**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | School of health sciences | | | | |
| **ACADEMIC UNIT** | Department of Biological Applications and Technology (BET) | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | ΒΕΥ606 | **SEMESTER** | | 6th | |
| **COURSE TITLE** | HYDROBIOLOGY | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits* | | | **WEEKLY TEACHING HOURS** | | **CREDITS** |
|  | | | 6 | | 7 |
| **COURSE TYPE**  *general background,  special background, specialised general knowledge, skills development* | Special background | | | | |
| **PREREQUISITE COURSES:** | - | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | Yes (in English) | | | | |
| **COURSE WEBSITE (URL)** | <http://ecourse.uoi.gr/course/view.php?id=254> | | | | |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** |
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| The aim of the course is to acquire knowledge on the biology of aquatic ecosystems. For this purpose, basic physical and chemical characteristics of water, which determine the evolution and adaptations of aquatic organisms and which are responsible for the differences observed in the organization of life in aquatic and terrestrial ecosystems, are examined. Furthermore, the organization of plankton, nekton and benthic communities and different habitats from the midlittoral zone and estuaries to the deep ocean are investigated. Finally, the course outlines the services aquatic ecosystems provide to humans and life on earth.  Upon successful completion of the course the students will have knowledge on:  • the organisms and the biological processes that take place in aquatic ecosystems following an ecological approach  • the provisioning, reregulating, support services provided by aquatic ecosystems as well as of the impact of anthropogenic activity on them.  • basic methodologies and techniques for the study of aquatic ecosystems |
| **General Competences** |
| Search for, analysis, synthesis and dissemination of data and information, with the use of the necessary technology.  Working independently  Teamwork  Respect for the natural environment.  Work in an interdisciplinary environment.  Production of free, creative, and inductive thinking |

1. **SYLLABUS**

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| **Lectures (theory)**   * Introduction to Hydrobiology – Classification of aquatic ecosystems * Abiotic characteristics of aquatic ecosystems (temperature, salinity, density, nutrients, dissolved gazes) * Distribution of life (plankton, benthos, nekton, aquatic birds) * Adaptations * Interactions between biotic components (antagonism, predation, parasitism, symbiosis) * Biogeochemical cycles (N, P, C) * Metabolic processes (primary production, respiration) – Food webs * Comparison of terrestrial and aquatic ecosystems * Description of major marine provinces/lakes/rivers * Disturbance, Pollution, Climate change * Conservation * Technologies and methods for the study of aquatic environments   **Laboratory classes**   * Determination of photosynthetic pigment concentration in lake water * Study of phytoplankton * Study of zooplankton * Estimation of primary productivity of aquatic ecosystems * Measurement of dissolved oxygen concentration * Data processing of abiotic parameters – ecosystem description and characterization   **Field work (optional)**   * Study of benthos * Measurement of abiotic parameters * Visit to a protected areas agency or other environmental agency |

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

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Classroom |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** | University e-course platform and tools like padlet and mentimeter. Laboratory education.  Communication with students through e-course and email |
| **TEACHING METHODS** | |  |  | | --- | --- | | ***Activity*** | ***Semester workload*** | | Lectures | 39 | | Laboratory practice and (or) field work | 18 | | Project | 25 | | Laboratory essays | 25 | | Non-directed study | 70 | |  |  | | **Course total** | **177** | |
| **STUDENT PERFORMANCE EVALUATION** | * 1. **Final exam (70%)**   Multiple choice questionnaires, short-answer questions, open-ended questions on the theory and the practicals of the course   * 1. **Lab course (15%)**   Average of written lab reports or tests in selected labs (short answer/multiple choice questions). Oral response to questions and participation in laboratory activities.   * 1. **Project (15%)**   Writing an extended abstract and public presentation of group work. The work is evaluated based on the following criteria:  • Theoretical background (15%)  • Research methodology and data analysis (10%)  • Results/Discussion/Conclusions (15%)  • Written extended summary (20%)  • Oral presentation (25%)  • Answering questions (15%) |

1. **ATTACHED BIBLIOGRAPHY**

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| **Suggested bibliography:**   * Castro P, Huber M, Marine Biology, 3rd edition/2021, UTOPIA Edt., ISBN: 9786185173753 * Levinton JS, Marine Biology, 1st edition/2020, BROKEN HILL PUBLISHERS LTD, ISBN: 9789925575091 * Wetzel R, Limnology Lake and River Ecosystems, 1st edition/2010, S. KOSTARAKIS Edt., ISBN: 9789609985871   **Related academic journals:**   * Marine Biology (<https://link.springer.com/journal/227>) * Limnology and Oceanography (<https://aslopubs.onlinelibrary.wiley.com/journal/19395590>) * Estuaries and Coasts (<https://link.springer.com/journal/12237>) * Hydrobiologia (<https://link.springer.com/journal/10750>) |