

2023/2024. ACADEMIC YEAR							
PROGRAM OF STUDY (FOR STUDENTS OF 2ND YEAR)							
<b>Full (Hun) name of the subject: Biokémia II</b>							
<b>Program: Undivided program (Pharmacy)</b>							
<b>Schedule: full-time</b>							
<b>Short name of the subject: Biochem II</b>							
<b>English name of the subject: Biochemistry II</b>							
<b>German name of the subject: Biochemie II</b>							
<b>Type of registration: obligatory/obligatory elective/elective/criteria requirement</b>							
<b>Neptun code of the subject: GYKBMT276E2A</b>							
<b>Responsible Department:</b> Institute of Biochemistry and Molecular Biology, Department of Biochemistry							
<b>Responsible tutor</b>  Dr. Attila Ambrus, associate professor  <b>Contact information:</b> - <b>phone:</b> 06 1 459-1500/60050 - <b>email:</b> ambrus.attila@med.semmelweis-univ.hu				<b>Title, academic degree:</b>  D. Sc.			
<b>Name of the persons responsible for the teaching of the subject:</b>  Dr. Iordan Iordanov Dr. István Léránt Dr. Dóra Ravasz Dr. László Tretter Dr. Krasimir Kolev Dr. Bálint Nagy Dr. Olivér Ozohanics Erzsébet dr Maróthy Tóth				<b>Title, academic degree:</b>  Ph. D. Ph. D. Ph. D. D. Sc. D. Sc. Ph. D. Ph. D. Pharm. D.			
<b>Class per week:</b> 1 lecture/week (2 hours/week)				<b>Credit point(s):</b>  3			
<b>Professional content, intent of acquirement and it's function in order to implement the goals of the program:</b>  The main goal of this course is to introduce students to the mechanisms of human biochemical processes at the molecular level. The program is designed to also provide a broader insight into physiological processes that enables students to connect all their previous studies to metabolic processes, and also provides them with the basic knowledge to understand mechanisms of drug action discussed later in Pharmacology. The skills and knowledge acquired in this program is inevitable for modern rational drug design.							
<b>Short description of the subject:</b> Metabolism of lipids. Regulation of biochemical pathways. Enzyme defects. Pharmacological targets. Integration of the metabolism amongst various organs. Synthesis and degradation of neurotransmitters. Hemostasis, blood coagulation and fibrinolysis.							
<i>Course data</i>							
Recommend ed term	Contact hours (lecture)	Contact hours (practice)	Contact hours (seminar)	Individual lectures	Total number of contact hours/semester	Normal course offer	Consult ations
4th	2	1	no	no	35+7	spring semester*	on demand

**Program of semester\*\***

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

- Week 1: Degradation of saturated, unsaturated, even- and odd-C-chained fatty acids, metabolism of ketone bodies
- Week 2: Synthesis of fatty acids, regulation, elongation and desaturation of fatty acids, synthesis of eicosanoids
- Week 3: Digestion of lipids, degradation and synthesis of triglycerides and phospholipids, fatty acid transporters, the role of lipids in signal transduction
- Week 4: Synthesis of cholesterol, regulation, transport of cholesterol, pharmacological targets, synthesis of bile acids, enterohepatic circulation
- Week 5: Metabolism of lipoproteins, hyperlipoproteinaemias
- Week 6: Synthesis of steroid hormones
- Week 7: Metabolic integration: red blood cell, adipocyte, heart, skeletal muscle
- Week 8: Metabolic integration: brain, kidney, intestine
- Week 9: Metabolic integration: liver in well-fed and fasting states
- Week 10: Synthesis and degradation of neurotransmitters: Ach, NA, DA, 5-HT
- Week 11: Synthesis and degradation of neurotransmitters, receptor types: Glu, GABA, Gly
- Week 12: Hemostasis: blood coagulation, role of thrombocytes, pharmacological targets
- Week 13: Hemostasis: fibrinolysis, pharmacological targets
- Week 14: Hemostasis: role of endothelium and liver, pharmacological targets

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

- Week 1-2: Purification of trypsin with affinity chromatography
- Week 3-4: Detection of LDH isoenzymes by PAGE
- Week 5-6: Determination of blood sugar level
- Week 7-8: Determination of TAG and cholesterol levels in serum, 1<sup>st</sup> midterm
- Week 9-10: Determination of ASAT and ALAT activities in serum
- Week 11-12: Seminar on liver failure, 2<sup>nd</sup> midterm
- Week 13-14: Determination of prothrombin time, activated partial thromboplastin time

**Course requirements**

**Schedule of consultations:** on demand

**Prerequisites:**

Biochemistry I.	GYKBMT276E1A
Organic Chemistry I.	GYKSZK274E2A

**Conditions of attending the classes, amount of acceptable absents, way of presentation of leave, opportunity for makeup:** Not more than two absences from the practice. Justification of absence is not required.

**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):**

Grading of the final exam:

0-49%: fail, 50-61%: pass, 62-74%: fair, 75-87%: good, 88-100%: excellent

**Number, topics and dates of tests during the semester, opportunities of makeup and improvement of results\*\*\*:**

Two midterm exams will be held in the Moodle system. The first midterm exam will take place on weeks 5-6, the material is lipid metabolism discussed on weeks 1-4. The second midterm will take place on weeks 11-12, the material is the steroid hormones, metabolic integration and neurochemistry discussed in the week 10 lecture. Students who do not write the mid-term paper in the normal time can make up for it after each paper and in the last week.

**Requirements of signature(as provided for in STUDY AND EXAMINATION REGULATIONS § 29):**

all midterms should be successful, not more than two absences from the practice

**Number and type of projects students have to perform independently during the semester and their deadlines: Projects are not required.**

<p><b>Type of the semester-end examination:</b> signature*/practical grade*/semi-final*/<u>final</u>* (<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>Offering grades is not possible.</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, <del>****</del> with exact description about which of them is required to acquire which part of the syllabus (e.g. description based on topics)), as well as the main technical and other aids and study aids that can be used:</b></p> <p>Berg-Tymoczko-Stryer: Biochemistry 9<sup>th</sup> edition Lecture slides and the syllabus uploaded in the Moodle system.</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>) <i>Biochemistry 1 and 2 should not enroled parallely.</i></p>
<p><b>The course description was prepared by:</b></p> <p>dr. Attila Ambrus dr. Erzsébet Maróthy Tóth</p>