other ruminants: Disorders of accessory sexual glands, primary and secondary disorders of ejaculation, diseases of reproductive organs of ram and goat- congenital and acquired defects</p> <p>6. Diseases of genital organs in stallion: Endo- and exogenous causes of most common fertility disorders in stallion, disorders of development of elements of reproductive system, cryptorchidism, inflammation of individual parts of reproductive organ, injuries- diagnostics and treatment</p> <p>7. Diseases of genital organs in boar: Congenital and acquired boar's fertility disorders, environmental conditioning of boar reproductive use, the most common diseases of boar's reproductive organ</p> <p>8. Diseases of genital organs in boar: Endo- and exogenous causes of most common boar's fertility disorders, disorders in development of reproductive system individual parts- diagnostics and treatment</p> <p>9. Diseases of genital organs in dog: Endo- and exogenous disorders of reproduction, intersexuality in dogs, defects in development of reproductive organ individual parts, acquired diseases of reproductive organ</p> <p>10. Diseases genital organs in dog: Diseases of prostate, benign prostate hyperplasia- diagnostics and treatment, acute and chronic prostatitis, tumors and cysts of prostate, diseases of testes, diseases of segmental parts of reproductive system, diagnostics and treatment of diseases of reproductive system</p> <p>11. Breeding centre documentation of the semen use and shipment: Documentation held by veterinarian performing artificial insemination in cows, sows, bitches. The rules of disposal of documents concerning the insemination, international exchange of insemination doses and legal requirements concerning the import, export and use of semen</p> <p>12. Reproductive biotechnology in birds: Clinical aspects of bird semen collection and preservation, methods of male gametes collection, specificity of assessment of various birds species semen, methods of birds reproductive potential evaluation</p> <p>13. Reproductive biotechnology in birds: Techniques of birds semen conservation, fresh, chilled semen, semen cryopreservation, techniques of artificial insemination in various birds species, methods of insemination, techniques of semen deposition in different localization in the genital tract</p> <p>14. Reproductive biotechnology in felidae , wild and laboratory animals: Techniques of assisted reproduction in felids, basics of semen collection, species specificity of fertility assessment and semen analysis of domestic cat and wild felids, methods of felids semen conservation, artificial insemination in wild felids,</p> <p>15. Reproductive biotechnology in felidae, wild and laboratory animals: In vitro techniques in felids reproduction, collection of female gametes, in vitro maturation of oocytes, in vitro fertilization, embryotransfer, adaptation of in vitro techniques in practice to increase in vanishing population of felids, biotechnology use in bison and Cervidae.</p>	lecture
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2.	<p>1. Clinical aspects of morphology of genital organs in males of domestic animals (isolated organs): Details of diagnostics and therapeutic procedures used in andrology based on anatomical model of male reproductive organs, clinical aspects of reproductive system structure and functioning specificity of male of various animal species, practical demonstrations and exercises of techniques of males examination and diagnostics samples collection on isolated organs</p> <p>2. Laboratory assessment of males semen- macroscopic examination, microscopic examination, CASA, flow cytometry: Laboratory tests in semen assessment, methods of sperm concentration assessment per volume, methods of sperm morphology assessment, standards of morphology of male gametes classification, sperm survival, biochemical examination of semen, examination of sperm ultrastructure, microbiological examination of semen</p> <p>3. Preservation of stallion semen and artificial insemination in mares, monitoring of ovulation time: Semen preservation in liquid state, diluents used for semen extension, insemination dose, semen cryopreservation, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of artificial insemination and determination of optimal time of mating, practicals - catheterization of uterine cervix</p> <p>4. Andrological examination and semen collection from boar, semen assessment: Methods of semen collection from boar, mating in swine and ejaculation, sexual reflexes in boar, technique of semen collection, features of boar ejaculate, rules of semen assessment, demonstration of semen collection and assessment, practicals - collection and assessment of boar semen</p> <p>5. Dog semen preservation and artificial insemination in bitches: Semen conservation in liquid state, semen diluents, rules of semen conservation and used procedures, insemination dose, semen conservation in low temperatures, methods of semen freezing and way of use of insemination doses depending on type of semen package, technique of female artificial insemination and determination of optimal time of insemination, methods of catheterization of uterine cervix</p> <p>6. Test and credits.</p>	laboratory classes
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3.	<p>1. Andrologic examination of bull and other ruminants (clinical and supplementary examination, washings, scrapings): History for herd and individual animal, clinical aspects of male age, nutrition and sexual exploitation, bull's assessment based on evaluation of offspring utility features, estimation of male health, present state, livestock-veterinary evaluation, detailed andrological examination, external and internal examination, laboratory examination, criteria of qualification of males for reproduction</p> <p>2. Collection and initial assessment of semen in bull and other ruminants: Mating and ejaculation of bull, ram and goat, methods of semen collection from bull, ram and goat, rules of use artificial vagina, massage of accessory sexual glands and electroejaculation, assessment of male sexual reflexes, technique of semen collection, assessment of bull, ram and goat semen, demonstration of semen collection and assessment, practicals - semen collection and assessment</p> <p>3. Preservation of semen of bull and other ruminants and techniques of artificial insemination: Semen preservation in liquid state, artificial diluents, components of diluents, basics for semen conservation and used procedures, insemination dose, semen preservation in low temperatures, cryobiological aspects of semen preservation, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of female artificial insemination and determination of optimal time of insemination, practicals - catheterization of uterine cervix for semen deposition</p> <p>4. Andrological examination and semen collection from stallion, semen assessment: Methods of semen collection from stallion, types of artificial vagina, the use of different types of artificial vagina, sexual reflexes in stallion, technique of semen collection, assessment of stallion semen quality, demonstration of collection and assessment of stallion semen, practicals - collection and assessment of stallion semen</p> <p>5. Boar semen conservation and artificial insemination of sows: Semen conservation in liquid state, specificity of packaging systems and storage methods of diluted semen of boar, semen diluents, rules of semen conservation and used procedures, insemination dose, semen conservation in low temperatures, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of artificial insemination in sows and determination of optimal time of insemination, practicals - catheterization of uterine cervix</p> <p>6. Andrological examination and semen collection from dog, semen assessment: Indications to semen collection from dog, methods of semen collection from dog, massage of glans penis, artificial vagina, other methods, physiology of copulation and ejaculation, sexual reflexes in dog, technique of semen collection, rules of assessment of dog semen, demonstration of collection and assessment of dog semen, practicals - collection and assessment of dog semen</p> <p>7. Collection, assessment and preservation of semen in tom cat, fox, laboratory animals and artificial insemination of females: Indications to semen collection, methods of semen collection, mating reflexes and ejaculation, assessment of cat semen, demonstration of collection and assessment of cat and rabbit semen, practicals - collection and assessment of semen. Semen chilling, insemination dose, semen cryopreservation and usually used procedures, methods of semen freezing and the use of insemination doses depending on type of semen packaging system, techniques of artificial insemination and determination of optimal time of insemination, practicals- artificial insemination</p> <p>8. Semen collection and assessment in birds: Practical exercises of collection and assessment of rooster semen, dorso-abdominal massage, semen assessment using macroscopic and microscopic methods, species specific ejaculate of birds</p> <p>9. Artificial insemination in cattle - field training</p>	clinical classes
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### Entry requirements

Completion of courses : animal anatomy I and II, pathomorphology, animal physiology, pathophysiology, parasitology and invasiology, veterinary pharmacology, veterinary microbiology, veterinary immunology, clinical and laboratory diagnostics, diseases of farm animals.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Slaughter animals and meat hygiene II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2336.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 10, clinical classes: 20	

### Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit, oral credit

W2	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written credit, oral credit
W3	identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit, oral credit
W4	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	written credit, oral credit
W5	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written credit, oral credit
W6	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written credit, oral credit
W7	knows to an extensive degree the procedures of pre- and post-mortem inspection	B.W19	written credit, oral credit
<b>Skills - Student can:</b>			
U1	performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	observation of student's work
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	observation of student's work
U3	is able to perform pre- and post-mortem inspection	B.U17	observation of student's work
U4	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	observation of student's work
U5	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	observation of student's work
U6	Issues veterinary medical opinion and certificate	O.U7	written credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	Formulates conclusions from own measurements or observations	O.K5	observation of student's work
K4	Deepens his/her knowledge and improves skills	O.K8	observation of student's work
K5	Is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work



## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Side articles slaughter. Regulation of the European Parliament and Council Regulation (EC) No 1069/2009 of 21 October 2009 laying down health rules concerning animal by-products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Regulation on animal by-products )</li> <li>2. Trading conditions in meat refrigeration chain. The concept of cold chain. Temperature ranges. Monitoring of refrigerated transport.</li> <li>3. Veterinary documentation, information on the food chain, books ante-mortem inspection books, records samples, laboratory records, the main instructions veterinarian.</li> <li>4. Theories of food poisoning. Distribution and characterization of the most important from the standpoint of evaluation of meat microorganisms present in the meat</li> <li>5. Meat - the construction, chemical composition, maturation of meat. Processes occurring after the slaughter of animals, the impact on meat quality.</li> <li>6. Meat quality, stress myopathies: PSE, DFD. Preventing changes, the mechanism changes, the use of meat as amended.</li> <li>7. Undesirable physical and chemical changes occurring in the meat</li> <li>8. Cons meat, slaughter procedure. Watery, thinness, emaciation, penetrating acid digestion, jaundice.</li> <li>9. Rating meat in the presence of infectious diseases part. First</li> <li>10. Ocena meat in the presence of infectious diseases part. Second</li> <li>11. Score meat in the presence of parasitic diseases</li> <li>12. Laboratory testing of meat, monitoring, research directions, laboratories, accreditation</li> <li>13. Method of preserving meat, curing, drying, pasteurization, sterilization, drying, modified atmosphere packaging, vacuum packaging, paskalizacja</li> <li>14. The differential diagnosis of lesions in the post-mortem inspection, the impact on the assessment of the meat. Changes in internal organs.</li> <li>15. The differential diagnosis of lesions in the post-mortem inspection, the impact on the assessment of the meat. Rating meat with selected diseases.</li> </ol>	lecture

2.	<p>1. Meat hygiene</p> <ul style="list-style-type: none"> <li>- food law basis – regulation 178/2002</li> <li>- definitions</li> <li>- food safety</li> <li>- food chain</li> </ul> <p>2. Dealings with slaughter animals</p> <ul style="list-style-type: none"> <li>- law basis – regulation 853/2004 i 1/2005</li> <li>- animal welfare during collection, transport, preslaughter rest and slaughter</li> <li>- preslaughter examination</li> <li>- slaughter hygiene</li> </ul> <p>3. Meat examination for trichinae</p> <ul style="list-style-type: none"> <li>- law basis – regulation 2075/2005</li> <li>- meat sampling for examination for trichinae</li> <li>- digestive method of examination for trichinae</li> <li>- compressor method of examination for trichinae</li> </ul> <p>- dealing with meat</p> <ul style="list-style-type: none"> <li>- meat evaluation</li> </ul> <p>4. Post mortem inspection of meat (pork and beef)</p> <ul style="list-style-type: none"> <li>- law basis – regulation 854/2004</li> <li>- post mortem inspection of beef</li> <li>- post mortem inspection of pork</li> <li>- post mortem inspection of horse meat</li> <li>- post mortem inspection of small ruminants</li> <li>- post mortem inspection of poultry</li> </ul> <p>5. Hygiene in slaughter house and meat plant</p> <ul style="list-style-type: none"> <li>- personal hygiene in meat plant</li> <li>- work and protective cloths in slaughter house</li> <li>- cleaning and disinfection in meat plant</li> <li>- verification of cleaning and disinfection</li> <li>- work stand environment of veterinary inspector and slaughter worker</li> <li>- Occupational Health and Safety in slaughter house</li> </ul>	laboratory classes
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3.	<p>6. Structure of meat plant fulfilling HACCP requirements (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- meat plant environment</li> <li>- internal organization of meat plant</li> <li>- pig slaughter technology line</li> <li>- cattle slaughter technology line</li> <li>- protection of meat plant against rodents</li> <li>- protection of meat plant against flies and insects</li> <li>- other technological line</li> <li>- dirty and clean parts of plant</li> </ul> <p>7. Transport of slaughter animals and ante mortem examination (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- condition of download animals from means of transport and rest</li> <li>- ante mortem examination and veterinary decisions</li> <li>- animals marking and identification</li> <li>- veterinary documentation</li> <li>- means of transport hygiene</li> </ul> <p>8. Post mortem inspection of pork (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- inspection of placks</li> <li>- inspection of carcasses</li> <li>- detailed inspection</li> <li>- examination for trichinae</li> <li>- veterinary documentation</li> </ul> <p>9. Post mortem inspection of beef (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- inspection of heads</li> <li>- inspection of placks</li> <li>- inspection of carcasses</li> <li>- detailed inspection</li> <li>- sampling for examination for BSE</li> <li>- veterinary documentation</li> </ul> <p>10. Dealings with meat after slaughter (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- evaluation</li> <li>- marking</li> <li>- food quality marks</li> <li>- meat cutting on elements</li> <li>- veterinary documentation</li> <li>- category 1 material</li> <li>- category 2 material</li> <li>- category 3 material</li> <li>- SRM</li> </ul>	clinical classes
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## **Entry requirements**

knowledge obtained on the subject of Slaughter Animals and Meat Hygiene 1 (sem. 7), knowledge obtained on the subject of Sanitary Food Law



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Milk hygiene Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.1296.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 24, clinical classes: 6	

### Goals

C1	During the course the student gain the knowledge on milk testing as a raw material for the dairy industry, the principles of surveillance of processing plants as well as quality and safety management systems of dairy products. Technology used in dairy plants are presented.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows to an extensive degree the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;	O.W13	written credit

W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit
W3	Identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit, active participation
W4	Presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written credit, active participation
W5	Explains in detail the principles of consumer health protection	O.W11	written credit, active participation
<b>Skills - Student can:</b>			
U1	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	written credit, active participation
U2	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	written credit, active participation
U3	assesses the risk of contamination, cross-contamination and accumulation of pathogens in veterinary facilities and in the natural environment, as well as introduces recommendations that minimise such risk.	B.U25	written credit, active participation
U4	Issues veterinary medical opinion and certificate	O.U7	written credit
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	active participation
K2	deepens his/her knowledge and improves skills	O.K8	active participation
K3	Communicates with the co-workers and shares knowledge	O.K9	active participation
K4	Is ready to act in the conditions of uncertainty and stress	O.K10	active participation
K5	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation

## Study content

No.	Course content	Activities
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1.	<p>1. Milk as main raw material in dairy business</p> <p>chemical milk content milk nutritional value components features allergizing properties of milk proteins</p> <p>2. Physicochemical properties of milk</p> <p>density and viscosity of milk potential and active acidity of milk buffering system milk foaming milk fat creaming and buttering</p> <p>3. Nitrogenous milk compounds</p> <p>milk proteins - casein and whey proteins coagulation thermal, enzymatic by ion action forces utilized for production</p> <p>4. Milk microflora</p> <p>origin influence on hygiene and technology homo and heterofermentative bacteria usage of bacteria in dairy industry</p> <p>5. Milk microflora</p> <p>fungi and moulds utilized in dairy production psychrophile microflora</p> <p>6. Natural defense mechanisms in milk</p> <p>health promoting properties of lactic bacteria probiotics udder origin</p> <p>7. Breed and environmental considerations of milk production</p> <p>milk quotas system agents influencing yield, composition and quality of milk lactation</p> <p>8. Milking conditions</p> <p>cowshed and milking parlor preparing for milking milking</p> <p>9. Raw milk hygiene, law regulations</p> <p>veterinary requirements for raw milk dealings with milk after milking</p> <p>10. Hygiene in milk farms</p> <p>law regulations veterinary requirements for animals veterinary requirements for milk farms</p> <p>11. Technological processes in dairy production</p> <p>centrifugation homogenization thermal treatment thermization pasteurization sterilization UHT,</p> <p>12. Drinking milk production</p> <p>collecting and grading of raw milk raw milk storing operations applied on milk packaging, storing health (veterinary) mark on dairy products</p> <p>13. System HACCP in dairy business</p> <p>prerequisites of system implementing hazard analysis CCP, monitoring, correction actions</p> <p>14. Veterinary supervision on milk processing</p> <p>law regulations veterinary requirements for milk companies</p> <p>15. HACCP system verification</p> <p>cleaning and disinfection of milking machines cleaning and disinfection of technological lines</p>	lecture
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2.	<p>1. Evaluation raw milk quality in cowshed and dairy plant</p> <ul style="list-style-type: none"> <li>- milk sampling for quality analyses</li> <li>- organoleptic evaluation of raw milk</li> <li>- evaluation of density</li> <li>- evaluation of potential milk acidity</li> <li>- evaluation of active milk acidity</li> </ul> <p>2. Milk fat</p> <ul style="list-style-type: none"> <li>- evaluation of fat content in milk by technical - butyrometric method</li> <li>- evaluation of fatless solid</li> <li>- evaluation of fat content in milk by reference method</li> <li>- evaluation of fat content in dairy products</li> </ul> <p>3. Determination of milk adulteration</p> <ul style="list-style-type: none"> <li>- water down</li> <li>- fat removal</li> <li>- neutralization</li> <li>- addition of hydrogen peroxide</li> <li>- milk addition of other animal species</li> <li>- cryoscopic number</li> </ul> <p>4. Milk proteins.</p> <ul style="list-style-type: none"> <li>- evaluation of protein content</li> <li>- evaluation of casein in milk of different animal species</li> <li>- determination of calcium addition to milk</li> </ul> <p>5. Thermal processes applied to milk</p> <ul style="list-style-type: none"> <li>- evaluation of pasteurization effectiveness</li> <li>- evaluation of homogenization effectiveness</li> <li>- test on phosphatase,</li> <li>- test on peroxidase</li> <li>- determination of amylase</li> </ul> <p>6. Evaluation of raw milk usefulness for collecting and processing</p> <ul style="list-style-type: none"> <li>- quality demands</li> <li>- evaluation of number of somatic cells in milk</li> <li>- instrumental methods</li> <li>- evaluation of number of somatic cells in milk by microscopic method according to Polish Norm</li> </ul> <p>7. Milk reception in dairy plant</p> <ul style="list-style-type: none"> <li>- antimicrobial substances in milk</li> <li>- determination antimicrobial substances in milk by microbiological methods</li> <li>- determination antimicrobial substances in milk by enzymatic methods</li> </ul> <p>8. Evaluation of hygiene quality of milk part 1.</p> <ul style="list-style-type: none"> <li>- bacteriostatic features of milk</li> <li>- microbiological evaluation of milk</li> <li>- sampling of milk for microbiological testing</li> <li>- determination of total viable count by plate method</li> <li>- determination of total viable count by Petrifilm test</li> </ul> <p>9. Evaluation of hygiene quality of milk part 2.</p> <ul style="list-style-type: none"> <li>- factors influencing microflora development (temperature, acidity, oxygen)</li> <li>- dynamics of microflora development in milk</li> <li>- evaluation of results of previous classes tests</li> <li>- evaluation of microbial quality of milk</li> <li>- fermentation test</li> </ul> <p>10. Evaluation of organoleptic quality of dairy products</p> <ul style="list-style-type: none"> <li>- evaluation quality of cheese according Polish Norm</li> <li>- evaluation quality of cottage cheese according Polish Norm</li> <li>- evaluation quality of milk drinks according Polish Norm</li> <li>- evaluation quality of butter according Polish Norm</li> </ul> <p>11. GMP and GHP in dairy plant</p> <ul style="list-style-type: none"> <li>- zones in dairy plant</li> <li>- plant environment</li> <li>- passage locker rooms and sluices</li> <li>- structural demands</li> <li>- technological lines</li> </ul>	laboratory classes
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3.	<p>12. Hygiene in dairy plant (Classes in dairy plant)</p> <ul style="list-style-type: none"> <li>- cleaning and disinfection in plant</li> <li>- CIP</li> <li>- COP</li> <li>- verification of cleaning and disinfection effectiveness</li> <li>- staff personal hygiene</li> </ul> <p>13. Production of milk and dairy products part 1. (Classes in dairy plant)</p> <ul style="list-style-type: none"> <li>- technological processes in dairy production</li> <li>- milk processing (cleaning, homogenization, deodorizing, pasteurization, sterilization)</li> <li>- production of dairy products (cottage cheese, butter, yogurt, butter milk, cream)</li> <li>- powder products (whole milk, proteins concentrates, ultrafiltrates, reversed osmosis)</li> <li>- dairy products packaging</li> <li>- dairy products storing</li> </ul> <p>14. Production of milk and dairy products part 1. (Classes in dairy plant)</p> <ul style="list-style-type: none"> <li>- veterinary supervision on milk production and processing</li> <li>- dairy plant</li> </ul> <p>15. HACCP in dairy plant.</p> <ul style="list-style-type: none"> <li>- critical control points</li> <li>- monitoring CCP</li> <li>- verification of HACCP</li> <li>- documentation</li> </ul>	clinical classes
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## Entry requirements

Sanitary Food Law



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary dietetics Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2639.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	The course aims to present the dietary management of specific disease with an explanation of their etiopathogenesis and development mechanisms. The aim of teaching the subject is to provide students with basic knowledge about dietary procedures in specific disease and knowledge of veterinary diets and dietary supplements applied adequately to the disease entity being treated. The subject is also intended to present dietary diagnostic tools and their application.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	the rules of animal nutrition, taking into account species and age differences, as well as the rules of arranging and analyzing food doses. Has knowledge of veterinary diets and supplements used adequately to the disease being treated. knows adverse reactions to food, hypoallergenic diets, elimination diets with an atypical source of protein, mono-protein	B.W13, B.W14	test
<b>Skills - Student can:</b>			
U1	issues veterinary medical opinion and certificate	O.U7	observation of student's work
U2	assess the animal's nutritional status and provide advice in this regard. I apply diets adequate to the disease entity	A.U19	observation of student's work
U3	use professional knowledge and skills to improve the quality of veterinary care and animal welfare in terms of proper nutrition	B.U5	observation of student's work, case study
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	uses the objective sources of information	O.K4	active participation
K3	formulates conclusions from own measurements or observations	O.K5	observation of student's work, case study
K4	broadening knowledge and improving skills	O.K8	observation of student's work

## Study content

No.	Course content	Activities
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1.	<p>Lectures</p> <ol style="list-style-type: none"> <li>1. Diet, concept and types of diets</li> <li>2. Diet in diseases of growing animals</li> <li>3. Diet in cancer</li> <li>4. Diet in skin diseases</li> <li>5. Lipid disorders, diet</li> <li>6. Diet in diseases of the gastrointestinal tract: oral cavity, stomach diseases</li> <li>7. Diet in diseases of the gastrointestinal tract: SIBO, enteropathies, IBD</li> <li>8. Diet in diseases of the gastrointestinal tract: large intestine</li> <li>9. Diet in liver diseases</li> <li>10. Diet in osteoarticular diseases (problems of large growing dogs, older dogs, sports dogs)</li> <li>11. Diet in endocrine diseases: diabetes, hypothyroidism, hyperadrenocorticism</li> <li>12. Diet in heart disease: DCM, HCM, taurine</li> <li>13. Diet in the aspect of production - production of dry and moist diets</li> <li>14. Legislation, legal norms (PL) in the aspect of food and diets</li> <li>15. Legislation of EU legal norms in the aspect of food and diets</li> </ol>	lecture
2.	<p>Classes</p> <ol style="list-style-type: none"> <li>1. Diet - types of diets (commercial, home-made), label evaluation</li> <li>2. Calculation of energy demand, determining the food dose for sick animals</li> <li>3. Diet in metabolic diseases: diabetes, obesity, body condition scale, glycemic index, glycemic load</li> <li>4. Enteral and parenteral nutrition, convalescent diets</li> <li>5. Diet in diseases of the kidneys and lower urinary tract</li> <li>6. Adverse reactions to food, hypoallergenic, elimination diets, diet with an unusual source of protein, mono-protein</li> <li>7. Passing classes - test</li> </ol>	laboratory classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary toxicology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2652.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 8	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 30	

### Goals

C1	Familiarize students with the origin of dangerous poisons for animals and their mechanisms of action, as well as their fate in the organism.
C2	To provide students with knowledge in the field of veterinary clinical toxicology with a focus on issues leading to the correct diagnosis of poisoning, knowledge of symptoms and pathological findings as well as knowledge of laboratory methods of toxicological analysis, protection of material for analysis and conducting a toxicological interview.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Ways to use veterinary medicinal products to prevent and treat poisoning in animals, and to ensure the safety of the food chain and protect the environment in a toxicological context	O.W5	written exam, written credit, cover letter
W2	Principles of conducting a clinical examination, analysis of clinical symptoms and pathological changes in cases of poisoning.	O.W7	written exam, written credit, cover letter
W3	Kinds of poisoning occurring in animals and principles of diagnostic and therapeutic procedures in poisoning	A.W21	written exam, written credit, cover letter
W4	Disorders at the level of tissue, organ, system and organism in the course of poisoning in animals	B.W1	written exam, written credit, cover letter
<b>Skills - Student can:</b>			
U1	Analyze and interpret pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease, including differential diagnosis, and undertake therapeutic or prophylactic measures in cases of poisoning in animals	O.U2	written credit, active participation, cover letter
U2	Plan diagnostic procedures in cases of poisoning in animals	O.U3	written credit, active participation, cover letter
U3	Estimate the toxicological hazard in specific technological groups of farm animals	A.U17	written credit, active participation, cover letter
U4	Collect and secure samples in cases of poisonings	B.U6	written credit, active participation, cover letter
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment in the toxicological context	O.K1	active participation
K2	uses the objective sources of information in the assessment of toxicological risks	O.K4	active participation
K3	is ready to act in the conditions of uncertainty and stress while dealing with animal poisonings	O.K10	active participation

### Study content

No.	Course content	Activities
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1.	<p>1. Toxicology - field of interest, characteristics of poisons, chemical and physical speciation in relation to exposure, classification of toxicity, exposure to poisons - quantitative and qualitative aspects, toxicological significance of the exposure route, exposure - response relationship, risk and risk analysis, types of poisonings.</p> <p>2. Basics of toxicokinetics, mechanisms of poisons' action.</p> <p>3. Table salt (sodium chloride) poisonings, ammonia and urea poisonings and poisoning caused by phosphorus compounds. Fluorosis.</p> <p>4. Nitrate and nitrite poisonings, cyanide poisonings, carbon monoxide poisonings, hydrogen sulfide poisonings.</p> <p>5. Poisonings caused by lead, mercury and iron compounds.</p> <p>6. Poisonings caused by copper, molybdenum and zinc compounds.</p> <p>7. Insecticide poisonings (organophosphates, carbamates, pyrethrin and pyrethroids, neonicotinoids). Molluscicide poisonings (metaldehyde).</p> <p>8. Herbicide poisonings (dinitroalkylophenols, dipyridyl derivatives, phenoxy acid derivatives, derivatives of urea and thiourea). Fungicide poisoning (carbamic acid derivatives).</p> <p>9. Rodenticide poisonings (anticoagulant rodenticides, strychnine, bromethalin, cholecalciferol, alpha-naphtyl-thiourea).</p> <p>10. Mycotoxicoses (poisonings caused by aflatoxins, ochratoxins, trichothecenes, fumonisins, zearalenone and ergot).</p> <p>11. Blue-green algae poisonings, poisonings caused by invertebrates' (wasps, hornets, bees, flies, caterpillars moths) and vertebrates' venoms (toads, snakes), characteristics of plant toxins.</p> <p>12. Plants related toxicoses.</p> <p>13. Selected drug poisonings (ionophore antibiotics, paracetamol, aspirin and other NSAIDs, amitraz, ivermectin, methylxanthines).</p> <p>14. Poisonings by agents used in household (acids, alkalis, batteries, soap, detergents, enzymatic cleaners, cosmetics, ethanol, ethylene glycol, phenol-based products).</p> <p>15. Principles of poisoning treatment, antidotes and other drugs used in poisonings, gastrointestinal, dermal and mucosal decontamination, methods used to enhance systemic toxicant elimination, symptomatic and supportive treatment. Principles of cooperation with the animal owner.</p>	lecture
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2.	<p>1. Preliminary steps in cases of farm animal poisonings. Taking a complete toxicological history and writing a cover letter for the analytical laboratory.</p> <p>2. Preliminary steps in cases of dog and cat poisonings. Taking a complete toxicological history and writing a covering letter for the analytical laboratory. Rules for sampling and sending samples for laboratory tests.</p> <p>3. Scheme of toxicological analysis. Taking samples for testing. Preliminary physicochemical examination. Methods of toxicant extraction from biological material. Detection of water-soluble compounds. Table salt poisoning. Quantitative detection of chlorides in the fodder and in gastrointestinal contents.</p> <p>4. Nitrate and nitrite poisoning. Qualitative detection of nitrate and nitrite in biological samples. Urea poisoning. Safety in the use of urea as a source of non-protein nitrogen in ruminant feed. Quantitative determination of urea and ammonia in the fodder and in the content of the gastrointestinal tract. Cyanide poisoning. Qualitative detection of toxicants isolated by distillation on the example of cyanide.</p> <p>5. Poisoning by phosphorus and its compounds. Qualitative detection of phosphides in the content of the gastrointestinal tract and feed using Gutzeit method. Metal poisonings (lead, copper). Mineralization as a method of isolation of metals from biological material. Types of mineralization techniques. Sources of exposure to compounds containing metals. Intra-vitam and post-mortem laboratory tests used for lead poisoning. Principles of quantitative methods for determining metals concentration (atomic absorption spectrometry - AAS).</p> <p>6. Test no 1 (table salt, urea, nitrates and nitrites, phosphorus and its compounds, fluorosis, poisoning with metals: lead, copper).</p> <p>7. Pesticides - general information. Commercially available preparation of herbicides, fungicides and molluscicides. Their applications, toxicity characteristics. Toxicological anamnesis and sample preparation for further laboratory analysis. Metaldehyde poisoning, qualitative determination of metaldehyde in biological samples and baits.</p> <p>8. Commercially available preparations of insecticides and their applications. Insecticide toxicity characteristics. Toxicological anamnesis and sample preparation for further laboratory analysis. Pesticide extraction from biological material - organic solvent extraction method. Quantitative determination of selected pesticides by high performance liquid chromatography.</p> <p>9. Commercially available preparations of rodenticides. Their usage and toxicity characteristics. The principles of medical treatment in cases of anticoagulant poisoning. Toxicological anamnesis and sample preparation for further laboratory analysis. Qualitative determination of hydroxycoumarin rodenticides by liquid chromatography.</p> <p>10. Clinical treatment of acute poisonings in small animals. Overview of the availability of diagnostic laboratories useful in the small animal poisonings.</p> <p>11. Test no 2 - pesticide poisonings and veterinary treatment of acute poisonings.</p> <p>12. Botanical classification of poisonous plants and their toxic compounds. The review of poisonous and potentially harmful plants important in veterinary toxicology - part 1. Poisonings with fodder plants, meadow plants and weeds.</p> <p>13. The review of poisonous and potentially harmful plants important in veterinary toxicology - part 2. Poisonings with garden and ornamental plants commonly found in homes. Plant poisonings in cats and dogs.</p> <p>14. Selected drug and household chemical poisonings in dogs and cats.</p> <p>15. Test no 3. Poisonings with plants, drugs and household chemicals. Test retakes.</p>	laboratory classes
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## **Entry requirements**

Veterinary pharmacology I, II, Pathomorphology I, II, Clinical and laboratory diagnostics I, II



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Zoonoses

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2885.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 3, practical classes: 12	

#### Goals

C1	The aim of the course is to familiarize students with issues concerning zoonoses.
C2	The training course includes basic definitions and terms, regarding presence of zoonoses in populations and successively (including division of animal's species like cattle, pigs, horses, dogs, cats, birds, exotic animals): sources of infection, routs of disease transmission (infection/invasion).
C3	Clinical manifestation of individual diseases in animals, methods of laboratory diagnostics in veterinary medicine as well as overall conduct of diseases and diagnostics in humans (classes performed by doctor of medicine, specialist in human infectious diseases) are presented.

#### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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<b>Knowledge - Student knows and understands:</b>			
W1	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	test
W2	knows to an extensive degree the method of procedure in the case of suspicion or diagnosing diseases that are subject to the obligation of disease eradication or its registration	B.W8	active participation, test
W3	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	active participation, test
W4	knows to the biology of infectious factors species specific that cause zoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the host	A.W13	active participation, test
<b>Skills - Student can:</b>			
U1	plans the diagnostic procedure	O.U3	test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	test
U3	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	test
U4	is able to work in a multidisciplinary team	A.U15	active participation
U5	interprets the responsibility of veterinary physician in regard to the animal, its owner, society, as well as the natural environment	A.U16	active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation
K2	uses the objective sources of information	O.K4	active participation
K3	cooperates with representatives of other professions in the scope of public health protection	O.K11	active participation

## Study content

No.	Course content	Activities
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1.	<p>Parasitic zoonoses transmitted by companion animals (dogs, cats) and laboratory animals: zoonotic risk during contacts, toxoplasmosis, giardiasis, toxocarosis, tapeworm diseases), prophylaxis in pets (deworming programs).</p> <p>Parasitic zoonoses transmitted by farm animals (cattle, pigs) and horses: food-borne parasitic zoonoses and culinary customs, risk of invasion , ways of preventing.</p> <p>“Exotic” Parasitic zoonoses: risk of invasion (climatic zones) during travels around different geographical areas and climate zones; malaria, leishmaniasis, sleeping sickness and others - human behavior and risk of invasion; other arthropod-borne diseases, Prophylaxis in “exotic “ zoonoses.</p>	laboratory classes
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2.	<p>Definitions: direct zoonoses, cyclo-, meta- and saprozooses, „emerging zoonoses”, zoonoses and transmissible diseases, Arboviral infections, conditions of occurrence of zoonoses (global climate changes, immune deficiencies).</p> <p>Zoonoses (bacterial, viral) transmitted by cats, dogs and horses: dogs and cats: brucellosis, leptospirosis, campylobacteriosis, Rabies, Salmonellosis, Cat Scratch Disease (<i>Bartonella henselae</i>), chlamydiosis (<i>Chlamydia felis</i>), <i>E.coli</i> O:157: H7, MRSA (methicillin resistant <i>Staphylococcus aureus</i>); horses: melioidosis, campylobacteriosis, leptospirosis, rabies, salmonellosis</p> <p>Tick borne- and mosquito borne diseases- zoonotic Vector borne diseases (ehrlichiosis, anaplasmosis, borreliosis, RVF, RMSF Rocky Mountain Spotted Fever, WNV West Nile Virus, Arboviral encephalitis).</p> <p>Food and animal products (meat, milk, eggs, fishes, shellfishes, honey) as a source of zoonoses (<i>Salmonella</i> sp, <i>Staphylococcus aureus</i>, <i>Clostridium botulinum</i>, <i>Clostridium perfringens</i>, <i>Enterococcus</i> sp. <i>Yersinia enterocolytica</i>, <i>Bacillus cereus</i>, <i>Trichinella</i> sp., <i>Toxoplasma gondii</i>, <i>tasienice</i>, <i>Campylobacter jejuni</i>, <i>Listeria monocytogenes</i>, <i>ciguatera</i>, parasites: <i>Kudoa aliarua</i>; w ECHO virus, Norwalk; bacteria: <i>Aeromonas hydrophila</i>, <i>Vibrio parahaemolyticus</i>, <i>Vibrio vulnificus</i>; risk of animal by-products and derived products not intended for human consumption.</p> <p>Zoonoses (viral, bacterial) transmitted by swine: etiology, clinical symptoms and diagnosis, swine herds as a reservoir , collection of samples, bacterial and viral diseases (influenza, leptospirosis, tuberculosis, listeriosis, leptospirosis, <i>E.coli</i>, salmonellosis, <i>Erysipelotrix rhusiopathiae</i>).</p> <p>Ruminants as a source of zoonoses: TSE, verocytotoxic strains of <i>E.coli</i> (VTEC), salmonellosis, cryptosporidiosis, tuberculosis, brucellosis, Q fever, listeriosis (risk for cattle, sources of infection, diagnostics and pathogenicity for people).</p> <p>Zoonoses transmitted by birds: etiology, clinical symptoms and pathological changes, diagnosis, prevention, routes of transmission and reservoirs, samples collection: bacterial and viral infections (salmonellosis, campylobacteriosis, avian influenza).</p> <p>Zoonoses transmitted by exotic animals: etiology, clinical symptoms and pathological changes, diagnosis, exotic animals as a reservoirs, collection of samples; bacterial infections (salmonellosis, chlamydiosis), fungal infections (dermatophytosis), parasitoses (encephalitozoonosis, sabies).</p> <p>Zoonotic fungal infections: fungal infections in pets and farm animals; zoonotic potential of infections; treatment and eradication; <i>Trichophyton</i> spp., <i>Epidermophyton</i> spp., <i>Candida</i> spp., <i>Microsporum</i> spp., <i>Aspergillus</i> spp.</p> <p>Legislation and zoonoses: monitoring and eradication of zoonoses – existing legislation. Proceedings medical-veterinary staff in case of zoonoses threatening public health.</p> <p>Most recognized zoonoses in clinical and diagnostic aspects: campylobacteriosis, salmonellosis, yersiniosis, STEC/VTEC, Q fever; clinical syndroms and zoonoses with practical relevance; animal bites (Rabies, RBF), toxocarosis and toxoplasmosis, therapy in the selected zoonotic diseases.</p> <p>Credit (test)</p>	practical classes
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## Entry requirements

Classes in accordance with the course manager's guidelines may be attended by persons who have completed the following subjects:

Veterinary microbiology (I,II), Veterinary parasitology and invasiology (I,II), Pathomorphology (I,II), Veterinary Epidemiology, Infectious diseases of horses, dogs and cats, farm animals.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Summer practical training: Animal clinic I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2404.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 8.0
	<b>Activities and hours</b> practical training: 160	

### Goals

C1	Introduction to the specificity of work in a veterinary clinic. Performing a clinical examination and veterinary procedures in patients of a veterinary clinic.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	oral credit

W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	oral credit
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure	O.W3	oral credit
W4	explains and interprets the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W4	oral credit
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	oral credit
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	oral credit
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	oral credit
W8	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	oral credit
W9	explains the mechanisms of organ and systemic pathologies	B.W2	oral credit
W10	describes the causes and symptoms of diseases, principles of treatment and prophylaxis in individual disease entities	B.W3	oral credit
W11	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	oral credit
W12	presents the principles of conducting clinical examination and monitoring animal health	B.W5	oral credit
W13	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	oral credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	oral credit
U3	plans the diagnostic procedure	O.U3	oral credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration	O.U4	oral credit

U5	issues veterinary medical opinion and certificate	O.U7	oral credit
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit
U7	applies IT systems used to support the health facility for animals, herd and analysis of epizootic situation	O.U9	oral credit
U8	safely and humanely handles animals and instructs others in this scope	B.U1	oral credit
U9	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	oral credit
U10	performs a full clinical examination of the animal	B.U3	oral credit
U11	is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	oral credit
U12	assesses the nutritional status of the animal and provides advice in this scope	B.U5	oral credit
U13	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit
U14	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit
U15	implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	oral credit
U16	obtains and uses information on authorised veterinary medicinal products	B.U9	oral credit
U17	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	oral credit
U18	uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	oral credit
U19	monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	oral credit
U20	chooses and applies the appropriate treatment	B.U13	oral credit
U21	implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	oral credit
U22	assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes the animal in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	oral credit
U23	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	oral credit



<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	practical training report
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit
K3	uses the objective sources of information	O.K4	oral credit
K4	formulates conclusions from own measurements or observations	O.K5	oral credit
K5	formulates opinions regarding various aspects of professional activity	O.K6	oral credit
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	oral credit
K7	deepens his/her knowledge and improves skills	O.K8	oral credit
K8	communicates with the co-workers and shares knowledge	O.K9	oral credit
K9	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit

## Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<p>1. Introduction to the specificity and organization of work in the clinic, and applicable health and safety regulations. The student becomes familiar with distribution facilities (emergency room, hospital, operating room, X-ray, etc.) and the system of admitting patients.</p> <p>2. Introduction to the drugs used in the practice and the way records and dispensing of medicines. Introduction to diets and dietary supplements used in a veterinary clinic.</p> <p>3. Introduction to the computer program used in the practice.</p> <p>4. Analysis of the cases registered in the file system of a computer-types of diseases, diagnostic methods, therapeutic methods.</p> <p>5. Familiarize yourself with the program of prevention of infectious diseases and prevention systems with and combat parasitic diseases in animals treated with the practice. Familiarizing yourself with the medical interview.</p> <p>6. Improving history, basic clinical examination, performing additional diagnostic methods (imaging techniques, cytological assessment, laboratory tests of blood, urine and other body fluids), collecting material for additional tests.</p> <p>7. Improving the techniques restraining of the animal and performing basic veterinary procedures, eg injection, establishing access to a vein, catheterization and care treatments (eg: shortening of the claws, cleaning the perianal sinuses, cleaning the ears, etc.).</p> <p>8. Introduction to the surgical procedures or their improvement: protocols and techniques of anesthesia, techniques of surgical procedures (assisting in the procedures).</p>	practical training

## **Entry requirements**

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Farm animal disease



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Summer practical training: Abattoir I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J80BO.2403.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 8	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> practical training: 80	

### Goals

C1	The purpose of the practice in slaughterhouses for cattle, pigs or horses is to teach students with the technology of slaughtering animals, post-slaughter meat processing, organizational structure of the plant and the technique of pre-and post-mortem inspection, as well as keeping veterinary documentation
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	oral credit, observation of student's work

W2	explains in detail the principles of consumer health protection	O.W11	oral credit, observation of student's work
W3	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	oral credit, observation of student's work
W4	describes legal standards associated with the activities of veterinary physicians;	O.W14	oral credit, observation of student's work
W5	identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	oral credit, observation of student's work
W6	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	oral credit, observation of student's work
W7	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	oral credit, observation of student's work
W8	presents the methods of management and utilisation of animal by-products and waste associated with animal production	B.W15	oral credit, observation of student's work
<b>Skills - Student can:</b>			
U1	issues veterinary medical opinion and certificate	O.U7	oral credit, observation of student's work
U2	performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	oral credit, observation of student's work
U3	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	oral credit, observation of student's work
U4	is able to perform pre- and post-mortem inspection	B.U17	oral credit, observation of student's work
U5	assesses the quality of products of animal origin	B.U18	oral credit, observation of student's work
U6	performs an epizootic investigation in order to determine the period of time, during which a contagious disease may have developed on the farm before suspecting or establishing its occurrence, place of origin of the source of the animal contagious disease, along with determination of other farms and the pathways of movement of people, animals and objects that could cause the spread of an infectious disease to or from the farm;	B.U19	oral credit, observation of student's work
U7	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	oral credit, observation of student's work
U8	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit, observation of student's work

U9	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, observation of student's work
U10	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit, observation of student's work
K2	communicates with the co-workers and shares knowledge	O.K9	oral credit, observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	oral credit, observation of student's work
K4	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit, observation of student's work

### Study content

No.	Course content	Activities
1.	<p>The organizational structure of the slaughterhouse.  Health and safety regulations in force at the slaughterhouse.  Tasks veterinary sanitary supervision over the purchase and transport of animals for slaughter.  Tasks sanitary veterinary surveillance in slaughterhouses slaughter animals.  Formal legal proceedings related to the adoption of slaughter animals to the slaughterhouse.  Ante-mortem technique.  Proceedings of the animals after the ante-mortem technique.  Methods of stunning and slaughter of animals for slaughter.  Deadweight technological processing of animal carcasses.  Organization and post-mortem meat inspection technique.  Principles of meat samples for laboratory tests.  Trichinoscopic methods.  Sanitary evaluation and labeling of meat from animals slaughtered.  Handling the meat and unfit for consumption.  Animal by-products  Principles of cleaning and disinfection of premises, machinery and equipment and transportation of animals and meat.  Principles of sewage treatment in slaughterhouses.  Sanitary Requirements for the location and construction of slaughterhouses and facilities and lines.  Principles of sanitary-veterinary records in a slaughterhouse.  The current sanitary and veterinary regulations.</p>	practical training

### Entry requirements

knowledge of sanitary food law, in particular: Regulations no. : 178/2002, 2017/625, 2019/627, 853/2004, 852 / 2004,1 / 2005, 1069/2009, 1099/2008, 999/2001, 2015/375.

Theoretical knowledge in the field of ante-mortem and post-mortem inspection of slaughter animals.

Basic knowledge of animal identification (including age assessment based on the dental formula of cattle).

Theoretical knowledge about the symptoms of proper stunning of animals, knowledge of stunning methods and the possibilities of their application in individual animal species.

Theoretical knowledge regarding animal-by products and waste classification produced at the slaughterhouse.

Theoretical knowledge regarding the requirements for slaughterhouses.

Theoretical knowledge regarding infectious diseases and their clinical symptoms.

Theoretical knowledge in the field of anatomopathological changes in carcasses caused by OIE list A and B diseases

Theoretical knowledge of the meat sampling procedure and the diseases / residues of substances for which samples should be taken.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.0493.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 9	<b>Examination</b> exam	<b>Number of ECTS points</b> 17.0
	<b>Activities and hours</b> lecture: 125, laboratory classes: 115	

### Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases, its diagnosis, differential diagnosis, treatment and additional diagnostics procedures. It can provide the additional information of illness prevention and prognosis.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	A.W10, O.W1	written exam, test
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	written exam, test
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written exam, test
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written exam, test
W5	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written exam, test
W6	knows to an extensive degree the method of procedure in the case of suspicion or diagnosing diseases that are subject to the obligation of disease eradication or its registration	B.W8	written exam, test
W7	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written exam, test
W8	presents the principles of conducting clinical examination and monitoring animal health	B.W5	written exam, test
W9	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written exam, test
W10	explains the mechanisms of organ and systemic pathologies	B.W2	written exam, test
W11	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	written exam, test
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	A.U11, A.U14, O.U1	written exam, test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, test
U3	plans the diagnostic procedure	O.U3	written exam, test
U4	issues veterinary medical opinion and certificate	O.U7	written exam, test



U5	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written exam, test
U6	safely and humanely handles animals and instructs others in this scope	B.U1	written exam, test
U7	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	written exam, test
U8	performs a full clinical examination of the animal	B.U3	written exam, test
U9	is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	written exam, test
U10	assesses the nutritional status of the animal and provides advice in this scope;	B.U5	written exam, test
U11	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	written exam, test
U12	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	written exam, test
U13	implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	written exam, test
U14	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	written exam, test
U15	uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	written exam, test
U16	monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	written exam, test
U17	chooses and applies the appropriate treatment	B.U13	written exam, test
U18	implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	written exam, test
<b>Social competences - Student is ready to:</b>			
K1	deepens his/her knowledge and improves skills	O.K8	written exam, test
K2	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	written exam, test
K3	uses the objective sources of information	O.K4	written exam, test
K4	cooperates with representatives of other professions in the scope of public health protection	O.K11	written exam, test

K5	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written exam, test
K6	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	written exam, test

## Study content

No.	Course content	Activities
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1.	<p><b>Internal Diseases of Dogs and Cats</b></p> <ol style="list-style-type: none"> <li>Cardiovascular diseases. Part 1: dilated cardiomyopathy, endocardiosis of atrio-ventricular valves</li> <li>Cardiovascular diseases. Part 2: hypertrophic cardiomyopathy, myocarditis, Infectious endocarditis, embolism and thrombosis</li> <li>Cardiovascular diseases. Part 3: patent ductus arteriosus, aortic stenosis, pulmonary artery stenosis, tetralogy of Fallot, dysplasia atrioventricular valves, survived right aortic arch.</li> <li>Skin disorders. Part 1: allergy: atopy, food allergy</li> <li>Skin disorders. Part 2: autoimmune skin diseases, behavioral dermatosis</li> <li>Respiratory tract disorders. Part 1: inflammation of nasal cavity, laryngitis, Respiratory syndrome of brachycephalic dogs</li> <li>Respiratory tract disorders. Part 2: inflammation of the trachea, bronchus, bacterial pneumonia, trachea collapse, aspiration pneumonia</li> <li>Digestive tract disorders. Part 1: stomatitis, gingivitis, salivary cysts, pharyngitis, tonsillitis</li> <li>Digestive tract disorders. Part 2: esophageal motility disorders,</li> <li>Digestive tract disorders. Part 3: classification of vomiting, gastritis, stomach ulcers, foreign bodies in stomach, gastric dilatation - volvulus syndrome</li> <li>Digestive tract disorders. Part 4: acute and chronic enteritis</li> </ol> <ol style="list-style-type: none"> <li>Liver, pancreas disorders: acute and chronic form of liver and pancreas diseases. Exocrine pancreas insufficiency</li> <li>Urinary tract disorders: FLUTD, idiopathic cystitis, acute and chronic renal diseases, protein losing nephropathy</li> <li>Nervous system disorders. Part 1: diseases of brain, meninges, spinal cord</li> <li>Nervous system disorders. Part 2: epilepsy - classification and treatment</li> </ol> <p><b>Surgery</b></p> <ol style="list-style-type: none"> <li>Diseases of the eye and ear infections in dogs and cats. Bacterial inflammation of the eyelids, conjunctiva and cornea, foreign body in the conjunctival sac and cornea. Autoimmune superficial keratitis. Corneal sequestration in cats. Ocular diseases transmitted genetically. Disadvantages of the plastic lids. Tumors of the eyelids and the eyeball. Surgical ear disease.</li> <li>Surgical diseases of the mouth, throat and esophagus. Oro-nasal fistula, Mandibulectomy and hemimandibulectomy. Tonsilectomy. Cleft of the soft and hard palate. Cysts of the salivary glands (neck, throat, yoke, sublingual), Diverticula and achalasia of the esophagus. Foreign body in the esophagus. Cancers of the esophagus. Hiatal hernia. Vascular ring and right aortic arch.</li> <li>Gastrointestinal disease requiring surgical intervention. Foreign bodies in the stomach. Gastrotomy, gastropexy. extension and torsion of the stomach in dogs. Neoplasms of the stomach and the method of resection of the wall.</li> <li>Surgery within the small intestine. Foreign bodies in the small intestine. Enterotomia. Enterektomia, bowel anastomosis "end to end" and "end-to-side" anastomosis. Intussusception of the small intestine.</li> <li>Surgical procedures in the colon and rectum. Kolopexy. Tyfektomia. Cancers of the colon. A giant colon. Prolapsed rectum. anal sinus excision. Surgical treatment of anal hernia.</li> <li>Hernias, surgery of hepatobiliary, adrenal, thyroid and spleen. General definition and types of hernias. Division of hernias due to their causes. Symptoms and diagnosis of hernia consequences. Complications at different hernias caused by lack of surgical intervention. Methods of surgical treatment of haemias. Choleodocholithiasis and gallbladder. tumors of adrenal gland and spleen, and surgical methods to remove them.</li> <li>Surgical diseases of the urinary tract. Bladder stones in small animals. Surgical methods used for removing stones from the urinary bladder and urethra. Feline urological syndrome. Urinary incontinence in females. Ectopic ureters and surgical methods of treatment. Tumors of the kidneys and ureters. Ureterostomia.</li> <li>Reproductive Surgery. Methods of castration (owariohisterektomia, orchiektomia) used in dogs and cats. Rules of conduct of mastectomy, prostate diseases - methods of surgical intervention. Plastic surgery of perineum and vulva in females</li> </ol> <ol style="list-style-type: none"> <li>Thoracic Surgery in dogs and cats. Indications and rules of conduct for operating opening the chest. Foreign bodies in the thoracic esophagus. Survived the ductus arteriosus (Botall). Right-hand arch of the aorta and other vascular anomalies in the construction of a large heart.</li> <li>Fractures in small animals. Classification of fractures and divisions in small animals, methods of conservative procedure for long bone fractures. The most commonly used method of osteosynthesis in dogs and cats (intramedullary nail, AO plate, wire, bone ZESPOL stabilizers, POLFIX).</li> <li>Osteosynthesis of fractures of the thoracic limbs. Orthopedic and radiological examination of the thoracic limb bone fractures in dogs and cats. Operating Procedure in fractures of the shoulder blade. Simple and complex fractures of the humerus. Monteggia fracture type. Fracture of the elbow. Procedure of fracture of metacarpal bone.</li> <li>Osteosynthesis of fractures of the pelvic limb. Methods of fixation in fractures of the femoral shaft. Tibial tuberosity avulsion in young dogs. Fractures of the tibia. Intramedullary Osteosynthesis of the calcaneal fracture tumor.</li> </ol> <ol style="list-style-type: none"> <li>Neurosurgery of spine. Surgery: cervical spine, thoracic, lumbo- sacral spine. Surgical approaches. Methods of spinal surgery. Laminektomy and hemilaminektomy, foraminotomia, facetektomia, fenestration and ventral slot method.</li> <li>Some joint diseases in small animals. Dislocation and subluxation in dogs and cats. Dislocation of the patella and the surgical procedure. Dysplasia of the hip and methods of surgical treatment. Diagnosis and surgical treatment for ulnar additional separate appendix.</li> <li>Some joint diseases in small animals cont Arthropathy of the elbow caused by fragmentation of the alveolar coronary medial and lateral. Aseptic necrosis of the femoral head (Legg Calvet Perthes disease). Aseptic necrosis of the hyaline cartilage of the shoulder, elbow, ankle.</li> </ol> <p><b>Reproduction</b></p> <ol style="list-style-type: none"> <li>Neurohormonal regulation and the course cycle in bitches; puberty and somatic maturity; hypothalamus, hypophysis-gonadal axis; hormonal feedback; relationship between age, maintenance, feeding and estrous cycle</li> <li>Neurohormonal regulation and the course cycle in queen; puberty and somatic maturity; hypothalamus, hypophysis-gonadal axis; hormonal feedback; relationship between age, maintenance, feeding and estrous cycle</li> <li>Disorders of estrous cycle; abnormalities of ovarian function: anoestrus primary and secondary, silent heat, week ovarian activity, ovulation disorders, split estrous, ovarian cysts</li> <li>Disorders of the ovaries, uterus and vagina, part I: Vaginal prolapse, inflammation of the caudal genital tract</li> </ol> <ol style="list-style-type: none"> <li>Disorders of the ovaries, uterus and vagina, part II: Genital tumors.</li> <li>Disorders of the ovaries, uterus and vagina, part III: Cystic endometrial hyperplasia-pyometra complex; incidence, diagnosis, surgical and pharmacological treatment.</li> <li>Disorders of sexual differentiation. Clinical aspects of sexual differentiation process. Disorders of sexual differentiation and their diagnostics, chromosomal abnormalities, gonadal abnormalities and phenotypic abnormalities.</li> <li>Infertility infectious origin: Nonspecific infectious, specific infections: Br. Canis, CHV-1; parasitic infestation</li> </ol> <ol style="list-style-type: none"> <li>Physiopathology and monitoring of pregnancy in bitches and queens, part I: Endocrinology of pregnancy. Gestational changes in maternal organism. Pregnancy diagnosis and monitoring of foetal development. Assessment of foetuses development during pregnancy and determination of parturition day.</li> <li>Physiopathology and monitoring of pregnancy in bitches and queens, part II: Pregnancy abnormalities in a practice - clinical cases.</li> <li>Eutocia - normal parturition Endocrinology of parturition. Initiation of parturition. Course of normal delivery. Stages of parturition.</li> <li>Dystocia - abnormal parturition and obstetrical aid in the bitches and queens. Causes of dystocia of maternal and foetal origin. Symptoms of dytocia. Methods of obstetrical aid. Manual assistance, the use of forceps, medication - ecobolic therapy, cesarean section.</li> <li>Mammary gland disorders in bitches and queens. Agalactia, hypogalactia, mastitis, pseudopregnancy.</li> <li>Veterinary care on puppies and kittens from birth to weaning. Feeding of the lactating dam. Neonatal care, resuscitation, optimal environmental conditions, artificial feeding, veterinary assistance, methods of evaluation of live ability of neonates.</li> <li>Diseases of puppies and kittens from birth to weaning. Still births in puppies/kittens. Isoerythrolises serological conflict, herpesvirosis and other specific infectious factors, abnormal development, staphylococcal infectious: toxic milk syndrome, diarrhoea, fading puppy/ kitten syndrome. Assessment of congenital reflexes.</li> </ol> <p><b>Infectious Diseases</b></p> <ol style="list-style-type: none"> <li>Infection diseases in dogs and cats - Rabies and Lyssavirus infection</li> <li>Infection diseases in dogs - canine parvovirus infection, coronavirus infection and ratovirus infection</li> <li>Infection diseases in dogs - babesiosis in dogs, boreliosis and Lyme diseases, RMSF</li> <li>Infection diseases in dogs - herpesvirus infection in dogs, Brucella sp., Mycoplasma sp. and Ureaplasma sp. infection</li> <li>Infection diseases in dogs - infection of Clostridium sp. (enterotoxemia, tetanus, Clostridium botulinum infection)</li> <li>Infection diseases in dogs - ehrlichiosis and anaplasmosis</li> <li>Infection diseases in cats - retrovirus infection (FeLV, FIV)</li> <li>Infection diseases in cats - infection of parvo- astro- i coronavirus (FIP)</li> <li>Infection diseases in cats - URTD syndrom</li> <li>Diagnostics of infection diseases in dogs and cats</li> <li>Infection diseases in cats - TSE, orthopoxvirus infection, papilomatosis</li> <li>Mycosis in dogs and cats</li> <li>Infection diseases in dogs and cats - haemoplasmosis and bartonellosis</li> <li>Infection diseases in dogs and cats - inection diseases after surgery intervention</li> <li>Biosecurity in kennel of dogs and cats</li> </ol>	lecture
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2.	<p>Diseases of Dogs and Cats - practical exercises</p> <ol style="list-style-type: none"> <li>1. Endoscopic examination of nasal cavity. Laryngotracheobronchoscopy.</li> <li>2. Additional diagnostic tests used in diagnosis of skin disorders - part 1 and 2</li> <li>3. Additional laboratory examinations used in endocrinal disorders</li> <li>4. EKG and heart USG</li> <li>5. Interpretation the result of electrodiagnostic examination in neurological patients (EMG, EEG, MNCV).</li> <li>6. Prevention and treatment of dentistry</li> <li>7. RTG in dentistry</li> <li>8. Procedures used in alimentary tract disorders</li> <li>9. Liver biopsy</li> <li>10. Cystocentesis and laboratory urine analysis</li> <li>11. Cystoscopy, kidneys biopsy</li> <li>12. Interpretation of the advanced imaging in neurological patients (X-ray, CT, MRI).</li> </ol> <p>13. Organs punctures. Examinations of body fluids</p> <p>14. TEST</p> <p>Surgery</p> <ol style="list-style-type: none"> <li>1. Desmurgia. Approaches to the establishment wound dressings under the band. Applying a soft gauze dressings and gel. Compression bandages used for haemostasis and compression used in orthopedic surgery of large animals. Approaches to the establishment of restraining bandages, plaster and synthetic plastics bonding after contact with air or water. Making cooling and warming compresses after injuries in orthopedic diseases.</li> <li>2. Surgical procedures on the head: the sublingual and submandibular salivary glands, trepanation of sinuses and nasal cavity, the opening of the frontal sinuses and nasal passages, jaw surgery. Methods of extraction of milk teeth and permanent. Cleft palate surgery.</li> <li>3. Ophthalmology - selected eye diseases of dogs and cats; irrigation naso-lacrimal duct, subconjunctival injections and eyeball prolapse, third eyelid gland and operational methods of repositioning or resection, follicular inflammation of the third eyelid, eyelid plastic surgery, (entropion, ectropium, kantotomia), extirpation of the eyeball. Corrective Actions in the eyelids folded up in the medial corner of the eye,</li> <li>4. Ophthalmology - clinical examination of eye of dog and cat using: slit lamp, direct and indirect ophthalmoscopy, diafanoskopii, applanation tonometer Schiötz tonometer. Clinical study of vision.</li> <li>5. Orthopedic examination of small animals - Plan and test methods, the test animals lying, standing the test animal (stationary and moving), additional tests.</li> <li>6. Conservative and surgical treatment of bone fractures in dogs and cats. Intramedullary osteosynthesis, fixation plate, Weber loop (types of nails, types of plates, screws, wires bone).</li> <li>7. ZESPOL stabilizer bone fusion and osteosynthesis AO: classification, types and methods of setting the stabilizer ZESPOL, display and use of AO bone plates.</li> <li>8. Therapeutic surgical diseases of joints: surgical approaches, sprain, ligament rupture, arthrodosis, ankiloza.</li> <li>9. final test</li> <li>10. Chest Surgery: thoracotomy, PDA, foreign body in the esophagus, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, resection of the lobe and completed the protocol of anaesthesia, use of recording equipment</li> </ol> <p>11. Surgical procedures in the abdomen - the digestive tract: laparotomy, gastrotomia, gastropexia, extension and torsion of the stomach, gastropexia, splenectomy, enterektomia.</p> <p>12. Surgical procedures in the abdomen: the urinary system and sex: stones in the bladder and urethra, cystotomy, ectopic ureters, ovariectomy, ovariohisterektomia, umbilical hernia, inguinal, femoral, Perineal, traumatic, rules remove cancerous tumors in the abdomen.</p> <p>13. Anesthesiology - select models of small animal anesthesia, analgesia, local head of a cat and dog. Local anesthetic. Epidural anesthesia and brachial plexus. Inhalation anesthesia and types of anesthetic apparatus and methods of inhalation anesthesia.</p> <p>14. Anesthesiology - cardiopulmonary resuscitation, practical exercises in the field of resuscitation and CPR for cardiac pulmonary failure in dogs and cats in life-threatening conditions.</p> <p>15. final test</p> <p>Reproduction</p> <ol style="list-style-type: none"> <li>1. Gynecological examination in bitches and queens practice - clinical examination, vaginal cytology, collection, staining and interpretation of results (prac.). Introduction - basics of clinical examination and vaginal cytology, collection of vaginal swabs. Smear preparation and staining. Assessment of samples.</li> <li>2. Endoscopic examination and endocrinological diagnosis of reproductive function in practice - technique, basics and result interpretation (prac.). Introduction, endoscopy of the vagina, interpretation and discussion of the results vaginoscopy catheterisation of uterine cervix. Analysing of progesterone level and discussing results, analyses of dynamic changes in sexual hormone concentration in peripheral blood.</li> <li>3. Reproductive ultrasound diagnosis in small animal in practice - ultrasonographic examination of uterus and ovaries in different physiological stages and pathological conditions (prac.). Introduction, practical aspects of examination of ovaries, uterus, uterine cervix and other reproductive structures. Interpretation of ultrasound images.</li> <li>4. Determination of optimal mating time (prac.). Plan of examination of the bitch to determine optimal mating time. Analyses of clinical symptoms, cytological findings, discussion of results of endoscopy, endocrinological examination and ultrasound diagnosis. Management, algorithms.</li> <li>5. Reproductive surgeries in practice: students assistance, cesarean section, gonadectomy in dogs and cats, mastectomy, surgical treatment of pyometra. Discussion.</li> </ol> <p>Infectious Diseases</p> <ol style="list-style-type: none"> <li>1. Rabies in dogs and cats. The exercises concern epidemiology and distribution of Rabies infection, etiology, pathogenesis, clinical and pathological disorders, differential diagnosis, laboratory diagnosis, with important information about taken of diagnostics material and eradication</li> <li>2. Distemper (CDV), Adenovirus infection in dogs (CAV-1, CAV-2). The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>3. Viral and bacterial infection of digestive tract in dogs and cats (CPV and FPV) The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>4. Leptospirosis in dogs and pasterellosis. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>5. Viral and bacterial infection of digestive tract in dogs and cats: coronavirus infection (CCV i FCoV), rotavirus infection (CRV i FRV), E. coli, staphylococcal and streptococcal infection The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>6. Viral and bacterial infection of respiratory tract in dogs and cats - kennel cough. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>7. Viral and bacterial infection of respiratory tract in dogs and cats - URTD syndrom. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>8. Viral and bacterial infection of nervous system in dogs and cats. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis with diagnostics samples, eradication with prophylaxis.</li> <li>9. Prophylaxis in dogs and cats. The exercises concern eradication with prophylaxis and control methods of effective proceedings.</li> <li>10. Summary and credit.</li> </ol> <p>8. Viral and bacterial infection</p>	laboratory classes
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## Entry requirements

Animal anatomy, biochemistry, histology and embryology, veterinary microbiology, animal physiology, clinical and laboratory diagnostics I & II, veterinary pharmacology, pathophysiology, pathomorphology, parasitology, andrology and artificial insemination



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Avian diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.0112.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 9	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 40, laboratory classes: 16, clinical classes: 24	

### Goals

C1	The aim of the course is to provide students with basic knowledge on: modern technology breeding for different species of birds, physiology and pathology, breeding, breeding period diseases, nutrient deficiency, environmental background, the background of metabolic disorders, as well as the etiology of parasitic, bacterial and viral diseases. In addition, the course program includes knowledge of the veterinary laboratory diagnostic, laws relating to the prevention and control of diseases, in particular diseases from the OIE list.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written exam, test
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written exam, test
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student's work, test
W4	the student knows and understands the principles and mechanisms underlying the health of birds, the formation of diseases and their therapy	A.W10	written exam, test
W5	the student understands the causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of birds	B.W3	written exam, test
W6	the student knows the principles of diagnostic and therapeutic management of bird diseases	B.W4	written exam, test
W7	the student knows the methods of proceeding clinical data and the results of laboratory and additional tests - is able to interpret them and apply appropriate procedures	B.W6	observation of student's work, active participation
W8	the student is able to act correctly in the case of suspicion or finding of diseases that are subject to mandatory control or registration in birds	B.W8	observation of student's work, active participation
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, observation of student's work, test
U3	plans the diagnostic procedure	O.U3	written exam, observation of student's work, test
U4	the student is able to choose and apply rational antibacterial, antifungal and antiparasitic chemotherapy	A.U11	observation of student's work, test
U5	the student is able to write clear case reports and keep documentation in accordance with applicable regulations, in a form understandable to the owner of the animal and legible to other veterinarians	A.U14	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work

K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work, test

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Salmonellosis in poultry - the european program of eradication of Salmonella</li> <li>2. Bacterial diseases of poultry</li> <li>3. Bacterial diseases of poultry</li> <li>4. Bacterial diseases of poultry</li> <li>5. Fungal diseases and mycotoxicosis of poultry</li> <li>6. Parasitic diseases</li> <li>7. Selected diseases of pigeons and ornamental birds</li> <li>8. Bird diseases with surveillance programme</li> <li>9. Viral diseases of poultry</li> <li>10. Viral diseases of poultry</li> <li>11. Viral diseases of poultry</li> <li>12. Nutritional errors including metabolic and deficiency diseases as well as poultry poisoning</li> <li>13. New syndromes in poultry flocks. Infections of wild and free-living birds</li> <li>14. Bio-insurance on poultry farms</li> <li>15. Vaccines and vaccinations of poultry</li> </ol>	lecture
2.	<ol style="list-style-type: none"> <li>1. Differential diagnosis and sampling for laboratory tests of bacterial diseases of poultry - colibacillosis, ornithobacteriosis, pasteurellosis, tuberculosis, differential and laboratory diagnosis</li> <li>2. Principles of combating adenoviral and coronaviral infections and taking samples for laboratory tests</li> <li>3. Principles of fighting Marek's disease and poultry leukemia infections and taking samples for laboratory tests</li> <li>4. Principles of fighting viral infections in waterfowl and taking samples for laboratory tests</li> <li>5. Disease diagnostics and veterinary treatments in pigeons and ornamental birds</li> <li>6. Medical and veterinary treatments on a poultry farm and principles of immunoprophylaxis.</li> </ol>	laboratory classes

3.	<ol style="list-style-type: none"> <li>1. Clinical examination, post-mortem examination of birds.</li> <li>2. Differential and laboratory diagnosis and control rules, sampling for laboratory tests: poultry pulorosis, typhus and salmonellosis</li> <li>3. Diagnostics of invasive diseases, including coccidiosis.</li> <li>4. Veterinary treatments in birds and pigeons - clinical and post-mortem examination of birds.</li> <li>5. Differential and laboratory diagnosis and principles of combating mycoplasmosis and fungal diseases of poultry.</li> <li>6. Differential and laboratory diagnosis and rules for diseases surveillance programme (AI and ND)</li> <li>7. Diseases of an immunosuppressive nature: Gumboro disease, reoviral infections, infectious anemia of CA chickens - differential and laboratory diagnosis and control rules, sampling for laboratory tests.</li> <li>8. Discussing field cases - rules for collecting and sending samples for diagnostic tests.</li> <li>9. Embriopathology - post-hatch examination.</li> </ol>	clinical classes
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### **Entry requirements**

Obligatory course, required passed exams: breeding and animal nutrition, biochemistry, microbiology, anatomy, pathology, pharmacology, parasitology, veterinary toxicology.





