

## COURSE OUTLINE “ADVANCED THEMES OF MOLECULAR IMMUNOBIOLOGY”

### 1. GENERAL

<b>SCHOOL</b>	HEALTH SCIENCES		
<b>DEPARTMENT</b>	MOLECULAR BIOLOGY AND GENETICS		
<b>STUDY LEVEL</b>	ISCED LEVEL 6		
<b>COURSE CODE</b>	<b>MBG611</b>	<b>SEMESTER</b>	6 <sup>th</sup> and 8 <sup>th</sup>
<b>COURSE TITLE</b>	ADVANCED THEMES OF MOLECULAR IMMUNOBIOLOGY		
<b>TEACHING ACTIVITIES</b>	<b>HOURS/WEEK</b>	<b>ECTS CREDITS</b>	
<i>In case credits are awarded to individual components of the course eg. Lectures, laboratory practicals, etc. If credit units are awarded for the whole course, indicate the weekly teaching hours and total credits</i>	2	3	
<b>COURSE TYPE</b> <i>General, Background, Scientific field course, Expertise Course, Skills Development etc</i>	SCIENTIFIC FIELD		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF TEACHING AND EXAMINATIONS:</b>	GREEK ENGLISH FOR ERASMUS STUDENTS		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	YES		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.duth.gr/courses/ALEX01207/">https://eclass.duth.gr/courses/ALEX01207/</a>		

### 2. LEARNING OUTCOMES

#### Learning outcomes

*Describe the learning outcomes of the course, the specific knowledge, skills and competencies that students will acquire after successfully completing the course. Refer to Appendix A.*

- *Description of learning outcomes for the course according to the level of study - refer to the European Higher Education Area Qualifications Framework*
- *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B Curriculum Vitae Summary Guide*

The objectives of the course are:

- To acquire knowledge and to understand the role of the immune system in health and disease
- To gain knowledge about the dysregulations of the immune system
- To get knowledge about the mechanisms involved in the induction or suppression of specific immune responses that lead to prevention and/or therapy of diseases
- To acquire knowledge about the development of novel immune strategies (vaccines, anticancer immunotherapy)

#### LEARNING OUTCOMES:

After successfully completing the course, students will acquire the following knowledge, skills and competencies:

- know the mechanisms underlying the dysregulations of the immune system (autoimmunity, immunodeficiency, hypersensitivity reactions) and ways of treatment,
- know and understand the immune reactions and mechanisms involved in transplantation,
- know the immune reactions and mechanisms involved in cancer, the interaction of immune cells with cancer cells, as well as the mechanisms used by cancer cells to avoid the immune system (immune evasion) - They should understand how cancer immunotherapy strategies work,
- know the mechanisms involved in the induction or suppression of specific immune responses that lead to prevention and/or therapy of diseases,
- know about the development of novel immune strategies (vaccines, immunotherapy),
- combine and utilize the acquired knowledge, in order to be able to comprehend and analyze the immune reaction mechanisms and function of the immune system.

#### General Skills

*Which of the general competencies that the student will have acquired on the completion of the studies (see also the Diploma Supplement and below) are relevant to this course?*

*Research, analysis and synthesize of data and information, using the necessary technologies*  
*Adaptation to new situations*  
*Decision making*  
*Autonomous work*

*Work in an interdisciplinary environment*  
*Production of new research ideas*  
*Project design and management*  
*Respect for diversity and multiculturalism*  
*Respect for the natural environment*

<i>Team work Work in an international environment</i>	<i>Development of social, professional and moral responsibility and gender sensitivity Promotion of free, creative and inductive thinking</i>
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Search, analysis and synthesis of data and information, ICT Use  
Autonomous work  
Production of new research ideas  
Promoting free, creative and inductive reasoning

**3. COURSE CONTENT**

1. Introduction – The Immune system in Health and Disease - Dysregulations of the immune system
2. Immune prevention and Immunotherapy - Strategies
3. Vaccines: Design of novel Vaccines for active immunization
4. Immunodeficiencies – Primary and Secondary Immunodeficiencies – The Human Immunodeficiency virus (HIV)
5. Autoimmunity – Organ-specific and Systemic autoimmune diseases – Experimental animal models of Autoimmunity – Immune mechanisms - Therapy
6. Hypersensitivity reactions – Classification (Type I, II, III, IV) – Allergies, DTH – Immune mechanisms - Therapy
7. Immunology of Transplantation – Immune mechanisms of transplant/graft rejection – Clinical stages of rejection – Immunologically privileged sites – Graft versus host disease – Immunosuppression – Immune tolerance in allografts
8. Cancer and the Immune system – Immune surveillance – Oncogenes – Cancer/Tumor antigens – Escape of cancer cells from immune surveillance – Immune prevention and Immunotherapy
9. Special topics in Autoimmunity – Presentation of assignments/reports
10. Special topics in Immunodeficiency – Presentation of assignments/reports
11. Special topics in Transplantation – Presentation of assignments/reports
12. Special topics in Hypersensitivity reactions – Presentation of assignments/reports
13. Special topics in Vaccines and Cancer Immunotherapy – Presentation of assignments/reports

