

INTRODUCTION TO ECOLOGY, SCIE 102, Fall 2018

Class Meeting Location: CASE Z48

Class Meeting Times: Mon/Wed 11:30am-12:45pm

Instructor: PATRICIA RAMEY-BALCI

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Office Hours: after class Mon/Wed 12:45-14:45 (12:45am-2:45 pm)

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Number of KU credits: 4 / **ECTS credits:** 8

Language: English

SCIE 102 “Introduction to Ecology” was specifically designed to address KU core program objectives (see <https://core.ku.edu.tr/about-the-core-program/>), as well as promote active learning & critical thinking through “hands on learning” via field trips and in-class activities (detailed below). In this course we will:

Study the relationships between living organisms, including humans, and their physical environment. This course aims to understand the vital connections between plants and animals, and the world around them. The ecological environment supports our basic needs (e.g., food, water, air) and has firm implications in our daily lives. The science of ecology is truly multidisciplinary playing a fundamental role in many areas of study spanning natural sciences, social sciences and humanities, economics, law, and medicine. For example, there is a clear link between “clinical medicine”, “public health” and “ecology”. We are currently seeing an increase in the kind and number of diseases brought about by pollution and other ecosystem changes. Human behavior in regard to how we interact with the environment and the ethical/unethical decisions we make also has clear ramifications on society as a whole. On one hand, society benefits from economic growth, especially in this age of construction/industrialization providing shelter, infrastructure and employment, whereas, on the other hand, these activities often destroy critical ecosystems important in purifying vital water resources, reducing atmospheric carbon dioxide contributing to global warming, and providing essential fish habitat that supports economically important fishing industries. In its most simplest form ecological knowledge of how animals, plants and humans interact in marine, freshwater and terrestrial environments allow us to monitor potential negative ecosystem changes before they become irreversible and can help us to manage our natural resources in a sustainable way. Finally, how humans have interacted with their environment in the past and the respective environmental responses that have occurred can help us predict future responses, so we don’t make the same mistakes. The primary goal of this core course is to provide a broad knowledge base and general understanding of key ecological principles and concepts and become “ecologically literate” providing a conceptual scientific framework for contemporary ecological issues. Students will gain a good understanding of how ecologists conduct research, the quantitative tools they commonly utilize, interpret graphical representations of data, and encourage critical thinking by exploring how ecological principles can be applied to local and global environmental problems. This course adopts a "hands-on" learning approach that includes on-campus field trips, in-class exercises (see specifics below), and a guided ecological research project where students will employ the scientific method by creating their own hypothesis, experimental design, collect data, analyze/summarize the data and present results in an informal setting.

Specific course topics:

The science of ecology aims to identify, describe, and explain the physical, chemical and biological processes, and interactions that influence the distribution and abundance of organisms. Ecological processes are fundamentally important in many aspects of our daily lives and an ecological perspective is beneficial whether one is working towards a career in ecology, biology, social sciences, economics, law or another field. This course will provide an overview of the fundamental principles and concepts of ecology across multiple levels of organization: individual organism, population,

community, ecosystem, and landscape. Key topics include global climate/biome structure and distribution, community diversity, succession, species interactions, population structure and growth, evolution, behavior and human influences on ecosystems.

Required textbook:

Cain, M.L., Bowman, W.D., & Hacker, S.D. Ecology, Sinauer Associates, pp. 596 (3rd or 4th edition is fine)

The publisher of the textbook (Cain et al.) offers a companion website specifically designed for use with your textbook. This website can be accessed at: <http://sites.sinauer.com/ecology3e/>. On the website you will find quizzes are available for each Chapter to help learn the material and study for midterms.

