

Syllabus Spring 2015

(ECL112) THE BASICS OF ECOLOGY AND INTERNATIONAL ENVIRONMENTAL PROTECTION

Instructor

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Class meets twice a week:

Tuesday 13:00-14.15 lecture; Thursday 13:00-14.15 seminar

Course Description

The course is an introductory science course on environmental issues. It is designed to make students familiar with the concept of an ecosystem and its functioning. It also considers the main environmental problems of both local and global character and analyzes solutions to these problems. The course offers an overview of measures applied and policies developed to address environmental problems in developed and less developed countries. Students will also learn how environmental protection measures are promoted at the international level.

The aim of the course is to introduce all students to the basic principles required for a full understanding of different subject areas in environmental sciences. These basic skills are built upon focusing on issues of primary importance to Central Asia and all over the world, and linking them to global problems and solutions. The course intends to emphasize a multi- and inter-disciplinary nature of environmental issues to legal, economic, and political aspects.

Rationale for the course

The course is intended for students from different departments, with different levels of knowledge in environmental issues. Students will learn the basics of interactions between the human systems and the natural world, social mechanisms that help the students to identify the environmental problems in the future and to build a basis to supporting long-term solutions for the benefit of current and future generations. In addition, students are expected to improve their critical thinking ability, learn to evaluate different information sources and to formulate their own opinions; to recognize the solutions to environmental problems that lead to a more sustainable and peaceful world.

Methodology

The traditional lecture-seminar method will be used, with the lecture encompassing only the basic information on the topic. At the end of each lecture the questions are discussed and several additional topics for independent studying during the seminars will be offered to students. Students will make one 20-minutes presentations (both individual and group presentations) on these additional topics. Every presentation will be assessed by the Instructor in accordance with the grading scheme presented below. In case of group presentation the number of points is divided between the students prepared presentation proportionally. Majority of assignments will be intended to facilitate the work in groups.

Evaluation and Assessment

The students' performance is assessed on the basis of their participation during the lectures, including the familiarity with the reading material, note-taking, making assignments, oral

presentations and written exams. Students are expected to pass all the above in order to obtain a credit for the semester.

Examination

The students will take two exams: the first one is a mid-term test and the second one is an essay-type examination. The test consists of questions on short definitions and multiple-choice questions. Exam papers are composed of essay type questions, which require in-depth answers on the topics studied. No books, papers etc. can be used during the exam. Exam questions are compiled from the questions discussed during the lectures. Evidence of using additional sources of information related to the course content will be marked in the form of additional points for examination paper.

Grading scheme: All grades will be awarded in accordance with the scheme given below. *Your points for the class work cannot exceed the maximum of 40.*

Assignment Points

Mid-term test and final examination 20 and 30, **total 50**(maximum)

1 presentation and one home or class assignment 10 (maximum for each), **total 30**

Active participation, note-taking **2** each

Bonus for attending classes **10**

Withdrawal of grades in case of poor attendance without reason **Minus 5 for each failure to attend**

A 100-95	B - 76-71	D+ 47-42
A - 94-89	C + 70-60	D 41-36
B + 88-83	C 59-54	D- 35-30
B 82-77	C - 53-48	F < 30

Work and Attendance

The work and attendance of all students will be monitored. Students are expected to attend all lectures and seminars. Attendance is regarded as a part of the course. This is for the benefit of the students and helps to ensure that they are coping with the work and managing to comprehend all the information and complete all the tasks given to them. Students must come to class on time not to disturb others, being more than 10 minutes late is counted as an absence. Students are not allowed to use any mobile devices or portable computers in class.

Students are not allowed to use any mobile devices or portable computers in class, this is considered as a “negative” participation and participation points be deducted for that.

Documentation of reasons for absence

Any valid reasons for absence should be reported to the Instructor as soon as possible.

Legitimate excuses are the following: illness, confirmed by a doctor's note next class; a death in the family; participation in conferences or seminars with preliminary notification of the Instructor and submission of the relevant supporting documents. Unless the correct procedure is followed no allowances can be made.

Reading material

The course materials are available in the electronic course of AUCA library and additional sources for using by students independently are welcomed.

1. Allaby, M. 2002. *Basics of Environmental Science*. 2nd edition. Rutledge: London and New York.
2. Cassedy, E., Grossman P. 2000. *Introduction to Energy. Resources, Technology and Society*. 2nd addition. Cambridge University Press: Cambridge.
3. Chiras, D., 1994. *Environmental Science. Action for a sustainable future*. 4th edition. The Benjamin/Cummings Publishing Company, Inc.
4. Cunningham, W., Saigo, B. 1997. *Environmental Science. A Global Concern*. 4th edition WCB McGraw-Hill, Boston, Massachusetts.
5. Enger, E., Smith, B. 1992. *Environmental Science. A study of interrelationships*. Wm.C.Brown Publishers
6. Goodstein, E. 2005 *Economics and the Environment*, 4th edition. Lewis and Clark College.
7. Micklin, Ph. 2000: *Managing Water in Central Asia*, Royal Institute of International Affairs, London.

Library Materials:

Many useful reference materials are to be found in the AUCA's library on the AUCA's campus. Library materials are recommended for reading as homework assignments

- 1) Chapter 1. What is ecology? Chapter 2. Natural History; Chapter 5. Water relations; Chapter 8. Population Genetics and Natural Selection; Chapter 13. Competition; Chapter 19. Nutrient Cycling and Retention; Chapter 21. Landscape Ecology; Chapter 23. Global Ecology; (*Ecology-Concepts and Applications, Manuel C and Molles Jr. 2d Edition, 2002*).
- 2) *Unit 1*. Global Environment: An Emerging World View (Computing the risks: ... and The Global Challenge); *Unit 2*. The World Population: People and Hunger (Population, Consumption, and the path to Sustainability); *Unit 3*. Energy: Present and Future Problems (Sunlight Brightness Our Energy Future); *Unit 4*. Biosphere: Endangered Species (The Work of Nature); *Unit 5*. Resources: Land, Water and Air (Assault of the Earth), (*Environment. 98/99, 17th Edition. 1998*)

Lectures Outline

1. Getting acquainted, plan of the course. Definitions of environmental science, environmentalism, ecology
2. Concept of biosphere, biomes. Ecosystems
3. Food chains and webs. Basic elements' cycles. Laws of thermodynamic
4. Introduction to global ecological problems. Poverty, population and environment
5. Consumption and the Global Environment. Brunt land Commission Report on Sustainable Development
6. Air Pollution. Ozone layer depletion. Montreal Protocol.
7. Global warming and climate change. Kyoto Protocol. Case study: Climate change and Kyrgyzstan, Tajikistan
- 8. Mid-term exam**

9. Hazardous and solid wastes management. Basel Convention. Rotterdam Convention. Possible case-studies:

Uranium mines in Central Asia

10. Hydrologic cycle. Water resources contamination. Aral Sea, water division in CA. IWRM (Integrated Water Resources Management)

11. Grasslands and Forests Sustainable Management

12. Preservation of Biodiversity. Extinction of species

13. Renewable energy (solar, thermal, fusion, wind, biomass, waste to energy, etc.)

14. Promoting clean technology: waste reduction, alternative agriculture and recycling of municipal solid waste

15. Global government: toward a sustainable world community

16. **Final exam**