

Course Outline: "7121 - Bioinformatics"

1. General information

FACULTY/SCHOOL	Physical Education, Sport Science & Nutrition		
DEPARTMENT	Nutrition & Dietetics		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	7121	SEMESTER	7th
COURSE TITLE	Bioinformatics		
INDEPENDENT TEACHING ACTIVITIES 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		WEEKLY TEACHING HOURS	CREDITS
Lectures		2	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>		2	3
COURSE TYPE <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	Scientific Expertise		
PREREQUISITE COURSES	No		
LANGUAGE OF INSTRUCTION	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)			

2. LEARNING OUTCOMES

<p>Learning Outcomes</p> <p><i>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: Συμβουλευτείτε το</i></p> <p>APPENDIX A</p> <ul style="list-style-type: none"> <i>Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.</i> <i>Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and</i> <p>APPENDIX B</p> <ul style="list-style-type: none"> <i>Guidelines for writing Learning Outcomes</i> 		
<p>The main aim of the course is the familiarization of the students with the field of Bioinformatics, which is referred to the use of informatics tools for the comprehension of the biological procedures at the cellular level. Upon completion of the lectures, the students will have acquired the necessary knowledge regarding the most important and widely used biological databases, the principles of sequence analysis, phylogenetics, genomics and functional genomics.</p>		
<p>General Competences</p> <p><i>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></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <i>Search for, analysis and synthesis of data and information by the use of appropriate technologies, Adapting to new situations Decision-making Individual/Independent work Group/Team work Working in an international environment Working in an interdisciplinary environment Introduction of innovative research</i> </td> <td style="width: 50%; border: none; vertical-align: top;"> <i>Project planning and management Respect for diversity and multiculturalism Environmental awareness Social, professional and ethical responsibility and sensitivity to gender issues Critical thinking Development of free, creative and inductive thinking (Other.....citizenship, spiritual freedom, social awareness, altruism etc.)</i> </td> </tr> </table>	<i>Search for, analysis and synthesis of data and information by the use of appropriate technologies, Adapting to new situations Decision-making Individual/Independent work Group/Team work Working in an international environment Working in an interdisciplinary environment Introduction of innovative research</i>	<i>Project planning and management Respect for diversity and multiculturalism Environmental awareness Social, professional and ethical responsibility and sensitivity to gender issues Critical thinking Development of free, creative and inductive thinking (Other.....citizenship, spiritual freedom, social awareness, altruism etc.)</i>
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<ul style="list-style-type: none"> Individual/Independent work Working in an interdisciplinary environment Introduction of innovative research Development of free, creative and inductive thinking 		

3. COURSE CONTENT

<ul style="list-style-type: none"> • Biological Databases • Dotplots • Pairwise alignment • Homology Search – Blast/PSI-BLAST • Multiple Sequence analysis/Motifs/Profiles/HMMs • Principles of Phylogenetics • Phylogenetic algorithms • Phylogeny and implementations • Genomics – Next Generation sequencing technologies, data analysis and implementations <p>Functional Genomics - technologies, data analysis and implementations</p>

4. TEACHING METHODS - ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc..</i></p>	Face to face, distance teaching	
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<ol style="list-style-type: none"> 1. Lectures in power point documents 2. Research or review papers in pdf documents 3. Laptops for the projection of relevant videos 4. The lectures in pdf documents that are announced to the students through the eclass platform <p>The students get in touch with the instructor either directly (through face to face contact or email) or indirectly (through notes posted on the poster boards and the website of the Department).</p>	
<p>COURSE 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. The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i></p>	<p>Activity/Method</p>	<p>Semester workload</p>
	Lectures	2 × 13 = 26
	Literature analysis	10
	Preparation for the exams	39
	Total	75
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS <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>	The assessment language is Greek. The performance of the students is assessed through written exams.	

5. SUGGESTED BIBLIOGRAPHY

<p>- <i>Suggested bibliography:</i></p> <ul style="list-style-type: none"> - Jonathan Pevsner, Βιοπληροφορική και Λειτουργική Γονιδιωματική. ΑΚΑΔΗΜΑΪΚΕΣ ΕΚΔΟΣΕΙΣ Ι. ΜΠΑΣΔΡΑ & ΣΙΑ Ο.Ε., 2019. - Arthur M. Lesk., Εισαγωγή στη Βιοπληροφορική. ΥΤΟΡΙΑ ΕΚΔΟΣΕΙΣ Μ. ΕΠΕ, 2021. <p>- <i>Scientific journals:</i></p> <ul style="list-style-type: none"> - Bioinformatics - BMC Bioinformatics - Frontiers in Bioinformatics
