

UNIVERSITY OF ZAGREB  
 FACULTY OF VETERINARY MEDICINE  
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 Department of Pathophysiology  
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 File no.:  
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|                                 |                      |            |
|---------------------------------|----------------------|------------|
| 79391                           | REPUBLIKA HRVATSKA   |            |
| Veterinarski fakultet u Zagrebu |                      |            |
| Primljeno:                      | 17.01.2019           |            |
| Klasifikacijska oznaka          | Org. jed.            |            |
| 602-04/19-23/22                 | 251-61-32;251-61-11; |            |
| Uredžbeni broj                  | Prilozi              | Vrijednost |
| 251-61-13-19-01                 | 0                    | -          |

## COURSE SYLLABUS

Course name: Pathophysiology II

Academic year 2018-19

Course leader Prof. Mirna Robić, PhD

Teachers: Prof. Nina Poljičak Milas, PhD, Prof. Romana Turk, PhD, Prof. Maja Belić, PhD

First day of classes: 25. February 2019.

Last day of classes: 17. May 2019.

Timetable for LECTURES academic year 2018./2019.

| Lecture    |  |                          |   |            |
|------------|--|--------------------------|---|------------|
| Date       | Methodological unit  | Teacher                  | Location/time                                       | Literature |
| 25.2.2019. | Metabolic disturbances: blood sugar homeostasis, hyperglykemia, hypoglykemia of piglets, ketosis   | Prof. Mirna Robić        | Computer Hall Department of Pathophysiology 12-14 h |            |
| 26.2.2019. | Metabolic disturbances: starvation, disturbances in fatty acids, tryglicerides and cholesterol metabolism  | Prof. Mirna Robić        | Computer Hall Department of Pathophysiology 12-14 h |            |
| 27.2.2019. | Metabolic disturbances: lipides in blood and mechanisms of atherosclerosis development, Monday morning disease pathogenesis                                | Prof. Mirna Robić        | Computer Hall Department of Pathophysiology 12-13 h |            |
| 27.2.2019. | Liver and billiary system: disturbances in biotransformation mechanisms in liver, disturbances in billrubine metabolism, mechanisms of icterus development | Prof. Romana Turk        | Computer Hall Department of Pathophysiology 13-14 h |            |
| 28.2.2019. | Liver and billiary system: mechanisms of fatty liver development   | Prof. Romana Turk        | Computer Hall Department of Pathophysiology 8-10 h  |            |
| 1.3.2019.  | Liver and billiary system: mechanisms of ascites development   | Prof. Romana Turk        | Computer Hall Department of Pathophysiology 14-16   |            |
| 6.3.2019.  | Hematopoetic system: regulation of erythropoesis, classification of anemias, morphology changes, osmotic resistance and erythrocytes sedimentation         | Prof.Nina Poljičak Milas | Computer Hall Department of Pathophysiology 14-16   |            |

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|-------------------|--|---------------------------|---|--|
| <b>7.3.2019.</b>  | Hematopoetic system: causes of iron deficiency and toxicity of iron, anemia, disturbances in hemoglobine synthesis, regenerative blood count                           | Prof. Nina Poljičak Milas | Computer Hall Departmetn of Pathophysiology 8-10  |  |
| <b>15.3.2019.</b> | Hematopoetic system: coagulation disorders, DIK, von Willebradt disease, thrombocytopenia  | Prof. Romana Turk         | Computer Hall Departmetn of Pathophysiology 14-16 |  |
| <b>19.3.2019.</b> | Disturbances in forestomachs digestion; disturbances in ruminal microflora balance, ruminal acidosis and alcalosis pathogenesis  | Prof. Maja Belić          | Computer Hall Departmetn of Pathophysiology 8-10  |  |
| <b>27.3.2019.</b> | Disturbances in forestomachs digestion; traumatic reticuloperitonitis pathogenesis, disturbances in eructation and ruminal tympany pathogenesis                        | Prof. Maja Belić          | Computer Hall Departmetn of Pathophysiology 12-14 |  |
| <b>28.3.2019.</b> | Disturbances in stomach digestion: disturbances in gastric peristaltics, vomiting, acute gastric dilatation, gastric ulcer pathogenesis                                | Prof. Maja Belić          | Computer Hall Departmetn of Pathophysiology 14-16 |  |
| <b>3.4.2019.</b>  | Disturbances in motoric function and intestinal mobility in horses: neurovegetative dystonia, bacterial activity in large intestine, meteorisms, diarrhea, obstipation | Prof.. Maja Belić         | Computer Hall Departmetn of Pathophysiology 14-16 |  |
| <b>10.4.2019.</b> | Disturbances in intestinal digestion and resorption: disturbances in intestinal and pancreatic juice secretion, malabsorption  | Prof. Maja Belić          | Computer Hall Departmetn of Pathophysiology 12-14 |  |
| <b>12.4.2019.</b> | Disturbances in heart function: hemodynamics and regulatory  | Prof.Nina Poljičak Milas  | Computer Hall Departmetn of Pathophysiology 14-16 |  |

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|-------------------|---|--------------------------|--|--|
|                   | factors, disturbances in impulses generation in hearth, pathogenesis and forms of bradycardia and tachycardia   |                          |  |  |
| <b>15.4.2019.</b> | Disturbances in heart function: disturbances in impulses transmission, mechanisms of extrasistolas development  | Prof Nina Poljičak Milas | Computer Hall Departmetn of Pathophysiology 14-16  |  |
| <b>29.4.2019.</b> | Disturbances in heart function: vitia cordis, corornary insufficiency, hyperthropia, dilatation and decompensation of heart function  | Prof.Nina Poljičak Milas | Computer Hall Departmetn of Pathophysiology 14-15  |  |
| <b>29.4.2019.</b> | Pathophysiology of shock  | Prof. Mirna Robić        | Computer Hall Departmetn of Pathophysiology 15-16  |  |
| <b>30.4.2019.</b> | Renal mechanisms pathophysiology: regulation of renal mechanisms, classification of prerenal, renal and postrenal diseases. Prerenal insufficiency of kidneys, glomerular, vascular adn tubulointerstitial kidney diseases. | Prof. Romana Turk        | Computer Hall Departmetn of Pathophysiology 14-16  |  |
| <b>7.5..2019.</b> | Renal mechanisms pathophysiology: acute and chronic kidney insufficiency, uremic syndrome, nephrotic syndrome   | Prof. Romana Turk        | Computer Hall Departmetn of Pathophysiology 8-10 h |  |
| <b>8,5.2019.</b>  | Disturbances in fluid and circulation transportation, cardiogenic and non.-cardiogenic pulmonary edema Athelectasis. Disturbances in frequency and volueme of breathing.  | Prof. Mirna Robić        | Computer Hall Departmetn of Pathophysiology 10-12  |  |

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|-------------------|---|-------------------|--|--|
| <b>14.5.2019.</b> | Pulmonary volumes and capacities, protective mechanisms in respiratory tract. Disturbances in alveolar ventilation, asthma, chronic bronchitis, emphysema of the lungs. | Prof. Mirna Robić | Computer Hall Department of Pathophysiology<br>13-14 |  |
|-------------------|---|-------------------|--|--|

**Timetable for SEMINARS academic year 2018-2019**

| <b>Seminars</b>    |  |  |              |  |   |
|--------------------|--|--|--------------|--|---|
| <b>Date</b>        | <b>Methodological unit</b>                 | <b>Teacher</b>   | <b>group</b> | <b>Location/time</b>                               | <b>Literature</b>                               |
| <b>15. 5.2019.</b> | Individual presentation of selected themes | Prof. Romana Turk<br>Prof.. Maja Belić<br>Prof. Nina Poljičak Milas<br>Prof. Mirna Robić |              | Computer Hall,<br>Department of<br>Pathophysiology | Printed and electronic teaching materials 12-14 |
| <b>16.5.2019.</b>  | Individual presentation of selected themes | Prof. Romana Turk<br>Prof.. Maja Belić<br>Prof. Nina Poljičak Milas<br>Prof. Mirna Robić |              | Computer Hall,<br>Department of<br>Pathophysiology | Printed and electronic teaching materials 13-15 |
| <b>17.5.2019.</b>  | Individual presentation of selected themes | Prof. Romana Turk<br>Prof. Maja Belić<br>Prof. Nina Poljičak Milas<br>Prof. Mirna Robić  |              | Computer Hall,<br>Department of<br>Pathophysiology | Printed and electronic teaching materials 10-12 |