**4. TEACHING and LEARNING METHODS - EVALUATION**

<b>TYPE OF TRAINING</b> <i>Face-to-face, Distance learning, etc..</i>	Face to face												
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, and in communication with the students</i>	Use of ICT in Teaching Use of ICT in Communication with students												
<b>MODES OF DELIVERY</b> <i>Describe the teaching methods in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, practicum, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Instructional teaching in conjunction with collaborative and interactive teaching strategies.  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e0e0e0;">Activity</th> <th style="background-color: #e0e0e0;">Workload/semester</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Study and analysis of bibliography</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Essay writing</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Seminars</td> <td style="text-align: center;">4</td> </tr> <tr> <td><b>Course Total</b></td> <td style="text-align: center;"><b>90</b></td> </tr> </tbody> </table>	Activity	Workload/semester	Lectures	26	Study and analysis of bibliography	30	Essay writing	30	Seminars	4	<b>Course Total</b>	<b>90</b>
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<p style="text-align: center;"><b>STUDENT PERFORMANCE EVALUATION</b></p> <p style="text-align: center;"><i>Describe of the methods of evaluation language, methods of evaluation, types of exams, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p style="text-align: center;"><i>Are evaluation criteria known to the students?</i></p>	<p><b>Student evaluation languages</b> Greek, English</p> <p><b>Method (Formative or Concluding)</b> Formative</p> <p><b>Student evaluation methods</b> Written exam with multiple choice test (40%) Written Exam with Short Answer Questions (10%) Written Assignment (40%) Presentation in audience (10%)</p>
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## 5. SUGGESTED BIBLIOGRAPHY

### *Translated in Greek language:*

1. **'MOLECULAR and CELLULAR IMMUNOLOGY'** – Abbas AK, Lichtman AH, Pillai S, 9<sup>th</sup> edition 2017, translated in Greek language 2019, Utopia Publishing/Elsevier, p. 688, ISBN: 978-618-5173-39-5, *Eudoxus code: 86197140*
2. **'BASIC IMMUNOLOGY'-Functions and Disorders of the Immune system»** - Abbas A, Lichtman AH, Pillai S, 5th edition/2015, translated in Greek language 2018, Vasiliadis Medical Books/Broken Hill Publishers LTD, p. 520, ISBN: 978-996-327 4505, *Eudoxus code: 77106913*
3. **'IMMUNOLOGY'** - Goldsby R, Kindt T, Osborne B, Kuby J, 6th edition 2007, translated in Greek language 2013, Paschalidis Medical Publications/Broken Hill Publishers Ltd., p. 840, ISBN: 978-9963-716-14-2, *Eudoxus code: 23076003*
4. **'BASIC CLINICAL IMMUNOLOGY'** – Chapel H, Haeney M, Misbah S, Snowden N, 5<sup>th</sup> edition/2006, translated in Greek language 2013, Parisianou Publications/Wiley-Blackwell, p. 448, ISBN: 978-960-394-960-2, *Eudoxus code: 33074641*
5. **'CLINICAL IMMUNOLOGY'** – Boura P et al., 3<sup>rd</sup> edition/2015, University Studio Press, ISBN: 978-960-12-2192-2, *Eudoxus code: 41963815*
6. **'Lippincott's IMMUNOLOGY'** - Harvey RA, Doan T, Melvold R, Viselli S, Waltenbaugh C, 2<sup>nd</sup> edition/2012, translated in Greek language 2014, Parisianou Publications/Wolters Kluwer, p. 388, p. 386, ISBN: 978-960-394-98-62, *Eudoxus code: 33134131*

### *In English language:*

7. **'Kuby IMMUNOLOGY'** – Punt J, Stranford SA, Jones PP, Owen JA, 8<sup>th</sup> edition 2018, WH Freeman, p. 944, ISBN: 978-131-911-4701
8. **'Cellular and Molecular IMMUNOLOGY'** – Abbas AK, Lichtman AH, Pillai S, 9<sup>th</sup> edition 2017, Elsevier, p. 608, ISBN: 978-032-347-9783
9. **'Janeway's IMMUNOBIOLOGY'** – Murphy KM, Weaver C, 9<sup>th</sup> edition 2016, WW Norton, p. 924, ISBN: 978-081-534-5053

### **Course notes**

Course lecture notes and lecture presentations are available through the *e-class* platform.