

## COURSE OUTLINE

### (1) General information

<b>FACULTY/SCHOOL</b>	TECHNOLOGY		
<b>DEPARTMENT</b>	ENVIRONMENTAL SCIENCES		
<b>LEVEL OF STUDY</b>	<i>Undergraduate</i>		
<b>COURSE UNIT CODE</b>	<b>NEW COURSE</b>	<b>SEMESTER</b>	4 <sup>th</sup>
<b>COURSE TITLE</b>	FRESHWATER ECOSYSTEMS - SURFACE WATER AND GROUNDWATER		
<b>INDEPENDENT TEACHING ACTIVITIES</b> 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		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
<b>THEORETICAL BACKGROUND</b>		4	5
<b>LABORATORY PRACTICE</b>		-	-
<b>TOTAL</b>		4	5
<b>COURSE TYPE</b> Background knowledge, Scientific expertise, General Knowledge, Skills Development	Background knowledge		
<b>PREREQUISITE COURSES:</b>	No		
<b>LANGUAGE OF INSTRUCTION &amp; EXAMINATION/ASSESSMENT:</b>	Greek		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>			

### (2) LEARNING OUTCOMES

<p><b>Learning Outcomes</b></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:</i></p> <p><b>APPENDIX A</b></p> <ul style="list-style-type: none"> <li>• Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.</li> <li>• Descriptive indicators for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and</li> </ul> <p><b>APPENDIX B</b></p> <ul style="list-style-type: none"> <li>• Guidelines for writing Learning Outcomes</li> </ul> <p><i>The aim of the course is to familiarize students with the aquatic ecosystems and their biotic and abiotic characteristics, in order to acquire the necessary knowledge to be able to make administrative decisions for the future of such ecosystems. At the end of the course the students will have further developed the following skills/competences: 1. Ability for deep understanding of the fundamental biotic and abiotic characteristics of the aquatic ecosystems. 2. Ability to be capable of taking the right decisions concerning the management of these ecosystems.</i></p>
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## 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?

<p>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</p>	<p>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.) .....</p>
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- Search for, analysis and synthesis of data and information by the use of appropriate technologies,
- Decision-making
- Individual/Independent work
- Group/Team work
- Environmental awareness
- Critical thinking
- Development of free, creative and inductive thinking

## (3) COURSE CONTENT

1. The water: origin and physicochemical properties.
2. The abiotic elements.
3. Aquatic environment organisms (plankton, benthos, nekton): basic elements of their biology and ecology).
4. Pelagic productivity: restrictive factors, food chains and energy transport in aquatic ecosystems.
5. Pollution: organic pollution and eutrophication, other forms of pollution.
6. Aquatic ecosystems management: biological resources and administrative problems, rational management methods.

## (4) TEACHING METHODS-ASSESSMENT

<b>MODES OF DELIVERY</b> Face-to-face, in-class lecturing, distance teaching and distance learning etc.	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Semester projects - homework</li> </ul>								
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> Use of ICT in teaching, Laboratory Education, Communication with students	<ul style="list-style-type: none"> <li>• Powerpoint presentation.</li> <li>• e-mail communication.</li> <li>• e-class theory and exercises</li> </ul>								
<b>COURSE DESIGN</b> Description of teaching techniques, practices and methods: Lectures, seminars, laboratory	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Activity/Method</th> <th style="text-align: center;">Semester workload</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">39</td> </tr> <tr> <td>Workshop</td> <td style="text-align: center;">13</td> </tr> <tr> <td>Laboratory work</td> <td style="text-align: center;">-</td> </tr> </tbody> </table>	Activity/Method	Semester workload	Lectures	39	Workshop	13	Laboratory work	-
Activity/Method	Semester workload								
Lectures	39								
Workshop	13								
Laboratory work	-								

<p>practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</p> <p>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</p>	Theory study	50
	Weekly individual evaluation reports for laboratory exercises	23
	<b>Course total</b> <i>(25 hours of workload per credit unit)</i>	<b>125</b>
<p><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p> <p>Detailed description of the evaluation procedures:</p> <p>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.</p> <p>Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.</p>	<ul style="list-style-type: none"> <li>• Final examinations</li> <li>• Students should watch at least half seminars</li> <li>• Work will be given during the semester to be assessed at a rate of 30% on the final grade.</li> </ul> <p style="text-align: center;"><b><i>Final Grade</i></b></p> <p style="text-align: center;"><b><i>70% in Final Exams + 30% in the semester projects</i></b></p>	

**(5) SUGGESTED BIBLIOGRAPHY:**

**-Suggested bibliography**

-CASTRO, P and HUBER, M. E. (1999). 'Marine Biology', University Studio Press, Thessaloniki. (in Greek)

-BARNES, R. S. K. & MANN, K. H. (1991). 'Fundamentals of Aquatic Ecology', Blackwell Scientific Publications.

-SUMICH, J. J. (1996). 'An Introduction to the Biology of Marine Life', (6th Edition). McGraw-Hill.

**-Complementary bibliography**

Teacher's notes and the full lecture material, which are available through the asynchronous education platform