# UNIwersytet Przyrodniczy we Wrocławiu

## Slaughter animals and meat hygiene III Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.2337.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 9	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> laboratory classes: 25	

### Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written exam, oral exam, written credit, oral credit

W2	presents the methods of management and utilisation of animal by-products and waste associated with animal production	B.W15	written exam, oral exam, written credit, oral credit
W3	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written exam, oral exam, written credit, oral credit
W4	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written exam, oral exam, written credit, oral credit
W5	knows to an extensive degree the procedures of pre- and post-mortem inspection	B.W19	written exam, oral exam, written credit, oral credit
W6	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	written exam, oral exam, written credit, oral credit
W7	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written exam, oral exam, written credit, oral credit
<b>Skills - Student can:</b>			
U1	Performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	oral exam, oral credit
U2	is able to perform pre- and post-mortem inspection	B.U17	oral exam, oral credit
U3	assesses the quality of products of animal origin	B.U18	oral exam, oral credit
U4	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral exam, oral credit
U5	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	oral exam, oral credit
<b>Social competences - Student is ready to:</b>			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral exam, oral credit
K2	deepens his/her knowledge and improves skills	O.K8	oral exam, oral credit
K3	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral exam, oral credit

### Study content

No.	Course content	Activities
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1.	<p>1. Determination of chemical components of meat: fat, proteins, water</p> <ul style="list-style-type: none"> <li>- determination of protein content in meat according Kjeldahl method.</li> <li>- determination of fat content in meat according Soxlet method.</li> </ul> <p>2. Meat ripening determination of meat spoilage indicators</p> <ul style="list-style-type: none"> <li>- after slaughter chemical transformations of carbohydrates occurring in meat</li> <li>- after slaughter chemical transformations of nucleotides occurring in meat</li> <li>- after slaughter chemical transformations of proteins occurring in meat</li> <li>- meat quality deviation – stress myopathy</li> <li>- determination of ammonia in meat according Folina method</li> </ul> <p>3. Meat decay</p> <ul style="list-style-type: none"> <li>- reasons of meat decay</li> <li>- factors, rate and steps of meat decay</li> <li>- harmful factors for human health in spoiled meat</li> </ul> <p>4. Test for students (Classes in meat plant)</p> <ul style="list-style-type: none"> <li>- post mortem inspection of meat – checking manual</li> </ul> <p>5. Determination of factors of fat decay</p> <ul style="list-style-type: none"> <li>- features of animal fats</li> <li>- hydrolytic and oxidative putrefaction of fat inhibitors and stimulants</li> <li>- determination of acidity number of fat</li> <li>- determination of peroxides content in fat (Lea number).</li> <li>- determination of epihydrinic aldehyde (Kreis test)</li> </ul> <p>6. Meat quality deviation: smell, consistency, color. Dealings with meat expressing quality deviation</p> <ul style="list-style-type: none"> <li>- reasons of meat smell and color deviations</li> <li>- influence on meat safety</li> <li>- icterus – lipochromatosis differentiation - tests:</li> <li>- Martin,</li> <li>- alkohol-ether,</li> <li>- Van den Bergh,</li> <li>- Retzlaff</li> <li>- Thornton</li> </ul>	laboratory classes
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### **Entry requirements**

practical knowledge obtained during the trip to slaughterhouses in connection with the implementation of the subject Slaughter Animals and Meat Hygiene 2 and obtained during summer practice (80h). Theoretical knowledge obtained during the implementation of the subjects Slaughter Animals and Meat Hygiene 1 and Slaughter Animals and Meat Hygiene 2, as well as Sanitary Food Law.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Hygiene of food processing I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.0933.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 9	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 45	

### Goals

C1	The aim of the course is to give the students knowledge about most important processes used in food technology, about influence of each process on consumer health, about microbiological hazards related to different food of animal origin.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	technological processes used in production of animal origin foodstuffs	B.W17	written credit, observation of student's work, active participation, test

W2	hazard related to technological process used during processing of food of animal origin	B.W17	written credit, observation of student's work, active participation, test
W3	knows the hygiene requirements and obligatory law regulations implemented in processing of food of animal origin	O.W12	written credit, observation of student's work, active participation, test, performing tasks
W4	knows rules of consumer's health protection and surveillance on production of animal origin food	O.W11	written credit, observation of student's work, test
W5	knows and interprets the conditions of animal origin food production	B.W20	written credit, observation of student's work, test
<b>Skills - Student can:</b>			
U1	assess the parameters of technological processes and hygienic requirements in food industry	B.U18	observation of student's work, active participation, performing tasks, case study
U2	evaluate the quality of food of animal origin	B.U18	observation of student's work, active participation, performing tasks, case study
U3	interpret the results of microbiological and chemical examinations of food of animal origin	B.U22	observation of student's work, performing tasks, case study
<b>Social competences - Student is ready to:</b>			
K1	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student's work, active participation, performing tasks

## Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Healthy eating, basing rules of proper nutrition, main role of food technology, how to eat to stay healthy.</li> <li>2. Microbial pathogenicity: steps of microbial invasiveness, colonization, adhesion of bacteria, mechanisms of adherence</li> <li>3. Factors affecting microbial activity in food: pH, water activity, redox potential, temperatures: mesophilic, psychrophilic, thermophilic bacteria; change of water activity by physical and chemical processes and its influence on bacteria, the role of pH and red-ox potential in food.</li> <li>4. Food poisoning: kinds of food poisoning, food intoxications, systemic infections, mechanism of food poisoning, how to avoid food poisoning, the most popular food poisonings</li> <li>5. Bacterial defense against host immune system: bacterial defense against phagocytosis, bacterial defense against adaptive immune system, intracellular parasites.</li> <li>6. Foodborne protozoa: the most important protozoa transmitted by food: Giardia, Cryptosporidium, Toxoplasma, Cyclospora, life cycles, reservoirs, sources of infections, food of concern, control in food chain</li> <li>7. Allergens in food: law regulation about food allergens, main food allergens, difference between food allergy and food intolerance, mechanism of food allergy and food intolerance, protection of consumer against food allergies</li> <li>8. Foodborne viruses: foodborne viral infections, the most important viruses transmitted via food, viruses that cause gastroenteritis, hepatitis viruses, other viruses, sources of food contamination by viruses, epidemiology</li> <li>9. Foodborne botulism: infant type botulism, food involved in botulism, botulinogenic food, prevention against botulism</li> <li>10. Emergency pathogens transmitted via food : main pathogens of concern: Arcobacter butzleri, Mycobacterium avium, Aeromonas hydrophila, Hepatitis E, sources of pathogens, prevention, epidemiology.</li> <li>11. Food packaging and labeling: the role of packaging in food industry, primary, secondary, tertiary packaging, materials used for packaging, law requirements for packaging, evaluation of packaging materials , law requirements concerning food labeling in EU.</li> <li>12. Microflora of food processing plants and production facilities and its impact on food safety: microflora of food processing plants, microbiological contamination of production facilities and production equipment, microflora of the air in large and small food processing plants.</li> <li>13. The role of veterinary inspection in food processing plants: law requirements, main tasks of vets, cooperation with other inspections.</li> <li>14. Prerequisite Programs (PRPs), Sanitary Standard Operational Procedures (SSOP), Good Manufacturing Procedures, Good Hygienic Procedures (GMP/GHP) in food industry- practical approach, law regulations, methods of checking, veterinary surveillance.</li> <li>15. New eating rules: new nutritional pyramid, the most popular diet- pros and cons, diet food- pros and cons, superfoods .</li> </ol>	lecture
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2.	<p>1. Mechanical operations used in food technology: basic mechanical processes used in meat industry - grinding, mincing, mixing, filling, tumbling, characteristic of mechanical meat machineries - grinder, bowl cutter, tumbler, sanitary aspects of mechanical operations; chilling of food: classification of microorganisms according to their thermal growth conditions, characteristic of psychrotrophic and psychrophilic microorganisms, storage of food in chilling conditions.</p> <p>2. Storage of raw materials, cutting and dressing operations, classes of meat trimmings: conditions during carcasses storage, temperatures of meat storage, cutting into primal cuts, meat ageing, primal pork and beef cuts, classification of pork and beef meat trimmings, veterinary examination of meat trimmings, classification of slaughter by-products- classes in meat processing plant.</p> <p>3. Curing, salting and marinating: methods of curing- dry and wet curing, multi-needle injection curing, role of curing in meat technology, the role of nitrate and nitrite, health hazards connected with cured products, machines used for curing, role of salt in food preservation, microbiology of salted products, marinating as a method of food preservation.</p> <p>4. Smoking, drying, freeze-drying: role of smoking in meat processing, types of smoking: cold, warm, hot smoking, smoking with smoke preparates, microbiology of smoked products, health hazards connected with smoked products, methods of food drying, natural and machine drying, machines used for drying, technology of freeze drying, triple point of water, role of freeze drying in food technology.</p> <p>5. Thermal treatment - freezing of food: - shelf life, spoilage, microbiological safety, freezing of food - types, shelf life, susceptibility of microorganisms, defrost of food.</p> <p>6. Hygiene and technology of animal fat processing: classification and chemical composition of fat raw materials, veterinary inspection of fat raw materials, hydrolytic and oxidative rancidity, Lea number, Kreis test, rendering of animal fat raw materials, production of lard and tallow, microbiological safety of rendered animal fat</p> <p>7. Storage of food in vacuum and modified atmosphere: technology of vacuum and MAP packaging, microbiology of vacuum and MAP packed products, gases used in MAP technique, MAPAX technique in food packaging, spoilage of vacuum packed and MAP products.</p> <p>8. Hygiene, technology and microbiology of egg and egg products: microbiology of eggs, good hygienic practice during egg production, production of powdered eggs, microbiology of eggs, Salmonella in eggs, spoilage mechanisms.</p> <p>9. Thermal treatment - high temperatures: definition and history of food thermal processing, botulinogenic food, pasteurization of food, SSP products, sterilization of food, types of food sterilization, appertization, microbial inactivation parameters used in thermal processing of food - F, z, L, A, D, survival curve, TDT curve, thermophilic microorganisms.</p> <p>10. Thermal treatment - high temperatures - botulism: intoxication, toxicoinfection, botulinum toxins, foodborne botulism, infant-type botulism, wound botulism, pathogenesis of botulism, prevention of foodborne botulism.</p> <p>11. Hygiene and technology of honey production (types of honey and bee products, evaluation of honey, examination of honey, organoleptic properties, law regulations. Hygiene and technology of slaughter by products (types of slaughter by products, using of such raw material for foodstuff production, edible and inedible products, preservation, spoilage, natural casings.</p> <p>12. Hygiene in food plants in practice- examination of clothes and hands: microbiological criteria for personal hygiene, swabbing, hygiene of clothes, methods of hand disinfection, microbiological status of hands, permanent and non-permanent microflora.</p> <p>13. Organoleptic evaluation, sensory analysis- practical aspects and organoleptic examination of sausages: definition of sensory analysis and organoleptic examination, role of sensory analysis in food quality evaluation, gustometry, sensory analysis laboratory, taste sensitivity tests, sensory analysis of sausages - external, cross-section, mouth-feel examination, protocol of organoleptic examination.</p> <p>14. Hygiene and technology of meat cans production: types of cans, sterilization and pasteurization of meat cans, F value and meat cans, durability of meat cans, chilling after thermal treatment, microbiology of meat cans, technological production processes of sterilized and pasteurized meat cans. Practical laboratory examination of meat cans: thermostatic evaluation of pasteurized and sterilized cans, examination of cans tightness, microbiology examination, sensory evaluation of meat cans, swelling of cans, types of swelling, double seam examination, spoilage of meat cans.</p> <p>15. Organoleptic examinations of fish and fish products: microbiological and chemical hazards connected with fish and fish products, raw fish examination, evaluation of freshness, microbiology of fish meat and fish products, sensory evaluation of fish products- fish marinations, smoked fish, fish cans.</p>	laboratory classes
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## **Entry requirements**

Animal Anatomy, Animal Physiology, Biochemistry, Veterinary Microbiology, Food law, Slaughter animals and meat hygiene





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical immunology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.0409.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 9	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 14, laboratory classes: 16	

### Goals

C1	The goal of the course is to teach the students current issues in the field of clinical immunology of dogs, cats and horses, including autoimmune diseases, neoplasia, allergies, immunodeficiencies, as well as basics of serotherapy and treatments used in immunomodulation. The students learn how to diagnose immune-mediated diseases using available diagnostic methods.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	principles and mechanisms underlying immune-related diseases and therapy	O.W1	test, participation in discussion

W2	the etiology, pathogenesis and clinical symptoms of diseases involving the immune system, including immunological deficiencies and autoimmune diseases, and the principles of therapeutic management	O.W3	test, participation in discussion
W3	diagnostic and therapeutic methods appropriate for immune diseases of dogs, cats and horses	O.W4	test, participation in discussion, case study
W4	mechanisms of pathology of elements of the immune system	B.W2	test, participation in discussion
W5	principles of diagnostic procedures, including differential diagnosis, and therapeutic management in the case of diseases of the immune system of dogs, cats and horses	B.W4	test, participation in discussion, case study
W6	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	test, participation in discussion, case study
W7	Knows and explains the mechanism of action of immunomodulating drugs and drugs used in serotherapy	B.W4	test, participation in discussion, case study
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, test, participation in discussion, case study
U2	plan diagnostic procedures in diseases of the immune system	O.U3	observation of student's work, test, participation in discussion, case study
U3	Analyze the obtained results while discussing clinical cases.	B.U6	participation in discussion, case study
U4	Selects the appropriate treatment in the case of diseases related to the immune system	B.U13	test, case study
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work, participation in discussion, case study
K2	deepens his/her knowledge and improves skills	O.K8	observation of student's work, participation in discussion, case study
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student's work, participation in discussion, case study

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Pathomechanism of immune-related diseases. Laboratory tests in immunological diseases.</li> <li>2. Endocrine glands immunology. Joint immunology.</li> <li>3. Immunology of the muscle tissue and the nervous system.</li> <li>4. Immunology of the gastrointestinal tract. Systemic autoimmune diseases.</li> <li>5. Immunotherapy, immunomodulation.</li> <li>6. Current issues of equine immunology.</li> <li>7. Immunological phenomena accompanying neoplastic processes.</li> </ol>	lecture
2.	<ol style="list-style-type: none"> <li>1. Clinical aspects of neoplasms of the immune system.</li> <li>2. Serum, monoclonal antibodies and stem cells in therapy.</li> <li>3. Immunemediated cytopenias.</li> <li>4. Skin immunology.</li> <li>5. Primary immunodeficiencies</li> <li>6. Clinical Cases - Dogs and Cats I</li> <li>7. Clinical cases - dogs and cats II</li> <li>8. Clinical cases - horses</li> </ol>	laboratory classes

### **Entry requirements**

Knowledge in the area of veterinary immunology, pathophysiology I and II, Clinical and laboratory diagnostics I and II



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Academic entrepreneurship Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100AO.3468.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> general subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 9	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> practical classes: 15	

### Goals

C1	Practical classes of a project character are to prepare students to start, run or develop their own business. The project should relate to broadly defined academic entrepreneurship in the area of study or an anticipated/planned area of economic activity in Poland or abroad.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the relationship between the field of study and business activities, cost and revenue structure in a company	C.W2	project

W2	free market ideas and competition challenge	C.W2	project, observation of student's work
W3	the concept of profitability and economic viability of a planned undertaking	C.W2	project, active participation
<b>Skills - Student can:</b>			
U1	define data relevant for a given business issue, appropriately select sources and information from them	C.U2, C.U3	presentation
U2	prepare a cost and revenue structure, determine the break-even point and prepare a SWOT analysis of the planned business venture	A.U18, C.U3	presentation
U3	effectively present and defend their own business ideas	A.U22, C.U4	presentation
U4	plan and organise individual and team work	C.U4	presentation
<b>Social competences - Student is ready to:</b>			
K1	think and act in an entrepreneurial way, to implement projects taking into account social responsibility of business	O.K1	observation of student's work, active participation
K2	individual and group searching for directions of economic development	O.K10, O.K11, O.K9	observation of student's work, active participation

## Study content

No.	Course content	Activities
1.	<p>Students complete their own or commissioned e.g. a company project in the field of entrepreneurship using their knowledge and expertise of the tutor(s).</p> <p>Searching for own and/or new direction of activity also with the use of group work methods. Definition of important parameters and resources for the implementation of the project. Estimation of market size and capacity.</p> <p>Student can estimate the target group for the veterinary practice.</p> <p>Determine fixed, variable and total costs for a selected business venture and locate the venture in real free market trends.</p> <p>Determine marketing tools with the respect for the veterinary self-governing regulations. Estimation of the key areas of activities and determine quality service characteristics.</p> <p>Areas of business and customer relationship responsibilities. Ethical issues of the veterinary business as a profession of public trust.</p> <p>Preparation of a product sales forecast, determination of the break-even point (BEP). SWOT analysis and choice of future development strategy. Control of the vet practice development and progress</p> <p>Presentation and defence of the prepared project.</p>	practical classes

## Entry requirements

The student has preliminary ideas about the direction he will study at the second degree and about his professional career

after graduation.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Preventive veterinary medicine I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J100BO.1899.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 9	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 30	

### Goals

C1	Preparation of students to work in large farms of livestock animals. During lectures, classes and tasks directed to solve real farm problems, students are prepared to play a role of modern farm veterinarian focused on the herd health protection.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	defines the rules of cooperation with the breeder	B.W5, B.W9, O.W4, O.W8	written credit
W2	identifies the tasks of the farm veterinarian in large herd breeding facilities	A.W10, B.W6, B.W9, O.W3, O.W8	written credit

W3	identifies the most common health problems in herds of cattle, pigs, sheep and goats	A.W10, B.W6, O.W2, O.W8	written credit
W4	defines the basic methods of preventing and treatment diarrhea in cattle and pig herds	A.W5, B.W4, O.W3, O.W8	written credit
W5	the role of colostral immunity in protecting the health of young farm animals	A.W1, B.W5, B.W6, O.W1, O.W2	written credit
W6	rules for the use of farm data and laboratory examination in the herd health monitoring	A.W11, B.W20, B.W5, B.W6, B.W9, O.W8	written credit
<b>Skills - Student can:</b>			
U1	select a representative group of animals in healthy and problem herds - preparation for animal health monitoring in the herd	A.U7, B.U2, O.U1, O.U3, O.U4, O.U7	written credit
U2	is able to monitor animal health status in a large farm	A.U12, B.U6, O.U2, O.U4	written credit
U3	is able to utilize the determination of acute phase proteins and selected biochemical parameters of blood, urine, milk in the monitoring the herd health	B.U6, O.U2, O.U3, O.U4	written credit
U4	assess the status of colostral immunity of young farm animals and implement corrective measures in cases of failure	A.U7, B.U2, B.U20, B.U6, O.U10	written credit
<b>Social competences - Student is ready to:</b>			
K1	skilful use of various sources of information available on the farm to protect the health of animals	O.K4, O.K5, O.K8	written credit
K2	building partnership cooperation with employees of livestock farms	O.K1, O.K11, O.K3, O.K9	written credit
K3	creating a way of cooperation with a breeder focused on the protection of the health of the livestock herd	O.K1, O.K11, O.K3, O.K9	written credit

## Study content

No.	Course content	Activities
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1.	<p>1. The idea of herd health care. Actual trends in dairy farms. Evolution of veterinary tasks in present livestock animals' keeping farms. Relations advising veterinarian - owner. Expectations of producers against farm veterinarian. How to convince the breeders for herd health protection. Tasks of preventive veterinarian. Factors affecting the herd.</p> <p>2. Herd health care (cont.). Basic requirements of farm veterinarian necessary to start the herd care. Most important principles of monitoring the herd health. Why and how do the laboratory monitoring? Proposal of monthly reports of monitoring of diseases/threats in dairy farm. Periodicity in herd health monitoring. Desired features of documentation system.</p> <p>3. Acute phase proteins (APPs) in veterinary diagnostics. Their utilization in herd health monitoring. The manner of the reaction to inflammatory stimuli. Selected functions of APPs in course of the inflammation. Features of haptoglobin and fibrinogen and their application in veterinary practice (examples).</p> <p>4. Newborn care (calves). Monitoring of the parturition. procedures of newborn calf care. Hygiene regime of newborn calves boxes. Access to drinking water until first day of life. Biosecurity in delivery-stall and at rearing the calves. Dynamics of blood serum immunoglobulins in calves with failure of passive transfer (FPT) during first month of life. Economical consequences of FPT.</p> <p>5. Manners of the transfer of passive immunity from mother to the offspring. Problems in large farm systems. Consequences of the failure of passive transfer. Short- and long-term consequences of neonatal pathology.</p> <p>6. Newborn care (piglets). Stillborn piglets – causes and features. Losses of piglets caused by neonatal asphyxia. Methods of piglets' vitality score. Intrauterine infection. development of the immunity in piglets.</p> <p>7. Calculation of costs of pathology , losses and profitability in swine farm</p> <p>8. Preparation of rules for swine farm prophylactic programmes</p> <p>9. Newborn care (lambs and goat kids). Optimizing the periparturient survival of lambs/goat kids. Hypothermia treatment in neonates. The most common causes of lamb/goat kids mortality. "Downer kid syndrome" , „watery mouth" in lambs. Congenital muscle dystrophia (white muscle disease). Respiratory Distress Syndrome. Congenital copper deficiency in lambs.</p> <p>10. Methods of newborn calves keeping. The evaluation of adequacy of the passive transfer in calves. Advantages and disadvantages of different methods of colostrum immunity evaluation. Introduction of the programmes of colostrum immunity in the farms of different management and size.</p> <p>11. Economical profits from supplemental rearing piglets at wet nurses. Calculation of immunoprophylactic programme based on selected example in whole production cycle. Advantages and disadvantages of different systems of pig keeping. Factors affecting pigs health and productivity.</p> <p>12-13. Problems with herd immunity status. Principles of immunoprophylactics in the herd. The influence of nutrition. The protection of innate immunity mechanisms. Modulating the specific immunity. Programme of herd immunity status evaluation. Risk factors in different production groups of dairy herd.</p> <p>14. Homeostasis of alimentary tract and its disturbances. Digestion and absorption in different segments of digestive tract of healthy, diarrheic and convalescent calves after oral fluid therapy. Strategies of prevention of the alimentary tract infections. Risk factors of the diarrhoea in barn and calfbarn. Principles of immunoprophylactic programmes management in large farms of ruminants. Prophylactic application of allo- and xenogenic immunoglobulins. Economical aspects of diarrhoea in the farm.</p> <p>15. Advantages and disadvantages of different systems of cattle keeping. Characterization of the farm. Targets of yield and the occurrence of diseases in dairy farms. Advantages and disadvantages of tethered and loose systems of dairy cows keeping. Factors influencing the yield and the health of dairy cows. The methods of the detection of threats in the farm.</p>	lecture
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2.	<p>Block I. TASKS OF FARM VETERINARIAN IN HERD HEALTH MONITORING</p> <ol style="list-style-type: none"> <li>1. Differences between classical veterinarian and preventive veterinarian. Dependences in the herd between A-human, B-nutrition, C-environment. Individual patient and collective patient-herd. Target and selection of laboratory examinations.</li> <li>2. Acute phase proteins (APPs) – the utilization in veterinary diagnostics. Determination of fibrinogen according to Millar et al. Application of other serum proteins in the evaluation of herd health.</li> <li>3. Determination of haptoglobin according to Spooner. Application of APPs in the disease monitoring. Evaluation of cases.</li> <li>4. Selection of farm representative group. Results of laboratory examinations – their sorting and methods of analysis. Performing the metabolic profiles in farms. Methods of presenting the results (table system, diagrams). Elaboration by students of the results of representative group examination (part I). Preparation of tasks for next class.</li> <li>5. Elaboration by students of the results of representative group examination (part II). Interpretation of the results of representative group for the herd.</li> </ol> <p>Block II. IMMUNITY OF FARM ANIMALS</p> <ol style="list-style-type: none"> <li>6. Immunity of the neonate. Division of mammals according to way of transfer the maternal immunity to the progeny. Methods of checking the colostral immunity in farm animal neonates. Division of immunity factors of the colostrum: humoral specific; humoral innate; cellular specific; cellular innate.</li> <li>7. Field tests of checking the colostral immunity in farm animals' neonates. Foals. Determination of serum immunoglobulins using Glutaraldehyde Coagulation Test (GCT). Interpretation of the results. Treatment of foals with failure of passive transfer (FPT) and partial failure of passive transfer (PFPT). Calculating the plasma/serum volume for interventive application in foals.</li> <li>8. Calves. Determination of immunological value of the colostrum. Methods of colostrum preservation and management of „colostrum bank“. Effectiveness of the colostral immunity transfer. Effectiveness of the transfer of passive immunity. Zinc Sulphate Turbidity Test (ZSTT). Cooperation of calf immune mechanisms with colostral immunity. Differences in the content of Ig in the colostrum and milk – practical aspects. The influence of timing and colostrum Ig concentration on the efficiency of Ig absorption.</li> <li>9. Sodium Sulphite Turbidity Test (SSTT). The evaluation of the results for individual calf and for the farm; Index of total Ig at 3-4th week of life. Calculation of the Index for different farms, their interpretation and planning of improving strategies according to farm specificity. Associations between colostral immunity and the future of heifer-calves.</li> <li>10. Problems of lambs' and goat kids' immunity in large herds. Transfer of colostral immunity in sheep and goat, factors affecting the transfer associated with the dam, human and the newborn. FPT in lambs and goat kids. Criteria of evaluation the colostrum and the newborn serum Ig in lambs and goat kids. "Colostrum bank" and the application of cow colostrum, indications. Risk of hemolytic anemia.</li> <li>11. Problems of piglets' immunity in large herds. Differences of Ig content in the colostrum and milk –practical importance. Factors affecting the effectiveness of passive immunity transfer (associated with the dam, human and the newborn). The influence of low and high antigenic stimulation on the rearing effects of piglets. Prevention of excessive antigenic stimulation in swine.</li> <li>12. Elaboration of management programmes of first day care of calves and piglets in relation to farm management. Case diagnosis. Tasks of type case-oriented education.</li> </ol> <p>Block III. LOSSES IN YOUNG STOCK REARING – CAUSED BY ALIMENTARY TRACT PATHOLOGY</p> <ol style="list-style-type: none"> <li>13. Non-infectious and infectious causes of diarrhoea. Disturbances of intestinal homeostasis.</li> <li>14. Dehydration: types, differential signs. Estimated and field methods of calculation of water and electrolyte losses for the individual and group of animals. Calculation of water and electrolyte deficit. Evaluation of intensity of acidosis based on clinical signs.</li> <li>15. Comparison of selected commercial rehydrating preparates – calculation of electrolyte content. Principles of rehydration, choice of ways of rehydration within the herd. Planning the volume and composition of rehydrating fluids in the treatment of large groups of calves and piglets.</li> </ol>	laboratory classes
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## **Entry requirements**

Animal Breeding; Technologies in Animal Production; Animal Nutrition; Animal Physiology; Biochemistry; Microbiology; Veterinary Immunology; Ethology, Welfare and Animal Protection; Animal Hygiene; Diseases of Farm Animals



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Avian diseases – Clinical internship Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0113.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> clinical classes: 40	

### Goals

C1	The aim of the course is to provide students with basic knowledge on: modern technology breeding for different species of birds, clinical and post-mortem examination different species of birds, analyses and interpretations results of the tests
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge – Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	observation of student's work, active participation
W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student's work, active participation
W3	knows to an extensive degree and distinguishes the principles of animal raising and husbandry, taking into account the principles of animal nutrition, principles of maintaining their welfare and principles of production economics;	O.W8	observation of student's work, active participation
W4	knows to an extensive degree and distinguishes the principles of poultry raising and husbandry, taking into account the principles of nutrition, principles of maintaining their welfare and principles of production economics	O.W13	observation of student's work, active participation
W5	the student knows the principles of conducting a clinical examination and monitoring the health of poultry and ornamental birds	B.W5	observation of student's work, active participation
W6	the student knows the methods of dealing with the results of laboratory and clinical tests of birds	B.W6	observation of student's work, active participation
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, active participation
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, active participation
U3	issues veterinary medical opinion and certificate	O.U7	observation of student's work, active participation
U4	is able to cooperate with a breeder and manager of a poultry farm	A.U15	observation of student's work, active participation
U5	the student is able to prepare transparent case reports and keep documentation in accordance with the applicable regulations	A.U14	observation of student's work, active participation
U6	the student is able to conduct a medical and veterinary interview in order to obtain detailed information about the course of the disease on the farm	B.U2	observation of student's work, active participation
U7	conduct a complete clinical examination of the bird	B.U3	observation of student's work, active participation
U8	the student knows how to collect and secure samples for research and laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	observation of student's work, active participation
U9	the student knows how to perform an autopsy of a bird with a description, take samples and secure them for laboratory tests	B.U16	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			

K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, active participation
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work, active participation
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

### Study content

No.	Course content	Activities
1.	Clinical and post-mortem examination of poultry, pigeons or ornamental birds - principles of clinical and post-mortem diagnosis of birds Microbiological, PCR and serological diagnostics of bird diseases - rules for the interpretation of results Departure to a poultry farm - poultry flock inspection, medical and veterinary treatments at a poultry farm Reproductive issues (insemination) and laying problems (egg quality)	clinical classes

### Entry requirements

required passed exams: breeding and animal nutrition, biochemistry, microbiology, anatomy, pathology, pharmacology, parasitology, veterinary toxicology, avian diseases