Using blackboard: includes course syllabus, calendar of critical dates, announcements, lecture handouts and some assignments <https://ku.blackboard.com/> Grades will be posted in KUSIS <https://kuis.ku.edu.tr>

Course Objectives

1. introduce the basic concepts and principals in ecology through lectures, in class exercises, field trips, assignments
2. familiarize students with various methods used to study ecology & its sub-disciplines
3. gain experience in posing ecological questions & solving them by hypothesis testing & conducting a short ecological research project
4. introduce techniques for analysis & visualization of ecological data through lectures and in class exercises
5. re-enforce learned concepts & their application to real world environmental issues and connections in our daily lives through in-text readings, short videos & in-class discussion

Learning Objectives

At the end of this course students should:

1. acquire an ecological understanding for use in their daily lives
2. demonstrate an understanding of key concepts & principals in ecology that operate at the level of individual, population, community, & ecosystem
3. be familiar with common approaches for analysis & graphical visualization of ecological data
4. use observations & data to formulate research questions, hypotheses, and make predictions
5. develop an understanding of how the scientific method is employed
6. develop skills in data analysis, synthesizing information, critical thinking, & applying knowledge
7. develop an understanding of how organisms including humans interact with their environment & the consequences of those interactions
8. develop an awareness of current regional & global environmental challenges

Assessment methods & grading scheme:

Type	Final Grade %
Midterm	24
Final Exam	25
Assignments x3 (Field journal, Ecological research worksheets, owl pellet reconstruction & questions)	24
Documentary reaction letter	3
Attendance bonus	3
Lab	21
Total	100

Koç University grading scheme: <https://oip.ku.edu.tr/?q=grading-system>

Attendance: Missing more than 5 lectures (~20% of classes) starting on Sep. 24 disqualifies you for the 3% attendance bonus. However, you do not get 0 for attendance, in this case, your final exam will count toward this 3% (e.g., 80% on final then you will receive = $2.4/3$ which is 80% grade for attendance). **Please note a missed class with health excuse still constitutes a missed class.**

Requirements regarding missed classes (with a health excuse) on dates where an in-class activity takes place or an assignment is due: If you miss a class and have a health excuse it is your responsibility to come see me the **first day after the specified absence period provided on your health excuse** (not the next day you have class with me or later) to find out how you can make up the assignment (delays will result in 0 grade). If you miss a class where you have homework due by BB you are required to submit the homework on the original due date unless discussed with me prior to the day it is due. If you miss class on the day homework is due that is to be passed in during the class lecture then you must bring it to my office on the **first day after the specified absence period provided on your health excuse.**

SCIE 102 “Introduction to Ecology” was specifically designed to address core program objectives by promoting active learning & critical thinking through “hands on learning” via field trips and in-class activities:

1. **Ecologist’s tool kit- “observational ecology”/ Field trip to forest.** During this activity students make nature observations, and it is an activity/assignment whereby students can express their own thoughts & creativity informally.

This exercise serves to:

- engage students & gain their interest in Ecology from the outset of the course
 - show them that they can have fun doing science
 - provoke curiosity & creativity
 - gain a greater appreciation/understanding of natural world around them
- Allows for: critical thinking, development of communication skills, free inquiry and creativity.

2. **Owl pellet dissection and reconstruction of prey item/in class exercise.**

This exercise serves to:

- reinforce information taught in lecture
 - motivate students by engaging them in the learning process
 - type of scientific data gained from this activity (e.g., types of prey species, number of prey consumed etc.), and how used to solve real-world ecological issues
- Allows for: analytical reasoning, integration of knowledge, free inquiry and empirical reasoning.

3. **Ecological research/Field trip to forest.**

This activity serves to:

- engage students in the process of science
 - offer a less formal atmosphere where students can work together to collect data, make observations & achieve a common goal, have a vested interest in the course
 - develop an understanding of how the scientific method is employed
 - develop skills in data analysis, synthesizing information, critical thinking & applying knowledge
- Allows for: critical thinking, development of communication skills, analytical reasoning, integration of knowledge, creativity and empirical reasoning.

IMPORTANT!! This course adopts a “hands-on” learning approach and as such activities are conducted during lecture periods. **There will be no make-ups for these activities and associated assignments without a health excuse.** These activities and their respective dates are highlighted in yellow on the syllabus below. Dates may change and you will be informed in class and by email.

