

Course Title	<b>Pharmaceutical Immunology and Immunochemistry</b>				
Course Code	PHA310				
Course Type	Compulsory				
Level	BSc (Level 1)/ MPharm (Level 2)				
Year	3 <sup>rd</sup> year/6 <sup>th</sup> semester				
Teacher's Name	Dr Gourni Maritsa				
ECTS	6	Lectures / week	3	Laboratories / week	2
Course Objectives	The main objective of the course is to help students to gain the theoretical knowledge needed in Pharmaceutical Immunology and Immunochemistry, enabling students to understand the latest trends in diagnosis, treatment and research related to Pharmaceutical Immunology and Immunochemistry.				
Learning Outcomes	<p>At the completion of the course the student will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the evolution of pharmaceutical Immunology - Immunochemistry over time and recognize their contribution to the advancement of pharmaceuticals and society in general.</li> <li>• Become familiar with the terminology and the basic concepts of pharmaceutical Immunology - Immunochemistry.</li> <li>• Explain the association of innate and adaptive immunity and their role in the immune response.</li> <li>• Describe the antigen-antibody interaction and how this interaction applies to immunodiagnosis.</li> <li>• Identify the cells, the tissues and the organs of the immune system, their function, molecular biology, and their chemistry.</li> <li>• Analyze the disorders of the immune system.</li> <li>• Distinguish the role of various cells of the immune system, and the anti-inflammatory and inflammatory factors.</li> <li>• Describe the use of antibodies in the treatment and the development of drugs that target specific cells or tissues.</li> <li>• Explain the use of antibodies in immunotherapy and in diagnosis</li> </ul>				
Prerequisites	PHA203, PHA207	Required	None		
Course Content	<p>Theory</p> <ul style="list-style-type: none"> <li>• Introduction to Pharmaceutical Immunology and Immunochemistry.</li> <li>• Elements of the immune system.</li> <li>• Functioning of organs and cells of the immune system.</li> <li>• Antibodies and Adjuvant Antibody Administration.</li> </ul>				

	<ul style="list-style-type: none"> <li>• Cellular responses in immunity.</li> <li>• Antibodies as drugs and carriers of drugs.</li> <li>• Commercial antibodies used as drugs.</li> <li>• Chemotherapy, radioimmunotherapy.</li> <li>• Hypersensitivity and allergy to medicines.</li> <li>• Humoral and cellular immune deficiency. Cytokines, e.g. interleukins, interferons and immunotherapy</li> <li>• Infectious diseases. Vaccines, immune response, immunity duration, types of vaccines, vaccine technology.</li> <li>• Immunological agents as drugs, antibodies.</li> <li>• Immunodiagnosis and immunoassays. Inflammation and role of non-steroid anti-inflammatory drugs. Chemistry of antigens, immunoglobulins and antibodies.</li> <li>• Antibody-antigen interactions, e.g. precipitation, adhesion reactions. Biological - biochemical activities of antibodies, e.g. stabilization of the adjunct antibody. Autoimmune disease. Transplants. Pregnancy, cancer, nutrition and immunity</li> </ul> <p>Laboratory experiments/exercises:</p> <p>As part of the course, laboratory exercises are carried out on the course material for a better deepening and consolidation of the theoretical part. Indicative exercises are: blood cells - blood smear - staining – microscopy, measure lymphocyte count and type - measurement using Neubauer, blood group systems, rhesus Blood Group System, direct / indirect Coombs Tests, bacterial immunology using the Widal method.</p>
Teaching Methodology	<p>The teaching of the course includes lectures for students to get the theoretical background and laboratory exercises in order to get a better understanding and comprehension of the main concepts of Pharmaceutical Immunology and Immunochemistry. Methods such as discussion, questions/answers, and pros/cons, are used to enhance student's participation. Detailed notes with PowerPoint are used for teaching purposes. In addition, image-rich material and short animations are used to better understand the content of Immunology and Immunochemistry.</p> <p>The laboratory exercise is conducted in the biochemistry laboratory with the proper laboratory equipment and under the instructor's supervision. Appropriate preparation and demonstration by the laboratory supervisor is preceded by each laboratory exercise. The assessment of laboratory exercises includes laboratory reports submitted by each student at the end of each lab exercise.</p>
Bibliography	<p>(a) Textbooks:</p> <ul style="list-style-type: none"> <li>• Ανοσολογία (2021) 9<sup>η</sup> Έκδοση, David Male Stokes Peebles Victoria Male. Εκδόσεις: ΧΑΡΙΤΟΣ ΧΡ. ΠΑΝΑΓΙΩΤΗΣ</li> <li>• Basic Immunology 5<sup>th</sup> , A.K. Abbas, A.H 2018 – Broken Hill publishers LTD</li> <li>• Kuby Immunology. J. Punt, S. Stranford, P. Jones, J. Owen.</li> </ul>

	<p>Publisher: W. H. Freeman, 8<sup>th</sup> ed, 2018</p> <ul style="list-style-type: none"> <li>• Kuby Immunology. J. Punt, S. Stranford, P. Jones, J. Owen. Publisher: W. H. Freeman, 8<sup>th</sup> ed, 2018</li> <li>• “Ανοσολογία Kuby”, (2013), T. Kindt, R. Goldsby, B. Osborine. Εκδοτικός Οίκος: Ιατρικές Εκδόσεις Πασχαλίδης.</li> <li>• “Ανοσολογία”, (2005), 4<sup>th</sup> ed., M. Παυλάτου, Ιατρικές Εκδόσεις Λίτσας</li> </ul> <p>(b) <u>References:</u></p> <ul style="list-style-type: none"> <li>• “Immunology”, I. Roitt, J. Brostoff, D. Nale, Mosby; 6<sup>th</sup> edition, 2001.</li> <li>• «Immunobiology». L.Xatziperou-Kourounaki- University Studio Press, Thessaloniki (1987) “</li> </ul>
<p>Assessment</p>	<p>Course Work 40% Mid-term Test 20% Lab reports 20% Final Exam 60%</p> <p>For student evaluation, the overall grade is determined by a written midterm exam (20%), a laboratory grade (20%) and a written final exam (60%).</p> <p>The mid-term exam is carried out between the 6<sup>th</sup> and 8<sup>th</sup> week and it mainly includes short answer questions and problem- solving questions and examines specific modules of the course.</p> <p>As far as the laboratory grade is concerned, it comprises of the evaluation of the laboratory reports (60% of the laboratory grade) provided by the students for every experiment and a final laboratory examination (40% of the laboratory grade) which mainly includes short answer questions and problem-solving questions. In the laboratory reports, students are asked to describe the experiment procedure, to evaluate and analyse their results and to answer specific questions. The following criteria are taken into account when evaluating laboratory reports: (a) experimental data collection (30%), (b) data analysis (40%), and application of theory to draw conclusions (30%).</p> <p>The final exam of the course is carried out during the 14<sup>th</sup>-16<sup>th</sup> week of each semester and includes short answer questions, decision questions, and problem-solving questions regarding all course modules.</p> <p>The final assessment of the students is formative and summative and is assured to comply with the subject’s expected learning outcomes and the quality of the course.</p>
<p>Language</p>	<p>Greek, English</p>