UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
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Department of Physics and Biophysics
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Register no.:
File no.: 61-03-18/36-2
Zagreb, 27/07/2018

COURSE SYLLABUS

Course name: PHYSICS AND BIOPHYSICS

Academic year 2018-19

Course leader:

Teachers: Dr. Selim Pašić, assistant professor

Associate teachers: Nato Popara, mag. Phys.

First day of classes: 15/10/2018

Last day of classes: 14/12/2018

Timetable for LECTURES academic year 2018-2019

All Lectures are held in the Practical hall of the Department of Physics and Biophysic				
Date	**Methodological unit**	**Teacher**	**time**	**Literature**
15/10/2018	Introduction	Dr. Selim Pašić, assistant professor	16-18	PDF scripts on lms.vef.hr (Measure units.pdf, Measure units–5 tasks.pdf, Scalar and vectors.pdf, L1. Introduction.pdf)
16/10/2018	Mechanics		10-12	L2. Mechanics.pdf (lms.verf.hr)
17/10/2018	Fluids		10-12	L3. Fluids.pdf (lms.verf.hr)
18/10/2018	Heat		12-14	L4. Thermodynamics.pdf (lms.verf.hr)
19/10/2018	Oscillations, Waves, Acoustics		14-16	L5. Oscillations, Waves, Acoustics.pdf (lms.verf.hr)
22/10/2018	Optics		16-18	L6. Optics.pdf (lms.verf.hr)
23/10/2018	Electricity and Magnetism		12-14	L7. Electricity and Magnetism.pdf (lms.verf.hr)
26/10/2018	Structure of matter		08-10	L8. Structure of matter.pdf (lms.verf.hr)

Timetable for PRACTICALS academic year 2018-2019

All Practicals are held in the Practical hall of the Department of Physics and Biophysics						
Date	**Methodological unit**	**Teacher**	**Type of practical**	All Groups	**time**	**Literature**
23/10/2018	Measurement and processing of data	Dr. Selim Pašić, assistant professor Nato Popara, mag. Phys.	Qualitative numerical exercises		14-16	Introduction to measurement and data processing.pdf (lms.vef.hr)
24/10/2018	Measurement units and mechanics		Qualitative numerical exercises		12-14	Lectures Tasks on the exercise
30/10/2018	Hydrodynamics		Qualitative numerical exercises		14-16	Lectures Tasks on the exercise
05/11/2018	Oscillation, Waves and Thermodynamics		Qualitative numerical exercises		14-16	Lectures Tasks on the exercise
07/11/2018	Optics, types of radioactive decay		Qualitative numerical exercises		12-14	Lectures Tasks on the exercise
13/11/2018	Radioactive decomposition, electricity and magnetism		Qualitative numerical exercises		08-10	Lectures Tasks on the exercise
16/11/2018	Introduction to laboratory exercises and **COLLOQUIUM**		0^{th} Laboratory exercises		08-10	Lectures Tasks on the exercise
19/11/2018			**1^{st} Laboratory exercises**		08-10	Lectures Tasks on the exercise
21/11/2018			Laboratory exercises		08-10	Lectures Tasks on the exercise
28/11/2018			Laboratory exercises		08-10	Lectures Tasks on the exercise
04/12/2018			Laboratory exercises		08-10	Lectures Tasks on the exercise
05/12/2018			Laboratory exercises		10-12	Lectures Tasks on the exercise
06/12/2018			Laboratory exercises		10-12	Lectures Tasks on the exercise

07/12/2018			Laboratory exercises		10-12	Lectures Tasks on the exercise
10/12/2018			Laboratory exercises		10-12	Lectures Tasks on the exercise
11/12/2018			Laboratory exercises		12-14	Lectures Tasks on the exercise
12/12/2018			Laboratory exercises		12-14	Lectures Tasks on the exercise
13/12/2018			Laboratory exercises		12-14	Lectures Tasks on the exercise
14/12/2018			Laboratory exercises		10-12	Lectures Tasks on the exercise