Date	Lecture topics	Textbook//Exercise/field-trip
Sep 17	Introduction to Ecology, activities & expectations	
Sep 19	What is Ecology? Class discussion	
Sep 24	The web of life: Ecology- why & how to study it? / Field trip expectations	Ch. 1
Sep 26	*Observational ecology: Field trip (nature hike on-campus)	Exercise: Field journal Due Oct 3, upload to backboard
	ORGANISMS & THEIR ENVIRONMENT	
Oct 1	The Biosphere/Biodiversity	Ch. 3
Oct 3	The Biosphere/Biodiversity	Ch. 3
Oct 8	Modern World Problem-Links between Ecology & Human Health (Documentary film)	Exercise: in-class discussion/reaction letter Due Oct 14, upload to blackboard
Oct 10	Class discussion of documentary film / Coping with Environmental variation	Ch.4
Oct 15	Coping with Environmental variation	Ch. 4
	POPULATIONS	
Oct 17	*Ecological Research: experimental design	pasta demo, experimental design in groups
	COMMUNITIES	
Oct 22	*Field trip (on campus set-up sampling regime)	Exercise: set-up sampling design/worksheet 1 Due Oct 31, pass in at start of class
	ECOLOGIST'S TOOL KIT-ECOLOGY-in-PRACTICE	
Oct 24	*Field trip (on campus collect data)	Exercise: data collection/worksheet 2 results & conclusions Due Nov 4, pass in BB
<i>Oct 29</i>	<i>Holiday no class</i>	
Oct 31	The nature of communities	Ch. 16
Nov 5	Species diversity in communities	Ch. 19
Nov 7	Distribution & abundance	Ch. 9
	EVOLUTIONARY ECOLOGY	
Nov 12	Evolution & ecology	Ch. 6
Nov 14	Review Session	
	BEHAVIORAL ECOLOGY	
Nov 19	Behavioral Ecology	Ch. 8
TBA	MIDTERM EXAM (time/location TBA)	Inclusive Chapters: 1, 3, 4, 9, 16, 19 Dates/material: Sep. 17-Nov 5
Nov 21	Behavioral Ecology	Ch. 8
	INTERACTIONS AMONG ORGANISMS	
Nov 26	Competition	Ch. 12
Nov 28	*Food webs & trophic levels: owl pellet (ENG Z27)	Exercise: owl pellet
Dec 3	Competition	Ch. 12
Dec 5	*Food webs & trophic levels: owl pellet (ENG Z27)	Exercise: owl pellet Due Dec 5, pass in at beginning of class
Dec 10	Predation & herbivory	Ch. 13
Dec 12	Parasitism, Mutualism & commensalism	Ch. 14, 15
Dec 17	Conservation Ecology	Lecture notes supplement with Ch. 23
Dec 19	Review session	
TBA	FINAL EXAM	Inclusive Chapters: 6, 8, 12, 13, 14, 15, 23 Dates/material: Nov 8-Dec 13

-Assignments announced ahead of time in syllabus, class and by email / BB

*Midterm and final exam are **mandatory/compulsory. Must write the midterm exam in order to take the final exam!**

*Midterms and Final: multiple choice, short answer, and or longer answer (not essay)

ECOLOGIST'S TOOL KIT: -Ecology-in-Practice (Ecological Research):

This work includes 3 lecture periods (Oct 17, 22, 24) where we will work as a class to conduct Ecological Research (see above highlighted in yellow)

The research grade (total 100pts) consists of the following:

1. Oct 17 In-class participation (10 pts)

Missed class without health excuse = 0 grade for this part of assignment

2. Oct 22 Worksheet 1 (30 pts)

Missed class without health excuse = 0 grade for worksheet 1, assignment cannot be completed without attending

3. Oct 24 Worksheet 2 (60 pts)

Missed class without health excuse = 0 grade for worksheet 2, assignment cannot be completed without attending

INFORMATION ABOUT LABORATORIES

Scie 102, Scie 103-1, Scie 103-2, Scie 104 and Scie107 lectures are accompanied by Laboratory Work (Lab).

Each student taking one of these courses will find a Lab slot in their weekly schedule. The letter after Lab indicates the section name. (For example Laba: Lab Section a)

All students will have natural science laboratory in room SCI 134 even though in KUSIS, some students may see TBA in lab room info.

6 Laboratory experiments will be performed during the semester. The master copies of the experiment sheets will be available at Copy Center by September 24th and Laboratory notebooks will be available at the bookstore.

