

Course Unit Descriptor

Study Programme: Bachelor of Science in Ecology (2018/2019-)
Course Unit Title: Basics of Evolutionary Biology
Course Unit Code: OE021
Name of Lecturer(s): Dr Jasmina Ludoški
Type and Level of Studies: Bachelor Academic Degree
Course Status (compulsory/elective): Compulsory
Semester (winter/summer): Summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): face-to-face
Number of ECTS Allocated: 5
Prerequisites: None
<p>Course Aims:</p> <p>The objective of the course Basics of Evolutionary Biology is to introduce students with the concept of evolutionary biology, organization and adaptive importance of genetic variability, the forces responsible for evolutionary change and what these processes have produced, the origin of life on Earth, and evolution of living life.</p>
<p>Learning Outcomes:</p> <p>This course is designed to provide the student with a basic knowledge related to basic principles and mechanisms of biological evolution.</p>
<p>Syllabus:</p> <p>Theory</p> <p>Concepts of Evolutionary biology; Darwinism and the Fact of Evolution; Evolutionary theories; The Evidence for Evolution: fossil records, comparative studies, molecular data; Evolutionary biology and Systematics; Evolutionary theory and Phylogeny; Evolutionary processes: The origin of genetic variation by mutations, recombination, horizontal gene transfer, Evolution by genetic drift, Population structure and gene flow, Natural and sexual selection; Adaptations: Evolutionary analysis of form and function, Adaptive evolution and components of fitness, Adaptability, Phenotypic and evolutionary plasticity, Phenotypic stability, Ecological context of evolutionary changes; The evolution of interactions among species: Coevolution; The evolution of biodiversity: Species concepts, Mechanisms of isolations and genetic divergence of populations, Barriers to gene flow; Mass extinction and their consequences; The origin of life: The tree of life (classification and phylogeny), Precambrian evolution, The Cambrian explosion; Macroevolution: Rates of evolution, The evolution of novelty; Human evolution</p> <p><i>Practice</i></p> <p>Phenotypic evolution: Genetic architecture of phenotypic characteristics, Components of phenotypic variability, Genetic and environmental sources of phenotypic variability; Norm of reaction; Nongenetic variation: Phenotypic plasticity (examples, adaptive importance); Genetic variability: Individual variation, Polymorphism; Evolutionary change in nucleotide sequences; Evolution by gene duplication and domain shuffling; Changes in gene regulation; Evolution and development: Morphological evolution, Allometry, Heterochrony, Homeobox genes.</p>
<p>Required Reading:</p> <p>1. Milankov, V. (2007): Biološka evolucija. PMF, Novi Sad.</p>

2. Futuyma, D.J. (2013) Evolution. 3rd edition. Sinauer Associates, Inc.

3. Herron, J.C., Freeman, S. (2015) Evolutionary Analysis. Pearson.

Weekly Contact Hours:

Lectures: 3

Practical work: 2

Teaching Methods:

Video beam and overhead presentation

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work		oral exam	70
Preliminary exam(s)			
Seminar(s)	30		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.