### Timetable for PRACTICALS academic year 2018-2019

| Practicals |  |  |  |       |   |   |
|------------|--|--|--|-------|---|---|
| Date       | Methodological unit  | teacher  | Type of practicals<br>(čl. 34 Pravilnika o integriranom studiju) | group | Location/time                                       | Literature  |
| 4.3.2019.  | Disturbances in lipides and lipoproteins metabolism  | Prof.Nina Poljičak Milas, Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić      | Clinical practicals  |       | Practical Hall, Department of Pathophysiology 8-10  | R.Turk: Vježbe iz patofiziologije-biokemijski dio (interna skripta) |
| 5.3.2019.  | Clinical enzymology: diagnostic significance of enzymes in serum   | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk , Prof. Maja Belić | Clinical practicals  |       | Practical Hall, Department of Pathophysiology 8-10  | R.Turk: Vježbe iz patofiziologije-biokemijski dio (interna skripta) |
| 8.3.2019.  | Disturbances in bilirubine metabolism: differential diagnostic of icterus, determination of bilirubine nad interpretation of results | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk Prof Maja Belić    | Clinical practicals  |       | Practical Hall, Department of Pathophysiology 14-16 | R.Turk: Vježbe iz patofiziologije-biokemijski dio (interna skripta) |
| 12.3.2019. | Laboratory diagnostics and biochemical urine analysis interpretation   | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof.Romana Turk Prof. Maja Belić    | Constuctive practicals   |       | Practical Hall, Department of Pathophysiology 8-10  | CD-Atlas sedimenta mokraće, Chronolab                               |

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|-------------------|---|---|-------------------------|--|---|---|
| <b>13.3.2019.</b> | <b>Knowledge checking: diagnostic significance of biochemical blood and urine analysis</b>  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiology<br>14-16 | R.Turk: Vježbe iz patofiziologije-biokemijski dio (interna skripta)   |
| <b>14.3.2019.</b> | Anatomy and physiology of hematopoetic system, development of blood cells in bone marrow  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiology 12-14    | CD-Atlas<br>Laboratorijska hematologija<br>Chronolab  |
| <b>20.3.2019.</b> | Hematological analyses and its application in determination of hematological disturbances. Methodes of blood cells counting, determination of erythrocyte numbers | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16    | Nina Poljičak Milas: Uvod u hematološke pretrage. Web predavanje<br>Printed and electronic teaching materials             |
| <b>22.3.2019.</b> | Determination of erythrocyte sedimentation and PCV, changes and diagnostic significance in pathophysiological conditions  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16    | Nina Poljičak Milas: Procjenjivanje eritrocitnih pokazatelja, WEB predavanje<br>Printed and electronic teaching materials |
| <b>25.3.2019.</b> | Determination of hemoglobine concentration, determination of  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić  | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16    | Nina Poljičak Milas: Procjenjivanje eritrocitnih pokazatelja, WEB predavanje  |



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|-------------------|---|--|-------------------------|--|--|---|
|                   | erythrocyte constants and morphological classification of anemias   | Prof. Romana Turk, Prof. Maja Belić  |                         |  |  | Printed and electronic teaching materials   |
| <b>26.3.2019.</b> | Determination of reticulocyte count, diagnostic significance, classification of regenerative and non-regenerative anemias | Prof. Nina Poljičak Milas Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16 | Nina Poljičak Milas: Procjenjivanje eritrocitnih pokazatelja, WEB predavanje<br>Printed and electronic teaching materials<br>W.J. Reagan: Veterinary Hematology, Atlas of Common Domestic Species |
| <b>29.3.2019.</b> | Morphology of developmental forms of leukocytes, function of leukocytes   | Prof. Nina Poljičak Milas Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiology 14-16 | Printed and electronic teaching materials<br>W.J. Reagan: Veterinary Hematology, Atlas of Common Domestic Species   |
| <b>1.4.2019.</b>  | Determination of leukocytes count, diagnostic significance of changes in total leukocytes number                          | Prof. Nina Poljičak Milas Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16 | Printed and electronic teaching materials<br>W.J. Reagan: Veterinary Hematology, Atlas of Common Domestic Species   |
| <b>2.4.2019.</b>  | Determination of eosinophiles count, diagnostic significance of altered eosinophiles count                                | Prof. Nina Poljičak Milas Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 8-10  | Poljičak Milas Nina: Uvod u hematološke pretrage, WEB predavanje<br>Printed and electronic teaching materials   |

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|-------------------|---|---|-------------------------|--|--|---|
| <b>3.4..2019.</b> | Differential blood count, making and coloring blood smears  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 12-14 | Printed and electronic teaching materials   |
| <b>4.4..2019.</b> | Determination of differential leukocytes count, diagnostic significance of qualitative and quantitative changes                 | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16 | Printed and electronic teaching materials<br>W.J. Reagan: Veterinary Hematology, Atlas of Common Domestic Species |
| <b>10.4.2019.</b> | Determination of differential leukocytes count, diagnostic significance of qualitative and quantitative changes of erythrocytes | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk, Prof. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiology 14-16 |   |
| <b>11.4.2019.</b> | Explanation of altered values in complete blood count in different animal species   | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiology 14-16 | Printed and electronic teaching materials   |
| <b>16.4.2019.</b> | Changes of morphology of blood cells in neoplastic hematopoietic system diseases  | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk Prof. Maja Belić  | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiology 8-10  | Printed and electronic teaching materials<br>T.W. Campbell: Avian Hematology and Cytology                         |

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| <b>17.4.2019.</b> | Making of microscopic pictures of blood smears, pictures analysis and morphometry of cells     | Prof. Nina Poljičak Milas<br>Prof. Mirna Robić<br>Prof. Romana Turk<br>Prof. Maja Belić                                   | Constructive practicals |  | Practical Hall,<br>Department of Pathophysiolog 14-16 | Printed and electronic teaching materials |
| <b>18.4.2019.</b> | Hematology of birds; changes in number of cells and cell morphology in pathological conditions | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk<br>Doc. dr. sc. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiolog 14-16 | Printed and electronic teaching materials |
| <b>3.5.2019.</b>  | Reptile hematology: changes in number and morphology in pathological conditions                | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk<br>Doc. dr. sc. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiolog 8-10  | Printed and electronic teaching materials |
| 6.5.2019          | Bone marrow smears preparation and recognition of developmental forms of blood cells           | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk<br>Doc. dr. sc. Maja Belić | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiolog 11-13 | Printed and electronic teaching materials |
| <b>9.5.2019.</b>  | Practical exam: recognition of changes in blood cells morphology and differential blood count  | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk                            | Clinical practicals     |  | Practical Hall,<br>Department of Pathophysiolog 13-15 | Printed and electronic teaching materials |

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|             |   | Doc. dr. sc. Maja Belić   |                         |  |   |   |
| 10.5.2019.  | <b>Interpretation of hematological and biochemical laboratory findings</b>                              | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk<br>Doc. dr. sc. Maja Belić | Constructive practicals |  | Practical Hall, Department of Pathophysiology 12-14 | Printed and electronic teaching materials |
| 13.5..2019. | Short exam: diagnostic significance of qualitative and quantitative changes in hematological parameters | Prof.dr.sc. Nina Poljičak Milas<br>Prof. dr. sc. Mirna Robić<br>Izv. prof. dr. sc. Romana Turk<br>Doc. dr. sc. Maja Belić | Constructive practicals |  | Practical Hall, Department of Pathophysiology 11-13 | Printed and electronic teaching materials |
|             |   |   |                         |  |   |   |
|             |   |   |                         |  |   |   |