You can access information on courses and the laboratory on the website: <https://naturalscience.ku.edu.tr/>

September 18-21 all students will have Lab Orientation in SCI 134 at their Lab Hours.

Rules:

It is **compulsory to attend the laboratories.**

***Each missed Lab session**, without a legitimate excuse accepted by the university, **results in a reduction of your final course grade by one notch.** (For example, a student with a total grade in the B+ region, gets a B if he/she did not attend one Lab)

***A grade of at least 60% is required in Lab to pass the course, regardless of your performance in the rest of the course.** Total Lab score is 600. If your total Lab score is below 360, you will get an F.

Whenever you have an **excuse for the missing lab, you have to contact Nazmi Yilmaz (nayilmaz@ku.edu.tr) within 3 days and provide the relevant documents in order to arrange a make-up session. It is your responsibility to ask for a Lab make-up appointment. Late requests for make-ups will not be taken into consideration.**

Please contact Nazmi Yilmaz **if you are repeating a Science Course** and you have achieved 70% or more in the laboratory content the last time when you took the course. You can then be exempt from lab work. We will count your previous lab grades this semester.

CLASSROOM CODE OF CONDUCT

Students at Koç University are required to adhere to classroom code of conduct and to refrain from all forms of unacceptable behavior during lectures. The activities that are prohibited in class include and are not limited to:

- Engaging in side conversations.
- Using cell phones and other electronic devices. All cell phones should be switched off before entering the lecture room. If you expect a very important call, please switch your phone to silent mode and let your professor know in advance that you may receive a call.
- Using laptops for purposes that are not course-related.
- Arriving late or leaving early without the prior permission of the instructor. If you have to leave during class for an emergency, please try to minimize the disruption.
- Reading material, e.g., magazines, newspapers, novels etc., that are not course-related.
- Working on personal activities or the assignments of other courses.
- Interrupting the professor or other students. Students should request permission from the instructor before asking questions or making comments.
- Littering the classroom. Eating and drinking are allowed as long as impact on others is minimized and students clean up their garbage after class.

Failure to comply with the Classroom Code of Conduct may result in dismissal from class and disciplinary action.

HONOR CODE:

The “honor code” is in effect for all academic work at this university. **Suspected violations of the honor code will be reported to the disciplinary committee.** You are expected to do your work in a manner consistent with the principles of academic integrity at Koç University. Students and faculty adhere to the following principles of academic honesty at Koç University:

- Individual accountability for all individual work, written or oral: copying from others or providing answers and information, written or oral, to others is **cheating**.
- Proper acknowledgement of original author: Copying from another student’s paper or from another source without written acknowledgement is **plagiarism**.
- Authorized teamwork: Unauthorized help from another person or having someone else write one’s paper or assignment is **collusion**.

Cheating, plagiarism and collusion are serious offenses resulting in an F grade and disciplinary action.”
(modified from syllabus of Prof. Post (2014) and the Teaching Guide, Koç University, College of Administrative Sciences and Economics)

ACADEMIC DISHONESTY

Plagiarism

Plagiarism is an inclusive term that includes the actions of cheating, copying, borrowing without asking, or indicating, pretending some idea is yours when it is not, and the like. A little different from other types of ownership, the intellectual rights cover the right to the ownership of any stated idea. Again being different from other types of ownership, intellectual rights allow others to use your ideas as long as they indicate the source of the ideas and give credit. In an educational environment, intellectual rights must be most valued since this is the primary object of exchange in such environments. Therefore, every student is expected to respect the intellectual rights of others and give credit whenever necessary. You are allowed to use the ideas of others in your work such as exams and papers but you are allowed only if you indicate specifically what you have borrowed from another. For example, if you take an idea and indicate it in your own words, you should indicate the author and the source. If you take somebody else’s words directly, such as in a quote, then you should also specify page numbers. Any intellectual product that is not yours should be attributed to the right source. It

really does not matter whether the intellectual property you are using is a section in a printed book, a part of another student's assignment, or some idea you heard on a TV program. You have to give credit where it is due. Any wrongdoing in such a matter will be taken as an offense of the regulations of Koç University as well as a moral issue. Therefore, it is requested that you protect other people's intellectual property as meticulously as you would your own material property.