

Biology 118

Environmental Biology

Credit: four semester credits

Course Location: Mexico, as part of the Fall and Spring semester programs offered through Augsburg College's Center for Global Education and Experience.

Augsburg General Education Requirements

This course fulfills a Natural Science and Mathematics LAF (Liberal Arts Foundation) general education requirement at Augsburg College.

Natural Science "LAF" Syllabus Statement

Natural Science and Mathematics Liberal Arts Foundation courses are intended to help students understand aspects of the natural world and introduce them to the methodologies people use to study and understand it. These include scientific creativity and theory formulation, experimentation and observation, abstraction and generalization, and logic and pattern recognition. An effective understanding of the natural sciences and mathematics enhances the student's ability to see and appreciate fundamental beauty and intricacy in the natural world and serves as a basis for critical and intelligent participation in assessing and understanding difficult technical issues that confront an increasingly complicated world.

Environmental Studies

This course is a Biology course. However, please note that it will count towards the Environmental Studies major at Augsburg College. If you are an Environmental Studies major or minor at another college or university, please forward this syllabus to your department chair to ensure that it will count toward your major/minor, as well.

Course Description

This course will analyze the most important issues in environmental biology with special emphasis on biodiversity, drawing particularly from examples in Mexico. You will learn about theoretical and applied issues regarding the ecological framework of tropical America, particularly areas located in central and southern México through lectures, required readings, fieldwork, and lab work. Therefore, this course will acquaint you with the most conspicuous species of plants and animals of this area that is one of the most diverse regions of the world. Conservation of biodiversity in countries like Mexico requires a great amount of social participation in order to get long-lasting results; for that reason this course will cover some of the outstanding factors influencing efforts of conservation. You will visit official Natural Protected Areas in order to learn about successful case studies. The professors and guest speakers for this course are Mexican scientists and ecologists who will arrange fieldwork and lab work for you, including soil and water testing.

The course will include four modules. The first module will analyze the status of the planet regarding the destruction of the environment, including the changing factors that have shaped the severe global crisis. In the second module, we will study ecology (physical and biological factors) of the neotropics, with a greater depth on Mexican characteristics. As a consequence, types of vegetation, climate, and main species of plants and animals will be included in the course. In the third module, students will be exposed to the challenges for the programs of conservation in Mexico, including the main causes of destruction of nature: a) deforestation, b) agriculture and cattle, c) pollution, and d) the limited budgets available to work, among others. The fourth module includes a discussion about the past, present and future of the planet and what are the options to minimize the effects of some topics of interest of society regarding some magnificent threats including the global warming and the climate change; all of this with special focus on its implications on biodiversity.

Course Schedule

Class and lab/fieldwork times TBA: total number of hours: minimum of 60 contact hours

- Class sessions: two hours/week (120 minutes/week) for 15 weeks (30 hours of class time)
- Lab sessions/fieldwork: two hours/week (120 minutes/week) for 15 weeks (30 hours of class time)

Course Goals

By the end of this course, students will:

1. Understand details of pressing environmental issues related to population, agriculture, and climate of the planet.
2. Describe the basic biotic and abiotic factors that delimit the characteristics of the Mexican tropics.
3. Appreciate the importance of science in the conservation of biodiversity to delimit goals and programs.
4. Be aware of the relevance of participation of society on the conservation of biodiversity in tropical Mexico.
5. Recognize myths and realities of conservation, including the participation of some environmental groups in certain activities such as the introduction of invasive species in nature.
6. Identify the main tools and actions fundamental to establish concrete and efficient efforts in conservation of the tropics.
7. Be open-minded to recognize that there is no single and unique formula to develop conservation strategies; they always depend on a particular, local reality.

Required Reading

Bhatia, A.L. *Textbook of Environmental Biology*. I K International Publishing House, 2010.

Course Requirements (100%)

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| • Course participation and exercises, including lab work & fieldwork | 20% |
| • Three Exams (15% each) | 45% |
| • Special Project Paper (manuscript) | 10% |
| • Poster Presentation | 10% |
| • Final Presentation | <u>15%</u> |
| Total = | 100% |

Special project examples

- Wild cats of México
- Medicinal plants
- Biodiversity and culture
- Reforestation programs

Class Policies

You are expected to conduct yourselves in a professional and courteous manner towards your fellow students and instructor. I will extend you the same courtesy. The same will be expected in relation to local Mexican people that you will encounter.

