

LABORATORY MODULE OUTLINE

(1) GENERAL INFORMATION

SCHOOL	School of Science and Technology		
PROGRAM COURSE	Precision Medicine and Novel Therapies (PRETH)		
LEVEL OF STUDY	Postgraduate		
MODULE CODE	PRETH61	YEAR OF STUDY	2 nd (3 rd semester)
MODULE TITLE	Biomedical, Clinical and Translational Research		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Hours per week: 28-29 hours x 13 weeks (distance learning) and 50 hours x 1 week (laboratory learning)	420	15 ECTS	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
MODULE TYPE Compulsory, Optional, Optional mandatory	Compulsory		
PREREQUISITE MODULES:	PRETH61 is a prerequisite for enrollment to the 1st structure of the MSc curriculum, which includes a Research Dissertation (RDi) completed during the 4th semester of studies.		
LANGUAGE OF INSTRUCTION AND EXAMS:	English		
THE MODULE IS OFFERED TO ERASMUS STUDENTS	Yes		
MODULE WEBSITE (URL)	<p style="text-align: center;">https://www.eap.gr/en/preth/</p> <p>Each module has its own space in the Learning Management System of EAP, with controlled access (use of code) for students and teaching staff.</p> <p style="text-align: center;">https://courses.eap.gr/course/view.php?id=254</p>		

(2) LEARNING OUTCOMES

<p>Learning Outcomes</p> <p>The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult: APPENDIX A</p> <p>Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.</p> <p>Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and APPENDIX B</p> <p>Guidelines for writing Learning Outcomes</p>

Learning Outcomes

The trainees are expected to:

- Produce and analyze experimental data on modern fields of biomedical science
- Translate experimental results into potential biomarkers or novel clinical therapies
- Describe the process of disease-oriented research in the laboratory or in preclinical studies that will have an impact on human health
- Recognize the applications of discoveries generated during research in the laboratory, and in preclinical studies, to the development of clinical trials and studies in humans

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

<i>Search for, analysis and synthesis of data and information by the use of appropriate technologies,</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for diversity and multiculturalism</i>
<i>Decision-making</i>	<i>Environmental awareness</i>
<i>Individual/Independent work</i>	<i>Social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Group/Team work</i>	<i>Critical thinking</i>
<i>Working in an international environment</i>	<i>Development of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social innovative research awareness, altruism etc.)</i>	<i>.....</i>

The general skills that the students will acquire are:

- Expand the professional network by engaging with individuals who possess a wide range of work experience and extensive professional contacts
- Gain valuable insights into a research environment
- Work in an international environment
- Work in an interdisciplinary environment
- Production of new research ideas
- Search, analysis and synthesis of data and information, using the necessary technologies
- Promoting free, creative and inductive thinking

(3) MODULE CONTENT

Module Objectives

The use of modern research advances brings new insights into the study of disease in the human populations. Understanding the fundamental causes of diseases at their earliest molecular stage can reliably predict how and when a disease will develop. The opportunity is expanding our vision beyond the curative model and intervening earlier in the treatment process.

This laboratory module focuses on the interface between basic science and clinical medicine, the end point of which is the production of promising new treatments for clinical applications. The knowledge on disease mechanisms gained in the laboratory is translated into the development of new methods for diagnosis, therapy, and disease prevention.

- Basic research in Biomedical field
- Systems biology
- Preclinical and Translational research
- Omics

(4) TEACHING METHODS - ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>Personalized study, collaborative learning on the basis of real topics /works with the aim of developing creativity and innovation Distance teaching and distance learning with three Group Counseling Meetings (GCMs) of 4 hours duration during the academic semester on weekends. Also, 1-2 shorter tutoring sessions.</p> <ul style="list-style-type: none">• Students attend hands-on laboratory practice in the Laboratories of the Biomedical Research Foundation of the Academy of Athens (BRFAA), Hellenic Open University (HOU) labs or cooperating institutes at specific periods during the semester. Students may choose a training period from a specific list of options, provided that there will be a sufficient number of students to create a student group.• Students attend hands-on laboratory practice between five to seven consecutive days, performing two exercises per day, in order to complete each of the laboratory modules.• Students practice in small groups, supervised by Advisors – Professors of Laboratory modules.• Each student group conducts a specific set of laboratory protocols in predetermined periods of time. The lab exercise schedule is pre-posted on the distance learning platforms officially used by the HOU and students are allocated to groups after their declarations of participation. To facilitate planning, students are asked to indicate their first, second and third preference group at different time periods.• During the semester and before their practical laboratory training, students are guided by their Advisors - Professors to complete educational activities through the distance learning platforms of HOU Indicatively educational activities may include participating in Group Consultation Meetings (G.C.M.), watching video lectures, performing virtual labs, preparing assignments, participate in interactive exercises, etc., recorded on the posted study schedule of the laboratory module. During the distance learning process students are supervised - guided by an Advisor - Professor.
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<p>In GCMs and teaching we use:</p> <ul style="list-style-type: none">- Remote meetings tools (Webex, Cisco etc.)- Presentation software (e.g. power point, animations etc.)- Specialized software in the subjects under study (NCBI PubMed, NCBI Blast, EndNote, etc.) <p>In addition, students use office automation tools, web browsers and e-readers for digital books.</p> <p>Distance learning and communication with the students is supported by:</p> <ul style="list-style-type: none">- the (Hellenic Open University (HOU) digital platform http://courses.eap.gr (course information, educational material postings, announcements, messages, exam results, user groups, discussion forums, etc.).- Electronic mail (e-mail)