STUDENT OBLIGATIONS

Lecture attendance	A student gains 0.375 point for attending 1 lecture lesson. During the course a student must attend 8 lectures in order to gain minimal 3 points (8 lessons x 0.375 units ≈ 3 points). A student can gain 6 points max. (16 lessons x 0.375 = 6 points) from this evaluation element.
Practicals attendance	A student gains 0.316 point for attending one exercise. During the course a student must attend 26 exercises in order to gain minimal 8 points (26 lessons x 0.316 units = 8 points). A student can gain maximal 12 points (38 lessons x 0.316 units = 12 points) from this element of evaluation.
Active participation in seminars and practicals	During the course a student must complete 12 lab tasks. The student must be prepared for each problem according to methodical units. During the exercise a student must solve the discussed problems and analyse the measured data. If a student completes all activities process correctly, it can gain maximally 0.8333 points per exercise. The maximal number of point from all exercises is 10 (12 exercises x 0.8333 points). The minimal number of points is 5.
Final exam	A student must gain the minimal number of points from all fife evaluation elements to have right to take the final exam. The final exam is in written form and it consists of 20 tasks, between them are about 30% calculation exercises. Each correctly solved task in the test carries out 2 points. A student should solve at least 12 tasks to obtain the minimal number of points (24). The maximum number of points, a student can gain at the final exam, is 40.
Examination requirements	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. **Article 45:** a student can justifiably be absent from up to 50 % of the lectures; 30% of the seminars and 30 % of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	During the course, the following preliminary exams will be organized: a. measuring units preliminary exam (12 tasks x 0.5 points = 6 points). Minimal number of points is 4 (8 tasks x 0.5 = 4 points). b. An exam of processing of the data and 12 entry preliminary exams for each lab exercise. Each exercise consists of 5 questions. Each correct answer on the question carries 0.4 points. The maximal number of points per one entry exam is 2 points (5 questions x 0.4 points = 2 points). The maximal number of points is 26 ((12 lab exercises + an exam of processing x 2 points/lab exercise = 26 points). The minimal number of points is 16. The maximum number of points from this evaluation element is 32. Minimal number of points is 20. Student which doesn't achieve minimum points from this evaluation element has right on tree repeated preliminary exams, which will be hold during the semester. The repeated preliminary exam contains of two parts: measuring units correction preliminary exam and correction entry preliminary exam of the all 12 exercises. The student must gain minimal 4 points to achieve a minimum measurement units preliminary exam score and 16 points from exercises preliminary exam in order to achieve right to take the final exam. The right to take the repeated preliminary exam does not have the student who didn't gain the minimal point from the two evaluations elements: attending lectures and attending exercises.
Final exams (dates)	14/01/2019, 01/02/2019, 15/02/2019
Form of final exam	Written test

LITERATURE

Obligatory literature	1. S. Pašić: Laboratory exercises manual for students of veterinary medicine (http://www.fizika.vef.unizg.hr, PDF book) 2. C. Hilyard, H.C. Biggin: Fizika za biologe, Školska knjiga, Zagreb, 1984. or 1989. 3. D. M. Burns, S. G. G. Macdonald:Fizika za biologe i medicinare, Školska knjiga, Zagreb, 1980. 4. D. Winterhalter, A. Sliepčević, A. Kuntarić, K. Kempni: Vježbe iz fizike, Školska knjiga, Zagreb, bilo koje izdanje iza 1981.
Optional literature	1. J. N. Herak: Osnove kemijske fizike; Zagreb, Farmaceutsko-biokemijski fakultet, 2001. (Udžbenici Sveučilišta u Zagrebu = Manualia Universitatis studiorum Zagrabiensis) 2. J. Brnjas Kraljević: Fizika za studente medicine, I dio, 2001., Zagreb, (Udžbenici Sveučilišta u Zagrebu = Manualia Universitatis studiorum Zagrabiensis)

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Understanding physical laws on which the principles of diagnostic methods are based. Understanding complex diagnostic methods on the level of fundamental natural laws. Understanding the advantages and disadvantages of individual diagnostic methods. Applying the knowledge the student has gained in order to choose diagnostic methods on the basis of their essential differences and resolution. Applying the knowledge the student has gained in carrying out diagnostic procedures.
Learning outcomes	Having successfully completed the course, the students will be able to: describe diagnostic devices in accordance with their purpose and construction; understand the essence and differences of basic diagnostic methods in accordance with their physical basis; describe the advantages and disadvantages of individual diagnostic methods; compare methods of image diagnostics on the basis of their resolution and contrast.

GRADING SCHEME

Points	*Grade*
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:

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Dr. Selim Pašić, assistant professor

Head of Department:

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dr. Selim Pašić, assistant professor

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

Type of activity	Minimum number of points	Maximum number of points
Lectures attendance	**3**	**6**
Seminar attendance	**4**	**6**
Practicals attendance	**4**	**6**
Active participation in seminars and practicals	**5**	**10**
Continuous knowledge checking (mid-terms)	**20**	**32**
Final exam	**24**	**40**
TOTAL	**60**	**100**

GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES and SEMINARS (EXCERCISES?)

Type of activity	Minimum number of points	Maximum number of points
Lecture attendance	**3**	**6**
Practicals attendance	**8**	**12**
Active participation in practicals	**5**	**10**
Continuous knowledge checking (mid-terms)	**20**	**32**
Final exam	**24**	**40**
TOTAL	**60**	**100**

GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH SEMINARS and EXCERCISES

Type of activity	Minimum number of points	Maximum number of points
Seminar / practicals attendance	**11**	**18**
Active participation in seminars and practicals	**5**	**10**
Continuous knowledge checking (mid-terms)	**20**	**32**
Final exam	**24**	**40**
TOTAL	**60**	**100**