



University of Nicosia, Cyprus

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| Course Code BIOL-403 | Course Title Ecology | ECTS Credits 6 |
| Department Life and Health Sciences | Semester Spring | Prerequisites BIOL-231 Biostatistics |
| Type of Course Elective | Field Biology, Ecology | Language of Instruction English |
| Level of Course 1 st Cycle | Year of Study 3 rd or 4 th | Lecturer Dr. Iris Charalambidou |
| Mode of Delivery Face-to-face | Work Placement N/A | Co-requisites None |

Objectives of the Course:

The course will introduce students to ecological concepts and applications and provide the framework that will enable biology students to understand ecological questions and environmental issues. The main objectives of the course are to:

- Introduce the theory of ecology and the scientific concepts it is based on, and their applicability to today's environmental problems.
- Make students aware of the physical and biological features, contributions and limitations of the natural world, which determine the interrelationships of organisms and their adaptation within ecosystems.
- Explore the patterns, the interactions of populations and communities within populations with the physical environment and the mechanisms, which determine spatial and temporal densities, distribution and biodiversity.
- Discuss local and global environmental issues and activities for protecting natural ecosystem.
- Present the techniques used by ecologists for the study of natural ecosystems.
- Direct students toward pertinent literature, which demonstrates research methodologies for the study of natural ecosystems.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Describe the way organisms interact directly and indirectly with their physical environment and with each other and their contributions to energy flow, nutrients and the cycling of matter within ecosystems.
2. Use ecological principles to assess limitations and consequences of both living and nonliving elements of the environment on the distribution and abundance of

organisms.

3. Discuss population, community and ecosystem level ecology with regard to man's influence on nature and vice versa.
4. Identify environmental problems (natural and man-made) and recommend solutions for resolving or preventing them by applying ecology principles.
5. Explain the quantitative nature of the science of ecology.
6. Select the appropriate literature and write about current issues in the discipline of ecology.

Course Contents:

1. Introduction to Ecology
2. Natural History: Life on Land
3. Natural History: Life in the water
4. Ecology of individuals: Temperature and water relations
5. Ecology of individuals: Energy and nutrients relations
6. Ecology of populations: Population distribution and abundance; population dynamics
7. Ecology of populations: Population growth
8. Ecology of Interactions: Competition
9. Ecology of Interactions: Exploitation (predation, herbivory, parasitism and disease)
10. Ecology of Interactions: Mutualism
11. Communities and Ecosystems: species abundance and diversity
12. Communities and Ecosystems: Food webs; Energy production and flow
13. Communities and Ecosystems: Nutrient cycling and retention; succession and stability
14. Large Scale Ecology: global ecology

Learning Activities and Teaching Methods:

Lectures, Interpretation of quantitative data. Discussions of scientific research papers and pertinent ecological and environmental issues.

Assessment Methods:

Assignments, Tests and Mid-term Exam; Final Exam

Required Textbooks:

| Authors | Title | Publisher | Year | ISBN |
|---------------------------|------------------------------------|-------------------|---------------------------|---|
| M. C. Molles | Ecology: Concepts and Applications | McGraw-Hill | 2010, 5 th ed. | ISBN-10 0-07-338322-8 ISBN-13 978-0-07-338322-4 |
| R.L. Smith, T.M. Smith | Elements of Ecology | Benjamin Cummings | 2008, 7 th ed. | ISBN-10: 0321559576 ISBN-13: 978- |

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Recommended Textbooks/Reading:

| Authors | Title | Publisher | Year | ISBN |
|----------------------------|--|-----------------------------|-----------------------------|--|
| L.AAA. Real, J.H. Brown | Foundations of Ecology: Classic Papers with Commentaries | University Of Chicago Press | 1991 | ISBN-10: 0226705943 ISBN-13: 978-0226705941 |
| Edward I. Newman | Applied Ecology & Environmental Management | Wiley-Blackwell; | 2 nd ed. 2001 | ISBN-10: 0632042656 ISBN-13: 978-0632042654 |