**STUDENT OBLIGATIONS**

|   |   |
|---|---|
| Lecture attendance                              | Student must be present at at least 20 hours of lectures to gain minimal three points. For each excused absence student will get back 0,154 points per hour. Maximal number of points for lecture attendance is six points.   |
| Seminar attendance                              | Student must be present at at least 4 hours of seminars to gain minimal four points. For each excused absence student can make up in agreement with seminar leader in written form and the points for attendance will be regained. student can achieve maximum 6 points for seminar attendance.   |
| Practicals attendance                           | Student must be present at at least 34 hours of practicals to achieve minimal four points. Each excused absence within the limit (16 hours, i.e. 8 programmes) student can make up in agreement with practical leader. After succesful made up student will regain 0,12 points per hour. Maximal number of points which can be achieved from practical attendance is six points.  |
| Active participation in seminars and practicals | Each attended, written and signed practical results in 0,2 points, finally maximal 5 points (25 programmes x 0,2 = 5). during practicals short oral knowledge checking will be performed and that way maximal 2.5 points can be gained.<br>During seminars student can prepare oral presentation with PowerPoint presentation of given themes and that way can gain maximal 2,5 points.   |
| Continous knowledge checking                    | During semester three short exams in regular practical terms will be organised: <ol style="list-style-type: none"> <li>1. Written exam from biochemical practicals consisted of 6 questions. Each correct answer is worth 2 points. Minimal seven to maximal 12 points can be gained.</li> <li>2. Written exam from hematological practicals consists of 16 questions. Each correct answer is worth one point, minimal 10 points must be gained.</li> <li>3. Practical exam from blood cells morphology can bring minimal 3 and maxximal 4 points.</li> </ol> For students who did not achieve minimal number of points for each exam, additional three correctional exams will be organised. |

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|                          | Minimal number of points from this element of grading (the sum of minimal points gained in three exams) is 20 and maximal 32 points.   |
| Final exam               | <p>The final exam begins with results analysis of each evaluation element. For final exam attendance student must gain minimum 16 points from attendance and activity on lectures, seminars and practicals, and minimal 20 points from continuous knowledge checking. Regardless to the final sum of gained points until final exam, student must show sufficient knowledge at final exam. Minimal number of points which can be gained at final exam is 24, maximal is 40. If student did not show sufficient knowledge at final exam, he or she can access the exam in the next term.</p> <p>Final mark is formed based on total number of points from all elements of evaluation.</p> |
| Examination requirements | <p>Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. <b>Article 45:</b> a student can justifiably be absent from up to 50 % of the lectures; 30% of the seminars and 30 % of the exercises</p>   |

**GRADING AND EVALUATING STUDENT WORK**

|                     |  |
|---------------------|--|
| Short exams         | 2 written and 1 practical exam                               |
| Final exams (dates) | 14.6.2019., 28.6.2019., 12.7. 2019., 5.9. 2019., 19.9. 2019. |
| Final exam form     | oral   |

**LITERATURE**

|                       |   |
|-----------------------|---|
| Obligatory literature | <p>Steven L. Stockham and Michael A. Scott (2008.): Fundamentals of Veterinary Clinical Pathology. Blackwell Publishing.</p> <p>Mary Anna Thrall (2004.): Veterinary Hematology and Clinical Chemistry. Lippincott Williams &amp; Wilkins.</p> <p>Rick L. Cowell (2004.): Veterinary Clinical Pathology Secrets. Elsevier Mosby</p> <p>Harvey, J.W. (2001.): Atlas of Veterinary Hematology, Blood and Bone Marrow of Domestic Animals. W. B. Saunders Comp.</p> <p>Reagan, W.J., Sanders, T. G., DeNicola, D. B. (1998.): Veterinary Hematology: Atlas of Common Domestic Species, Iowa State University Press.</p> <p>CD- Atlas sedimenta mokraće, Chronolab</p> <p>CD – Atlas laboratorijska hematologija – Atlas analize razmaza periferne krvi.</p> <p>Weiss, D.J., K.J. Wardrop (2010): Schalm's veterinary hematology. 6th ed. Blackwell Publishing Ltd, Iowa, USA.</p> <p>Campbell, T., C. Ellis (2007): Avian and exotic animal hematology and cytology. 3rd ed., Blackwell Publishing Ltd, Iowa, USA.</p> |
| Additional literature | <p>Stjepan Gamulin, Matko Marušić, Zdenko Kovač i sur. (1988., 2002., 2011.): Patofiziologija. Medicinska naklada, Zagreb.</p> <p>Tatjana Božić (2007., 2012.): Patološka fiziologija domaćih životinja. Naučna KMD, Beograd.</p> <p>Romana Turk (2005.): Vježbe iz patofiziologije - biokemijski dio (interna skripta).</p> <p>Poljičak Milas Nina (2012.): Uvod u hematološke pretrage. Web predavanje, Veterinarski fakultet, Zagreb.</p> <p>Poljičak Milas Nina (2012.): Procjenjivanje eritrocitnih pokazatelja. Web predavanje, Veterinarski fakultet, Zagreb.</p> <p>Bilješke s predavanja i vježbi</p> <p>Robić Mirna (2016.): Bolesti poremećaja metabolizma. Web predavanje, Veterinarski fakultet, Zagreb.</p>   |

