

**2020/2021 TANÉVBEN ÉRVÉNYES  
TANTÁRGYI PROGRAM**

<b>Tantárgy teljes neve:</b> Clinical Physiology Laboratory Measurements							
<b>Képzés:</b> Semmelweis University, Pharmacy Basic Education (osztatlan)							
<b>Munkarend:</b> nappali tagozatos							
<b>Tantárgy rövidített neve:</b> Physiology Measurements							
<b>Tantárgy angol neve:</b> Clinical Physiology Laboratory Measurements							
<b>Tantárgy német neve:</b> Physiologische Untersuchungsmethoden im Klinikum							
<b>Tantárgy neptun kódja:</b> GYKIKKFVE1A							
<b>Tantárgy besorolása:</b> obligatory/ <b>obligatory elective subject</b> /elektive ( <i>Please, underline the correct!</i> )							
<b>A tantárgy oktatásáért felelős szervezeti egység:</b> Institute of Translational Medicine							
<b>A tantárgyfelelős neve:</b> Dr. Benyó Zoltán <b>Elérhetőség:</b> - <b>Phone:</b> (+36-1) 210-0306, extension number: 60300 - <b>e-mail:</b> benyo.zoltan@med.semmelweis-univ.hu				<b>Beosztás, tudományos fokozat:</b> head of department, professor, MD, PhD, DSc			
<b>A tantárgy oktatásában résztvevő(k) neve(i):</b> Dr. Ivanics Tamás Dr. Miklós Zsuzsanna Dr. Margittai Éva Dr. Ruisanchez Éva Dr. Anna Monori-Kiss Dr. Pál Éva				<b>Beosztás, tudományos fokozat:</b> Associate professor, MD, PhD Associate professor, MD, PhD Professor's assistant, MD Professor's assistant, MD Professor's assistant PhD student			
<b>A tantárgy heti óraszám:</b> <b>1 lecture</b> <b>2 practice</b> (on uneven weeks of the semester 2 theoretical, whereas on even weeks 4 practical lessons)				<b>A tantárgy kreditpontja:</b> <b>3</b>			
<b>A tantárgy feladata a szakképzés céljának megvalósításában:</b>  The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).							
<b>A tantárgy rövid leírása:</b>  The subject relies on the theoretical knowledge acquired previously or parallel on the physiology course. The <i>theoretical lessons</i> will be held every other week in 2 x 45 minutes (i.e 2 lessons on uneven weeks of the semester). These will give insight into the details of those physiological/pathophysiological processes and clinical conditions which will be examined on the practical lessons later. Moreover, technical background of the applied diagnostic measurements will also be presented. The <i>practical lessons</i> will be held in the educational laboratory of the institute (EOK building, room 1.309) every other week. In 4 x 45 minutes (i.e 4 lessons on even weeks of the semester) the students will have the opportunity to carry out human physiological/medical diagnostic measurements on each other in small groups (2-3 persons). In order to demonstrate basic physiological adaptation processes the recorded parameters will be manipulated by simple interventions (e.g. physical exercise, glucose consumption). Progress on the course and preparation for the exam will be aided by the handouts and laboratory manuals which have been compiled and continually revised by the tutors of the institute. These will be available for the students electronically on the website of the institute.							
<b>Az adott félévi kurzusra vonatkozó adatok</b>							
Tárgyfelvétel ajánlott féléve	Kontakt elméleti óra	Kontakt gyakorlati óra	Kontakt demonstrációs gyakorlati óra	Egyéni óra	Összes óra	Meghirdetés gyakorisága	Konzultációk száma
<b>From the 6th semester</b>	14	28			42	Every semester	

<i>A kurzus oktatásának időterve</i>	
<b>Elméleti órák tematikája (heti bontásban):</b>	<p>1<sup>st</sup> week - Introduction to the bases of measurement techniques.</p> <p>3<sup>rd</sup> week – Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular transmission and skeletal muscle.</p> <p>5<sup>th</sup> week - Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophysiological conditions. The characteristics of the pulse wave propagation.</p> <p>7<sup>th</sup> week - Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.</p> <p>9<sup>th</sup> week – Regulation of carbohydrate metabolism and its disorders.</p> <p>11<sup>th</sup> week – Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.</p> <p>13<sup>th</sup> week - Consultation</p>
<b>Gyakorlati órák tematikája:</b>	<p>2<sup>nd</sup> week - Introduction to the uses of instruments and data acquisition software applied during the course</p> <p>4<sup>th</sup> week - Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.</p> <p>6<sup>th</sup> week - Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG recordings. 8<sup>th</sup> week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise</p> <p>10<sup>th</sup> week –Oral glucose tolerance test, determination of HbA<sub>1c</sub> level, analysis of normal and pathologic glucose tolerance curves.</p> <p>12<sup>th</sup> week – Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.</p> <p>13<sup>th</sup> week - Optional lab retake.</p> <p>14<sup>th</sup> week - Repetition and practice for the practical exam</p>
<b>Konzultációk rendje:</b>	-
<i>Kurzus követelményrendszere</i>	
<b>A kurzus felvételének előzetes követelményei:</b>	<p><b>Successful completion of Physiology I course and Physiology semifinal exam.</b></p>
<b>A foglalkozásokon való részvétel követelményei, az elfogadható hiányzások mértéke, a távolmaradás igazolásának módja, pótlás lehetősége:</b>	<p>It is compulsory to attend the classes. Students are not allowed to miss more than 1 laboratory practice and more than 2 theoretical lessons; otherwise the semester cannot be accepted. A Retake Lab opportunity is provided on the 13<sup>th</sup> week of the semester to make up for one missed lab. Retake of 1 missed lab cancels 1 absence.</p>
<b>Évközi ellenőrzések (beszámolók, zárthelyi dolgozatok) száma, témakörei és időpontjai, pótlási és javítási lehetőségek:</b>	<p>Short test at the beginning of each lab practice on the background of the actual measurement. Questions for the test will be available for the students in advance.</p>
<b>A félév végi aláírás követelményei:</b>	<p>Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor.</p>
<b>A hallgató félév során egyéni munkával megoldandó feladatai:</b>	<p>Documentation of experimental results.</p>
<b>A félév végi számonkérés típusa:</b>	<p>signature/practical mark/<b>semi-final</b>/final (<i>Please, underline the correct!</i>)</p>
<b>A félév végi számonkérés formája:</b>	<p>Oral exam consisting of 2 parts:</p> <ol style="list-style-type: none"> <li>1. Practical exam: implementation of a short experimental task in pairs. Topic list will be available in advance.</li> <li>2. Theoretical exam: oral individual exam on the basic theoretical background of the laboratory measurements. Topic list will be available in advance.</li> </ol>
<b>A tárgy előírt külső szakmai gyakorlatai:</b>	-
<b>A tananyag elsajátításához felhasználható jegyzetek, tankönyvek, segédletek és szakirodalom listája:</b>	<ol style="list-style-type: none"> <li>1. Laboratory manuals provided by the institute.</li> <li>2. John E. Hall: Guyton and Hall Textbook of Medical Physiology. 13th Edition, Elsevier, 2015</li> </ol>

<b>A kurzus tárgyi szükségletei:</b> -
<b>Tantárgyi vonatkozású tudományos eredmények, kutatások:</b> The institute has been conducting internationally acknowledged researches on various fields of cardiovascular and cardiorespiratory sciences for decades. The fundamentals of this course rely on this knowledge base.
<b>A tantárgyleírást készítette:</b>  Dr. Ivanics Tamás, egyetemi docens, tanulmányi felelős