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of dogs and cats - Clinical internship I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0494.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> clinical classes: 60	

### Goals

C1	The aim of the course is to provide students with practical knowledge of: clinical examination of animals, diagnosing diseases of dogs and cats and differential diagnosis of specific disease, collection and protection material for laboratory tests, interpret laboratory tests results and relate them to the clinical condition of the patient and the use of appropriate treatment (including operations) and disease prevention in dogs and cats.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	oral credit
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	oral credit
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	oral credit
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	oral credit
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	oral credit
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit
U3	plans the diagnostic procedure	O.U3	oral credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	oral credit
U5	issues veterinary medical opinion and certificate	O.U7	oral credit
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit
<b>Social competences - Student is ready to:</b>			



K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral credit
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit
K3	uses the objective sources of information	O.K4	oral credit
K4	formulates conclusions from own measurements or observations	O.K5	oral credit
K5	formulates opinions regarding various aspects of professional activity	O.K6	oral credit
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	oral credit
K7	deepens his/her knowledge and improves skills	O.K8	oral credit
K8	communicates with the co-workers and shares knowledge	O.K9	oral credit
K9	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit

## Study content

No.	Course content	Activities
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1.	<p><b>INFECTIONS DISEASES</b></p> <p>1. Epizootic management and currently binding documentation concerning management in suspected rabies in dogs and cats: rules of observing the animals suspected of rabies, differential diagnosis, intravital diagnosis. The procedure and documentation in official observation for rabies in animals observed after biting a human: taking epizootic history from the owners of animals observed for rabies, rules of official observation by a decision of the County veterinary doctor and observation at the expense of the owner conditions of the premises meeting the requirements for temporary detention of observed animals principles of cooperation with the County veterinary doctor and SANEPID. Vaccination against rabies: performance of vaccination, rule of documentation for vaccination against rabies. Collection of blood samples for testing blood samples and rules of antibody titration and interpretation of examination results in the case of dogs going abroad of Poland in respect to international requirements for rabies.</p> <p>2. Serological (ELISA, DIF, IFAT, OA, RIVIta test) and microbiological (cultures) examinations of material from clinical cases (EPI-VET laboratory). Evaluation of preparations, principles for interpretation of serological tests and possible procedures in infectious diseases of dogs (distemper, leptospirosis, Rubarth disease, canine coronavirus infection, canine parvovirus infection, ehrlichiosis, borreliosis, kennel cough and FIV, FIP, FeLV, feline distemper, feline rhinitis, mycoplasmosis, chlamyphilosis, herpes viruses infection). Principles of preparation of material for diagnostic tests using techniques of molecular biology and flow cytometry (collection samples, lymphocyte raft preparation, DNA isolation, isolation of subpopulations of haemocytes in evaluation of the background immune thrombocytopenia). Interpretation of the results of PCR examination in animals at different stages of infection and in vaccinated animals.</p> <p>3. Veterinary proceedings in case of infectious diseases in dogs and cats: proceeding in animals kennels, principles of vaccination and using appropriate preparations, principles for conducting therapy, principles of combining sick animals, animals after recovery, healthy animals, bioassurance. Vaccinations for dogs and cats.</p> <p><b>INTERNAL DISEASES</b></p> <p>1. Practical diagnosis and treatment of cardiovascular diseases in dogs and cats (congenital and acquired heart diseases, vascular diseases, heart ultrasound, heart electrocardiography).</p> <p>2. Practical diagnosis and treatment of skin diseases in dogs and cats (bacterial dermatitis, fungal skin diseases, allergic dermatitis, parasitic skin diseases, autoimmune skin diseases, additional tests used in the diagnosis of skin diseases).</p> <p>3. Practical diagnosis and treatment of gastrointestinal diseases in dogs and cats (diseases with vomiting signs, diseases with diarrhea or difficult passing of feces, endoscopic diagnostics of anterior and posterior part of the alimentary tract).</p> <p>4. Practical diagnosis and treatment of liver and pancreatic diseases in dogs and cats (inflammatory and noninflammatory diseases of the liver and biliary tract, laboratory and imaging diagnostics of liver diseases, liver biopsy, pancreatitis, exocrine pancreatic insufficiency, laboratory diagnostics of pancreatic diseases).</p> <p>5. Practical diagnosis and treatment of respiratory diseases in dogs and cats (diseases with sneezing signs, diseases with cough and dyspnoea signs, endoscopic diagnostics of diseases of nasal cavities, larynx, trachea and bronchi, broncho-alveolar lavage).</p> <p>6. Practical diagnosis and treatment of nervous system diseases in dogs and cats (inflammatory and noninflammatory diseases of the brain, meninges and spinal cord, differentiation of causes of epileptic seizures, laboratory and imaging diagnostics of nervous system diseases, puncture and collection of cerebrospinal fluid).</p> <p>7. Practical diagnosis and treatment of urinary tract diseases in dogs and cats (diseases of kidney and lower urinary tract, laboratory and imaging diagnostics of the urinary system, cystoscopy, kidney biopsy).</p> <p>8. Practical diagnosis and treatment of endocrine diseases in dogs and cats (disturbances in the function of the thyroid, adrenal gland and pancreas, laboratory diagnostics of endocrine diseases).</p> <p>9. Principles of diagnosis of neoplastic diseases and the principles of tumours therapy.</p> <p><b>SURGERY</b></p> <p>1. Surgery in the abdominal cavity in dogs and cats (the alimentary tract - surgery of the stomach, intestines and liver, the urinary system - surgery of the kidneys, ureters, urinary bladder and urethra, the reproductive system - surgery of the ovaries, testes, uterus, vagina, prostate and mammary gland; splenectomy, oncological operations).</p> <p>2. Surgery in the chest in dogs and cats (thoracotomy, surgery of the thoracic part of the esophagus, surgery of the thoracic part of the trachea, vascular anomalies in the chest, the operating procedures of mediastinum, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, lung lobe resection).</p> <p>3. Surgery in the neck and head (surgery of the oral cavity and throat, surgery of the sinuses and nasal cavities, surgery of the larynx and cervical part of the trachea).</p> <p>4. Orthopedic joint procedures (diagnostics, conservative and surgical treatment).</p> <p>5. Veterinary traumatology (fractures, luxations), diagnostics, surgical and conservative treatment).</p> <p>6. Anesthesiology (methods of anesthesia used in various surgical procedures, intensive care, cardiopulmonary resuscitation).</p> <p>7. Imaging diagnostic of surgical patients (X-ray, ultrasound).</p> <p><b>REPRODUCTION</b></p> <p>1. The practical gynecological examination of bitches and queens: anamnesis, anamnesis questionnaire, clinical examination, cytological examination of the vagina. Vaginal swabs collection. Swabs staining. Cytological evaluation of vaginal swabs. Review of preparations from different physiological and pathological states. Collection material from the urogenital system for additional tests.</p> <p>2. Endoscopic examination of the reproductive tract: patient preparation and the technique, principles and interpretation of results, determination of the oestrus cycle phase on the basis of endoscopic examination, pathological lesions of the reproductive tract, methods for uterine cervix catheterization.</p> <p>3. The endocrinological examination of reproductive functions in small animals: collection of material, determination and analysis of concentrations of progesterone, estrogen and other sex hormones in the blood, hormonal stimulation tests, interpretation of results, analysis of the dynamics of changes in sex hormone concentrations in the blood. The principles for determining the optimum date for insemination of females.</p> <p>4. The ultrasound examination of the reproductive system in small animals: ultrasound examination of the ovaries in various physiological and pathological states, ultrasound examination of the uterus and other parts of the reproductive system, interpretation of results.</p> <p>5. Obstetric-gynecological procedures in small animals: caesarean section - surgical technique, preparation for surgery, postoperative proceeding, female sterilization, male castration, total and partial mastectomy, hysterectomy and ovariectomy in females with pyometra.</p>	clinical classes
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## **Entry requirements**

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, Surgery and anesthesiology, Imaging diagnostic, Diseases of dogs and cats



# UNIwersytet Przyrodniczy we Wrocławiu

## Diseases of farm animals - Clinical internship I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0497.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> clinical classes: 60	

### Goals

C1	The aim of the course is to provide students with practical knowledge on: clinical examination of animals, diagnosis of livestock diseases and differential diagnosis of individual disease entities, collection and preservation of material for laboratory tests, interpretation of laboratory test results and relate them to the patient's clinical condition, and apply appropriate treatment (including surgical treatment) to livestock diseases and implement preventive measures.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	in detail the uses of veterinary medicinal products for the prevention and treatment of livestock	O.W5	oral credit, active participation

W2	the principles and methods of diagnostic and therapeutic procedures applied in diseases of farm animals	B.W4	oral credit, active participation
W3	how to conduct a clinical examination and monitoring of livestock health	B.W5	oral credit, active participation
W4	the principles of selection of animals for mating, techniques and biotechnology of livestock breeding	B.W12	oral credit, active participation
<b>Skills - Student can:</b>			
U1	analyze and interpret clinical symptoms, anatomopathological changes and test results, make a diagnosis of a state of disease in animals, to make appropriate therapeutic or prophylactic decisions in different species of livestock	O.U2	oral credit, active participation
U2	communicate in understandable language with the animal owner and with other veterinarians. Maintains records of cases of illnesses of livestock	A.U12, A.U14	oral credit, active participation
U3	handle farm animals in a safe and humane manner	B.U1	oral credit, active participation, performing tasks
U4	conduct a veterinary medical history to obtain accurate information on an individual animal or an entire herd of animals	B.U2	oral credit, active participation
U5	perform a complete clinical examination of individual livestock species	B.U3	oral credit, active participation, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	demonstrate responsibility for his/her decisions and presents an attitude in line with ethical principles and takes actions based on the code of ethics in professional practice	O.K2	active participation
K2	be creative and to formulate conclusions from his/her own measurements or observations as well as opinions concerning various aspects of professional activities	O.K5, O.K6	active participation
K3	be aware of the need to deepen knowledge and improvement of skills	O.K8	active participation
K4	be aware of operating under potential conditions of uncertainty and stress	O.K10	active participation

## Study content

No.	Course content	Activities
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1.	<p><b>INFECTIOUS DISEASES</b></p> <ol style="list-style-type: none"> <li>1. Infectious diseases in farm animals: FMD, BrB, EBB. Sampling material for diagnosis FMD - in cattle, sheep, goat and swine, BrB - cattle, sheep, goat and swine, EBB - cattle. Prossidings with farm animals with suspected and after diagnosis of FMD, BrB, EBB infection. Practical procedure: identification, clinical examinations, age and time of production in cattle. Different clinical diagnosis of FMD, BrB, EBB in farm animals.</li> <li>2. Infectious diseases in farm animals - Rabies. Prossidings with farm animals before and after diagnostics rabies infection. Practical procedure: identification, clinical examinations, age and time of production in cattle, sheep, goat and swine. Practical cooperation with National Veterinary Sugeron and with Sanepid (documents). Vaccination against Rabies in farm animals - prevention and special vaccination farm animals.</li> <li>3. Infectious diseases sheep and goat. Material for diagnosis TBR in cattle, sheep and swine. Prossidings with farm animals after diagnostics results, practical procedure: identyfication, clinical examinations, age and time of production in cattle. Alergic diagnosis (tuberculinisation) in farm animals with Bovituberculin and Avituberculin.</li> <li>4. Infectious diseases in sheep (ekhtyma and whitlow). Prossidings with sheep before and after laboratory diagnosis, Practical procedure: identification, clinical examinations, age and time of production in cattle. Qualification infected animals. Choice of method of therapeutics method. Practical prevention - vaccination and bath in sheep with enzootic and epidemic diseases.</li> <li>5. Infectious diseases in swine. Clinical examination in the direction PRDC and PIDC. Sampling for laboratory diagnosis (blood, etc.) - serology and microbiology. Practical prevention PRDC and PIDC.</li> <li>6. Infectious diseases in farm animals - laboratory diagnosis bacterial and viral diseases. Practical procedures with contagious samples. Practical diagnosis: serological tests (ELISA, iIF, dIF, OA) and bacteriology examinations from clinical cases. Practical interpretation of laboratory investigations.</li> <li>7. Infectious diseases in farm animals. Practical training with documents in Veterinary Sugeron with statistics and data base about infection diseases in Poland and UE).</li> </ol> <p><b>INTERNAL DISEASES</b></p> <ol style="list-style-type: none"> <li>1. Animal taming.</li> <li>2. Collection of material for tests (blood, feces, urine, rumen contents, fluid from body cavities), techniques of medicaments administration.</li> <li>3. Practical recognition (trichogram, scrapings, test with tape, cytology) and treatment of skin diseases.</li> <li>4. Practical recognition and treatment of respiratory system diseases.</li> <li>5. Practical recognition and treatment of digestive system diseases.</li> <li>6. Practical recognition and treatment of musculoskeletal and nervous system disease.</li> <li>7. Practical recognition and treatment of metabolic diseases.</li> <li>8. Practical recognition and treatment of urinary system diseases (including endoscopy of bladder).</li> </ol> <p><b>SURGERY</b></p> <ol style="list-style-type: none"> <li>1. Surgical treatment of digestive system diseases of ruminants and swine.</li> <li>2. Dehorning in cattle</li> <li>3. Practical performing of anesthesia in farm animals</li> <li>4. Practical recognition and treatment of fingers diseases in farm animals.</li> </ol> <p><b>REPRODUCTION</b></p> <ol style="list-style-type: none"> <li>1. Gynecological examinaton per rectum of cows and heifers- diagnosis of state of reproductive tract, introduction of proper treatment</li> <li>2. Gynecological examinaton per vaginam of cows and heifers- diagnosis of state of reproduction tract, introduction of proper treatment</li> <li>3. Ultrasound evaluation of reproductive tract of cattle- diagnosis of state of reproductive tract, introduction of proper treatment</li> <li>4. Catheterization of bladder, catheterization of cervix</li> <li>5. Assistance during parturition (conservative and surgical) for females of farm animals</li> <li>6. Performing fetotomy</li> <li>7. Examination for pregnancy in females of farm animals ( external, internal, ultrasound, ultrasonic).</li> <li>8. Performing of anesthesia useful in obstetrics and ginecology in farm animals</li> <li>9. Clinical examination and evaluaton of mammary gland in cattle, field trial of milk and introduction of proper treatment in case of mastitis</li> <li>10. Gynecological examinaton in sheeps and goats</li> <li>11. Clinical examination of mammary gland in a small ruminants and swine</li> <li>12. Gynecological examinaton sows- clinical and ultrasound evaluation of reproductive tract</li> </ol>	clinical classes
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## **Entry requirements**

Prior completion of subjects: Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, Surgery and anesthesiology, Imaging diagnostic, Diseases of farm animals, Andrology.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of horses - Clinical internship I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0501.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> clinical classes: 40	

### Goals

C1	Practical independent examination and treatment of horses - patients of the Equine Clinic, discussion of cases, presentation with a demonstration and discussion of the presented cases
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			



W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
U3	plans the diagnostic procedure	O.U3	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks

K3	deepens his/her knowledge and improves skills	O.K8	written credit, oral credit, active participation, presentation, participation in discussion, performing tasks
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### Study content

No.	Course content	Activities
1.	<p>Practical classes with patients of the Horse Clinic. Procedures, as the case may be, include:</p> <ul style="list-style-type: none"> <li>• diagnosis and treatment of infectious and non-infectious diseases</li> <li>• use of specialized diagnostic equipment</li> <li>• taking samples for laboratory tests (bacteriology, biochemistry, cytology, endocrinology, histopathology)</li> <li>• diagnosis of reproductive disorders in relation to individual animals and herds</li> <li>• using methods of assisted reproduction and artificial insemination of horses</li> <li>• diagnosing and conducting pregnancy in mares</li> <li>• delivering births by bloodless and bloody methods</li> <li>• postpartum care for mare - methods for subtracting retained fetal membranes</li> <li>• care for the newborn, prevention and treatment of foal diseases</li> <li>• examination of stallions for fitness for reproduction with semen collection and assessment</li> <li>• surgery on the testicles, penis, foreskin and accessory glands</li> <li>• the use of modern methods of therapy and prevention as well as modern drugs</li> <li>• moving horse examination and lameness diagnostics</li> <li>• use of diagnostic and therapeutic procedures in horse orthopedics</li> <li>• surgery on the limbs</li> <li>• treatment of diseases of the digestive system of horses, including oral and dental diseases</li> <li>• surgery in the treatment of equine diseases of horses</li> <li>• dietitian and horse nutrition</li> <li>• parasitological prevention and recognition of parasite invasion in horses</li> <li>• immunology and immunoprophylaxis of horses</li> <li>• diagnosis and treatment of eye diseases</li> <li>• diagnosis and treatment of cardiological diseases in horses</li> </ul>	clinical classes

## **Entry requirements**

Animal physiology, Animal anatomy, Histology and embryology , Veterinary pharmacology, Pathomorphology, Diagnostic imaging, Clinical and laboratory diagnostics, Parasitology and Invasiology Immunology, Biochemistry, Veterinary microbiology, Diseases of horses



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Forensic veterinary medicine Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0738.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, practical classes: 15	

### Goals

C1	The aim of the course is to acquaint students with the structure, organization and function of case law in Poland. Students learn how to act in accordance with the law and medical and veterinary ethics. Students are prepared to act independently as a forensic expert in the field of veterinary medicine. During the course, they learn how to formulate an expert opinion, prepare forensic documentation, learn methods of assessing animal tissues and other material evidence.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Regulations of the law, rules for issuing judgments and preparing opinions for the needs of courts, state, local government and professional administration bodies	B.W7	report
W2	Legal standards associated with the activities of veterinary physicians;	O.W14	observation of student's work, report
<b>Skills - Student can:</b>			
U1	Issue veterinary medical opinion and certificate	O.U7	report
<b>Social competences - Student is ready to:</b>			
K1	Deepen his/her knowledge and improves skills	O.K8	observation of student's work
K2	Communicate with the co-workers and shares knowledge	O.K9	observation of student's work
K3	Formulate opinions regarding various aspects of professional activity	O.K6	observation of student's work
K4	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K5	Formulates conclusions from own measurements or observations	O.K5	observation of student's work
K6	Exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K7	To make reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work

### Study content

No.	Course content	Activities
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1.	<p>1. Differences between forensic veterinary medicine and veterinary pathology. Who is legally the owner of the pet. Who is a forensic expert. Duties of a court expert. 2h</p> <p>2. Polish law and the protection of animals. Animal Protection Act. 2h</p> <p>3. Civil law and professional liability of a veterinarian. Act on the profession of a veterinarian, medical and veterinary chambers. 2h</p> <p>4. Veterinary ethics. 2h</p> <p>5. Collection of material and sending to the laboratory. 2h</p> <p>6. Animal abuse. 2h</p> <p>7. Medical and veterinary errors. 2h</p> <p>8. Summary of topics</p>	lecture
2.	<p>1. Injuries. 2h</p> <p>2. Cover letter. 2h</p> <p>3. Animal abuse. 2h</p> <p>4. Drowning. 2h</p> <p>5. Expert opinion. Shots. 2h</p> <p>6. Purchase and Sale Agreement. 2h</p> <p>7. Poisoning. 2h</p> <p>8. Passing the course</p>	practical classes

### Entry requirements

Pathomorphology, Veterinary microbiology, Veterinary pharmacology, Toxicology, Parasitology and Invasiology, Biochemistry, Clinical and Laboratory Diagnostics



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Hygiene of food processing II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0934.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 30, laboratory classes: 12, clinical classes: 18	

### Goals

C1	The aim of the course is to give the students knowledge about most important processes used in food technology, about influence of each process on consumer health, about microbiological hazards related to different food of animal origin.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the principles of GMP and GHP in meat plants	B.W17	written exam, written credit, active participation, case study

W2	Characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written exam, written credit, active participation, case study
W3	the role and duties of the official veterinary surgeon in meat, fish and poultry processing plants	B.W16	written exam, written credit, active participation, case study
W4	knows the rules of technologies and hygiene of animal origin food technology	O.W13	written exam, written credit, observation of student's work
<b>Skills - Student can:</b>			
U1	estimate the risk of occurrence of chemical and biological hazards in food of animal origin and establish the most effective control measures	B.U22	observation of student's work, active participation, case study
U2	assesses the compliance of law requirements in food plants	B.U18	observation of student's work, active participation, case study
U3	makes activities related to veterinary supervision on production of animal origin food	O.U6	observation of student's work, active participation, case study
U4	knows how to take samples for presence of various toxins in food	B.U23	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, case study
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, case study

### Study content

No.	Course content	Activities
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1.	<p>1. Convenience and functional food ; definitions of functional and convenience food, methods of preservation used for production of convenience food, sous vide technology, clean room technology, examples of functional food</p> <p>2. Unconventional methods of food preservation- part I: positive aspects of new non thermal methods of food preservation, High Hydrostatic Pressure (history, technology, pros and cons, biological effects).</p> <p>3. Unconventional methods of food preservation- part II: food irradiation (history, technology, pros and cons, biological effects, radurization, radacidation, risk for human health ), microwaves radiation (history, technology, pros and cons, biological effects), atmospheric pressure plasma APP, ultrasonication.</p> <p>4. Spoilage of food: chemical, microbiological, physical, enzymatic spoilage, mechanisms of food spoilage, microflora involved in spoilage, meat spoilage (aerobic and anaerobic), spoilage of other foodstuffs, prevention against food spoilage</p> <p>5. Antibiotic resistant bacteria: mechanisms of antibiotic resistance, prevalence of antibiotic resistant bacteria in food chain, livestock associated MRSA, sources of contamination</p> <p>6. Hygiene in food industry: basic hygienic rules in food plants, proper washing of hands, clothing, skin microbiota, transient and resistant microflora, methods of verification of hand washing in food industry, swabs, ATP</p> <p>7. Supporting raw materials in food industry: spices, polyphosphates, vegetables, hydrocolloids, meat analogues- their role in food processing, natural and artificial casings, microbiology of spices.</p> <p>8. Food additives: the most popular and controversial food additives: aspartame, fructose corn syrup, artificial coloring, MSG, the role of food additives, trans fats, E numbers, law regulation related to food additives in EU and other countries,</p> <p>9. Bacillus cereus food poisoning: life cycle of Bacillus cereus, heat resistant endospores, emetic form and diarrheal form of Bacillus cereus food poisoning, sources, symptoms, prevention.</p> <p>10. Quality management systems in food industry: ISO 22 000, FSSC, ISO 9001, BRC and IFS standards.</p> <p>11. Chemical hazards in food: acrylamide, bisphenol A, melamine, dioxins, polychlorinated biphenyles, BFRs- sources, methods of prevention, maximum acceptable levels, law regulations.</p> <p>12. Shelf life of food: best before date, expire date, consumer margin, testing of foodstuffs for shelf life, perishable and nonperishable food, contamination of raw materials and finished products with pathogenic bacteria, microbial durability of food, the rules for determining the margin of consumer safety.</p> <p>13. Introducing into methodology of auditing in food processing plants: difference between control and audit, internal audit, audit as a tool of HACCP verification, basic rules of auditing in food industry.</p> <p>14. Disinfection in the food industry: principles of disinfection in the food industry, the types of disinfectants and methods of their use, evaluation of disinfectants, characteristics of good disinfectants.</p> <p>15. Hygiene and technology of wild game production: law requirements regarding wild game, processing of wild game, storage and distribution of wild game meat, veterinary surveillance,</p>	lecture
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2.	<p>1. Hygiene and technology of rabbit slaughter and processing: steps of rabbit slaughter, law requirements, microbiology of rabbit meat, spoilage, preservation, storage, methods of processing.</p> <p>2. Hygiene and technology of ostrich slaughtering; technology of slaughtering, chilling of carcasses, using of slaughter by products, microbiology of raw meat, preservation, characteristic of meat, law regulations.</p> <p>3. Hygiene and technology of sausage and ham production: technology of sausage production, technology of ham production, machines used for sausage and ham productions, hygiene of sausage and ham production, microbiology of sausages and hams, fermented sausages, types of sausages, sausage yield, high yielded hams</p> <p>4. Hygiene and technology of wild game processing: law regulations connected with wild game, obtaining of wild game, hygiene and microbiology of wild game meat and meat products, storage of wild game meat, ageing of wild game meat.</p> <p>5. Unconventional methods of food preservation: unconventional non-thermal methods – high pressure technology, pulsed electric field, ultrasound, ultraviolet radiation, ionizing radiation, radappertization, radurization, radacidation; microwave radiation, microbiological safety of unconventional preserved food products.</p> <p>6. Probiotics, prebiotics, synbiotics: definition of probiotics, probiotics microorganisms, sources of probiotics, role and use of probiotics, definition and classification of prebiotics, sources of prebiotics, inulin as natural prebiotic, definition of synbiotics.</p>	laboratory classes
3.	<p>1. The role of veterinary inspection in surveillance in meat processing plant- visit in meat plant.</p> <p>2. The evaluation and control of implementation of HACCP system and its documentation in meat industry- visit in meat plant.</p> <p>3. GMP/GHP, SSOP, Prerequisite Programs in food plants, practical approach- visit in meat processing plant</p> <p>4. Hygiene and technology of edible offal processed meat products and cold (deli) products: sorts of offal and deli products, technology of production, methods of preservation, microbiology, cold chain in deli products dispatch, storage and transportation, critical control point (CCP) in production of deli and offal product.</p> <p>5. Critical control points, monitoring, corrective actions, records, verification of HACCP system, practical approach- visit in meat processing plant</p> <p>6. Storage, packaging and distribution in food industry- requirements, cold chain, documentation, veterinary surveillance- visit in meat plant</p> <p>7. Hygiene and technology of fish and fish products: classification of fish raw materials, veterinary inspection of fish raw materials, preliminary processing of fish, preservations of fish - smoked, salted and marinated fish, microbiological spoilage of fish and fish products, nutritive value of fish, polyunsaturated fatty acids – DHA, EPA- visit in fish processing plant.</p> <p>8 Hygiene and technology of poultry processing: technology of poultry slaughtering, chilling of poultry carcasses, cutting into primal cuts, microbiology of raw poultry and poultry products, microbiological hazards connected with poultry meat, preservation of poultry meat, cold chain in poultry processing- visit in poultry slaughterhouses.</p> <p>9. The role of official inspections in food control and surveillance; tasks of each inspections, responsibilities, documentation- visit in meat plant.</p>	clinical classes

### **Entry requirements**

Animal Anatomy, Animal Physiology, Biochemistry, Veterinary Microbiology, Food law, Hygiene of Food Processing I.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Preventive veterinary medicine II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.1900.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> exam	<b>Number of ECTS points</b> 3.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 26, clinical classes: 4	

### Goals

C1	Familiarization with tasks and methods of veterinary procedures in nowadays farms of livestock animals. Conditions and methods in field work of farm veterinarian, rules in co-operation with the owner. Methods of recognition of the causes and prevention of morbidity and mortality in large farms, caused by digestive and respiratory tract diseases and metabolic disturbances.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	rules in preventing and control of the respiratory tract diseases in the herds of cattle and pigs	A.W10, A.W2, B.W9, O.W2, O.W5, O.W8	written exam, test, practical training report

W2	the causes of the occurrence and the principles of preventive treatment of metabolic disorders in dairy herds	A.W11, A.W4, O.W2, O.W3, O.W4	written exam, report, presentation, test, case study, practical training report
W3	the causes of the birth of weak newborns of livestock animals	A.W11, A.W3, O.W3	written exam, presentation, test, case study
W4	rules for the use of passive and active immunization in the prevention of infectious diseases in calves and piglets	A.W12, B.W9, O.W3, O.W5	written exam, test
<b>Skills - Student can:</b>			
U1	is able to monitor animal health in a large farm	A.U7, B.U2, B.U6, O.U2, O.U4, O.U7	written exam, observation of student's work, presentation, test
U2	is able to independently assess the body condition of dairy cows	A.U7, B.U1, B.U2, B.U5	active participation, presentation, test
U3	can classify the degrees of lameness of animals in a group	A.U7, B.U1, O.U2	written exam, observation of student's work, test, practical training report
U4	perform resuscitation of a weak newborn calf	B.U1, B.U4, O.U2	written exam
<b>Social competences - Student is ready to:</b>			
K1	livestock herd health management	O.K1, O.K5, O.K9	observation of student's work, report, practical training report
K2	cooperate with the staff of livestock farms in the field of herd health protection	O.K2, O.K3, O.K8, O.K9	report, presentation, case study, practical training report
K3	change the method of veterinary professional activity from traditional to focused on herd health protection	O.K1, O.K11, O.K2	report, presentation, practical training report

### Study content

No.	Course content	Activities
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1.	<p>1. Herd immunity checking programme. Risk factors affecting basic production groups of dairy and beef cattle. Factors affecting productivity and health of dairy cows. Methods to detect the herd threats.</p> <p>2. Advantages and disadvantages of various systems of cattle keeping. Production groups of dairy cattle. Characterization of the farm. Targets for yield and for the occurrence of diseases in the herd</p> <p>3-4. Hypomagnesemia, hypocalcemia, hypokalemia, hypophosphatemia. Dietary cation-anion balance. Strategies of milk fever prevention.</p> <p>5. Preparation of assumptions for creation of prophylactic programmes for swine farms.</p> <p>6. Advantages and disadvantages of various systems of cattle keeping. Advantages and disadvantages of tethered and loose systems of cow keeping. Principles of dairy herd health care. Risk factors for the metabolic disturbances in the transition period in dairy cows. Monitoring of the health of reproduction group in transition period.</p> <p>7. Principles of dairy herd health care. The barrier for herd diseases. Targets of the occurrence of clinical production diseases. Estimated importance of factors influencing the dairy herd profitability. Mixer feeders - types, destination, terms of use from the veterinarian point of view. The most common diseases and routine procedures between 1-8 week of lactation. Fat Cow Syndrome (FCS). Mixing vagns - types, destination, rules of use - veterinarians point of view.</p> <p>8. Connections between cow obesity and the severity of inflammatory response. Diseases accompanying the FCS. Dependences between feeding the dairy cattle and pathology of the gastrointestinal tract. Abomasum pathology and prevention in dairy cows. Factors predisposing to left abomasum translocation.</p> <p>9. Downer cow syndrome (DCS). Diseases that may cause DCS. Prognosis. Procedures in the treatment of DCS.</p> <p>10. FCS prevention, principles of treatment, and what to do in endangered farm. Keeping the dairy cow from dry period of the peak of lactation. Costs of pathology in dairy farms. Direct and indirect costs. The dependence of costs from the severity of disease.</p> <p>11. Aseptic laminitis in dairy cows. Dependences between feeding and rumen acidosis, bacterial diseases and appearance of laminitis. Limitations of the diet that prevent laminitis. System of lameness evaluation in walking cows. Problem of subacute rumen acidosis in dairy and beef cattle. Risk factors of lameness in dairy cattle, feeding failures as the predisposing factor. System of cow comfort evaluation in the bed. Risk factors associated with technology.</p> <p>12. Preparation of assumptions for creation of prophylactic programmes for swine farms (cont).</p> <p>13. Consequences of intrauterine infection. Evaluation of respiratory tract threats in calves. Infectious agents that cause weak calf syndrome. Consequences of chorioamnionitis. Central nervous system injury. Interpretation of precolostral serum immunoglobulin concentration in calves.</p> <p>14. Losses in youngstock caused by respiratory tract pathology. Immaturity of lungs; surfactant; respiratory distress syndrome (RDS). Species specific predispositions for lung function disturbances. Environmental risk factors for lung diseases (at the pre- and postnatal), prevention. Non-infectious risk factors.</p> <p>15. Histophilus somni Syndrome. Economic importance. Principles of respiratory tract diseases immunoprophylactics on the herd level. Immunoprophylactic programmes for beef and dairy cattle.</p>	lecture
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2.	<p>Block III. LOSSES IN YOUNGSTOCK - CAUSES ASSOCIATED WITH GASTROINTERSTINAL TRACT (CONT.)</p> <p>1. Analysis of the case of diarrhoea outbreak in large dairy farm. (class type: Problem Based Learning, PBL).</p> <p>2. Full bellied scour. Estimation of milk coagulation time. Picture of this feature in the herd, dependence of cows' feeding. Factors affecting the calcium availability and milk coagulation time. Current and long term prevention. Secondary role of infectious agents. General principles of diarrhea prevention. Infectious causes of diarrhea, immunoprophylaxis, herd strategy, GALT.</p> <p>Block IV. LOSSES IN OFFSPRINGS AND MAETRNL HERD CAUSED BY INAPPROPRIATE FEEDING</p> <p>3. Test of block III. Fat cow syndrome. Management-related and nutrition-related risk factors. Threat prognosis: zootechnical herd evaluation, clinical herd evaluation, (cows and calves). Analysis of milking utility reports, part 1.</p> <p>4. Analysis of milking utility reports, part 2. (class type: PBL). Pathogenesis of FCS. Anamnesis, laboratory and postmortem investigation, liver biopsy. Problem evaluation in the herd.</p> <p>Block V. LOSSES IN YOUNGSTOCK - CAUSES ASSOCIATED WITH RESPIRATORY TRACT PATHOLOGY</p> <p>5. Test of block IV. Economical evaluation of prophylactic programmes in large farm. Calculation ogf the costs of immunoprophylactic programme. Balance of profits and losses for the veterinarrian and the owner. Infectious risk factors. Swine pleuropneumonia.</p> <p>6. Weak Calf Syndrome (WCS). Evaluation of the vitality in newborns using different scales. (class type: PBL)</p> <p>7-8. Identification of risk factors for respiratory tract infections in the herd. A case of outbreak of bronchopneumonia in calves from dairy farm. (class type: PBL)</p> <p>9. Test of block V. Recognizing the herd problems by students - review of movies/pictures. Quiz for respiratory problems in youngstock.</p>	laboratory classes
3.	<p>Block IV. LOSSES IN OFFSPRINGS AND MAETRNL HERD CAUSED BY INAPPROPRIATE FEEDING</p> <p>10-11. Body condition score by Mulvany. Principles of cow examination. Principles of herd evaluation, utilization of the results in hewrd health monitoring and foreseeing the problems. Complexed evaluation of good and weak features of dairy farm.</p> <p>Technopathies - identification and the evaluation of their intensity within the herd. Calculation of the rate of cows that exhibit problems and their classification. The evaluation of comfort of cows on beds, evaluation of beds' quality. Evaluation of lameness in walking cows; principles of application this method in the herd and the evaluation of documentation in herd health monitoring.</p>	clinical classes