1. Absences will hurt your course participation grade. To minimize in-class distractions, my expectation is that you arrive on time and remain for the entire class. Turn off your cell phone before class. Please do not make appointments that overlap with class time. If you have a known conflict, please talk to me well in advance. If you miss class, you should get the notes from a classmate. If you have specific questions, do not hesitate to contact the professor.
2. No make up exams or in class assignments will be given. If you have a legitimate, *documented*, excused absence, a make up may be arranged. For example, religious holidays are considered legitimate reasons for an excused absence. Regardless of the reason for your absence, however, you must contact me before the missed class. Makeup material will be different from the original.

3. Academic integrity: You are encouraged to discuss and study material in groups. However, for examinations and all individual submitted material, all work must be your own. Plagiarism is taking someone else's language, ideas or thoughts and representing them as your own. Paraphrasing without citation is also a form of plagiarism! In addition, discussion of exams with other sections of this class will be interpreted as academic dishonesty.
4. **Assignments submitted late will receive lower grades.** Unless otherwise noted, *assignments are due at the beginning of class and you must be present in class for assignment credit.* **YOU** must provide proper documentation for any exceptions to this policy.
5. All assignments **must be typed** unless otherwise specified. Assignments not typed are therefore late and will not be accepted. Typed assignments should use 1" margins and 11 or 12 font in Times New Roman or Arial.
6. Course participation includes homework, quizzes, reading quizzes, in-class activities, and attendance. Your active participation and day-to-day involvement is vital to the learning experience and the success of the class. To gauge your overall class engagement, you will be graded regularly, but not every time. These cannot be made up.
7. Course Grading: Grades will be based on course participation and the quality of work demonstrated in the assignments listed below, using the grading criteria provided in this syllabus.

Sample of Weekly Schedule of Course Topics and Activities

Week #s	Unit	Topics
1	Introduction	Course overview, scientific method, Assign homework prep Ecology concepts
2		Ecology of populations General principles of Conservation Biology
3	Global changes factors, responsible for the environmental crisis	Forces of global environmental degradation
4	Biological Principles of Conservation	Species and conservation Exam 1
5		Island Biology, extinctions
6	Global changes factors, responsible for the environmental crisis	Pollution: atmosphere, solid residuals, water The tragedy of the commons
7		Glaciations, Greenhouse effect Tropical vs. temperate areas Climate change (special emphasis in the neotropics)
8	Fall/Spring Break	
9	Biological Principles of Conservation Mexican Biodiversity	Evolutionary view of conservation Representative plants and animals of tropical Mexico
10	Biological Principles of Conservation	Exam 2 Causes of deforestation in tropical Mexico (deforestation, agriculture, cattle). Invasive species Hybridization: implications in conservation biology Discussion of scientific papers
11	Mexican Biodiversity	Floristic provinces of Mexico Types of vegetation of Mexico
12, 13, 14 & 15	Practical – Field Work and Lab Work	Field Work & Lab Work

16	Conclusions	Presentations Photo-poster and Field work report Overview and final remarks. Exam 3, End of the course
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Additional Comments

Explanation of Grades

Augsburg College uses a numerical grading system using the following definitions:

Number	Letter Equivalent	Percentage	Augsburg Definition
4.0	A	93-100%	Achieves highest standards of excellence
3.5	A-/B+	88-92%	
3.0	B	83-87%	Achieves above basic course standards
2.5	B-/C+	78-82%	
2.0	C	73-77%	Meets basic standards for the course
1.5	C-/D+	68-72%	
1.0	D	63-67%	Performance below basic course standards
0.5	D-	60-62%	
0.0	F	Under 60%	Unacceptable performance (no credit for the course)

A "Pass" grade is 2.0 or above.

Grading Policy and Late Assignments

You must submit assignments on time. If you need an extension, you must talk to us **in advance** to negotiate a new deadline. If you have not been given an extension in advance and you turn in a late assignment, you will be docked half a grade (from a 4.0 to a 3.5 or 3.5 to a 3.0, 3.0 to a 2.5, 2.5 to a 2.0, etc.) If you are more than one week late, you will be docked a full grade. No assignments will be accepted more than two weeks after the original deadline; a "0" will be given after that. Assignments due near the end of the semester will not be accepted after the last day of the semester.

Augsburg Honesty Policy

You are expected to follow the Augsburg Honesty Policy which is printed in the program manual. We assume that you have read the honesty policy, understand it, and are following it. Except when the assignment expressly encourages group work, it is assumed that all course work will be your own. You may not copy other students' work. The first occurrence of plagiarism will result in the failure of the assignment. A student who commits plagiarism a second time will fail the course.

Students' Rights and Responsibilities

Students with formally diagnosed learning or physical differences have legal rights to course modifications. Those who qualify should identify themselves to the instructor as soon as possible in order to obtain extra assistance.