

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	PRETH51	YEAR OF STUDY	1 st (1 st semester)
MODULE TITLE	Applied Omics		
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	375	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:	No		
LANGUAGE OF INSTRUCTION AND EXAMS:	English		
THE MODULE IS OFFERED TO ERASMUS STUDENTS	Yes		
MODULE WEBSITE (URL)	https://www.eap.gr/en/preth/ Each module has its own space in the Learning Management System of EAP, with controlled access (use of code) for students and teaching staff. https://courses.eap.gr/course/view.php?id=254		

(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: <u>APPENDIX A</u></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 <u>APPENDIX B</u></p> <p>Guidelines for writing Learning Outcomes</p>
<p>Learning Outcomes</p> <p>Upon successful completion of the module, students are expected to:</p> <ul style="list-style-type: none"> - Describe the categories of applied "Omics" that currently serve the initiative of Precision Medicine - Distinguish the laboratory technology that is utilized for each category of "Omics" - Describe the results of "Omics" methods and their evaluation

- They report examples of the use of "Omics" in clinical practice

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:

- 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

Applied "Omics" is the term describing the next generation of laboratory tools, which open new windows into the molecular signature of an individual. They are powerful contributors to our knowledge network and our ability to prevent and treat disease across lifespan.

Basic categories of "Omics" :

- The epigenome, affecting the gene expression and treatment response
- Genome expression studied via transcriptomics
- Proteomics studying the products of mRNA
- Metabolomics, which is the study of metabolites
- DNA-based tools can also detect bacteria, parasites and viruses (microbiome) that coexist in our bodies through metagenomics
- Inflammomics, lipidomics, glycomics, and other large molecular data sets can be used to diagnose and predict disease

This module explores the "Omics" technology that provides researchers and clinicians clear answers to rare or undiagnosed conditions and indicates the most effective treatment plan.

- Applied genomics
- Epigenomics
- Proteomics
- Transcriptomics
- Metabolomics
- Phenomics
- Microbiome

(4) TEACHING METHODS - ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>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>																	
<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>MODULE DESIGN <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"> <thead> <tr> <th><i>Activity/Method</i></th> <th><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>3 GCMs x 4 hours</td> <td>12</td> </tr> <tr> <td>2 educational activities (x 10 hours)</td> <td>20</td> </tr> <tr> <td>2 Semester Assignments (x 30 hours)</td> <td>60</td> </tr> <tr> <td>Tutoring sessions</td> <td>5</td> </tr> <tr> <td>Final examination</td> <td>4</td> </tr> <tr> <td>Individual study</td> <td>274</td> </tr> <tr> <td>Total module workload (hours)</td> <td>375</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	Tutoring sessions	5	Final examination	4	Individual study	274	Total module workload (hours)	375
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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 – Module Grade</p> <p>a. Two (2) multiple-choice (quiz) educational activities (Q), which contribute equally to the final grade with a value of 5% each.</p> <p>b. Two (2) Semester Assignments (A) which contribute equally to the final grade with a value of 15% each. The scoring of educational activities and assignments is activated only if the student succeeds an overall score equal to or above the base (≥ 5) in the final or repeat exams.</p> <p>c. Final or repeat exams (E) contributing to the final grade of the module by 60%.</p> <p>The Final Grade of the module, within scale 1-10 (10 is the excellent), is calculated as follows: Final Grade=(Q1x0.05) + (Q2x0.05) + (A1x0.15) + (A2x0.05) + (Ex0.6)</p> <p>Language of evaluation: English</p> <p>The evaluation criteria are explicitly mentioned in the web published study guide (https://www.eap.gr/education/odigos-spoudwn-eap/), as well as in the educational platform (http://courses.eap.gr), with controlled access (use of code) for students.</p>
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(5) SUGGESTED BIBLIOGRAPHY

<p>Books</p> <ol style="list-style-type: none"> 1. "Precision Medicine for Investigators, Practitioners and Providers", Joel Faintuch, Salomao Faintuch, © 2020 Elsevier Inc. 2. "PERSONALIZED EPIGENETICS", Trygve O. Tollefsbol, © 2015 Elsevier Inc 3. "Clinical Precision Medicine: A Primer", Judy S. Crabtree, © 2020 Elsevier Inc. <p>Related Scientific Journals</p> <p>Current scientific literature from PUBMED database</p>