### Entry requirements

Animal Breeding; Technologies in Animal Production; Animal Nutrition; Animal Physiology; Biochemistry; Veterinary Microbiology; Veterinary Immunology; Ethology, Welfare and Animal Protection; Animal Hygiene; Diseases of Farm Animals; Preventive veterinary medicine I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Safety of feedstuff Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2244.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, laboratory classes: 20	

### Goals

C1	The aim of the course is to acquaint students with the factors influencing the feed safety. During the course they are discussed problems of microbiological and chemical hazards in feed production, and presence of GMO in feed. Students learn how to identify the presence of xenogenic proteins in feed and acquaint with the current veterinary feed law. They learn the method of feed production, and sanitary-veterinary supervision of feed plants.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	law regulations connected with veterinary supervision of feedstuffs in Poland and EU	B.W16	written credit

W2	identifies and describes the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit
W3	explains the principles of consumers and animals health protection connected with use of feedstuffs	O.W11	written credit
<b>Skills - Student can:</b>			
U1	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues and medicinal products in water intended for animal drinking and in the feedstuffs.	B.U23	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, participation in discussion
K2	communicates with the co-workers and shares knowledge	O.K9	observation of student's work, participation in discussion
K3	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, participation in discussion

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. The rules of feed supervision in the area of feed production and distribution according to actual veterinary feed law. European Parliament and Council Regulations, Feed Enactment, medicament feed.</li> <li>2. Classification, processing, distribution and veterinary supervision of slaughter by-products.</li> <li>3. Undesirable substances in feedstuffs.</li> <li>4. Bacterial, fungal and prions hazards in feed production. Antibiotic resistance of feed-derived microorganisms.</li> <li>5. Detection of mycotoxins in feedstuffs - chromatography methods (TLC - Thin Layer Chromatography, HPTLC, GC - Gas Chromatography), acceptable levels of some mycotoxins in feeds.</li> </ol>	lecture



2.	<p>1. National plan of official feed control, control plans in feed processing plants, interpretation of laboratory feed examination results.</p> <p>2. Microbiological examination of feedstuffs. The rules of feed sampling used in microbiology, interpretations of feed microbiological examination results.</p> <p>3. Methods of analysis referring to assessment of animal derived components in official animal feed examination. Microscopic method of detection - preparation of specimens and examination.</p> <p>4. Assessment of fibre content and nitrates and nitrites presence in animal feed. Risk connected with presence of nitrites and nitrates in animal feed. Determination of nitrites and nitrates by colorimetric method with diphenylamine reagent.</p> <p>5. Application of molecular techniques in identification of xenogenic protein additives. Feed DNA isolation. Preparation and application of PCR.</p> <p>6. Application of molecular techniques in identification ofGMO. Electrophoresis and data analysis.</p> <p>7. Feed additives. Soil improvers. Organic fertilizers. Antibiotic growth stimulators. Detection of antimicrobial substances in feedstuffs.</p> <p>8. Detection of coccidiostats in animal feed. General rules of feed sampling and official feed analysis. The use of coccidiostats in animal husbandry. Determination of the ionophoric coccidiostats by qualitative method and quantitative colorimetric method.</p> <p>9. Production of feeds of animal origin. Visit in feed plant.</p> <p>10. Technology and processing of slaughter by-products.</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Summer practical training: Animal clinic II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2405.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 8.0
	<b>Activities and hours</b> practical training: 160	

### Goals

C1	Introduction to the specificity of work in a veterinary clinic. Performing a clinical examination and veterinary procedures in patients of a veterinary clinic.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	oral credit

W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	oral credit
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure	O.W3	oral credit
W4	explains and interprets the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W4	oral credit
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	oral credit
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthroozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	oral credit
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	oral credit
W8	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	oral credit
W9	explains the mechanisms of organ and systemic pathologies	B.W2	oral credit
W10	describes the causes and symptoms of diseases, principles of treatment and prophylaxis in individual disease entities	B.W3	oral credit
W11	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	oral credit
W12	presents the principles of conducting clinical examination and monitoring animal health	B.W5	oral credit
W13	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	oral credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	oral credit
U3	plans the diagnostic procedure	O.U3	oral credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration	O.U4	oral credit

U5	issues veterinary medical opinion and certificate	O.U7	oral credit
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit
U7	applies IT systems used to support the health facility for animals, herd and analysis of epizootic situation	O.U9	oral credit
U8	safely and humanely handles animals and instructs others in this scope	B.U1	oral credit
U9	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	oral credit
U10	performs a full clinical examination of the animal	B.U3	oral credit
U11	is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	oral credit
U12	assesses the nutritional status of the animal and provides advice in this scope	B.U5	oral credit
U13	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit
U14	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit
U15	implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	oral credit
U16	obtains and uses information on authorised veterinary medicinal products	B.U9	oral credit
U17	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	oral credit
U18	uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	oral credit
U19	monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	oral credit
U20	chooses and applies the appropriate treatment	B.U13	oral credit
U21	implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	oral credit
U22	assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes the animal in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	oral credit
U23	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	oral credit

<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	practical training report
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit
K3	uses the objective sources of information	O.K4	oral credit
K4	formulates conclusions from own measurements or observations	O.K5	oral credit
K5	formulates opinions regarding various aspects of professional activity	O.K6	oral credit
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	oral credit
K7	deepens his/her knowledge and improves skills	O.K8	oral credit
K8	communicates with the co-workers and shares knowledge	O.K9	oral credit
K9	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit

## Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<p>1. Introduction to the specificity and organization of work in the clinic, and applicable health and safety regulations. The student becomes familiar with distribution facilities (emergency room, hospital, operating room, X-ray, etc.) and the system of admitting patients.</p> <p>2. Introduction to the drugs used in the practice and the way records and dispensing of medicines. Introduction to diets and dietary supplements used in a veterinary clinic.</p> <p>3. Introduction to the computer program used in the practice.</p> <p>4. Analysis of the cases registered in the file system of a computer-types of diseases, diagnostic methods, therapeutic methods.</p> <p>5. Familiarize yourself with the program of prevention of infectious diseases and prevention systems with and combat parasitic diseases in animals treated with the practice. Familiarizing yourself with the medical interview.</p> <p>6. Improving history, basic clinical examination, performing additional diagnostic methods (imaging techniques, cytological assessment, laboratory tests of blood, urine and other body fluids), collecting material for additional tests.</p> <p>7. Improving the techniques restraining of the animal and performing basic veterinary procedures, eg injection, establishing access to a vein, catheterization and care treatments (eg: shortening of the claws, cleaning the perianal sinuses, cleaning the ears, etc.).</p> <p>8. Introduction to the surgical procedures or their improvement: protocols and techniques of anesthesia, techniques of surgical procedures (assisting in the procedures).</p>	practical training

## **Entry requirements**

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Farm animal disease



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Summer practical training: Food processing plant I Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2407.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> practical training: 80	

### Goals

C1	The purpose of the practice in slaughterhouses for cattle, pigs or horses is to teach students with the technology of slaughtering animals, post-slaughter meat processing, organizational structure of the plant and the technique of pre-and post-mortem inspection, as well as keeping veterinary documentation
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the principles of consumer health protection	O.W11	oral credit, observation of student's work

W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	oral credit, observation of student's work
W3	knows to an extensive degree the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;	O.W13	oral credit, observation of student's work
W4	describes legal standards associated with the activities of veterinary physicians;	O.W14	oral credit, observation of student's work
W5	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	oral credit, observation of student's work
W6	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	oral credit, observation of student's work
W7	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	oral credit, observation of student's work
W8	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	oral credit, observation of student's work
W9	knows to an extensive degree, interprets and observes the principles of food law	B.W21	oral credit, observation of student's work
<b>Skills - Student can:</b>			
U1	issues veterinary medical opinion and certificate	O.U7	oral credit, observation of student's work
U2	assesses the quality of products of animal origin	B.U18	oral credit, observation of student's work
U3	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, observation of student's work
U4	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit, observation of student's work
U5	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit, observation of student's work
K2	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit, observation of student's work
K3	communicates with the co-workers and shares knowledge	O.K9	oral credit, observation of student's work
K4	deepens his/her knowledge and improves skills	O.K8	oral credit, observation of student's work

## Study content

No.	Course content	Activities
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1.	<p>The organizational structure of the slaughterhouse.  Health and safety regulations in force at the slaughterhouse.  Tasks veterinary sanitary supervision over the purchase and transport of animals for slaughter.  Tasks sanitary veterinary surveillance in slaughterhouses slaughter animals.  Formal legal proceedings related to the adoption of slaughter animals to the slaughterhouse.  Ante-mortem technique.  Proceedings of the animals after the ante-mortem technique.  Methods of stunning and slaughter of animals for slaughter.  Deadweight technological processing of animal carcasses.  Organization and post-mortem meat inspection technique.  Principles of meat samples for laboratory tests.  Trichinoscopic methods.  Sanitary evaluation and labeling of meat from animals slaughtered.  Handling the meat and unfit for consumption.  Animal by-products  Principles of cleaning and disinfection of premises, machinery and equipment and transportation of animals and meat.  Principles of sewage treatment in slaughterhouses.  Sanitary Requirements for the location and construction of slaughterhouses and facilities and lines.  Principles of sanitary-veterinary records in a slaughterhouse.  The current sanitary and veterinary regulations.</p>	practical training
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### **Entry requirements**

knowledge of sanitary food law, in particular: Regulations no. : 178/2002, 2017/625, 2019/627, 853/2004, 852 / 2004,1 / 2005, 1069/2009, 1099/2008, 999/2001, 2015/375.

Theoretical knowledge in the field of ante-mortem and post-mortem inspection of slaughter animals.

Basic knowledge of animal identification (including age assessment based on the dental formula of cattle).

Theoretical knowledge about the symptoms of proper stunning of animals, knowledge of stunning methods and the possibilities of their application in individual animal species.

Theoretical knowledge regarding animal-by products and waste classification produced at the slaughterhouse.

Theoretical knowledge regarding the requirements for slaughterhouses.

Theoretical knowledge regarding infectious diseases and their clinical symptoms.

Theoretical knowledge in the field of anatomopathological changes in carcasses caused by OIE list A and B diseases

Theoretical knowledge of the meat sampling procedure and the diseases / residues of substances for which samples should be taken.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary administration and law Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2634.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> exam	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	The aim of the course is to acquaint students with the terminology used in the veterinary administration and legal (administrative) tools used in administrative proceedings involving the official investigation in the procedures against spread of infectious diseases in populations.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	legal norms of Veterinary Inspection. Source of veterinary law.	O.W14	written exam, test

W2	legal standards for the management and disposal of by-products and waste related to animal production	B.W15, O.W9	written exam, test
W3	rules for issuing medical and veterinary certificates and drawing up opinions for the needs of courts and state and local government administration bodies	B.W7	written exam, test
W4	the principles of the IW functioning in terms of public health and the procedure to be followed in the case of suspicion or confirmation of an infectious disease that is subject to notification and control	B.W8	written exam, test
<b>Skills - Student can:</b>			
U1	analyze and interpret clinical symptoms, pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease state, including differential diagnosis, and undertake therapeutic or prophylactic measures	O.U6	written exam, test
U2	conduct an epizootic investigation to determine the potential source of an infectious disease and the course and development of infection in the field	B.U19	written exam, test
U3	communicate with employees of governmental and self-governmental administration control authorities and offices	C.U4	written exam, test
<b>Social competences - Student is ready to:</b>			
K1	showing responsibility for decisions made towards people, animals and the natural environment	O.K1	observation of student's work
K2	cooperation with representatives of other professions in the field of public health protection	O.K11	observation of student's work

## Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Overview of the veterinary legislation</li> <li>2. The insitutional and legal structure for veterinary activites</li> <li>3. Food law - reg 178/2002</li> <li>4. Feed law - general overview</li> <li>5. Animal welfare - owerview</li> <li>6. Animal welfare on slaughter and Ritual slaughter</li> <li>7. Animal welfare on the farm</li> </ol>	lecture

2.	<ol style="list-style-type: none"> <li>1. Law making process – institutions of the UE law interpretation – how to use legal act</li> <li>2. Improving the quality of animal welfare</li> <li>3. Animal identification and registration system</li> <li>4. Veterinary medicinal products (inc. cascade principle)</li> <li>5. Animal by-products</li> <li>6. Q&amp;A (topic – students choice of interest)</li> </ol>	laboratory classes
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### **Entry requirements**

Veterinary anatomy, Biology, Statistic, Vet. Bacteriology, Vet. Virology, Veterinary epidemiology, Infectious diseases of dogs and cats, Infectious diseases of farm animals, Infectious diseases of horses, Food hygiene, Veterinary pharmacology



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Basis of veterinary haematology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0123.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 20, laboratory classes: 10	

### Goals

C1	The aim of the course is to familiarize students with: - haematological terms; haematopoiesis, the role of blood cells and plasma, - disorders of haematopoiesis, morphological and functional disorders of blood in the various kinds of disease, - hemostasis and its role in; prevention of the body against blood and body fluid loss, healing, - differences in morphology and function of blood components depending on various species of animals. During practical part of course, students are familiarized with: - methods of collecting, handling, transport of blood and bone marrow samples, - principles of practice in haematology and coagulology laboratories, - the rules of analysis and interpretation of the laboratory tests results.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the principles and mechanisms underlying animal health, the development of haematological diseases and the course of diseases accompanied by haematological signs, their therapy - from the level of cells, through the organ, to the entire animal body.	O.W1	test
W2	the normal haemopoiesis, blood morphology and function, and disorders of them.	O.W2	test
W3	the etiology, pathogenesis and clinical symptoms of haematological diseases and occurrence of haematological signs in the course of other diseases.	O.W3	test
W4	the principles of diagnostic and therapeutic procedures appropriate for haematological diseases and other diseases accompanied by haematological signs occurring in animals.	O.W4	test
W5	the principles of diagnostic and therapeutic procedures taking into account the differential diagnostics and therapeutic procedure.	B.W4	test
W6	the method of handling clinical data, as well as results of laboratory tests and additional tests.	B.W6	test
<b>Skills - Student can:</b>			
U1	analyse and interpret pathological changes and results of laboratory tests and additional tests, formulate the diagnosis of given disease, taking into account the differential diagnostics, and undertake therapeutic or prophylactic actions.	O.U2	observation of student's work, test, participation in discussion
U2	issue veterinary medical opinions.	O.U7	observation of student's work, test, participation in discussion
U3	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health and haematological diseases, pathological changes and conditions.	O.U8	observation of student's work, test, participation in discussion
U4	use vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary haematology.	O.U11	observation of student's work, test, participation in discussion
U5	safely and humanely handle animals and instruct others in this scope.	B.U1	observation of student's work, test, participation in discussion
U6	conduct a medical-veterinary interview in order to obtain precise information regarding individual animal with haematological disease or group of animals and its or their living environment.	B.U2	observation of student's work, test, participation in discussion
U7	collect and secure the samples for tests, as well as perform standard haematological laboratory tests, and correctly analyse and interpret the results of laboratory tests.	B.U6	observation of student's work, test, participation in discussion
U8	use the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd.	B.U20	observation of student's work, test, participation in discussion

<b>Social competences - Student is ready to:</b>			
K1	exhibit responsibility for his/her decisions made in regard to the people and animals.	O.K1	observation of student's work, participation in discussion
K2	use the objective sources of information related to the pathogenesis and results of haematological diseases.	O.K4	observation of student's work, participation in discussion
K3	formulate conclusions from observations of the impact of harmful factors on the body and the resulting consequences.	O.K5	observation of student's work, participation in discussion
K4	deepen his/her knowledge and improve skills in haematology area.	O.K8	observation of student's work, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student's work, participation in discussion

### Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<ol style="list-style-type: none"> <li>1. Haemopoiesis; haemopoietic disorders and the results of them.</li> <li>2. Blood cells - erythrocytes; physiology, morphological and functional alterations in a state of various diseases.</li> <li>3. Blood cells - leukocytes; physiology, morphological and functional alterations in a state of various diseases.</li> <li>4. Blood cells - platelete; physiology, morphological and functional alterations in a state of various diseases.</li> <li>5. Coagulology - primary and secondary hemostasis, fibrinolysis; disturbances and the results of them.</li> <li>6. Specific haematology of chosen species of animals.</li> </ol>	lecture
2.	<ol style="list-style-type: none"> <li>1. Making acquainted with the rules of work at haematological and coagulological laboratories, laboratory equipment and materials used in tests.</li> <li>2. Making acquainted with procedures of collecting, storing, preparation for transport, transport of blood, plasma, serum and bone marrow samples.</li> <li>3. Making acquainted with procedures of preparation of blood, plasma, serum and bone marrow samples for tests.</li> <li>4. Haematological tests - the screening, routine and "special" procedures.</li> <li>5. Differentiation and counting blood and bone marrow cells.</li> <li>6. Blood picture analysis in a state of the adaptation process, the infectious diseases, the metabolic diseases and endocrinopathies.</li> <li>7. Coagulological tests - the screening, routine and "special" procedures.</li> </ol>	laboratory classes

## **Entry requirements**

Completion of the course in: chemistry, biochemistry, histology and embryology, cell biology, animal physiology, veterinary microbiology, veterinary immunology.





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Dogs and cats oncology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0512.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 20, clinical classes: 10	

### Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about the diagnosis and therapy of cancer occurring in dogs and cats. The subject presents basic clinical disorders resulting from disorders associated with the cancer process. Explains the mechanisms of carcinogenesis, the tumor's impact on the animal's body, and how to properly diagnose it and determine the method of therapy.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, active participation
W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written credit, active participation
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit, active participation
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work
U3	plans the diagnostic procedure	O.U3	written credit, observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student's work, active participation
K2	uses the objective sources of information	O.K4	observation of student's work, active participation
K3	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work, active participation
K4	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

## Study content

No.	Course content	Activities
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1.	<p>The etiology and pathogenesis of cancer - definition of tumor (cancer) causes tumorigenesis  Ø Pathogenesis (spontaneous genetic changes, changes in chromosome and genome caused by external factors, tumor immunology)  Ø predisposition (race, family) for the occurrence of cancer  Ø differentiation of benign and malignant tumors  Diagnosis of cancer  Ø interview, clinical examination  Ø Research Oncology (methods of downloading and transferring the material to study, cytological, histological examination)  Ø imaging studies (X-ray, ultrasound, CT, MRI)  Ø TNM classification of tumors  Ø Paraneoplastic (impact of cancer on the body, metabolic disorders, hematologic, endocrine)  Ø The prognosis in cancer  Methods of treating tumors  Ø The purpose and legitimacy of cancer treatment  Ø Surgical Therapy (rules of conduct for surgery, radical resection, sparing surgery, palliative treatment, reconstructive surgery)  Ø Radiation therapy of cancer  Ø Other methods of therapy (immunotherapy, hyperthermia, gene therapy, photodynamic therapy, alternative therapy)  Chemotherapy cancer  Ø Mechanisms of action of cytostatic drugs  Ø toxicity, side effects and contraindications to the use of cytostatic drugs  Ø Prevention of chemotherapy side effects  Ø The safety of cytostatic drugs (safety veterinarian and owner)  Mastocytoma dogs (incidence, causes, symptoms, prognosis, therapy)  Mastocytomas cats (incidence, causes, symptoms, prognosis, therapy)  Skin cancer (incidence, causes, symptoms, prognosis, therapy)  Ø Changes of epithelial origin (brodawczyca, about anal gland tumors, squamous  Ø cutaneous histiocytosis  Soft tissue tumors (incidence, causes, symptoms, prognosis, therapy)  Ø fibroma / fibrosarcoma  Ø Lipoma / liposarcoma  Ø myosarcoma  Ø hemangioma / angiosarcoma  Tumors of bones and joints (incidence, causes, symptoms, prognosis, therapy)  Ø osteoma / osteosarcoma  Ø Chondrosarcoma / chrzestaniakomięsak  Ø galls bone - cartilage  Synovial tumors  Tumors of the central nervous system (incidence, causes, symptoms, prognosis, therapy)  Ø Brain tumors (neuroblastoma, meningioma, glioma, astrocytoma, adenoma)  Ø spinal cord neoplasms (change pozaoponowe, intrathecal, intraspinal)  Nutrition of dogs with cancer  Ø The metabolism of cancer cells  Ø The energy demand of an animal with cancer  Ø Methods of nutrition in cancer  Ø The choice of diet  Hematopoietic neoplasms (incidence, causes, symptoms, prognosis, therapy)  Ø Lymphoma  Ø Leukemia  Ø Multiple  Ø Polycythemia  Ø tumors of the spleen  Ø thymoma  Tumors of the digestive system (incidence, causes, symptoms, prognosis, therapy)  Ø Cancers of the esophagus  Ø Gastrointestinal Cancers  Ø intestinal tumors  Ø tumors of the liver and pancreas  Tumors of the urinary tract (incidence, causes, symptoms, prognosis, therapy)  Ø kidney tumors  Ø ureteral tumors  Ø bladder tumors  Ø Tumors of the urethra  Cancers of the reproductive system (incidence, causes, symptoms prognosis, therapy)  Ø Ovarian Tumors  Ø tumors of the uterus  Ø Tumors of the vagina and vulva  Ø Testicular  Ø tumors of the penis and foreskin  Ø Prostate Cancers  Mammary tumors  Endocrine tumors (incidence, causes, symptoms, prognosis, therapy)  Ø neoplasms of the thyroid and parathyroid glands  Ø pituitary tumors  Ø Adrenal Tumors  The reasons for the failure of cancer therapy and ethical aspects of animal euthanasia terminally ill</p>	lecture
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2.	<p>Diagnosis of cancer</p> <ul style="list-style-type: none"> <li>Ø Research Oncology (methods of downloading and transferring the material to study, cytological, histological examination)</li> <li>Ø imaging studies (X-ray, ultrasound, CT, MRI)</li> <li>Ø TNM classification of tumors</li> <li>Ø Paraneoplastic (impact of cancer on the body, metabolic disorders, hematologic, endocrine)</li> </ul> <p>Methods of treating tumors second</p> <ul style="list-style-type: none"> <li>Ø Surgical Therapy (rules of conduct for surgery, radical resection, sparing surgery, palliative treatment, reconstructive surgery)</li> <li>Ø Radiation therapy of cancer</li> <li>Ø Other methods of therapy (immunotherapy, hyperthermia, gene therapy, photodynamic therapy, alternative therapy)</li> </ul> <p>Chemotherapy cancer</p> <ul style="list-style-type: none"> <li>Ø The safety of cytostatic drugs (safety veterinarian and owner)</li> </ul> <p>Skin cancer (incidence, causes, symptoms, prognosis, therapy)</p> <ul style="list-style-type: none"> <li>Ø Changes of epithelial origin (brodawczyca, about anal gland tumors, squamous)</li> <li>Ø cutaneous histiocytosis</li> </ul> <p>Nutrition of dogs with cancer</p> <ul style="list-style-type: none"> <li>Ø Methods of nutrition in cancer</li> <li>Ø The choice of diet</li> </ul>	clinical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Hygiene and technology of fish raw materials and fish products Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0932.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 2, laboratory classes: 13	

### Goals

C1	The aim of the course is to acquaint students with the factors influencing the safety of fish raw materials and fish products. During the course they are discussed problems of microbiological, parasitological and chemical hazards in production of fish and fish products. Students acquaint with technology of fish cans and salted, smoked and marinated fish. They learn how to make microbiological examination of fish, and they acquaint with current microbiological criteria used for fish and fish products.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	standards, principles and conditions of fish processing and production	O.W13	oral credit, observation of student's work, participation in discussion, written test
W2	risk factors for consumer health connected with production and processing of fish and fish products	O.W11	oral credit, observation of student's work, participation in discussion, written test
<b>Skills - Student can:</b>			
U1	performs activities that are associated with the veterinary supervision of fish production	O.U6	observation of student's work
U2	performs pre- and post-mortem inspection of fish, and is able to make a basic microbiological examination of fish	O.U5	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, participation in discussion

### Study content

No.	Course content	Activities
1.	1. Veterinary inspection of fish raw materials and fish products. Inspection of fish raw materials and fish products according to actual veterinary law regulation (2 hours).	lecture
2.	<p>- Hygiene and technology of fish raw materials. Hygiene and technology of live, fresh and frozen fish. Hygiene and technology of freshwater and marine fish (3 hours)</p> <p>- Hygiene and technology of processed fish. Production of salted fish - types of salted fish, shelf-life of salted fish. Production of smoked fish - types of smoked fish, shelf-life of smoked fish. Production of marinated fish - types of marinated fish, shelf-life of marinated fish (3 hours).</p> <p>- Fish and fish products as a risk factor for humans health. Microbiological, chemical and parasitical contamination of fish and fish products - basic sources of contamination, ways of transmission and methods of prevention (3 hours).</p> <p>- Microbiological examination of fish and fish products. Microbiological examination of fish according to actual EN ISO Norms (4 hours).</p>	laboratory classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Innovations (project) Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.0960.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> laboratory classes: 15	

### Goals

C1	Practical classes of a project character are to prepare students to generate innovative ideas with various methods of seeking solutions from the field of science, technology and organization in the area of study. The realized own project should concern innovative solutions aiming at implementation.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Social competences - Student is ready to:</b>			
K1	think and act in an entrepreneurial and innovative way, which prepares them to play the role of a leader	O.K11, O.K8	written credit, project, presentation
K2	to search for unconventional solutions	O.K11, O.K7, O.K8	project, presentation

K3	to perceive the benefits connected with using own knowledge and sharing knowledge in a group	O.K11, O.K8, O.K9	written credit, project, presentation
K4	search for innovative solutions with the use of various methods according to needs and possibilities	O.K8	written credit, project, presentation
K5	evaluate solutions with the use of various methods in order to select solutions to be implemented	O.K7, O.K8	project, presentation
K6	defend own innovative solutions in the field of science, technology, organisation	O.K7, O.K8, O.K9	project, presentation

## Study content

No.	Course content	Activities
1.	<p>Project activities, during which students will look for innovative solutions to issues related to their field of study and/or future workplace.</p> <p>Session 1 (4h): Defining the area of searching for innovative ideas taking into consideration current development megatrends. Application of heuristic methods to search for solutions. Definition of the topic of consideration and creation of an initial set of innovative solutions.</p> <p>Session 2 (4h): Searching for ideas using systematic methods of searching the field of solutions such as tree of variants, morphological tables. Further selection of solutions.</p> <p>Session 3 (4h): Selection and weighting of evaluation criteria. Evaluation of generated solutions. Final selection of solutions. Gantt chart of further project implementation.</p> <p>Session 4 (3h): Presentation and defence of own innovative idea.</p>	laboratory classes

## Entry requirements

Completing the 'Academic Entrepreneurship' course





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Laboratory diagnosis of viral infection of horses Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.1132.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	In the course of the classes the students will become acquainted with laboratory techniques for the diagnosis of separate viral infections, and methods of obtaining material for testing and methods of its transportation . The symptoms and pathomechanisms of diseases will also be discussed.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	active participation
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	active participation
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, observation of student's work
W4	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	observation of student's work, active participation
W5	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	active participation
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work
U2	plans the diagnostic procedure	O.U3	oral credit, observation of student's work
U3	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	observation of student's work
U4	issues veterinary medical opinion and certificate	O.U7	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation
K2	uses the objective sources of information	O.K4	active participation
K3	formulates conclusions from own measurements or observations	O.K5	active participation
K4	deepens his/her knowledge and improves skills	O.K8	active participation

### Study content

No.	Course content	Activities
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1.	<p>Titles of classes:</p> <p>1. Viral diseases of horses</p> <ul style="list-style-type: none"> <li>- equine viral arteritis (EVA)</li> <li>- diseases caused by equine herpesvirus 1,4 and 3 (EHV1,4 and EHV3)</li> <li>- equine influenza</li> <li>- equine infectious anemia</li> <li>- West Nile Virus infection</li> <li>- Eastern, Western and Venezuelan equine encephalitis</li> <li>- African horse sickness</li> </ul> <p>2. Collection of the specimens to the viral examinations.</p> <ul style="list-style-type: none"> <li>- method of collection and procedures of safe transport of specimens to the laboratory.</li> </ul> <p>Preparation of specimens to the viral examination.</p> <p>3. Trials of virus isolation:</p> <ul style="list-style-type: none"> <li>- Embryonated chicken eggs</li> <li>- primary cell cultures</li> <li>- cell lines</li> <li>- nutrition requirements and other culture conditions (for cell culture growth)</li> <li>- cytopathic effect (CPE)</li> </ul> <p>4. Methods of new isolates identification. Serological tests:</p> <ul style="list-style-type: none"> <li>- virus neutralisation (VN)</li> <li>- virus titration</li> <li>- hemagglutination</li> </ul> <p>5. Serological tests:</p> <ul style="list-style-type: none"> <li>- hemagglutination inhibition test</li> <li>- indirect fluorescent antibody test</li> <li>- complement fixation test (CF)</li> <li>- enzyme-linked immunosorbent assay (ELISA)</li> </ul>	lecture
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## **Entry requirements**

Preceding subjects that should be completed: immunology and microbiology (part virology)



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Marketing in Veterinary Practice Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.1165.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	The aim of the course is to get the students known about marketing, public relations, practice image, information versus advertisement, creating an ethical marketing campaigns, quality of service, loyalty in business, client trends and behaviour modulation. They know how to use a modern marketing techniques to build up a practice as a bussines.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit

W2	knows and understands the principles of economics of the animal production	B.W22	written credit
<b>Skills - Student can:</b>			
U1	obtains and uses information on authorised veterinary medicinal products;	B.U9	written credit
U2	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit
K2	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	written credit
K3	uses the objective sources of information	O.K4	written credit
K4	formulates conclusions from own measurements or observations	O.K5	written credit
K5	deepens his/her knowledge and improves skills	O.K8	written credit
K6	communicates with the co-workers and shares knowledge	O.K9	written credit
K7	is ready to act in the conditions of uncertainty and stress	O.K10	written credit

### Study content

No.	Course content	Activities
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1.	<p>1 &amp; 2. Marketing basics - Introduction to marketing area (elements, marketing-mix), service marketing (structure of the service, service standardization, service as a personal contact), product marketing versus service marketing</p> <p>3 &amp; 4. Quality service - quality criteria, addend value, client service, professional responsibility, specialization in profession knowledge, quality management, important details, TQM system, pricing strategy</p> <p>5 &amp; 6. Professional ethics in veterinary practice. Business according to ethical rules. Self-governing relations, business responsibility of the profession of public trust, veterinary codes of ethics, Code of Good Veterinary Practice (GVP)</p> <p>7 &amp; 8. Client loyalty - loyalty in business , motivation, promotion, how to built a loyalty,</p> <p>AUDITORY CLASSES</p> <p>1 &amp; 2. Direct service - phone as a tool, direct contact with a client, personalization, creation of first impression, vet - client relationship, social media, distribution of the information</p> <p>3 &amp; 4. Advertisement versus information - structure of the commercial/information, media, creating commercial campaign, ethical aspects of advertisement in profession of public trust - veterinary profession, self-governing regulation, visual information, virtual media</p> <p>5 &amp; 6. Public relations - Aaea description, internal and external use, media tools, image creation, media power, choosing the right channel, PR in crisis situations</p> <p>7 &amp; 8. Change as a challenge. Change as a process. For and against of change implementation, change and progress, change management.</p>	lecture
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary neurology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2647.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 18, clinical classes: 12	

### Goals

C1	Getting to know the principles of diagnostic and therapeutic procedures in neurological cases of small animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit



W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written credit
W3	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit
W4	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit
W5	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit
W6	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	written credit
W7	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	written credit
W8	explains the mechanisms of organ and systemic pathologies	B.W2	written credit
W9	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written credit
W10	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written credit
W11	presents the principles of conducting clinical examination and monitoring animal health	B.W5	written credit
W12	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit
U3	plans the diagnostic procedure	O.U3	written credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	written credit
U5	safely and humanely handles animals and instructs others in this scope	B.U1	written credit

U6	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	written credit
U7	performs a full clinical examination of the animal	B.U3	written credit
U8	is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	written credit
U9	assesses the nutritional status of the animal and provides advice in this scope;	B.U5	written credit
U10	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	written credit
U11	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	written credit
U12	chooses and applies the appropriate treatment	B.U13	written credit
U13	monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit
K2	uses the objective sources of information	O.K4	written credit
K3	formulates conclusions from own measurements or observations	O.K5	written credit
K4	formulates opinions regarding various aspects of professional activity	O.K6	written credit
K5	deepens his/her knowledge and improves skills	O.K8	written credit
K6	communicates with the co-workers and shares knowledge	O.K9	written credit
K7	is ready to act in the conditions of uncertainty and stress	O.K10	written credit

## Study content

No.	Course content	Activities
1.	Neurological assessment, localization, differential diagnosis, clinical cases. 2h Advanced imaging of the nervous system. 2h Cerebro-spinal fluid collection and inflammatory diseases on nervous system. 2h Spinal disorders - diagnostics, treatment options. 2h Electrodiagnostic examination in assessment of miopathies, neuropathies, neuromiopathies. 2h Seizures as an emergency patient. 2h Involuntary movement disorders. 2h Neuroophthalmology, clinical cases. 2h TEST..2h	lecture

2.	Practical clinical cases. Differential diagnosis, treatment. 12h	clinical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Management in Veterinary Practice Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200AO.1160.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> general subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 15, laboratory classes: 15	

### Goals

C1	Students can make up the strategic decision for running business towards progress and development of veterinary practice. Students can assess the decision making process with the profit for private practice about employees, can motivate and award the staff. They can organize and manage the job to be done.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit

W2	knows and understands the principles of economics of the animal production	B.W22	written credit
<b>Skills - Student can:</b>			
U1	performs basic statistical analysis and uses appropriate methods for presentation of the results	O.U10	active participation
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation
K2	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	active participation
K3	uses the objective sources of information	O.K4	active participation
K4	formulates conclusions from own measurements or observations	O.K5	active participation
K5	deepens his/her knowledge and improves skills	O.K8	active participation
K6	communicates with the co-workers and shares knowledge	O.K9	active participation
K7	is ready to act in the conditions of uncertainty and stress	O.K10	active participation

### Study content

No.	Course content	Activities
1.	<p>1 and 2. Management basics. What is management? Authorities and competences, leadership versus power, operative and strategic decisions. Leadership and administration. Team work.</p> <p>3 and 4. Work organization and time management. Priorities, job level, duties, daily routine, crisis situations, overworking. Ability to delegate some part of work. Mistakes in job and time organization. Negative and positive daily routine.</p> <p>5 i 6. Quality service management. Work quality. Staff efficiency. Customer relationship management. Ethical challenge in management decision making process. Professional ethics versus business. Free market and profession of public trust.</p> <p>7 i 8. Financial management. Income and profit. Margin value. Business plan as planning tool. Lifetime client value. Changes in price and client volume and impact on financial account.</p>	lecture

2.	<p>1 i 2. CV, motivation letter andd interview. CV- selection of information, frame, contents. Motivation letter as the answer for the job offer - arguments, personal characteristic, layout, references. Interview - prepartion, first impression, behaviour, body languge. Questiona and answers to asked and answered.</p> <p>3 i 4. Brand and bussinessplan.What is a brand - characteristic. Company brand and personal brand. Positive public relation. "Moments of truth" is service company. Bussinessplan - elements ,layout, analysis. What is it for and for whom. Control.</p> <p>5 i 6. Technical and medical procedures in veterinary practice. What is a procedure. How to create a procedure. The reasons of procedure creation. Creating own procedures for basic standard situation in veterinary practice.</p> <p>7 i 8. Opening of own veterinary practice. Law basis and procedures step by step. Veterinary and bussiness responsibilitie in front of customer and society. Practice regulations. Manager's statement.</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Ornamental fish diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.3139.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	This course offers students basic issues of ornamental fish biology, anatomy, diagnosis of fish diseases based on the clinical and postmortem examination of fish. During the course student should acquire the theoretical knowledge and practical skills necessary to diagnose fish disease, taking samples for laboratory test and treat diseases in fish
C2	Student has knowledge about major diseases in ornamental fish .

