**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | Health Sciences | | | | |
| **ACADEMIC UNIT** | Department of Biological Applications and Technologies | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | **ΒΕΥ902** | **SEMESTER** | | **6th** | |
| **COURSE TITLE** | Evolutionary Biology | | | | |
| **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** |
|  | | | 4 | | 4 |
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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:** |  | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** |  | | | | |
| **COURSE WEBSITE (URL)** | http://ecourse.uoi.gr/course/view.php?id=563 | | | | |

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* | |
| This course focuses on the processes of evolution and the patterns generated by these processes. Topics covered include elementary population genetics, the theory of evolution by natural selection, concepts of fitness and adaptation, genetic and developmental bases of evolutionary change, modes of speciation, molecular evolution, principles of systematic biology, paleontology and macroevolutionary trends in evolution, extinction and human evolution.  The aim of the course is to integrate students' knowledge from all biology research fields in a coherent context.  Upon completion of the course students will be able to understand the basic principles of evolution, mechanisms and processes of evolutionary change, as well as their value in the overall view and understanding of all biological processes and phenomena. | |
| **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…*  *…….* |
| * *Working in an interdisciplinary environment* * *Production of free, creative and inductive thinking* * *Better understanding of how science generates knowledge by way of hypothesis testing, systematic observations, and the comparative method* * *Ability to distinguish scientific from unscientific arguments* | |

1. **SYLLABUS**

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| 1. Introduction to Evolutionary Biology – What is Evolution? 2. The history of evolutionary thought – Darwin’s theory of evolution – the Modern Synthesis 3. Evidence of Evolution 4. History of Life on Earth 5. Tree of Life – Taxonomy and Phylogeny – Molecular clocks – Gene trees 6. Evolution of Genes and Genomes 7. Microevolution – Genetic variation - Hardy-Weinberg Equilibrium – Mutations – Random Genetic Drift – Gene Flow – Natural Selection – Non-random Mating 8. Natural Selection and Adaptations – Phenotypic Evolution 9. Evolution and Development 10. Life History Evolution 11. Sexual Selection 12. Kin Selection – Altruism 13. Species – Speciation – Hybrid Zones 14. Macroevolution – Biogeography – Evolutionary patterns – Punctuated Equilibrium 15. Evolution of Man |

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

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | *Face-to-face in class* |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | *Support of learning process through the e-course electronic platform* |
| **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 | 52 | | Independent study | 50 | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total | ***102*** | |
| **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.* | Written final exam that includes:  - *multiple choice questionnaires*  - *short-answer questions*  *- open-ended questions* |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*   * *Futuyma D.J., Kirkpatrick M. – Evolution. Utopia Press.* * *Barton N.H., Briggs D.E.G., Eisen J.A., Goldstein D.B., Patel N.H. – Evolution. Utopia Press.* * *Futuyma D.J. – Evolutionary Biology. Crete University Press*   *Related academic journals:*   * *Evolution (*[*http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291558-5646*](http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291558-5646)*)* * *Journal of Evolutionary Biology (*[*http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291420-9101*](http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291420-9101)*)* * *Molecular Phylogenetics and Evolution (*[*http://www.journals.elsevier.com/molecular-phylogenetics-and-evolution/*](http://www.journals.elsevier.com/molecular-phylogenetics-and-evolution/)*)* * *Ecology and Evolution* (<https://onlinelibrary.wiley.com/journal/20457758>) |