

Global Learning Semesters

Course Syllabus

Course: BIOL-280 Evolutionary Biology

Department: Health and Life Sciences

Host Institution: University of Nicosia, Nicosia, Cyprus



Course Summary		
Course Code	Course Title	Recommended Credit Hours
BIOL-280	Evolutionary Biology	3
Semester Offered	Contact Hours	Prerequisites
Please contact us	42-45	BIOL-101, BIOL-102
Department	Level of Course	Language of Instruction
Health and Life Sciences	Lower Division	English

Course Description

This course will cover subject areas such as phylogeny, pale biology, genetic mechanisms of change and speciation, character evolution, the theory of processes and macroevolution, and new molecular perspectives regarding evolution. The student will be able to get a basic understanding of how the scientific method is used to address questions in the field of evolutionary biology. Specifically, students will gain an understanding of the major topics in evolutionary biology including the processes of natural selection, adaptation, speciation, the reconstruction of phylogeny, macroevolution, co evolution and extinction., their relevance to biology in general, to their own lives in particular, and how the application of evolutionary ideas has shaped contemporary thinking about the history of life on earth. The student's understanding of evolutionary principles will be through lectures 3h/week and through the collection and analysis of data from classroom exercises and web-linked simulations of the process of evolution.

Prerequisites

BIOL-101, BIOL-102

Topic Areas

1. Evolutionary Biology, Short History; Genetics and Development
2. The Environmental Context of Evolutionary Change
3. The Tree of Life: Classification and Phylogeny, Evolving Lineages in the Fossil Record
4. A History of Life on Earth, The Geography of Evolution
5. Evolutionary Processes in Populations and Species, Variation; The Origin of Genetic Variation
6. Population Structure and Genetic Drift
7. Natural Selection and Adaptation, The Theory of Natural Selection
8. Multiple Genes and Quantitative Traits, Species, Speciation
9. Character Evolution, Form and Function
10. Interactions among Species, The Evolution of Life Histories, of Behavior and of Genetic Systems
11. Molecular Evolution
12. Macroevolution: Development and Evolution
13. Pattern and Process in Macroevolution
14. The Evolution of Biological Diversity
15. Human Evolution and Variation

Readings and Resources

Required Textbooks

1. Evolutionary Biology by Douglas J. Futuyma Publisher: Sinauer Associates, Inc.; 3rd edition (January 1998) ISBN: 0878931899

Recommended Reading

1. Understanding Evolution, Sixth Edition by E. Peter Volpe, Peter A. Rosenbaum, Publishers: McGraw-Hill, 1999 ISBN: 0-697-05137-4
2. From DNA to Diversity: Molecular Genetics and the Evolution of Animal Design by Sean B. Carroll, Jennifer K. Grenier, Scott D. Weatherbee Publisher: Blackwell Science Inc; (August 2001) ISBN: 0632045116
3. Master Control Genes in Development and Evolution: The Home box Story (Terry Lectures) by Walter J. Gehring, Frank Ruddle Publisher: Yale Univ Pr; (December 1998) ISBN: 0300074093
4. Genomic Regulatory Systems: Development and Evolution by Eric H. Davidson Publisher: Academic Press; 1st edition (February 15, 2001) ISBN: 0122053516
5. The Shape of Life: Genes, Development, and the Evolution of Animal Form by Rudolf A. Raff Publisher: University of Chicago Press; (July 1996) ISBN: 0226702650
6. Principles of Human Evolution by Roger Lewin, Robert A. Foley, Robert Foley Publisher: Blackwell Publishers; 2nd edition (February 1, 2004) ISBN: 0632047046
7. Evolution's Eye: A Systems View of the Biology-Culture Divide (Science and Cultural Theory) by Susan Oyama Publisher: Duke University Press (April 1, 2000) ISBN: 0822324725