<p style="text-align: center;">MODULE DESIGN</p> <p><i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i></p> <p><i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Activity/Method</i></th> <th style="text-align: center;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>3 GCMs (x 4 hours)</td> <td style="text-align: center;">12</td> </tr> <tr> <td>2 Educational activities (x 10 hours)</td> <td style="text-align: center;">20</td> </tr> <tr> <td>2 semester assignments (x 30 hours)</td> <td style="text-align: center;">60</td> </tr> <tr> <td>Individual study</td> <td style="text-align: center;">278</td> </tr> <tr> <td>Laboratory training (5 days x 10 hours)</td> <td style="text-align: center;">50</td> </tr> <tr> <td>Total (hours)</td> <td style="text-align: center;">420</td> </tr> </tbody> </table>	<i>Activity/Method</i>	<i>Semester workload</i>	3 GCMs (x 4 hours)	12	2 Educational activities (x 10 hours)	20	2 semester assignments (x 30 hours)	60	Individual study	278	Laboratory training (5 days x 10 hours)	50	Total (hours)	420
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<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p>Student Evaluation – Laboratory Module Grade</p> <p>The specific instructions for each exercise in lab module PRETH61 are available on the digital educational platform of HOU and are sent to students upon enrollment.</p> <p><u>Through the distance learning platforms of HOU</u></p> <ul style="list-style-type: none"> • The schedules for training and online activities, the electronic resources for each laboratory module, and the contact details of the Advisors - Professors of laboratory modules are available on the digital educational platforms of HOU. • During the semester, students are required to complete two Written Assignments (W.A.). The average score of these assignments contributes to the final score of the module by 30%. Additionally, they successfully finish two (2) sets of Educational Activities (E.A.) throughout the semester, and the average score from these activities contributes 10% to the final score of the module. • Establishment of participation right in the face to face laboratory exercise: <p>Participation in the face to face laboratory exercise will be allowed, if:</p> <ol style="list-style-type: none"> 1. the sum of the grades of the aforementioned assignments (see a1 and a2) is equal to, or greater than 50% of the assigned grading scale, i.e. at least 20 points out of 100, based on the weights mentioned in the points above; 2. at least 3 of the 4 Activities and Assignments should be submitted. <p><u>Attendance to hands-on laboratory practice in the Laboratories of the Biomedical Research Foundation of the Academy of Athens (BRFAA), HOU labs or cooperating institutes</u></p> <ul style="list-style-type: none"> • Specific instructions for each laboratory exercise/protocol in each laboratory module are available on the digital distance learning platforms of HOU and in the corresponding lab module, which are sent to students upon enrollment. • For each workshop, students will receive assistance and support from their supervisor (Advisor – Professor). Nevertheless, possessing theoretical and methodological 														

	<p>expertise is essential for successfully conducting experiments in the laboratory, gathering observations and/or measurements, analyzing them, and deriving meaningful results and conclusions.</p> <ul style="list-style-type: none">• Upon completion of each activity, students will be required to analyze experimental results by completing a worksheet. The worksheet is provided to the supervisor (Advisor – Professor) upon the student's departure following each workshop. Not delivering the worksheet is essentially the same as not finishing the task.• The typical duration for each laboratory exercise, which includes completing the worksheet, ranges from 4 to 5 hours. Based on the specific needs of the laboratory exercises sometimes, time employed in the lab may differ from the predetermined.• The student's laboratory performance in each exercise will be evaluated by the supervising Advisor - Professor. The evaluation is obtained based on the student's theoretical knowledge, experimental skills, and the quality of the work sheet submitted.• Students are encouraged to complete all exercises of the laboratory module. To successfully complete each laboratory module, the average score of the student in the sum of the laboratory exercises/worksheets must be equal to or exceeding five (≥ 5.0). Alternatively, they will need to re-enroll at the laboratory module in the next following semester, fulfilling all educational and financial responsibilities. In case students re-enroll in the laboratory module and don't successfully complete the face to face laboratory exercise, they must re-enroll in the laboratory module with fulfilling all educational and financial responsibilities. The laboratory exercises contribute to the overall grade of the laboratory module with a weightage of 60%. <p>Language of evaluation: English</p>
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(5) SUGGESTED BIBLIOGRAPHY

Up-to-date scientific publications from the PubMed database