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W3	written credit
W2	Knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W5	written credit
W3	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	written credit
W4	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit
U3	plans the diagnostic procedure	O.U3	written credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration	O.U4	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	written credit
K2	deepens his/her knowledge and improves skills	O.K8	written credit
K3	formulates conclusions from own measurements or observations	O.K8	written credit

## Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Anatomy and physiology of ornamental freshwater and marine fish.</li> <li>2. Acclimation procedures for aquatic life. Monitoring environmental conditions. Water analysis.</li> <li>3. Clinical examination and procedures for ornamental fish. Biopsy techniques. Shipping samples.</li> <li>4. Postmortem examination. Necropsy procedures. Pet fish formulary.</li> <li>5. Aquarium water filtration system. Mechanical filtration. Chemical filtration. Biological filtration.</li> <li>6. Management of the large public aquarium. Aquatic Life Support System .</li> <li>7. Elasmobranch transport techniques and equipment. Acclimatization and recovery.</li> <li>8. Common freshwater aquarium fish diseases. Treatment and control.</li> <li>9. Common saltwater aquarium fish diseases. Treatment and control.</li> <li>10. Infectious diseases of ornamental pet fish. Treatment and control.</li> <li>11. Environmental requirements and diseases of carps, Koi and goldfish.</li> <li>12. Tropical fish medicine.</li> <li>13. Nutrition and nutritional diseases of ornamental fish.</li> <li>14. Culture and maintenance of selected marine invertebrates.</li> <li>15. Diseases and pathogens of marine invertebrates.</li> </ol>	laboratory classes
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# UNIwersytet Przyrodniczy we Wrocławiu

## Orthopedic diseases in horses Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200AO.1533.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> general subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> clinical classes: 30	

### Goals

C1	Knowledge of clinical anatomy and biomechanics of the horse movement will help students to better understand the pathology of various diseases of horse locomotor system. Information about equine orthopedic examination and detailed discuss about the most common diseases of horse musculoskeletal system will allow students to get a correct diagnosis and effective treatment.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	oral credit, observation of student's work
W2	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	oral credit, observation of student's work
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work
U2	plans the diagnostic procedure	O.U3	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	participation in discussion
K3	deepens his/her knowledge and improves skills	O.K8	participation in discussion

### Study content

No.	Course content	Activities
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1.	<p>1.Detailed musculoskeletal anatomy of the horse. Theoretical and practical classes. Presentation of the anatomy of the horse in clinical aspect. Location the most important structures of the equine limb and back (bursaes, joint, ligaments, tendons).</p> <p>2.Biomechanics of horse movement. Theoretical classes. Definition of terms in the field of biomechanics. Discussion about pattern of proper horse movement. Occupational diseases of sport horses. Analysis of films with moving horses in terms of biomechanics and recognition of lameness.</p> <p>3.Horse orthopedic examination. Theoretical and practical classes. Schema and practical exercises on live animal (palpation, assessment of the horse in motion, flex test).</p> <p>4. Diagnostic perineural nerve block and intra-articular anesthesia. Practical classes. Localisation of point of injection in the case of perineural nerve block. Intra-articular injection and ultrasound guided injection. Work on the cadaver limbs.</p> <p>5.Radiology diagnostic. Practical classes. Detailed discussion about proper technic of equine radiograms – how to make. Practicing correct techniques and X-ray projection. Analysis of performed radiograms.</p> <p>6.Ultrasound diagnostic. Practical classes. Detailed discussion about proper technic of equine sonograms – how to make. Practical ultrasound examination of equine digital flexor tendons. Analysis of performed sonograms</p> <p>7.Additional diagnostic method used in equine orthopedic. Theoretical classes. Discussion about thermography and its usefulness in the diagnostic of horse orthopedic disease. Rules of proper technic of thermograms – how to make. Discussion of clinical case.</p> <p>8.Pharmacology of equine orthopedic disease.Elements of regenerative medicine. Theoretical classes. Discussion about drugs used in orthopedic patient management (p.o., i.m.,i.v.,i.a. ways of administration). Discussion about used of regenerative medicine in equine orthopedic disease.</p> <p>9.Wound healing. Desmurgia. Theoretical and practical classes. Discussion about most common injuries in horses and wound healing complications. Each student will assume dressing on head, hoof and limb.Discussion and presentation of splints and Robert Johnes bandages.</p> <p>10. Equine back disease. Theoretical classes. Discussion about most common back disease in horse. Schema of back examination and diagnostic imaging. The influence of rider and saddle on the development of spine disorders. Rules of matching saddle.</p> <p>11.Diseases of flexor tendons of the foot. Theoretical classes. Detailed discussion about foal tendons diseases (contractures, laxity), and adult horses tendon diseases. Presentation of method of treatment, rehabilitation program and correct forging in tendon diseases.</p> <p>12.Horse physiotherapy and rehabilitation. Theoretical classes. Presentation of method used in equine physiotherapy (massage, kinesitherapy, physical therapy). Physiotherapy of sport horses.</p> <p>13.Horse physiotherapy and rehabilitation. Practical classes. Demonstration of high intensity laser therapy and extracorporeal shock wave therapy. Presentations of horse stretching techniques. Each student will perform physiotherapy and stretching on live animal.</p> <p>14.Case discussion. Theoretical classes. Presentation of the full documented cases. Examination protocols, radiograms, sonograms and films with lameness horses.</p> <p>15. CREDIT</p>	clinical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Poultry meat and egg hygiene and technology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.1758.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 5, laboratory classes: 10	

### Goals

C1	During the course, the student becomes familiar with slaughtering methods of different kind of poultry, with practical implementation of HACCP system in poultry meat plants and with the technology of egg production and egg products.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains in detail the hazards and risk related to egg and poultry products	O.W11	written credit, observation of student's work, active participation, case study

W2	explains in detail the principles of appropriate supervision over the production of eggs and poultry meat products	O.W12	written credit, observation of student's work, active participation, case study
W3	knows to an extensive degree the standards, principles and conditions and hygiene of technological process of processing of eggs and poultry meat;	O.W13	written credit, observation of student's work, active participation, case study
<b>Skills - Student can:</b>			
U1	performs examination of eggs and poultry meat products	O.U5	active participation, case study
U2	performs activities that are associated with the veterinary supervision on eggs and poultry meat processing plants	O.U6	active participation, case study
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student's work, active participation, case study
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, active participation, case study

### Study content

No.	Course content	Activities
1.	<p>1.Law regulations concerning the slaughtering process of poultry, the presentation of the main EU and Polish regulations concerning the rules for the transport of poultry to the slaughter -houses, poultry slaughtering, cutting and processing meat, microbiological criteria for poultry meat, the legal basis of the HACCP system.</p> <p>2.Basic principles of egg production: the presentation of environmental factors influencing the production of eggs. Microbiological criteria for environmental conditions-climate, litter, ventilation. Fundamentals of nutrition of laying hens.</p> <p>3. Nutritional value of eggs: nutritional value of eggs of different species of birds and contemporary trends shaping the nutritional value.</p> <p>4.Storage and preservation of eggs: cold storage and modified atmosphere packaging, modern methods of stabilizing and extending of the shelf- life of eggs.</p>	lecture

2.	<p>1. Detailed technology and hygiene of slaughtering process of the different kinds of poultry including ostriches, consumer health hazards and ways to eliminate them at each stage of the slaughter process, the quality of poultry meat</p> <p>2. Technology and hygiene of cutting and processing of poultry meat: a detailed presentation of the cutting process of the carcasses, packaging methods and preservation of poultry meat, production of processed poultry meat products (sausages, deli, MDPM), microbiological hazards associated with poultry meat and control measures for them.</p> <p>3. The HACCP system in poultry processing: practical development of the full documentation of the HACCP system for selected meat products, preparation of a product description and flow diagram, the hazard analysis and estimation of the risks, identification of the critical control points, identification of critical limits and establishing the ways of monitoring for each CCP, corrective actions and possible methods of verification of the HACCP system.</p> <p>4. Microbiological and sensory examination of processed poultry meat products: practical microbiological examination of different sorts of poultry meat and poultry meat products for presence of: Salmonella, Listeria monocytogenes, E. coli. Conducting sensory analysis of poultry meat products- assessment of taste, flavor, color and texture.</p> <p>5. Detailed technology and hygiene of slaughtering process of the different kinds of poultry including ostriches, consumer health hazards and ways to eliminate them at each stage of the slaughter process, the quality of poultry meat</p> <p>6.Examination of eggs: evaluation of egg freshness and microbiological examination.</p> <p>7.Packaging and storage of eggs- practical aspects, hazards,HACCP system</p>	laboratory classes
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### Entry requirements

Animal Anatomy, Biochemistry, Animal Physiology, Microbiology, Food Law, Meat Hygiene



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Swine diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2410.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> practical classes: 13, clinical classes: 17	

### Goals

C1	The aim of the course is to acquaint students with the knowledge on infectious diseases of pigs, possibilities of their diagnosis, treatment and prevention. Teaching is an extension of the issues discussed during the teaching of the subject disease of farm animals – swine diseases.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge – Student knows and understands:</b>			



W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	oral credit
W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	oral credit
W3	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W4	oral credit
W4	rules for the conduct of the clinical and pathological examination in accordance with the examination plan and the analysis of symptoms and post-mortem lesions in pigs	O.W7	oral credit
<b>Skills - Student can:</b>			
U1	plans the diagnostic procedure in pigs	A.U19	oral credit
U2	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	oral credit
U3	issues veterinary medical opinion and certificate	O.U7	oral credit
U4	conduct a clinical examination in pigs, analyze and interpret clinical signs and laboratory test results, formulate a diagnosis taking into account differential diagnosis and undertake therapeutic and preventive measures in pigs	O.U1, O.U2	oral credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	cooperation with representatives of other professions in the field of public health protection	O.K11	observation of student's work

### Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> <li>1. Vet's opinion</li> <li>2. Diagnostic tools in swine infection diseases</li> <li>3. New biosecurity systems on swine farms</li> <li>4. Probiotics in therapy and prophylaxis swine diseases</li> <li>5. ASFV in swine and biosecurity control</li> <li>6. New strategy in eradication PRRSV and PCV2 in swine farms (</li> <li>7. Metophylaxis in swine farms</li> </ol>	practical classes
2.	<ol style="list-style-type: none"> <li>1. Vet practice on swine farms</li> <li>2. Results fo treatment of swine - clinical and AP diagnostics on the swine farms</li> </ol>	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary advicement in large farms Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2635.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 12, laboratory classes: 10, clinical classes: 8	

### Goals

C1	Description of the most important tasks of the farm veterinarian, based on the example of dairy farms. At visits in the farm carrying the evaluation of the farm, and production groups of animals, collection of samples for laboratory examination, analysis of farm records, analysis of nutrition and keeping conditions, recognition of management programme. Elaboration and interpretation of the results of the material collected on the farm, preparation of the opinion about the farm, presentation the results to the owner, formulation of advisements.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Knows the scale and types of the most important problems of large dairy cattle farms	B.W9, O.W2, O.W3	project, observation of student's work, active participation, report
W2	Is able to perform the analysis of herd problems based on farm data and results of monitoring	A.W10, B.W5, B.W9, O.W1, O.W2, O.W8	project, observation of student's work, active participation, report
W3	understands the economical background of farm animal keeping	B.W4, B.W5, O.W3	project, observation of student's work, active participation, report
<b>Skills - Student can:</b>			
U1	Is able independently to recognize herd problems and to apply the proper improving programme	A.U12, A.U7, B.U5, O.U3, O.U4	project, observation of student's work, active participation, report
U2	Is able to select independently the representative group of animals and based on their examination take diagnosis of the herd problems	A.U12, A.U15, B.U1, B.U2, B.U20, B.U21, B.U5, O.U3	project, observation of student's work, active participation, report
<b>Social competences - Student is ready to:</b>			
K1	Is able successfully to utilize the farm records and perform the anamnesis that allow to determine the most important farm problems	O.K1, O.K3, O.K5, O.K8	observation of student's work, active participation
K2	Is able to suggest the most efficient solutions that increase the farm functioning	O.K1, O.K11, O.K3, O.K4, O.K9	observation of student's work, active participation

## Study content

No.	Course content	Activities
1.	<p>1-2. Minimal standards for field practice involved in livestock animals. Typical failures/drawback of the farm health records. Methods of financial settlements with the owner.</p> <p>3-6. Monitoring and prevention of production diseases. Main fields of herd health monitoring. Główne pola monitorowania zdrowia stada. Keeping the accurate body condition (BCS) in cows. Negative Energy Balance (NEB) Milk fever and subclinical hypocalcemia. The rumen health. Micronutrient and antioxidants status.</p> <p>7-8. Farm procedures associated with prevention of hypocalcemia. The influence of nutrition of the dairy cows on periparturient pathology</p> <p>9-10. Pathogenesis of mineral metabolism in dairy cows at transit period</p> <p>11-12. Analysis of costs of production diseases and other health problems in dairy farm. Definitions of production diseases in large farm conditions.</p>	lecture
2.	<p>1-2. Analysis of the case of problem farm, class type application-integration</p> <p>3-4. Familiarization with the software of herd management (evaluation of the possibilities of use the computer in the work of farm veterinarian).</p> <p>5-8. Elaboration and interpretation of results of examination the material collected on the farm, application of computer software in the data processing.</p> <p>9-10. Elaboration of the expertise and the discussion of results with the owner.</p>	laboratory classes
3.	<p>1-8. Farm evaluation, evaluation of respective technological groups of animals. Collection of samples for laboratory examinations, analysis of farm records, analysis of nutrition and keeping system.</p>	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary dermatology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.2638.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 20, laboratory classes: 10	

### Goals

C1	The aim of the Veterinary dermatology is to give the students the knowledge about diseases of skin in dogs and cats, their etiology, pathogenesis, therapeutic methods, and prevention. It concerns ectoparasitic diseases, autoimmune diseases as well as allergic diseases, genetic dermatoses, behavioral dermatoses and endocrinopathies.
C2	The aim is to give information about possible diagnostic methods and therapeutic methods use in skin diseases of dogs and cats

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Explains and interprets the etiology, pathogenesis and clinical symptoms of skin diseases occurring in dogs and cats, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats;	O.W3	written credit
W2	Knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the skin diseases occurring in dogs and cats;	O.W4	written credit
W3	Characterizes in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of dogs and cats, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit
W4	Knows the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the skin diseases occurring in dogs and cats;	B.W4	written credit
W5	Knows the method of handling clinical data, as well as results of laboratory tests and additional tests used in veterinary dermatology	B.W6	written credit
<b>Skills - Student can:</b>			
U1	Conducts dermatological clinical examination of dogs and cats in accordance with the principles of medical art;	O.U1	active participation
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given skin disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	active participation
U3	Plans the diagnostic procedure in skin diseases in dogs and cats	O.U3	active participation
U4	Uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions in skin diseases	O.U8	written credit
U5	Conducts a medical-veterinary interview in order to obtain precise information regarding individual dog, cat or group of animals and its or their living environment	B.U2	active participation
U6	perform clinical examination in dogs and cats	B.U3	active participation
U7	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests used in veterinary dermatology	B.U6	active participation
U8	Chooses and applies the appropriate treatment in different skin diseases	B.U13	written credit
<b>Social competences - Student is ready to:</b>			
K1	Uses the objective sources of information	O.K2, O.K4	active participation
K2	Formulates conclusions from own measurements or observations	O.K5	active participation

K3	Deepens his/her knowledge and improves skills	O.K8	active participation
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## Study content

No.	Course content	Activities
1.	<p>Exercise 1. History and dermatological examination. History of the disease. Dermatological patient`s chart. Additional dermatological tests. Dermatological magnifier, Woods lamp examination, coat brushing, scotch test.</p> <p>Exercise 2. Additional dermatological tests. Principles of collecting materials for additional tests. The trichogramme, skin scraping (superficial and deep, BAC, cytology, Diff-Quick coloration, skin biopsy).</p> <p>Exercise 3. Main principles of allergological diagnosis. Allergens and diagnostic kits. Evaluation of disorders of skin reactivity. Skin patch tests, allergic skin tests (prick-tests, intradermal tests) provocative skin tests. Exercise 4. Otitis externa. Clinical division, diagnosis and basis of differential diagnosis, clinical signs, treatment and prophylaxis, general and local treatment.</p> <p>Exercise 5. Analysis of dermatological patients charts, presentation of papers prepared by students</p>	laboratory classes
2.	<p>Immune dermatoses part 1. Allergic skin diseases (atopy, atopic dermatitis, flea allergy dermatitis, food intolerance, food allergy- as an example for using provocative test, contact allergic dermatitis)</p> <p>Immune dermatoses part 2. Immune dermatoses (lupus, pemphigus)</p> <p>Metabolic dermatoses, skin conditions associated with behavioral disorders and complicating dermatoses. Zinc-responsive dermatoses. Complicating dermatoses. Clinical signs related to pruritus, secondary infection, keratinisation disorders; primary and secondary seborrhea, seborrheic dermatitis complex. Skin conditions associated with behavioral problems.</p> <p>Genetic skin diseases. Genetic melanin pigmentary disorders, genetic disorder of collagen production- EDS complex, dermoid sinus.</p> <p>Skin neoplasmas. Epithelial tumors, mezenchymal tumors (connective tissue), melanocytes tumors.</p> <p>Main feline dermatoses. Extensive alopecia, milliary dermatitis, feline eosinophilic granuloma complex</p> <p>Endocrine dermatoses. Sertolli cell tumor, male feminisation syndrome, hyperandrogenism, hyper- and hypoestrogenism, acromegaly, alopecia X.</p> <p>Bacterial skin diseases. Types of pyoderma. Surface Pyodermas. Superficial Pyodermas. Deep Pyodermas. Diagnosis and treatment.</p> <p>Laboratory and exozitic animals dermatoses. Dermatoses of guinea pigs, hamsters, rats and rabbits. Ectoparasites and dermatophytosis.</p> <p>Drugs used in treatment of skin diseases. Principles of therapy, protocols of treatment, methods of treatment.</p>	lecture

## Entry requirements

veterinary pharmacology, veterinary microbiology, veterinary immunology, parasitology and invasiology, clinical and laboratory diagnostics, diseases of dogs and cats



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Surgical oncology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J200BO.3573.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 10	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 8, clinical classes: 7	

### Goals

C1	During the classes participants will learn the basic principles and methods of surgical oncology. The goal of the course is also to introduce students to the basics of minimally invasive surgery and possibilities of using modern techniques in oncological patients. Students will be able to plan the treatment in some oncological cases, conduct a conversation with the owner on the ways and possibilities of treatment as well as practically perform basic procedures in oncological surgery.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	basic principles of surgical oncology and additional therapy.	O.W3, O.W4, O.W7	test



<b>Skills - Student can:</b>			
U1	plan the treatment, remove small skin lesion and do basic skin reconstruction.	O.U2	active participation
<b>Social competences - Student is ready to:</b>			
K1	to discuss and explain to the owner the treatment options.	O.K10, O.K2, O.K9	active participation

### **Study content**

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	Principles of surgical oncology. Reconstructive surgery. Palliative treatment in oncological surgery. Basics of minimally invasive surgery in oncology.	lecture
2.	Skin reconstruction - practical classes in surgical technique. Suturing, tension relieving sutures, grafts. Electrochemotherapy - practical application, technique, equipment. Pain in oncological patients - case analysis, anesthesia and palliative protocols planning, case study. Laparoscopy - components of the equipment, laparoscopy in practice. Clinical cases - case study, treatment planning. How to talk with the owner of the oncological patient? Clinical case analysis and test of knowledge	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of horses - Clinical internship II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0502.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> clinical classes: 40	

### Goals

C1	During the internship, students will independently conduct a medical history, conduct a general and detailed examination of all systems of the horse's body, collect material for diagnostic tests, perform additional imaging tests, analyze differential diagnosis, make a diagnosis based on the results of the conducted test, perform therapeutic procedures and present methods disease prevention.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	oral credit
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	oral credit
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work
U3	plans the diagnostic procedure	O.U3	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	participation in discussion
K3	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	participation in discussion

## Study content

No.	Course content	Activities
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1.	<p>Practical classes with patients of the Horse Clinic. Procedures, as the case may be, include:</p> <ul style="list-style-type: none"> <li>• diagnosis and treatment of infectious and non-infectious diseases</li> <li>• use of specialized diagnostic equipment</li> <li>• taking samples for laboratory tests (bacteriology, biochemistry, cytology, endocrinology, histopathology)</li> <li>• diagnosis of reproductive disorders in relation to individual animals and herds</li> <li>• using methods of assisted reproduction and artificial insemination of horses</li> <li>• diagnosing and conducting pregnancy in mares</li> <li>• delivering births by bloodless and bloody methods</li> <li>• postpartum care for mare - methods for subtracting retained fetal membranes</li> <li>• care for the newborn, prevention and treatment of foal diseases</li> <li>• examination of stallions for fitness for reproduction with semen collection and assessment</li> <li>• surgery on the testicles, penis, foreskin and accessory glands</li> <li>• the use of modern methods of therapy and prevention as well as modern drugs</li> <li>• moving horse examination and lameness diagnostics</li> <li>• use of diagnostic and therapeutic procedures in horse orthopedics</li> <li>• surgery on the limbs</li> <li>• treatment of diseases of the digestive system of horses, including oral and dental diseases</li> <li>• surgery in the treatment of equine diseases of horses</li> <li>• dietitian and horse nutrition</li> <li>• parasitological prevention and recognition of parasite invasion in horses</li> <li>• immunology and immunoprophylaxis of horses</li> <li>• diagnosis and treatment of eye diseases</li> <li>• diagnosis and treatment of cardiological diseases in horses</li> </ul>	clinical classes
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### **Entry requirements**

Credit for subject Diseases of horses, Diseases of horses - Clinical internship I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diseases of dogs and cats - Clinical internship II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0495.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> clinical classes: 60	

### Goals

C1	The aim of the course is to provide students with practical knowledge of: clinical examination of animals, diagnosing diseases of dogs and cats and differential diagnosis of specific disease, collection and protection material for laboratory tests, interpret laboratory tests results and relate them to the clinical condition of the patient and the use of appropriate treatment (including operations) and disease prevention in dogs and cats.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	oral credit
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	oral credit
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	oral credit
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	oral credit
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	oral credit
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit
W8	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	oral credit
W9	explains the mechanisms of organ and systemic pathologies	B.W2	oral credit
W10	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	oral credit
W11	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	oral credit
W12	presents the principles of conducting clinical examination and monitoring animal health	B.W5	oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit

U3	plans the diagnostic procedure	O.U3	oral credit
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	oral credit
U5	issues veterinary medical opinion and certificate	O.U7	oral credit
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit
U7	safely and humanely handles animals and instructs others in this scope	B.U1	oral credit
U8	performs a full clinical examination of the animal	B.U3	oral credit
U9	assesses the nutritional status of the animal and provides advice in this scope;	B.U5	oral credit
U10	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral credit
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit
K3	uses the objective sources of information	O.K4	oral credit
K4	formulates conclusions from own measurements or observations	O.K5	oral credit
K5	formulates opinions regarding various aspects of professional activity	O.K6	oral credit
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	oral credit
K7	deepens his/her knowledge and improves skills	O.K8	oral credit
K8	communicates with the co-workers and shares knowledge	O.K9	oral credit
K9	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit

## Study content

No.	Course content	Activities
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1.	<p><b>INFECTIOUS DISEASES</b></p> <p>1. Epizootic management and currently binding documentation concerning management in suspected rabies in dogs and cats: rules of observing the animals suspected of rabies, differential diagnosis, intravital diagnosis. The procedure and documentation in official observation for rabies in animals observed after biting a human: taking epizootic history from the owners of animals observed for rabies, rules of official observation by a decision of the County veterinary doctor and observation at the expense of the owner conditions of the premises meeting the requirements for temporary detention of observed animals principles of cooperation with the County veterinary doctor and SANEPID. Vaccination against rabies: performance of vaccination, rule of documentation for vaccination against rabies. Collection of blood samples for testing blood samples and rules of antibody titration and interpretation of examination results in the case of dogs going abroad of Poland in respect to international requirements for rabies.</p> <p>2. Serological (ELISA, DIF, IFAT, OA, Rivlta test) and microbiological (cultures) examinations of material from clinical cases (EPIVET laboratory). Evaluation of preparations, principles for interpretation of serological tests and possible procedures in infectious diseases of dogs (distemper, leptospirosis, Rubarth disease, canine coronavirus infection, canine parvovirus infection, ehrlichiosis, borreliosis, kennel cough and FIV, FIP, FeLV, feline distemper, feline rhinitis, mycoplasmosis, chlamyphilosis, herpes viruses infection). Principles of preparation of material for diagnostic tests using techniques of molecular biology and flow cytometry (collection samples, lymphocyte raft preparation, DNA isolation, isolation of subpopulations of haemocytes in evaluation of the background immune thrombocytopenia). Interpretation of the results of PCR examination in animals at different stages of infection and in vaccinated animals.</p> <p>3. Veterinary proceedings in case of infectious diseases in dogs and cats: proceeding in animals kennels, principles of vaccination and using appropriate preparations, principles for conducting therapy, principles of combining sick animals, animals after recovery, healthy animals, bioassurance. Vaccinations for dogs and cats.</p> <p><b>INTERNAL DISEASES</b></p> <p>1. Practical diagnosis and treatment of cardiovascular diseases in dogs and cats (congenital and acquired heart diseases, vascular diseases, heart ultrasound, heart electrocardiography).</p> <p>2. Practical diagnosis and treatment of skin diseases in dogs and cats (bacterial dermatitis, fungal skin diseases, allergic dermatitis, parasitic skin diseases, autoimmune skin diseases, additional tests used in the diagnosis of skin diseases).</p> <p>3. Practical diagnosis and treatment of gastrointestinal diseases in dogs and cats (diseases with vomiting signs, diseases with diarrhea or difficult passing of feces, endoscopic diagnostics of anterior and posterior part of the alimentary tract).</p> <p>4. Practical diagnosis and treatment of liver and pancreatic diseases in dogs and cats (inflammatory and noninflammatory diseases of the liver and biliary tract, laboratory and imaging diagnostics of liver diseases, liver biopsy, pancreatitis, exocrine pancreatic insufficiency, laboratory diagnostics of pancreatic diseases).</p> <p>5. Practical diagnosis and treatment of respiratory diseases in dogs and cats (diseases with sneezing signs, diseases with cough and dyspnoea signs, endoscopic diagnostics of diseases of nasal cavities, larynx, trachea and bronchi, broncho-alveolar lavage).</p> <p>6. Practical diagnosis and treatment of nervous system diseases in dogs and cats (inflammatory and noninflammatory diseases of the brain, meninges and spinal cord, differentiation of causes of epileptic seizures, laboratory and imaging diagnostics of nervous system diseases, puncture and collection of cerebrospinal fluid).</p> <p>7. Practical diagnosis and treatment of urinary tract diseases in dogs and cats (diseases of kidney and lower urinary tract, laboratory and imaging diagnostics of the urinary system, cystoscopy, kidney biopsy).</p> <p>8. Practical diagnosis and treatment of endocrine diseases in dogs and cats (disturbances in the function of the thyroid, adrenal gland and pancreas, laboratory diagnostics of endocrine diseases).</p> <p>9. Principles of diagnosis of neoplastic diseases and the principles of tumours therapy.</p> <p><b>SURGERY</b></p> <p>1. Surgery in the abdominal cavity in dogs and cats (the alimentary tract - surgery of the stomach, intestines and liver, the urinary system - surgery of the kidneys, ureters, urinary bladder and urethra, the reproductive system - surgery of the ovaries, testes, uterus, vagina, prostate and mammary gland; splenectomy, oncological operations).</p> <p>2. Surgery in the chest in dogs and cats (thoracotomy, surgery of the thoracic part of the esophagus, surgery of the thoracic part of the trachea, vascular anomalies in the chest, the operating procedures of mediastinum, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, lung lobe resection).</p> <p>3. Surgery in the neck and head (surgery of the oral cavity and throat, surgery of the sinuses and nasal cavities, surgery of the larynx and cervical part of the trachea).</p> <p>4. Orthopedic joint procedures (diagnostics, conservative and surgical treatment).</p> <p>5. Veterinary traumatology (fractures, luxations), diagnostics, surgical and conservative treatment).</p> <p>6. Anesthesiology (methods of anesthesia used in various surgical procedures, intensive care, cardiopulmonary resuscitation).</p> <p>7. Imaging diagnostic of surgical patients (X-ray, ultrasound).</p> <p><b>REPRODUCTION</b></p> <p>1. The practical gynecological examination of bitches and queens: anamnesis, anamnesis questionnaire, clinical examination, cytological examination of the vagina. Vaginal swabs collection. Swabs staining. Cytological evaluation of vaginal swabs. Review of preparations from different physiological and pathological states. Collection material from the urogenital system for additional tests.</p> <p>2. Endoscopic examination of the reproductive tract: patient preparation and the technique, principles and interpretation of results, determination of the oestrus cycle phase on the basis of endoscopic examination, pathological lesions of the reproductive tract, methods for uterine cervix catheterization.</p> <p>3. The endocrinological examination of reproductive functions in small animals: collection of material, determination and analysis of concentrations of progesterone, estrogen and other sex hormones in the blood, hormonal stimulation tests, interpretation of results, analysis of the dynamics of changes in sex hormone concentrations in the blood. The principles for determining the optimum date for insemination of females.</p> <p>4. The ultrasound examination of the reproductive system in small animals: ultrasound examination of the ovaries in various physiological and pathological states, ultrasound examination of the uterus and other parts of the reproductive system, interpretation of results.</p> <p>5. Obstetric-gynecological procedures in small animals: caesarean section - surgical technique, preparation for surgery, postoperative proceeding, female sterilization, male castration, total and partial mastectomy, hysterectomy and ovariectomy in females with pyometra.</p>	clinical classes
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## Entry requirements

