

2023/2024. ACADEMIC YEAR							
PROGRAM OF STUDY (FOR STUDENTS OF 1ST YEAR)							
Full (Hun) name of the subject: Biofizika I.							
Program: Undivided program (pharmaceutical)							
Schedule: full-time							
Short name of the subject: Biophys. I.							
English name of the subject: Biophysics I.							
German name of the subject: Biophysik I							
Type of registration: obligatory/obligatory elective/elective/criteria requirement							
Neptun code of the subject: GYKFIZ268E1A							
Responsible Department: Department of Biophysics and Radiation Biology							
Responsible tutor				Title, academic degree:			
Dr. Levente Herényi				associate professor, Ph.D.			
Contact information: - phone: +361 459-500/60222 - email: herenyi.levente@med.semmelweis-univ.hu							
Name of the persons responsible for the teaching of the subject:				Title, academic degree:			
Dr. Gergely Agócs Dr. Tamás Bozó Dr. Rita Galántai Dr. Nikolett Kósa Dr. Ádám Orosz Dr. Gusztáv Schay Dr. László Smeller Dr. István Voszka Dr. Ádám Zolcsák				senior lecturer, PhD senior lecturer, PhD teacher, PhD assistant lecturer, PhD assistant senior lecturer PhD senior lecturer, PhD professor DSc associate professor, PhD PhD student			
Class per week: 1,5 hours theory, 2,5 hours practice				Credit point(s): 4			
Professional content, intent of acquirement and it's function in order to implement the goals of the program: Our teaching program is evolving continuously. Today's students will be the pharmacists of the oncoming decades. In selecting and highlighting topics of study, the first viewpoint is scientific foresight: the knowledge should be conveyed which must be pertinent to ensure first-class professional competence while keeping abreast of the most recent development in the field of study.							
Short description of the subject:  Our aim is not only the teaching of a specific body of knowledge but also the development of the exact scientific method and concrete problem-solving abilities							
Course data							
Recommend ed term	Contact hours (lecture)	Contact hours (practice)	Contact hours (seminar)	Individu al lectures	Total number of contact hours/sem ester	Normal course offer	Consult ations
1. semester	21	35	-	-	56	Autumn semester* Spring semester Both semesters (* Please underline)	--

### **Program of semester\*\***

#### **Topics of theoretical classes (pro week):**

1. week: Introduction; Basic mathematics
2. week: Basic general physics; Some basic physical phenomena and their explanations
3. week: Geometrical optics; Fermat principle; Applications of geometrical optics
4. week: Lenses, image formation; lupe; microscope; necessity of a new model
5. week: Wave optics, Young experiment; optical grating; Electromagnetic radiation
6. week: Photon concept; Radiations; Law of attenuation of intensity of radiation
7. week: Atom, electron; Most important experiments; H-atom; Bohr's model
8. week: Duality; quantum numbers; Spin; Atomic and molecular interactions
9. week: Many atom systems; Gases; Barometric formula
10. week: Boltzmann distribution; Solids; Crystal defects
11. week: Doped crystals; Liquid crystals; Water, surface tension, hydrophobic interaction; proteins
12. week: Light emission, absorption; light scattering; Thermal radiation; Luminescence; Light sources; Lasers
13. week: Radioactive isotopes and radiation
14. week: X-ray and its absorption

#### **Topics of practical classes (pro week):**

1. week: Laboratory safety rules
2. week: Microscope
3. week: Measuring devices
4. week: Refractometer
5. week: Light emission
6. week: Resonance measurement
7. week: Special microscopes
8. week: Light absorption
9. week: Optics of the eye
10. week: Nuclear medicine
11. week: Polarimetry
12. week: Skin impedance
13. week: Gamma absorption
14. week: Summary, repetition

**Schedule of consultations:** every week in the exam period

#### **Course requirements**

**Prerequisites:** -

#### **Conditions of attending the classes, amount of acceptable absents, way of presentation of leave, opportunity for makeup:**

Participation in the practical lessons is compulsory. No more than three absences from practices are allowed for any reason, otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. The missed measurements should be done with another group if possible.

#### **The grading method; the conditions for getting the signature; the number, topic(s) and date(s) of the mid-term assessments, (reports, term tests), and the process in which they contribute to the final grade; and the possibility of their retake or their upgrading retake (as provided in §§ 25-28 of the STUDY AND EXAMINATION REGULATIONS):**

**Number, topics and dates of tests during the semester, opportunities of makeup and improvement of results\*\*\*:** It will be announced on the homepage of the department during the first week of the semester

<p><b>Requirements of signature (as provided for in STUDY AND EXAMINATION REGULATIONS § 29):</b></p> <p>Participation at least on 75 % of laboratory practices and all the lab reports should be accepted by the teacher of the group</p>
<p><b>Number and type of projects students have to perform independently during the semester and their deadlines:</b> Lab. report should be written about each measurement. Deadline: one week after the measurement.</p>
<p><b>Type of the semester-end examination:</b> signature*/practical grade*/ comprehensive examination*/<u>semi-final</u>*/final/end-term examination* (<i>Please underline</i>)</p> <p><b>Examination requirements:</b> as published by the education-research department on the MOODLE interface by the start of the academic term.</p>
<p><b>Form of the semester-end examination:</b> written*/oral*/<u>combined</u> examination/<b>practical examination/the assessment of completing project work (according to STUDY AND EXAMINATION REGULATIONS 30.§)*</b> (<i>Please underline</i>)</p>
<p><b>The possibility and conditions for offering grades:</b></p>
<p><b>A list of the basic notes, textbooks, resources and literature that can be used to acquire the knowledge necessary to master the curriculum and to complete the assessments, as well as the main technical and other aids and study aids that can be used:</b></p> <p>see the homepage of the department and the MOODLE</p>
<p><b>In the case of a subject lasting more than one semester, the position of the teaching/research department on the possibility of parallel enrolment and the conditions for admission****:</b></p> <p>yes*/<u>no</u>*/on and individual assesment basis* (<i>Please underline</i>)</p> <p><i>We do not allow to take Biophysics II. without passing Biophysics I.</i></p>
<p><b>The course description was prepared by:</b></p> <p>Dr. Levente Herényi and Dr. István Voszka</p>

**\*\* A tantárgy tematikáját oly módon kell meghatározni, hogy az lehetővé tegye más intézményben a kreditismerési döntéshozatalt, tartalmazza a megszerzendő ismeretek, elsajátítandó alkalmazási (rész)kézségek, (rész)kompetenciák és attitűdök leírását, reflektálva a szak képzési és kimeneti követelményeire.**