Reagan, W.J., Sanders, T. G., DeNicola, D. B. (1998.): Veterinary Hematology: Atlas of Common Domestic Species, Iowa State University Press.

CD- Atlas sedimenta mokraće, Chronolab

CD – Atlas laboratorijska hematologija – Atlas analize razmaza periferne krvi.

### OBJECTIVES AND LEARNING OUTCOMES

|                          |   |
|--------------------------|---|
| <b>Course objectives</b> | The objectivity is gaining knowledge on mechanisms involved in development of pathophysiological processes in individual organs and organ systems on molecular and cellular level and tissue and organs levels which provides basis for understanding clinical courses including diagnose making, understanding the course of disease and choosing adequate therapy. Introspection in integrative pathophysiological mechanisms enables student to develop sense for integrative approach to pathological process at the whole organism level. Also the objective of the course is to develop skills in laboratory diagnostic of pathological processes and interpretation of changes in laboratory findings and diagnose making. |
| <b>Learning outcomes</b> | After successful Pathophysiology II mastering student will gain knowledge on mechanisms of diseases of organs and organ systems development and differential diagnostic approach to disease which is essential for good veterinary praxis. Also, student will gain skills in performing biochemical and hematological laboratory analyses, correct choosing and correct interpretation of results in order to obtain correct diagnose and prognose of disease..   |



**GRADING SCHEME**

| <i>points</i> | <i>grade</i> |
|---------------|--------------|
| Up to 59      | 1 (F)        |
| 60-68         | 2 (E)        |
| 69-76         | 2 (D)        |
| 77-84         | 3 (C)        |
| 85-92         | 4 (B)        |
| 93-100        | 5 (A)        |

Course leader:



Head of Department/Clinic:



Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course.

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES,  
SEMINARS and PRACTICALS**

| <b>Type of activity</b>                         | <b>Minimum number of points</b> | <b>Maximum number of points</b> |
|---|---------------------------------|---------------------------------|
| Lecture attendance                              | 3                               | 6                               |
| Seminar attendance                              | 4                               | 6                               |
| Practicals attendance                           | 4                               | 6                               |
| Active participation at seminars and practicals | 5                               | 10                              |
| Continuous knowledge checking (mid term examd)  | 20                              | 32                              |
| Final exam                                      | 24                              | 40                              |
| <b>TOTAL</b>                                    | <b>60</b>                       | <b>100</b>                      |

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES and  
SEMINARS**

| <b>Type of activity</b>            | <b>Minimum number of points</b> | <b>Maximum number of points</b> |
|------------------------------------|---------------------------------|---------------------------------|
| Lecture attendance                 | 3                               | 6                               |
| Practicals attendance              | 8                               | 12                              |
| Active participation at practicals | 5                               | 10                              |
| Continuous knowledge checking      | 20                              | 32                              |
| Final exam                         | 24                              | 40                              |
| <b>TOTAL</b>                       | <b>60</b>                       | <b>100</b>                      |

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH SEMINARS and  
EXERCISES**

| <b>Type of activity</b>          | <b>Minimum number of points</b> | <b>Maximum number of points</b> |
|----------------------------------|---------------------------------|---------------------------------|
| Attendance on seminars/exercises | 11                              | 18                              |
| Activity on seminars/exercises   | 5                               | 10                              |
| Continuous knowledge checking    | 20                              | 32                              |
| Final exam                       | 24                              | 40                              |
| <b>TOTAL</b>                     | <b>60</b>                       | <b>100</b>                      |