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology



and in vivo, Pathomorphology, Surgery and anesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of dogs and cats - Clinical internship I



# UNIwersytet Przyrodniczy we Wrocławiu

## Diseases of farm animals - Clinical internship II Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0498.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> clinical classes: 60	

### Goals

C1	The aim of the course is to provide students with practical knowledge about: clinical examination of animals, diagnosis of livestock diseases and differential diagnosis of individual disease entities, collection and preservation of material for laboratory tests, interpretation of laboratory tests results and referring them to the patient's clinical condition and appropriate treatment (in including operational) and prevention diseases of farm animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the principles of diagnostic management, and therapeutic management of diseases of farm animals	B.W4	oral credit, performing tasks

W2	handling of clinical data and results of laboratory tests used in the treatment of livestock	B.W6	oral credit
W3	how to proceed in case of suspicion or confirmation of diseases which are subject to compulsory eradication or registration for individual animal livestock species	B.W8	oral credit
W4	techniques of reproduction and breeding selection for livestock	B.W12	oral credit
<b>Skills - Student can:</b>			
U1	analyze and interpret clinical symptoms, anatomopathological changes and test results, recognizes diagnose pathological conditions in farm animals and undertakes therapeutic or prophylactic actions	O.U2	oral credit, active participation, performing tasks
U2	communicate in an understandable language with livestock owners and with other veterinarians. Prepares case descriptions and maintains records in a correct manner	A.U12, A.U14	oral credit, active participation
U3	collect and secures specimens for testing and performs standard laboratory tests, as well as correctly analyze and interpret laboratory test results used in the treatment of livestock diseases	B.U6	oral credit, active participation, performing tasks
U4	select and applies appropriate treatment for specific livestock species	B.U13	oral credit, active participation
U5	develop and implements appropriate prophylactic programmes appropriate to the livestock species	B.U21	oral credit, active participation
<b>Social competences - Student is ready to:</b>			
K1	demonstrate responsibility for decisions made towards people, animals and the natural environment	O.K1	active participation, performing tasks
K2	to be open to other opinions and willing to use objective sources of information	O.K4	active participation
K3	discusse and is willing to formulate conclusions from own measurements or observations	O.K5	active participation
K4	operate under conditions of uncertainty and stress	O.K10	active participation

## Study content

No.	Course content	Activities
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1.	<p><b>INFECTIOUS DISEASES</b></p> <ol style="list-style-type: none"> <li>Infectious diseases in farm animals: FMD, BrB, EBB. Sampling material for diagnosis FMD - in cattle, sheep, goat and swine, BrB - cattle, sheep, goat and swine, EBB - cattle. Prossidings with farm animals with suspected and after diagnosis of FMD, BrB, EBB infection. Practical procedure: identification, clinical examinations, age and time of production in cattle. Different clinical diagnosis of FMD, BrB, EBB in farm animals.</li> <li>Infectious diseases in farm animals - Rabies. Prossidings with farm animals before and after diagnostics rabies infection. Practical procedure: identification, clinical examinations, age and time of production in cattle, sheep, goat and swine. Practical cooperation with National Veterinary Sugeron and with Sanepid (documents). Vaccination against Rabies in farm animals - prevention and special vaccination farm animals.</li> <li>Infectious diseases sheep and goat. Material for diagnosis TBR in cattle, sheep and swine. Prossidings with farm animals after diagnostics results, practical procedure: identyfication, clinical examinations, age and time of production in cattle. Alergic diagnosis (tuberculinisation) in farm animals with Bovituberculin and Avituberculin.</li> <li>Infectious diseases in sheep (ekhtyma and whitlow). Prossidings with sheep before and after laboratory diagnosis, Practical procedure: identyfication, clinical examinations, age and time of production in cattle. Qualification infected animals. Choice of method of therapeutics method. Practical prevention - vaccination and bath in sheep with enzootic and epidemic diseases.</li> <li>Infectious diseases in swine. Clinical examination in the direction PRDC and PIDC. Sampling for laboratory diagnosia (blood, etc.) - serology and microbiology. Practical prevention PRDC and PIDC.</li> <li>Infectious diseases in farm animals - laboratory diagnosis bacterial and viral diseases. Practical procederes with contagious samples. Practical diagnosis: serological tests (ELISA, iIF, dIF, OA) and bacteriology examinations from clinical cases. Practical interpretation of laboratory investigations.</li> <li>Infectious diseases in farm animals. Practical training with documents in Veterinary Sugeron with statistics and data base about infection diseases in Poland and UE).</li> </ol> <p><b>INTERNAL DISEASES</b></p> <ol style="list-style-type: none"> <li>Animal taming.</li> <li>Collection of material for tests (blood, feces, urine, rumen contents, fluid from body cavities), techniques of medicaments administration.</li> <li>Practical recognition (trichogram, scrapings, test with tape, cytology) and treatment of skin diseases.</li> <li>Practical recognition and treatment of respiratory system diseases.</li> <li>Practical recognition and treatment of digestive system diseases.</li> <li>Practical recognition and treatment of musculoskeletal and nervous system disease.</li> <li>Practical recognition and treatment of metabolic diseases.</li> <li>Practical recognition and treatment of urinary system diseases (including endoscopy of bladder).</li> </ol> <p><b>SURGERY</b></p> <ol style="list-style-type: none"> <li>Surgical treatment of digestive system diseases of ruminants and swine.</li> <li>Dehorning in cattle</li> <li>Practical performing of anesthesia in farm animals</li> <li>Practical recognition and treatment of fingers diseases in farm animals.</li> </ol> <p><b>REPRODUCTION</b></p> <ol style="list-style-type: none"> <li>Gynecological examinaton per rectum of cows and heifers- diagnosis of state of reproductive tract, introduction of proper treatment</li> <li>Gynecological examinaton per vaginam of cows and heifers- diagnosis of state of reproduction tract, introduction of proper treatment</li> <li>Ultrasound evaluation of reproductive tract of cattle- diagnosis of state of reproductive tract, introduction of proper treatment</li> <li>Catheterization of bladder, catheterization of cervix</li> <li>Assistance during parturition (conservative and surgical) for females of farm animals</li> <li>Performing fetotomy</li> <li>Examination for pregnancy in females of farm animals ( external, internal, ultrasound, ultrasonic).</li> <li>Performing of anesthesia useful in obstetrics and ginecology in farm animals</li> <li>Clinical examination and evaluaton of mammary gland in cattle, field trial of milk and introduction of proper treatment in case of mastitis</li> <li>Gynecological examinaton in sheeps and goats</li> <li>Clinical examination of mammary gland in a small ruminants and swine</li> <li>Gynecological examinaton sows- clinical and ultrasound evaluation of reproductive tract</li> </ol>	clinical classes
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## **Entry requirements**

Prior completion of subjects: Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, Surgery and anesthesiology, Imaging diagnostic, Diseases of farm animals, Andrology, Diseases of farm animals - Clinical internship I



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Health herd management Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.3571.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 12, laboratory classes: 18	

### Goals

C1	Expanding theoretical knowledge and practical skills in animal health management on farms in order to obtain satisfactory production results
C2	Presentation of the specificity of constructing prophylactic and immunoprophylactic programs for various species depending on herd size, production group and epizootiological evaluation taking into account the reduction of used antibiotics
C3	Showing various methods of assessing the economic effects of introduced procedures and programs.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	the use of health monitoring in different herds	B.W19, B.W20, B.W3, B.W5, B.W9, O.W1, O.W10, O.W11, O.W13, O.W4, O.W8	written credit, observation of student's work, active participation, test, participation in discussion
W2	the relationship between environment antygen preasure and prophylactic programme at farm	B.W10, B.W11, B.W5, O.W11, O.W13, O.W3	written credit, active participation, test, participation in discussion
W3	what should be taken into account when preparing preventive programs and procedures for various farms	B.W20, B.W22, B.W6, B.W9, O.W5	written credit, observation of student's work, active participation, test
<b>Skills - Student can:</b>			
U1	assess the health risk at farm	B.U17, B.U2, B.U20, B.U5, B.U6, O.U2, O.U3, O.U4, O.U5	observation of student's work, active participation, test, participation in discussion
U2	construct the prophylactic programmes for different pigs and cattle production groups	B.U20, B.U21, B.U5, B.U9, O.U2	observation of student's work, active participation, presentation, test, participation in discussion
U3	intregate knowledge from different disciplines	B.U2, B.U20, B.U21, B.U5, O.U10	observation of student's work, active participation, test
<b>Social competences - Student is ready to:</b>			
K1	cooperate with stockman	O.K1, O.K11	observation of student's work, active participation
K2	to define the principles of cooperation between veterynarian, farmers and other people working in livestock area to counteract diseases occurence at cattle and pigs farms	O.K11, O.K5, O.K8	observation of student's work, active participation, participation in discussion

### Study content

No.	Course content	Activities
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1.	<p>1. Monitoring the health status of animals on farms. Practical basics of cooperation with a large-scale farm. Acquisition and interpretation of production results and diagnostic tests. On-site examination, use of various technological tools, rapid tests.</p> <p>2. Calculation the costs of pathology and the expected economic effects of the interventions introduced on the basis of chosen examples.</p> <p>3. The specificity of constructing prevention and immunophylaxis programs on poultry farms (chickens, turkeys, ducks, geese).</p> <p>4. Presentation of principles for creating a variety of prophylactic and immunoprophylactic programs on large-scale pig farms depending on existing / identified risk. Introducing various procedures.</p> <p>5. Assumptions for the immunoprophylaxis program in cattle, possibilities and requirements. Overview of the principles and conditions for the introduction of immunoprophylaxis in cattle herds.</p> <p>6. General assumptions for a preventive program (routine activities) for a dairy farm. Presentation of the principles of creating preventive programs on dairy cattle farms for individual production groups.</p>	lecture
2.	<p>1. Pig health monitoring based on post-mortem inspection using the Ceva Lung Program (CLP). Assessment of the health status of pigs based on lung assessment using the CLP mobile application.</p> <p>2. Therapeutic strategies on pig farms, proposals for further intervention and therapeutic steps in herds after taking into account the results of clinical examination and post-mortem assessment.</p> <p>3. Presentations and discussion on the prepared procedures for pig farms.</p> <p>4. Assessment of the health status of pigs based on the clinical evaluation of the animals - a case study.</p> <p>5. Creation of preventive programs (routine activities and possible vaccinations) depending on the farm's reality.</p> <p>Case studies for dairy and beef cattle farms. Proposing solutions for various cattle farms taking into account the current farm abilities and problems.</p>	laboratory classes

### **Entry requirements**

A student should be after courses: Animal Breeding; Animal Nutrition; Technologies in Animal Production; Immunology; Farm practice; Slaughter animals and meat hygiene I, II, III; Diseases of Farm Animals; Avian disease; Veterinary prevention I & II





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Professional ethics Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.1941.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 1.0
	<b>Activities and hours</b> lecture: 15	

### Goals

C1	Showing to the students the ethical problems concerning professional veterinarians. Giving the knowledge in the area of Guide to Professional Conduct of veterinary surgeons. Making the students aware of various range of responsibilities connected with profession of public trust.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit

W2	explains in detail the principles of consumer health protection	O.W11	written credit
W3	knows and understands the veterinary physician's code of ethics	A.W22	written credit
<b>Skills - Student can:</b>			
U1	communicates with the clients and other veterinary physicians	A.U12	written credit
U2	is able to listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	written credit
U3	assesses the economic and social conditions, in which the profession of veterinary physician is performed;	A.U18	written credit
U4	uses his/her professional skills to improve the quality of veterinary care, animal welfare, as well as public health;	A.U19	written credit
U5	understands the need of continuing education, in order to ensure continuous professional development	A.U21	written credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	report
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	report
K3	gets involved in the activities of professional and local government organisations	O.K12	report

## Study content

No.	Course content	Activities
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1.	<p>1. What is a profession of public trust?, Historical outline of self-governing organizations. Law basis of a profession. Role of the professions of public trust in the society.</p> <p>2. Structure: National General Assembly of Veterinary Surgeons, Regional Assembly of Veterinary Surgeons, National Council of Veterinary Surgeons, Regional Councils of Veterinary Surgeons, Intercessor of professional Responsibility, National and Regional Veterinary Courts of Veterinary Surgeons, National and Regional Revision Commissions.</p> <p>3. Principles of ethics based on the Code of Ethics of Veterinary Profession. Ethical issue In everyday practice. Cooperation with other vets, professional organizations and animal owners.</p> <p>4. Professional responsibility on ethical, medical and law basis. Skills and competences. Professional mistake and medical and professional consequences. Use of animals in research and medical experiments.</p> <p>5. Clients demands and requirements and complaints. Professional procedures with client's complaints.</p> <p>6. European Code of Professional conduct. Federation of Veterinarians in Europe. EAEVE (European Establishment for Evaluation of Veterinary Education).</p> <p>7. Free market versus ethics. Is it possible to coexistence? Area of common interest. Doubts. Free market dylemas in the light of ethical codes of profession of public trust.</p>	lecture
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### **Entry requirements**

Humanistic subjects according to study curriculum



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Laboratory analytic Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.1131.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> exam	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 25	

### Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about the profiles of laboratory tests performed for selected animal diseases, possible deviations occurring in laboratory tests in selected animal diseases, and cells occurring in the bone marrow in selected disease units. To familiarize students with the equipment necessary to perform laboratory tests, blood, bone marrow, feces, urine and tissue fluids. Knowledge about adequate sets of additional tests necessary to monitor health and disease, ways of interpreting laboratory results, methods of collecting and testing blood, bone marrow, feces, urine and tissue fluids,
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
	Knowledge - Student knows and understands:		

W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written exam
W2	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written exam
W3	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written exam, active participation
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, active participation
U2	plans the diagnostic procedure	O.U3	written exam
U3	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	written exam, observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	uses the objective sources of information	O.K4	observation of student's work, active participation
K2	formulates conclusions from own measurements or observations	O.K5	observation of student's work, active participation
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation

## Study content

No.	Course content	Activities
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1.	<p>Practical interpretation of the results of laboratory tests on dogs and cats. - part I.</p> <p>Microbiological examination of the clinical material and their interpretation - part II</p> <p>Glucose load test.</p> <p>Bronchoalveolar lavage and washings in dogs and cats.</p> <p>White blood cell image</p> <ul style="list-style-type: none"> <li>- image counting</li> <li>- pathological images.</li> </ul> <p>Examination of marrow smears - myelogram</p> <p>Practical implementation of tests in the analytical laboratory, including modern equipment.</p> <p>Diagnostics of blood counts - part I</p> <ul style="list-style-type: none"> <li>study of erythrocyte osmotic resistance</li> <li>watching bone marrow smears</li> <li>visualization of results.</li> </ul> <p>Diagnostics of blood counts - part II</p> <ul style="list-style-type: none"> <li>coagulation time</li> <li>bleeding time cross test</li> </ul> <p>Metabolic profiles in cattle</p> <p>Laboratory tests in the diagnosis of liver and biliary tract diseases.</p> <p>Research in the diagnosis of diseases of the liver vascular system.</p> <p>Blood collection to determine the acid-base balance.</p> <p>Practical Interpretation results.</p> <p>Urine test.</p> <p>Carrying out the study and calculating the exogenous creatinine clearance.</p>	laboratory classes
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### **Entry requirements**

Animal anatomy, Biochemistry I, Biochemistry II, Histology and embryology I, Histology and embryology II, Veterinary microbiology I, Veterinary microbiology II, Animal physiology I, Animal physiology II, Clinical and laboratory diagnostics I, Clinical and laboratory diagnostics II, Veterinary pharmacology I, Veterinary pharmacology.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Auditing of quality management systems in food industry Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0105.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 3, laboratory classes: 12	

### Goals

C1	During the course, the student becomes familiar with the methodology of auditing of quality management systems on the example of the HACCP system.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	rules of audit leading in food industry	B.W16	observation of student's work, active participation, test

W2	procedures of auditing of HACCP system in food industry	B.W18	observation of student's work, active participation, test
<b>Skills - Student can:</b>			
U1	estimate implementation of HACCP system documentation .	B.U25	observation of student's work, active participation
U2	lead practically HACCP audit in food plant	B.U18	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student's work, active participation
K2	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work, active participation

### Study content

No.	Course content	Activities
1.	Procedures of auditing the HACCP and other quality management systems used in the food industry: auditor qualifications and standards on auditing (ISO 19011), the most important standards and norms as reference documents for auditing quality systems (HACCP, BRC, IFS, ISO 9001, ISO 22000, GMP + ), the requirements for auditors, the types of audits, audit objectives, audit methodology.	lecture
2.	<ul style="list-style-type: none"> <li>Preparing and initiating an audit: preparation of audit working papers (schedules of the audits, specific audit plan, checklists), preparing for the opening meeting.</li> <li>Practical audit of documentation: the types of documentation of quality management systems, preparing the proper procedures and instructions, the methodology of auditing, searching for nonconformities in the documentation.</li> <li>.Practical auditing methods "on site": "upstream" and "downstream", the types of questions, examinations on site in food processing plant, "body language.</li> <li>.Discrepancies/ nonconformities and their classification: a practical search for non-compliances during the manufacturing process of foods, preparing of non-compliance papers, preparation of audit report.</li> <li>Preparation of the closing meeting, summary of the audit: conducting the final meeting, audit findings, the potentials for improvement, strong and weak points.</li> <li>Post audit actions: corrective actions for each non-compliance, checking audit, preventive actions.</li> </ul>	laboratory classes

### Entry requirements

Veterinary Microbiology, Food law, Hygiene of Meat and Slaughter Animals, Hygiene of Food Processing





# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Cancer pharmacotherapy Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0328.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	To provide knowledge of the molecular basis of cancer development.
C2	To familiarize students with the groups of drugs used in animal anticancer chemotherapy.
C3	To familiarize students with the principles of cancer chemotherapy, adverse drug reactions, and causes of cancer cell resistance.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Etiology, pathogenesis and clinical signs of cancers in dogs and cats and the principles of antineoplastic chemotherapy.	O.W3	oral credit
W2	Methods of diagnostic and therapeutic procedures appropriate for neoplastic diseases occurring in dogs and cats.	O.W4	oral credit
W3	Mechanisms of drug resistance acquisition, including multidrug resistance by neoplastic cells.	A.W18	oral credit
W4	Principles of diagnostic procedure in case of suspicion of neoplastic disease, including differential diagnosis and therapeutic management.	B.W4	oral credit
<b>Skills - Student can:</b>			
U1	Analyze and interpret the results of molecular tests, formulate the diagnosis of the disease, including differential diagnosis, in animals suffering from various types of cancer and implement appropriate anti-cancer treatment on their basis.	O.U2	oral credit
U2	Select and apply appropriate anti-cancer treatment in dogs and cats.	B.U13	oral credit
<b>Social competences - Student is ready to:</b>			
K1	Demonstrating responsibility for decisions made towards people, animals and the natural environment in the context of the use of anti-cancer chemotherapy.	O.K1	oral credit
K2	Reliable self-assessment, formulating constructive criticism in the field of veterinary anti-cancer treatment of animals, accepting criticism of the solutions presented by them, responding to it in a clear and substantive manner, also using arguments referring to the available scientific achievements in the discipline of cancer chemotherapy.	O.K7	oral credit
K3	Is ready to act under conditions of uncertainty and stress in the course of anticancer chemotherapy in animals.	O.K10	oral credit

## Study content

No.	Course content	Activities
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1.	<p>1. The molecular basis of cancer.</p> <p>Definition of cancer. Discussion of the process of cancer formation and progression. Discussion of the molecular basis of cancer. Oncogenes and suppressor genes. Carcinogens.</p> <p>2. Basics of chemotherapy and side effects of anti-cancer drugs.</p> <p>Presentation of the principles of cancer chemotherapy. Discussion on the dosage of anticancer drugs. Safety of drugs used in cancer therapy. Side effects of anti-cancer drugs. Interactions between anticancer drugs and other drugs used in animals.</p> <p>3. Preparation of staff and office for the use of cancer chemotherapy. Tumor cell resistance to drugs used in cancer therapy.</p> <p>Storage and anticancer drugs preparation for administration. Discussion of the legal provisions regarding the purchase and issue of prescriptions for cancer medicines by veterinarians. Ethical and legal issues. Mechanisms of tumor cell resistance: primary and secondary resistance.</p> <p>4. Alkylating agents and enzymes.</p> <p>Characteristics of alkylating drugs. Discussion of individual drugs belonging to the group of alkylating agents: cyclophosphamide, ifosfamide, chlorambucil, busulfan, melphalan, thiotepa, mechlorethamine, carmustine, lomustine, dacarbazine, procarbazine, temozolomide. Characteristics of enzymes used in cancer therapy: L-asparaginase.</p> <p>5. Antimetabolites and hormones.</p> <p>Characteristics of antimetabolites. Discussion of individual antimetabolite drugs: methotrexate, 5-fluorouracil, cytosine arabinoside, 6-mercaptopurine, gemcitabine. Characteristics of hormones used in cancer therapy: glucocorticosteroids, tamoxifen.</p> <p>6. Platinum derivatives. Antimicrotubule Agents.</p> <p>Characteristics of platinum derivatives. Discussion of individual platinum derivatives used in cancer therapy: cisplatin, carboplatin, oxaliplatin. Antimicrotubule Agents. Overview of Vinca alkaloids: vincristine, vinblastine. Characteristics of taxanes. Paclitaxel and docetaxel.</p> <p>7. Anticancer antibiotics. Topoisomerase inhibitors. Tyrosine kinase inhibitors.</p> <p>Characteristics of anti-cancer antibiotics. Discussion of individual drugs in this group: doxorubicin, dactinomycin, bleomycin, mitoxantrone. Characteristics of topoisomerase inhibitors: topotecan, irinotecan, etoposide, teniposide. Characterization of tyrosine kinase inhibitors: masitinib, toceranib.</p> <p>8. Pharmacotherapy of hematopoietic cancers.</p> <p>Discussing the principles of hematopoietic cancer chemotherapy and the drugs used. Lymphoma and leukemia chemotherapy. Multiple myeloma chemotherapy.</p> <p>9. Pharmacotherapy of skin and soft tissue cancers.</p> <p>Discussing the principles of chemotherapy for skin and soft tissue cancers and the drugs used. Chemotherapy for particular types of cancer.</p> <p>10. Pharmacotherapy of selected solid tumors.</p> <p>Discussion of the principles of chemotherapy for solid tumors. Chemotherapy for mammary gland cancer, bone cancer and discussion of the drugs used in their therapy.</p> <p>11. Pharmacotherapy of respiratory, digestive and genitourinary cancers.</p> <p>Discussing the principles of chemotherapy for respiratory, digestive and genitourinary cancers and discussing the drugs used in their therapy.</p> <p>12. Pharmacotherapy of neoplasms of the nervous system and endocrine glands.</p> <p>Discussing the principles of chemotherapy for neoplasms of the nervous system and endocrine glands, and discussing the drugs used in their therapy.</p> <p>13. Chemotherapy in various animal species.</p> <p>Tumors in various animal species. The possibility of using chemotherapy in large and exotic animals.</p> <p>14. Molecular targeted therapies and immunotherapy.</p> <p>Presentation of the idea of personalized medicine and molecular targeted treatment. Possibilities of using molecularly targeted drugs in animals. Basics of cancer immunotherapy in veterinary medicine.</p> <p>15. Experimental oncology - research in veterinary and comparative oncology.</p> <p>Definition of experimental oncology. Discussion of the research methodology used in experimental oncology. Discussion of the basic principles of tumor cell culture. Basics of the principles of testing the cytotoxic effects of drugs, apoptosis, DNA damage.</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Case based physiology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0333.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> practical classes: 15	

### Goals

C1	To present the importance of a knowledge of physiology in making diagnostic and therapeutic decisions in clinical work.
C2	To systematize the knowledge of the organ system physiology in a way that directly translates into clinical practice.

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	Knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the internal diseases of companion animals	B.W1	written credit, case study
W2	knows to an extensive degree, describes in detail and explains the functioning and physiological mechanisms of companion animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	A.W2, O.W2	written credit, case study
W3	explains the mechanisms of organ and systemic pathologies as the disarrangement of physiological processes in the course of internal diseases in companion animals	B.W2	written credit, case study
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests and compares them to physiological conditions, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions in the course of internal diseases of companion animals	O.U2	written credit, case study
U2	plans the diagnostic procedure in internal diseases of small animals based on the knowledge of physiology	O.U3	written credit, case study
U3	prepares transparent clinical case descriptions together with the explanation of disarrangements in normal physiology in the course of internal diseases of small animals	A.U14	case study
<b>Social competences - Student is ready to:</b>			
K1	deepens his/her knowledge and improves skills in physiology and internal medicine of companion animals	O.K8	case study
K2	communicates with the co-workers and shares knowledge	O.K9	case study

## Study content

No.	Course content	Activities
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1.	<p>The subject is based on the analysis of clinical cases described in the literature to link knowledge of normal, physiological processes in the body with the selection of diagnostic tests and treatment methods for patients. During subsequent classes in auditory groups, clinical cases are presented, based on which students discuss and justify the presented diagnostic and therapeutic procedures and symptoms based on knowledge in animal physiology.</p> <p>Topics of classes:</p> <p>1-2: Clinical cases in neurology - physiology of the central and peripheral nervous system</p> <p>3-4: Clinical cases in endocrinology - endocrine physiology</p> <p>5-7: Clinical cases in the field of cardiology - physiology of the cardiovascular system</p> <p>8-9: Clinical cases in pulmonology - respiratory physiology</p> <p>10: Clinical gastroenterology cases - digestive system physiology</p> <p>11-12: Clinical cases in nephrology and urology - excretory system physiology</p> <p>13: Neonatology cases - selected aspects of neonatal physiology</p> <p>14: Anesthesia cases - homeostasis</p> <p>15: Summary and test of knowledge</p>	practical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical pathomorphology of dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0413.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> clinical classes: 30	

### Goals

C1	The purpose of the subject is to teach students specialist knowledge and skills in choosing and interpretation additional diagnostic test kits in diseases. It allow to disclose the final effects of these diseases, which are mortal to the animals. Student will choose additional tests, which will be the most specific. Students will learn also about additional test kits needed to diagnose properly.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit
W2	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthrozooses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	written credit
W3	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	written credit
W4	explains the mechanisms of organ and systemic pathologies	B.W2	written credit
W5	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written credit
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit
U2	issues veterinary medical opinion and certificate	O.U7	written credit
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
U4	performs a full clinical examination of the animal	B.U3	observation of student's work
U5	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	observation of student's work
U6	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	observation of student's work
U7	Plans the diagnostic procedure	O.U3	written credit
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	written credit
K2	deepens his/her knowledge and improves skills	O.K8	written credit

### Study content

No.	Course content	Activities
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1.	<p>Various autopsy technics.  Usefulness of various additional tests.  Practical sampling.  Performing the autopsy with usage the obtained knowledge.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Performing the autopsy with sampling, analysis of laboratory results. Practical test results interpretation.  Final test</p>	clinical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical pharmacology of dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0414.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 6, laboratory classes: 24	

### Goals

C1	The aim of the course is to familiarize students with the rules of drug dosage in the treatment of dogs and cats, taking into account therapeutic indications and pharmacokinetic issues. In addition, students recognize the side effects of these drugs and interactions in multi-drug therapies, and learn the principles of monitored therapy as a method of personalizing pharmacotherapy in companion animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	ways of using veterinary medicinal products for disease prevention and treatment of dogs and cats, taking into account the maximization of the therapeutic effect and minimization of the risk of side effects	A.W16, O.W5	written credit, active participation
W2	pharmacotherapeutic approaches appropriate to disease states in companion animals	A.W17, O.W4	written credit, active participation
W3	basics of clinical pharmacokinetics and methods of monitored therapy as a tool for optimizing the use of drugs in dogs and cats	B.W4, O.W15	written credit, active participation
<b>Skills - Student can:</b>			
U1	analyze and interpret clinical symptoms as well as the results of laboratory and additional tests, formulate the diagnosis of the disease, including differential diagnosis, and undertake pharmacotherapeutic activities in dogs and cats	B.U13, O.U2	written credit, active participation
U2	Select and administer rational empirical and targeted antimicrobial chemotherapy in companion animals	A.U11	written credit, active participation
<b>Social competences - Student is ready to:</b>			
K1	use of new guidelines in the field of pharmacotherapy of dogs and cats	O.K4	active participation
K2	expand knowledge and improve skills in the field of pharmacotherapy of dogs and cats	O.K8	active participation
K3	formulating conclusions related to treatment modifications based on laboratory results and own calculations	O.K5	active participation

## Study content

No.	Course content	Activities
1.	<p>1. The basic principles of pharmacokinetics, interactions between pharmacokinetic parameters. Dosage counting with regard to pharmacodynamic and pharmacokinetic data - antibiotics as an example. Dosing principles for animals with liver or kidney insufficiency, neonates and senile individuals.</p> <p>2. Pharmacological interactions. Mechanisms of pharmacodynamic, pharmacokinetic and pharmaceutical interactions. Interactions based on metabolic induction and inhibition. The review of most common drug interactions encountered in the treatment of dogs and cats.</p> <p>3. Side effects and drug caused diseases of dogs and cats. Dose-dependent and dose-independent side effects. Drug toxicity and the mechanisms of drug-caused organ damage. Familiarization with a side effect notification sheet and pharmaceutical law considering the duty of such notification.</p>	lecture

2.	<p>1. Anti-inflammatory pharmacotherapy – non-steroid anti-inflammatory drugs and chondroprotectants used in cats and dogs.</p> <p>2. Anti-inflammatory pharmacotherapy – glucocorticoids used in cats and dogs. Monitoring of adverse reactions and pharmacokinetic interactions.</p> <p>3. The principles of a correct antimicrobial therapy in dogs and cats: the review of available formulations, prophylactic and therapeutic indications, adverse effects and dangerous interactions, disposition of antimicrobial drugs in animal tissues. Factors that influence the efficacy of antimicrobial treatment and most common mistakes in treatment.</p> <p>4. Therapeutic drug monitoring. Clinical pharmacokinetics. Practical classes on drug dosage optimization in monitored patients (case studies).</p> <p>5. Pharmacotherapy in endocrine disorders and endocrinopathies. The review of drugs used in hyper- and hypothyroidism, hyper- and hypoadrenocorticism, hyper- and hypoparathyroidism. The review of antidiabetic drugs. Drug and hormone dosing based on functional diagnostic tests.</p> <p>6. Pharmacotherapy of reproductive system diseases. Review of drugs used in the prevention and therapy of reproductive system diseases. Drug dosage and side effects.</p> <p>7. Pharmacotherapy of cancer. Review of drugs used in cancer chemotherapy. Rules for the use of cancer chemotherapy, dosage of drugs and their side effects.</p> <p>8. Antiepileptic drugs. The review of drugs used in epileptic state in dogs and cats. Monitored therapy on an example of epilepsy treatment. Adverse effects and interactions</p>	laboratory classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Clinical psychology of animals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0415.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 15	

### Goals

C1	The goal of the course is to familiarize the students with leading theories in the field of animal psychology and concepts of learning. In the course the students learn most important definitions associates with animal psychology and behavioural medicine, as well as treatment methods in cases of behavioural disorders in companion animals.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			

