

## COURSE OUTLINE

### (1) GENERAL

SCHOOL	NATURAL SCIENCES		
ACADEMIC UNIT	BIOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	BIO_ΣΤΥ5	SEMESTER	6
COURSE TITLE	EVOLUTION		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		WEEKLY TEACHING HOURS	CREDITS
Theory		3	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Scientific		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek language		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in English language		
COURSE WEBSITE (URL)	www.biology.upatras.gr		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>
<p>Upon course completion, the students should be able to know the following subjects:</p> <p>1.the process of the evolutionary thought, 2.the agents inducing random or systematic genetic changes in populations, 3.the evolution of development, 4.the genome evolution, 5.the evolutionary significance of the sex, 6.the means of species as well as the speciation theories, 7.the phylogenetic relationships and the molecular phylogeny, 8.the ecological, biogeographical and coevolutionary interactions of the species, 9.the evolution on the cosmological, geological and palaiological level, 10.the most important evolutionary pathways, 11.the mankind origin</p>
<p><b>General Competences</b></p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma</i></p>

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

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Others...

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- Autonomous work
- Teamwork
- Search, analyze and synthesize data and information, using the necessary technologies
- Promote free, creative and inductive thinking

### (3) SYLLABUS

1. Basic evolutionary concepts and the evolution of the evolutionary thought The history of the evolutionary thought from the ancient times to the present.  
2. Random genetic changes in populations. Molecular and neutral evolution The role of mutations, recombination, genetic drift and migration on the populations genetic structure. The neutral theory. Debate between neutralist and selectionist.  
3. Adaptive evolution Natural selection. Types of selection. The maintenance of genetic variability.  
4. The evolution of development Developmental constraints. Ontogeny and phylogeny.  
5. Genome evolution c- value paradox. The origin of new genes. Gene duplication.  
6. The evolutionary investment of the sex Sex function and sexual selection.  
7. The mean of species and speciation The species definition, genetic differentiation and speciation. Isolation mechanisms. Speciation forms and theories.  
8. Phylogenetic relationships and molecular phylogeny Phylogeny and taxonomy. The molecular clock. Phylogenetic trees.  
9. Ecological, biogeographical and coevolutionary species interactions Evolution and ecology, evolutionary biogeography, coevolution among organisms and species.  
10. The evolution on the cosmological, geological and palaeobiological level The palaeontological record and the phenomenon of species extinction.  
11. The major evolutionary events The origin of life and DNA. Genetic code evolution and biochemical unity of life. The Cambrian evolutionary explosion of life and the evolution of animal and plants.  
12. The mankind origin Monkeys and mankind. African replacement theory and multiregional evolution. The human "races"

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;"><b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i></p>	Face to face	
<p style="text-align: center;"><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Lectures using slides and Power-Point.	
<p style="text-align: center;"><b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>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.</i></p> <p><i>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</i></p>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	40
	Independent study	85
<b>Course total</b>	<b>125</b>	
<p style="text-align: center;"><b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Theoretical written examinations at the end of semester, which grade students' acquired knowledge and critical and creative thinking. Greek grading scale: 1-10. Minimum passing grade: 5.</p>	

#### (5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. "Introduction to Evolution". S. N. Alahiotis
2. "Evolution" Barton, Briggs, Eisen, Goldstein, Patel

- Related academic journals: