**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | Health Sciences | | | | |
| **ACADEMIC UNIT** | Biological Applications and Technology | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | **BEY201** | **SEMESTER** | | **2nd** | |
| **COURSE TITLE** | GENERAL BIOLOGY II | | | | |
| **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 | | 6 |
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| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* | | |  | |  |
| **COURSE TYPE**  *general background,  special background, specialised general knowledge, skills development* | General background | | | | |
| **PREREQUISITE COURSES:** | No | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | No | | | | |
| **COURSE WEBSITE (URL)** | http://ecourse.uoi.gr/course/view.php?id=465 | | | | |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** | |
| *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.*  *Consult Appendix A*   * *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* * *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* * *Guidelines for writing Learning Outcomes* | |
| The Biology II course defines the subject of science at an organism level. Upon completion of the course the students will be able to understand:  (a) the basic principles governing the biology of the organisms  (b) the principles of organization and evolution of genomes  c) the history of the origin and spread of life on earth  (d) the concept of biodiversity and the classification of organisms up to the three territories of life,  (e) Interactions between organisms and interactions between organisms and the environment. | |
| **General Competences** | |
| *Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?* | |
| *Search for, analysis and synthesis of data and information, with the use of the necessary technology*  *Adapting to new situations*  *Decision-making*  *Working independently*  *Team work*  *Working in an international environment*  *Working in an interdisciplinary environment*  *Production of new research ideas* | *Project planning and management*  *Respect for difference and multiculturalism*  *Respect for the natural environment*  *Showing social, professional and ethical responsibility and sensitivity to gender issues*  *Criticism and self-criticism*  *Production of free, creative and inductive thinking*  *……*  *Others…*  *…….* |
| • Respect for the natural environment  • Autonomous Work  •Teamwork  • Promote free, creative and inductive thinking | |

1. **SYLLABUS**

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| Course Theory:  • Principles of organization and evolution of genomes.  • The Darwinian view of life. Evolution of populations and origin of species.  • The history of life on earth. (Origin of Life, Oxygen Revolution, Cambrian Explosion, Transition to Land, Mass extinctions, etc.). The importance of the archive of fossils to understand the history of life.  • Biological diversity. (Principles of systematic classification and phylogenetic trees)  • The case of viruses. A kind of “borrowed life”  • Prokaryotes. Bacteria and Archaea, two separate Territories.  • Protista.  • Plant diversity (Bryophyta, Pteridophata, Spermatophyta).  •Fungi.  • Animal diversity. Invertebrates, Vertebrates.  • Interaction of organisms with the environment.  Laboratory exercises:  • Evolution of life through the study of characteristic fossils.  • Biodiversity. Microscopic observation of morphology of organisms (and where necessary reproductive structures), covering the three domains of life.  • Bacteria and Archaea  • Eukaryotes. (Protista, Plants, Fungi, Animals).  • From biomolecules to phylogenetic trees. Extraction of proteins from different fish species ( muscle and liver). Separation of proteins by electrophoresis. Fixing, staining and discoloration of the gel.  • Design of a standard curve. Identification of the cytoskeleton proteins (actin, myosin) on the gel. Observing the profile of protein bands between different fish species.  Comparison of protein profiles. Create a cladogram. |

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

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Face to face, (Theory class, Laboratory class) |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Communication with students by electronic means. Support Learning through the e-course e-learning platform. Posting of lectures on laboratory theory. Launch of the lab guide online. |
| **TEACHING METHODS**  *The manner and methods of teaching are described in detail.*  *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.*  *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS* | |  |  | | --- | --- | | ***Activity*** | ***Semester workload*** | | Lectures | 39 | | Laboratory theory | 6 | | Laboratory practice | 18 | | Autonomous study hours | 82 | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total | ***145*** | |
| **STUDENT PERFORMANCE EVALUATION**  *Description of the evaluation procedure*  *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*  *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | I. Written final examination of course theory (80%) involving: Short answer and problem solving questions, multiple choice tests  II. Written examination in the theory and practice of laboratory exercises (20%), including short answer and problem solving questions, multiple choice tests  III. Assessment of the results obtained after the completion of each laboratory exercise (not rated) |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*  *- Related academic journals:*  **•** Biology (Volume II) N.A. Campbell & J.B. Reece, 8th edition, Pearson Benjamin Cummings, 2007.  • Biology (Basic concepts and principles) Starr, C. Evens, C.A., Starr, L. Utopia 2015.  • Laboratory exercises in Biology. K. Vareli, I. Sainis Tragas, University of Ioannina, 2015 |