W1	knows and understands the principles of diagnostic procedure in cases of behavioral problems, taking into account the differential diagnostics and therapeutic procedure	B.W4	presentation, case study
W2	species-specific welfare needs of dogs and cats	B.W9	presentation, case study
<b>Skills - Student can:</b>			
U1	chooses and applies appropriate training and treatment protocols for behavioral problems in dogs and cats	B.U13	presentation, case study
U2	conducts a medical-veterinary interview in cases of behavioral problems in dogs and cats, taking into consideration their living environment	B.U2	presentation, case study
U3	teaches the owners how to recognize human and abusive methods of animal training	B.U1	presentation, case study
<b>Social competences - Student is ready to:</b>			
K1	takes response for the implemented therapeutic methods in the context in their impact on the human-animal bond and animal welfare	O.K1	presentation, case study
K2	cooperates with the owner in order to increase animal welfare	O.K2	presentation, case study

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>Basic terms in psychology, animal emotions and methods of learning.</li> <li>The significance of species-specific needs and behavioral patterns for animals in the man-made environment.</li> <li>Dog training methods and behavioral therapies in the light of modern science.</li> <li>Learning methods used for behavioral therapies (desensitization, classical and operant conditioning, imitation)</li> <li>The role of veterinary surgeons in behavioral therapy: influence of somatic problems on behavior; pain assessment and control as a tool in behavioral therapy. Impact of neutering on behavioral changes in dogs and cats. Pharmacotherapy of behavioral problems in dogs and cats.</li> <li>Clinical case analysis</li> </ol>	laboratory classes

### Entry requirements

Ethology and animal welfare, Veterinary pharmacology, Diseases of dogs and cats



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diagnosics and treatment of ruminant diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0453.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, clinical classes: 5	

### Goals

C1	Basis of the programme is 50 year experience of Prof. Baugartner clinical activity in Clinic for Ruminants of the Veterinary University Vienna. Develops the diagnostics and therapy of infectious and uninfected diseases not presented or presented in abbreviation during obligatory programme of Farm animals' diseases. Special interest is dedicated to less known in Poland diseases of cattle, sheep and goats. Clinical classes are focused on the presentation of the model of clinical diagnosis and treatment of gastrointestinal tract pathology in calves and adult cattle utilized in Clinic for Ruminants in Vienna.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	knows to an extensive degree, describes in detail and explains the etiology, pathogenesis and clinical signs of infectious and non-infectious diseases in ruminants and rules of their treatment	B.W4, B.W5, O.W3, O.W4	project, observation of student's work, active participation, report, participation in discussion
W2	knows to an extensive degree and describes in detail the methods of diagnostics and therapy proper in the diseases occurring in domestic ruminants	B.W5, O.W4	project, observation of student's work, active participation, report, participation in discussion
W3	rules in the clinical examination in agreement with the clinical examination plan, is able to analyse clinical symptoms and necropsy findings	B.W4, B.W5, O.W7	project, observation of student's work, active participation, report, participation in discussion
W4	knows the principles of diagnostic and therapeutic procedures appropriate at the diseases of ruminants	B.W5, O.W4	project, observation of student's work, active participation, report, participation in discussion
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the respiratory and gastrointestinal tract in ruminants in accordance with the principles of medical art;	B.U2, B.U3, O.U1	project, observation of student's work, active participation, report, participation in discussion
U2	analyses and interprets clinical findings and results of laboratory tests, formulates the diagnosis of given disease, taking into account the differential diagnostics in ruminants	B.U2, B.U3, O.U2	project, observation of student's work, active participation, report, participation in discussion
U3	plans the diagnostic procedure of infectious and non-infectious diseases in ruminants	B.U6, O.U3	project, observation of student's work, active participation, report, participation in discussion
U4	conducts a medical-veterinary interview in order to obtain precise information regarding individual ruminant or the herd	B.U2, B.U3	project, observation of student's work, active participation, report, participation in discussion
U5	safely and humanely handles animals and instructs others in this scope	B.U13	project, observation of student's work, active participation, report, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	exhibits attitudes in accordance with professional ethics at circumstances that request the tolerance for specific beliefs of ruminant owners	O.K2, O.K5	project, observation of student's work, active participation, report, participation in discussion



K2	critical assessment of the situation and choosing impartial criteria in the veterinary procedures	O.K4	project, observation of student's work, active participation, report, participation in discussion
K3	ability of independent evaluation of the problem, and making decisions	O.K5	project, observation of student's work, active participation, report, participation in discussion
K4	needs permanent professional education to achieve progress in skills	O.K8	project, observation of student's work, active participation, report, participation in discussion

### Study content

No.	Course content	Activities
1.	<p>1-2. Deficiency diseases in cattle students may recognize problems of most commonly occurring deficiency diseases. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention, in individual diseases will be discussed.</p> <p>3-4. intoxications in cattle –students recognize problems of most common intoxications in cattle. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention, in individual types of intoxications will be discussed.</p> <p>5. Pregnancy toxemia, osteodystrophia, osteomalacia, hemoglobinuria puerperalis–students may recognize specific aspects of metabolic diseases that induce signs connected with central nervous system and bones in cattle. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention will be discussed</p> <p>6. Intensive treatment of recumbent cows –students may become familiar with possible causes of cows' recumbency. The methods that differentiate different recumbency types from downer cow syndrome caused by hypocalcemia will be described. Therapy of recumbent animals and veterinary treatment will be described</p> <p>7. Mastitis in small ruminants – students become familiar with inflammations of the mammary gland in small ruminants. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment and prevention will be discussed.</p> <p>8. Tetanus, Bovine malignant catarrhal fever – students become familiar with important aspects of mentioned diseases. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention and administrative procedures will be discussed.</p> <p>9. Rumen acidosis – students become familiar with ruminal indigestion in cattle. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment and preventive procedures will be discussed.</p> <p>10. Paratuberculosis in cattle – students become familiar with important aspects of Johne's disease in cattle. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention and administrative procedures will be discussed.</p>	lecture

2.	<p>1-3. Diagnostics of gastrointestinal tract diseases in cattle - history, clinical examination, signs, differential diagnosis, prognosis, treatment. Practical diagnostics of oral cavity, oesophagus, rumen, omasum, reticulum, abomasum, small intestine, large intestine. Techniques of sampling for laboratory examination.</p> <p>4-5. Diarrhoea in calves - causes and treatment. Main causes and diagnostic methods in calf diarrhoea. Establishing etiology and treatment procedures in respective clinical cases. Students become familiar with proper methods of rehydration in calves.</p>	clinical classes
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### **Entry requirements**

animal anatomy, pathomorphology, animal physiology, physiopathology, veterinary pharmacology, veterinary microbiology, veterinary immunology, clinical immunology, clinical diagnostics, farm animal diseases



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Diagnostic ultrasound of small animals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0452.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> Yes
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> laboratory classes: 30	

### Goals

C1	Practical training of performing abdominal ultrasound examination. Learning of fundamentals of diagnostics ultrasound, indications to perform the ultrasound examination in small animals and recognizing ultrasound image of abdominal organs and their common pathologies.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, active participation, test

W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, active participation, test
W3	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	oral credit, active participation, test
W4	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	oral credit, active participation, test
W5	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	oral credit, active participation, test
<b>Skills - Student can:</b>			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit, test
U2	plans the diagnostic procedure	O.U3	oral credit, test
U3	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit, test
U4	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, test
<b>Social competences - Student is ready to:</b>			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student's work
K2	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work
K4	communicates with the co-workers and shares knowledge	O.K9	observation of student's work

## Study content

No.	Course content	Activities
1.	Ultrasound units, physical basics of ultrasound, artefacts, preparing the patient for the examination. Ultrasound imaging of parenchymal organs of the abdominal cavity (liver, spleen, kidneys, pancreas, prostate), alimentary tract, urinary system, reproductive system, peritoneal cavity and retroperitoneal space. Basics of Doppler ultrasonography. Methods of ultrasound guided biopsy.	laboratory classes

## **Entry requirements**

Anatomy, topographic anatomy, clinical diagnostics, diagnostic imaging.



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Internal medicine of foals Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.0988.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 9, clinical classes: 6	

### Goals

C1	introducing students to common foals disease
C2	show differences between foal and adult horse
C3	deliver the knowledge about diagnostic procedures in assessing a foal current state of health
C4	train with students how to approach a foal and a mare to be safe and examine a foal properly
C5	deliver the knowledge about the realistic prediction of the chance for survival and normal use in the future
C6	deliver the knowledge of how to perform the assessment of the newborn and calculation of the foal score, collect detailed history from the owner and its correlation with the clinical exam

### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	observation of student's work, active participation, participation in discussion, performing tasks
W2	presents the principles of conducting clinical examination and monitoring animal health	B.W5	observation of student's work, active participation, participation in discussion, performing tasks
W3	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	observation of student's work, active participation, participation in discussion, performing tasks
W4	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	observation of student's work, active participation, participation in discussion, performing tasks
W5	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student's work, active participation, participation in discussion, performing tasks
W6	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	observation of student's work, active participation, participation in discussion, performing tasks
W7	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	observation of student's work, active participation, participation in discussion, performing tasks
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, active participation, participation in discussion, performing tasks

U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, active participation, participation in discussion, performing tasks
U3	plans the diagnostic procedure	O.U3	observation of student's work, active participation, participation in discussion, performing tasks
U4	safely and humanely handles animals and instructs others in this scope	B.U1	observation of student's work, active participation, participation in discussion, performing tasks
U5	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	observation of student's work, active participation, participation in discussion, performing tasks
U6	performs a full clinical examination of the animal	B.U3	observation of student's work, active participation, participation in discussion, performing tasks
U7	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	observation of student's work, active participation, participation in discussion, performing tasks
U8	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	observation of student's work, active participation, participation in discussion, performing tasks
U9	chooses and applies the appropriate treatment	B.U13	observation of student's work, active participation, participation in discussion, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, active participation, participation in discussion, performing tasks



K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work, active participation, participation in discussion, performing tasks
K3	uses the objective sources of information	O.K4	observation of student's work, active participation, participation in discussion, performing tasks
K4	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation, participation in discussion, performing tasks
K5	communicates with the co-workers and shares knowledge	O.K9	observation of student's work, active participation, participation in discussion, performing tasks
K6	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work, active participation, participation in discussion, performing tasks

### Study content

No.	Course content	Activities
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1.	<p>1. Immunoglobulin transfer, immune-mediated congenital disorders. Immunoglobulin transfer in foals, mechanism and abnormalities. Clinical signs of selected immune-mediated congenital disorders. Approach and diagnosis. Treatment options and prevention. Analysis of additional procedures and prediction of the chance for survival.</p> <p>2. Dummy foal, foal score. Causes and clinical appearance of dummy foals. Approach to the suspected case, diagnosis and treatment options. The use of foal score, how to calculate, prediction of the chance for survival based on the foal score. Analysis of additional procedures in the diagnostic process.</p> <p>3. Foal septicemia. Causes and clinical appearance of foal septicemia, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival.</p> <p>4. Respiratory diseases. A practical approach to selected respiratory diseases in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future.</p> <p>5. Gastrointestinal disorders. A practical approach to selected gastrointestinal disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future.</p> <p>6. Cardiovascular and urinary disorders. A practical approach to selected cardiovascular and urinary disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future.</p> <p>7. Ophthalmology and dermatology. A practical approach to selected ophthalmologic and dermatologic disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in diagnostic process and prediction of the chance for survival and normal use in future.</p> <p>8. Neurological disorders. A practical approach to selected neurological disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in diagnostic process and prediction of the chance for survival and normal use in future.</p> <p>9. Muscle disorders and other diseases. Practical approach to selected muscle and other disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in future.</p>	lecture
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2.	<ol style="list-style-type: none"> <li>1. Clinical assessment and examination of the foal - Clinical exam of the foal, differences regarding the age of the foal. Normal values of clinical parameters and assessment methods. Assessment of the newborn and calculation of the foal score. Collecting detailed history from the owner and its correlation with the clinical exam.</li> <li>2. Injection sites and drug delivery - Injection sites for different drug delivery routes. Places for intravenous injections and blood collection. Possible adverse reaction and approach to such situations.</li> <li>3. Respiratory examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results.</li> <li>4. Gastrointestinal examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results.</li> <li>5. Neurologic examination - detailed examination with an analysis of needed additional tests. Performing the additional tests. Analysis of the lab results.</li> <li>6. Ophthalmology examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results.</li> </ol>	clinical classes
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# UNIwersytet Przyrodniczy we Wrocławiu

## Pigeon diseases Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.1574.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> No

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> clinical classes: 30	

### Goals

C1	The aim of the course is to acquaint students with the biology and breeding of pigeons. During the course they become familiar with diseases of pigeons (bacterial, viral, parasitic, and fungal), principles of treatment, prevention programs, the techniques of restraining and clinical examination, sample collection for laboratory tests, and medication. The specificity of individual treatment and groups of pigeons.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	etiology, pathogenesis and clinical symptoms of pigeon diseases and the principles of therapeutic management	O.W3	written credit

W2	diagnostic and therapeutic methods used in pigeons	O.W4	written credit
W3	ways of using veterinary medicinal products for the prevention and treatment of pigeons	O.W5	written credit
W4	the biology of infectious agents that cause diseases that are transmitted between pigeons and transmitted from pigeons to humans, taking into account the mechanisms of disease transmission	O.W6	written credit
W5	principles of clinical examination and monitoring of pigeons' health	B.W5	written credit
W6	causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of pigeons	B.W3	written credit
W7	mechanisms of organ and systemic pathologies in pigeons	B.W2	written credit
W8	principles of diagnostic procedures, including differential diagnosis, and therapeutic procedures in pigeons	B.W4	written credit
<b>Skills - Student can:</b>			
U1	conduct a clinical examination of pigeons in accordance with the principles of medical practice	O.U1	written credit
U2	analyze and interpret clinical symptoms, pathological changes, and the results of laboratory tests of pigeons, formulate a diagnosis of the disease state, including differential diagnosis, and take therapeutic or preventive measures in pigeon flocks	O.U2	written credit
U3	plans the diagnostic procedure	O.U3	written credit
U4	conduct a medical and veterinary interview in order to obtain detailed information about the pigeons' health and living conditions	B.U2	written credit
U5	perform a complete clinical examination of pigeons	B.U3	written credit
U6	collect and preserve samples for research and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	written credit
<b>Social competences - Student is ready to:</b>			
K1	showing responsibility for decisions made towards people, birds, and the natural environment	O.K1	active participation
K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions	O.K2	active participation
K3	use of objective sources of information	O.K4	active participation
K4	broadening knowledge and improving skills	O.K8	active participation

## Study content

No.	Course content	Activities
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1.	<p>1. Principles of organization of breeding pigeons.</p> <p>The student becomes familiar with the environmental conditions for different groups of pigeons (ornamental and racing pigeons). In addition, the student takes note of the principles of the loft organization and the proper parameters to maintain birds (relevant biosecurity).</p> <p>2. Overview of the most commonly kept breeds of racing and ornamental pigeons.</p> <p>During the classes are presented the most common species of ornamental and racing pigeons coming from the Clinic and from private fanciers. The student becomes familiar with specific for each breed requirements of nutrition, care, maintenance, predisposition to certain diseases.</p> <p>3. Principles of feeding racing and ornamental pigeons.</p> <p>The student becomes familiar with the dietary requirements for different groups of pigeons (racing and ornamental pigeons) and nutrition programs for these birds, depending on the breeding period (the period of reproduction, shows/races). The student examines the types of food available on the Polish market (food demonstration, analysis of their composition depending on the demand in a specific period of the year).</p> <p>4. Anatomy and clinical physiology of pigeons.</p> <p>The student becomes familiar with the anatomy and physiology of pigeons.</p> <p>5. The clinical examination and techniques of pigeon restraint.</p> <p>The student becomes familiar with the techniques of catching, restraint of pigeons, learns to conduct a clinical examination. The student independently performs subcutaneous, intramuscular, intravenous injections, learns to collect blood and administer medications to the crop. From taken swabs from the crop or collected blood student independently performs smears, stains them, and assesses them.</p> <p>6. Selected viral diseases of pigeons.</p> <p>The student becomes familiar with the most common viral diseases of pigeons and diagnostic methods to detect them (techniques of molecular biology: PCR, RT-PCR, histopathology, serological tests: ELISA, HA). Discussion of ways to prevent (including immunoprophylaxis) and the combating of viral diseases in pigeon flocks.</p> <p>7. Selected bacterial diseases of pigeons.</p> <p>The student becomes familiar with the most common bacterial diseases of pigeons and diagnostic methods to detect them (microbiological tests, rules of sample transport to the laboratory, preparing a cover letter). Discussion about prevention (including immunoprophylaxis) and combating bacterial diseases in pigeon flocks. Students independently perform microbiological cultures in the laboratory of the Clinic.</p> <p>8. Selected fungal and parasitic diseases of pigeons.</p> <p>The student becomes familiar with the most common fungal and parasitic diseases of pigeons and diagnostic methods to detect them (flotation, sedimentation, direct examination of feces smears, evaluation of preparations subjected to dyeing and colored). Taking swabs from the crop and swabs for the presence of fungi and / or parasites and their evaluation under the microscope. Discussion of ways to prevent and combat fungal diseases and parasitic diseases (prevention programs on an annual basis) in pigeon flocks. The student performs fecal flotation and sedimentation.</p> <p>9. Principles of diagnostics of pigeon diseases.</p> <p>The student becomes familiar with the possibilities and principles of diagnostics of viral, bacterial, and parasitic diseases of pigeons. The student analyzes and interprets the results of laboratory tests. The student learns to perform properly the necropsy of pigeon, collect material for laboratory research, and learns to prepare preparations of cytological stains and assesses them under a microscope.</p> <p>10. Principles of pharmacological therapy in a pigeon flock.</p> <p>The student becomes familiar with medicinal products and nutritional supplements available on the Polish market, can independently choose the appropriate treatment depending on the diagnosed etiologic agent. The student becomes familiar with the rules for conducting proper pharmacotherapy in the flock depending on the period of breeding and used therapeutic agents.</p> <p>11. Prevention in racing and ornamental pigeon husbandry.</p> <p>The student becomes familiar with the rules of proper maintenance flock of pigeons on an annual basis (prevention during the winter, spring and summer period, loft hygiene depending on the time of year, food hygiene, prevention during the breeding, racing and rest season).</p> <p>12. Anesthesia, surgical procedures performed in pigeons. Preparing birds for surgery and post-operative care.</p> <p>Students participate in procedures most commonly performed in pigeons (suturing wounds, removing breeding rings), convert doses of anesthetics used for anesthesia, and learn the rules of induction of inhaled anesthesia. In addition, classes are conducted with dressing and the treatment of bone (stabilization of broken limbs).</p> <p>13. Principles of endoscopy and X-ray examination in pigeons.</p> <p>The student becomes familiar with the principles of preparing pigeons for endoscopy and X-ray (with or without contrast). During the classes are discussed indications for performing diagnostic tests, the student learns protocols for conducting anesthesia and are discussed most frequently performed X-ray projections (depending on an organ). Students independently evaluated radiographs.</p> <p>14. Participation in the exhibition of racing and ornamental pigeons.</p> <p>Class away. The student has the possibility to see the most popular breeds of racing and ornamental pigeons, learns the rules for evaluating bird exhibition.</p> <p>15. Final class - test.</p>	clinical classes
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# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Selected issues of gastroenterology in dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.3575.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 20, clinical classes: 10	

### Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases of alimentary tract, its pathogenesis, diagnosis and treatment.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	Knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	written credit

W2	Knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	written credit
W3	Explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W3	written credit
W4	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure in diseases of the alimentary tract of dogs and cats	O.W4	written credit
W5	Characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	written credit
W6	Specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	written credit
W7	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure in diseases of the alimentary tract of dogs and cats	B.W4	written credit
W8	Presents the principles of conducting clinical examination and monitoring health of dogs and cats with alimentary tract diseases	B.W5	written credit
W9	Explains the method of handling clinical data, as well as results of laboratory tests and additional tests in dogs and cats with alimentary tract diseases	B.W6	written credit
W10	Presents the principles of dogs and cats with alimentary tract diseases nutrition	B.W13	written credit
<b>Skills - Student can:</b>			
U1	Conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	oral credit, project, observation of student's work, active participation
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	oral credit, project, observation of student's work, active participation
U3	Plans the diagnostic procedure	O.U3	oral credit, project, observation of student's work, active participation
U4	Issues veterinary medical opinion and certificate	O.U7	oral credit, project, observation of student's work, active participation
U5	Uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit, project, observation of student's work, active participation



U6	Safely and humanely handles dogs and cats and instructs others in this scope	B.U1	oral credit, project, observation of student's work, active participation
U7	Conducts a medical-veterinary interview in order to obtain precise information about dogs and cats with alimentary tract diseases	B.U2	oral credit, project, observation of student's work, active participation
U8	Performs a full clinical examination of the dogs and cats with alimentary tract diseases	B.U3	oral credit, project, observation of student's work, active participation
U9	Assesses the nutritional status of the dogs and cats with alimentary tract diseases and provides advice in this scope	B.U5	oral credit, project, observation of student's work, active participation
U10	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests in dogs and cats with alimentary tract diseases	B.U6	oral credit, project, observation of student's work, active participation
U11	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for dogs, cats and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, project, observation of student's work, active participation
U12	Is able to prescribe and use veterinary medicinal products and medical materials for dogs and cats with alimentary tract diseases, taking into account their safe storage and utilisation	B.U10	oral credit, project, observation of student's work, active participation
U13	Chooses and applies the appropriate treatment for dogs and cats with alimentary tract diseases	B.U13	oral credit, project, observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	Uses the objective sources of information	O.K4	observation of student's work
K4	Formulates conclusions from own measurements or observations	O.K5	observation of student's work
K5	Is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student's work
K6	Deepens his/her knowledge and improves skills	O.K8	observation of student's work
K7	Communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K8	Is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work

## Study content

No.	Course content	Activities
1.	<p>1. Diseases of the oesophagus – part I. Etiopathogenesis and diagnostics of the: oesophagitis, gastro-oesophageal reflux, megaesophagus.</p> <p>2. Diseases of the oesophagus – part II. Etiopathogenesis, diagnostics and treatment of the: oesophageal stenosis, hiatal hernias, neoplasms, Barrett oesophagus.</p> <p>3. Diseases of the stomach – part I. Etiopathogenesis, diagnostics and treatment of the acute and chronic gastritis. Classification of gastritis based on the endoscopic result including Sidney system.</p> <p>4. Diseases of the stomach – part II. Etiopathogenesis, diagnostics and treatment of the gastric ulcers. Diagnostic and therapeutic procedures in the case of foreign bodies and neoplasms in the stomach. Syndrome of the acute dilation and volvulus of the stomach.</p> <p>5. Intestinal diseases – part I. Idiopathic chronic inflammatory diseases of the intestines (IBD). Hypersensitivity to food, allergy and food intolerance. Antibiotic responsive enteropathy.</p> <p>6. Intestinal diseases – part II. Protein-losing enteropathy. The sensitive colon syndrome. The megacolon syndrome. The short intestine syndrome. Intestinal neoplasms.</p> <p>7. Differential diagnosis of causes of vomits in dogs and cats.</p> <p>8. Differential diagnosis of the causes of diarrhea in dogs and cats.</p> <p>9. Selected liver diseases of dogs and cats.</p> <p>10. Discussion of the interesting gastroenterological cases.</p>	lecture
2.	<p>1. The performing of oesophagogastroduodenoscopy – work on the simulator.</p> <p>2. The performing of recto- and colonoscopy – work on the simulator.</p> <p>3. The performing of oesophagogastroduodenoscopy in dogs or cats.</p> <p>4. The performing of recto- and colonoscopy in dogs or cats</p> <p>5. The performing of the liver biopsy in dogs and cats.</p>	clinical classes



# UNIwersytet Przyrodniczy we Wrocławiu

## Selected issues of pulmonology in dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.2252.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 18, clinical classes: 12	

### Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases of respiratory system, its pathogenesis, diagnosis and treatment.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the principles and mechanisms underlying the health of dogs and cats, as well as the emergence of respiratory diseases and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	written credit, oral credit

W2	etiology, pathogenesis and clinical symptoms of respiratory diseases occurring in dogs and cats and the principles of therapeutic management	O.W3	written credit, oral credit
W3	diagnostic and therapeutic procedures in respiratory diseases in dogs and cats	O.W4	written credit, oral credit
W4	the principles of conducting clinical examination, in accordance with the plan of clinical examination (with particular emphasis on the respiratory system), analysis of clinical symptoms and pathological changes;	O.W7	written credit, oral credit
W5	the handling of clinical data and the results of laboratory and additional tests	B.W6	written credit, oral credit
<b>Skills - Student can:</b>			
U1	conducts clinical examination of the dog and cat in accordance with the principles of medical art;	O.U1	oral credit, observation of student's work, active participation
U2	analyze and interpret clinical symptoms, pathological changes and the results of laboratory and additional tests, formulate the diagnosis of respiratory diseases in dogs and cats, taking into account the differential diagnosis, and take therapeutic or prophylactic measures	O.U2	oral credit, observation of student's work
U3	plan diagnostic procedures in respiratory diseases in dogs and cats	O.U3	oral credit
U4	safely and humanely handles animals and instructs others in this scope	B.U1	oral credit, observation of student's work
U5	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	oral credit, observation of student's work, active participation
U6	collects and secures the samples for tests and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit, observation of student's work
U7	uses diagnostic equipment, including ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, observation of student's work
U8	select and apply appropriate treatment in respiratory diseases in dogs and cats	B.U13	oral credit
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	uses the objective sources of information	O.K4	observation of student's work
K3	formulates conclusions from own measurements or observations	O.K5	observation of student's work
K4	deepens his/her knowledge and improves skills	O.K8	observation of student's work

## Study content

No.	Course content	Activities
1.	<p>X-ray examination, endoscopy, biopsy of the bronchi, the tracheal lavage, the broncho-alveolar lavage (BAL), transthoracic lungs biopsy. Etiopathogenesis, diagnostics and treatment of nasal cavities diseases - foreign bodies, neoplasms, lymphoplasmocytic rhinitis, allergic inflammation of the nasal cavities, bacterial inflammation of the nasal cavities, mycotic inflammation of the nasal cavities. Brachycephalic syndrome, everted laryngeal sacculles, the larynx neoplasms and foreign bodies. The trachea collapse, the trachea hypoplasia, tracheostenosis, parasitic diseases, neoplasms - etiopathogenesis, diagnostics and treatment. Etiopathogenesis, diagnostics and treatment of bronchial diseases - allergic bronchitis, chronic recurrent (idiopathic) bronchitis, foreign bodies, neoplasms. Etiopathogenesis, diagnostics and treatment of the lungs diseases - pneumonia, lung cancer, pulmonary fibrosis, pulmonary embolism, embolic and/or thrombotic lungs disease. The pleural abscess, chylothorax, hydrothorax, mediastinal, subcutaneous emphysema - etiopathogenesis, diagnostics and treatment.</p>	lecture
2.	<p>Rhinoscopy in dogs. Rhinoscopy in cats. Laryngotracheobronchoscopy in dogs. Laryngotracheobronchoscopy in cats. Bronchoalveolar lavage in dogs and examination of the collected washings. Bronchoalveolar lavage in cats and examination of the collected washings. The lung biopsy and puncture of the pleural cavity.</p>	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary care on reproduction in breeding dogs and cats Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.2637.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 4.0
	<b>Activities and hours</b> lecture: 20, laboratory classes: 2, clinical classes: 8	

### Goals

C1	The aim of teaching the subject is to provide students with knowledge about controlling reproductive processes in dog and cat breeding, taking actions to improve those processes and the principles of comprehensive veterinary care in dog and cat breeding.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	etiology, pathogenesis and clinical signs of reproductive disorders in dogs and cats and the principles therapeutic management.	O.W3	written credit, active participation

W2	the principles of selecting animals for mating, methods fertilization and biotechnology of reproduction and selection breeding in dogs and cats.	B.W12	written credit, active participation
<b>Skills - Student can:</b>			
U1	plan the diagnostic procedure.	O.U3	observation of student's work, active participation, participation in discussion
<b>Social competences - Student is ready to:</b>			
K1	demonstrate responsibility for decisions made to people, animals and the natural environment.	O.K1	observation of student's work, active participation, participation in discussion

### Study content

No.	Course content	Activities
1.	<ol style="list-style-type: none"> <li>1. Veterinary supervision of parturition in dogs and cats.</li> <li>2. Obstetric procedure in dystocia.</li> <li>3. Veterinary supervision of pregnancy, endangered pregnancy, estimation of the delivery date in bitch and queen.</li> <li>4. Surgical obstetrics.</li> <li>5. General rules in pediatrics and pediatrics surgery</li> <li>6. Infertility in cats.</li> <li>7. Diseases in puppies</li> <li>8. Diseases in kittens</li> <li>9. Reproductive disorders in most popular breeds of dogs and cats</li> <li>10. Main genetic disorders in pedigree dogs and cats</li> </ol>	lecture
2.	<p>Veterinary supervision over pregnant bitch and queen (examination, nutrition, prevention).</p> <p>Dog and cat breeding in the aspect of the Kennel Club regulations</p> <p>Dog breeds.</p>	laboratory classes
3.	<p>Neonatal resuscitation.</p> <p>Veterinary care for newborns.</p> <p>Surgical obstetrics.</p>	clinical classes



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Veterinary Ophthalmology Educational subject description sheet

### Basic information

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2022/23
<b>Speciality</b> -	<b>Subject code</b> WMWMMW-AJS.J400BO.3625.22
<b>Department</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> English
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> optional
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages
<b>Education profile</b> General academic	<b>Subject related to scientific research</b> No
	<b>Subject shaping practical skills</b> Yes

<b>Period</b> Semester 11	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 10, practical classes: 5	

### Goals

C1	During the course, students will learn about ophthalmic surgical instrumentation and principles of ophthalmic surgery. Students will gain basic knowledge about the diagnosis and treatment of most common ophthalmic diseases of dogs and cats. During the auditory classes, students will learn how to provide first aid after ophthalmic emergencies and local anesthesia.
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### Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying eye disease formation and their treatment	O.W1	oral credit



W2	knows to an extensive degree, describes in detail and explains the development, structure of a properly functioning organ of vision, as well as the mechanisms of disorders in pathological conditions;	O.W2	oral credit, test
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of organ of vision diseases, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for these diseases;	O.W3	observation of student's work, test, participation in discussion
W4	presents the principles of conducting clinical examination including ophthalmologic examination	O.W4	oral credit
<b>Skills - Student can:</b>			
U1	conducts ophthalmologic examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, participation in discussion
U2	make a correct diagnosis of the eye disease, taking into account the differential diagnosis, based on the analysis and interpretation of clinical symptoms, pathological changes as well as the results of laboratory and additional tests, and undertakes therapeutic or prophylactic actions	O.U2	observation of student's work, test, participation in discussion
U3	plan the procedure of eye examination	O.U3	observation of student's work, test, participation in discussion
U4	performs a full clinical examination of the animal including ophthalmologic examination	O.U4	observation of student's work
<b>Social competences - Student is ready to:</b>			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K6	observation of student's work
K2	formulates opinions regarding various aspects of professional activity	O.K1	observation of student's work, test
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student's work

### Study content

No.	Course content	Activities
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1.	<p>1: Clinical anatomy of the eye.</p> <p>Histological Structure of corneal and impact of its hydration on transparency, role of photoreceptors in the process of perception and transduction of light stimuli on the bioelectric. Morphology of the eye with particular reference to its vasculature in the central field.</p> <p>2. Basics of Ophthalmic Surgery: instruments, patient preparation, suture materials, sutures, hemostasis techniques, basic operative approach.</p> <p>3. Anesthesia for ophthalmic surgery. Basic problems and complications.</p> <p>4. Surgical diseases of the cornea.</p> <p>5 .Ancillary diagnostic in ophthalmology: USG, TK, RTG, Schirmer Test, Fluorescein Dye Test, Fundoscopy,</p> <p>6. Surgical management of entropion and ectropion.</p> <p>7. Lasers in ophthalmology.</p> <p>8. Emergencies in Ophthalmology.</p> <p>9. Cataract - diagnosis and treatment, surgical procedures for cataracts, and lens removal.</p> <p>10. Glaucoma - diagnosis and treatment, surgical procedures for glaucoma.</p>	lecture
2.	<p>1. Patient ophthalmic examination in practice.</p> <p>2. Methods of the local anesthesia in ophthalmology. technique and complications.</p> <p>3. Surgical emergencies in ophthalmology - tarsorrhaphy and enucleation.</p> <p>4. CO2 laser surgery in ophthalmology - presentation of the clinical cases.</p> <p>5. Basic of canine blepharoplasty - principles and complications.</p>	practical classes