

SYLLABUS

BIO-330 Environmental Plant Biology

(202302)

Course Name: BIO-330 Environmental Plant Biology

Instructor: Levent Ozturk (lozturk@sabanciuniv.edu)

TA: Melis Hazal Porsuk (melis.porsuk1@sabanciuniv.edu)

Resources: Instructor slides, student presentation slides, research articles from Q1 journals, SUCourse+ (resources are restricted for redistribution and may be subject to copyrights)

Thursday: 10:40-12:30 (FENS L048)

Friday: 08:40-09:30 (FENS G025)

Office hours: Any time by appointment

Contents

Interaction of plants with the environment, and the human impact is discussed. Topics start with the effects of biotic and abiotic stress factors affecting plant life ranging from ecosystem to global environment scale. Effects of environmental pollutants to plant life, biological clean-up of pollutants, biological degradation of solid wastes and its use in plant production, pest management, food security and sustainable production are other main topics of the course.

Learning Outcomes

- The boundaries of Environmental Biology and the sphere concept.
- How is plant life affected by the global climate change?
- What are the components of ecosystems and why is sustaining the plant biodiversity important?
- What are the polluting factors for air and water?
- How are carbon and nutrients recycled in the environment.
- How do biotic and abiotic stress factors affect ecosystems.
- How are the soils being degraded and conserved?
- Effects of solid and hazardous wastes to environment.
- How is polluted land and water biologically re-mediated?
- What are pests and how are they managed.
- Is Agriculture Friend or Foe for the Environment?
- Food security: Solutions for sustainable production and distribution of the food.

Assessment (% impact on final grade)

- Attendance rule 1 (students who miss to attend >15% of class meeting hours cannot take the final exam)
- Attendance rule 2 (10%)
- Midterm Exam (20%)
- Presentation (20%)
- Term Paper (25%)
- Final Exam (25%)

Weekly Activity (subject to change)

Weeks	Activity
1	Introducing Environmental Biology
2	Global Climate Change and Plant Life
3	Ecosystems and Plant Biodiversity
4	Carbon and Nutrient Recycling
5	Pollution of Air and Water
6	Abiotic Stress in Plants
7	Climate Change, Agriculture and Human Nutrition
8	Plant Adaptations to the Environment
9	Soil Degradation, Conservation and Remediation (Midterm exam week!)
10*	Biological Remediation of Land and Water
11*	Pest Management
12*	Solid and Hazardous Wastes
13*	Is Agriculture Friend or Foe for the Environment?
14*	Food Security: Sustainable Production and Distribution

*weeks of student presentations

Attendance, Make-up, Ethics

Absence in your own student presentation day or in the midterm/final exam results in a zero grade. There will be no scheduled make-ups for these assessment items. In case of an emergency with a valid excuse (*e.g.*, a written proof of doctor's report, accident report, etc.) the instructor must be informed within the same week. In such a case, a separate assessment (in a structured essay format) will be given at a time and date determined by the instructor. Sabanci University's regulations on plagiarism and cheating will be strictly enforced on students who help, attempt, or conduct any form of cheating. Assessment materials will be check by plagiarism software.

Student Presentation Rules and Schedule

- Students will present during weeks 10-14, and during the course hours (see schedule below). All presentations will be performed face-to-face in classroom setting with no exceptions to any individual student (unless otherwise announced during the semester). All sessions will be recorded for grading and proof of attendance.

Chapters	Presenting Students* (team of five for each chapter/week)	Week/Day	Date and time
Biological Remediation of Land and Water	1. Aaaaa Bbbbbb Ccccc		
	2. Aaaaa Bbbbbb Ccccc		
	3. Aaaaa Bbbbbb Ccccc		
	4. Aaaaa Bbbbbb Ccccc		
	5. Aaaaa Bbbbbb Ccccc		
Pest Management	6. Aaaaa Bbbbbb Ccccc		
	7. Aaaaa Bbbbbb Ccccc		
	8. Aaaaa Bbbbbb Ccccc		
	9. Aaaaa Bbbbbb Ccccc		
	10. Aaaaa Bbbbbb Ccccc		
Solid and Hazardous Wastes	11. Aaaaa Bbbbbb Ccccc		
	12. Aaaaa Bbbbbb Ccccc		
	13. Aaaaa Bbbbbb Ccccc		
	14. Aaaaa Bbbbbb Ccccc		
	15. Aaaaa Bbbbbb Ccccc		
Is Agriculture Friend or Foe for the Environment?	16. Aaaaa Bbbbbb Ccccc		
	17. Aaaaa Bbbbbb Ccccc		
	18. Aaaaa Bbbbbb Ccccc		
	19. Aaaaa Bbbbbb Ccccc		
	20. Aaaaa Bbbbbb Ccccc		
Food Security: Sustainable Production and Distribution	21. Aaaaa Bbbbbb Ccccc		
	22. Aaaaa Bbbbbb Ccccc		
	23. Aaaaa Bbbbbb Ccccc		
	24. Aaaaa Bbbbbb Ccccc		
	25. Aaaaa Bbbbbb Ccccc		

*to be announced.

2. Full attendance is required during student presentation sessions (missing >10 min of a session will be regarded as absence). You may miss only one student presentation day without a penalty, however if you miss more than one, then your final grade will be reduced by one letter grade (i.e., A to A-) for each missed student presentation day. If you miss a student presentation day due to an emergency with a valid excuse (e.g., an official health or accident report) the instructor and TA must be informed within the same week.
3. Textbook resources will be provided to build up your PowerPoint presentation, however you are encouraged to research other resources from the IC (<https://www.sabanciuniv.edu/bm/en>) and the internet to design and enrich your presentation. Adding information from the articles you selected for your term paper is also highly encouraged and will receive bonus presentation points!
4. Students assigned to a topic/chapter are responsible for sharing the chapter content (i.e., sub-topics in a chapter) among themselves.
5. Having learned your presentation chapter and shared the sub-topics among your group members, you should then prepare your presentation slides (e.g. 10-20 slides) that would cover a 20 min (\pm 5 min) presentation. At the end of your presentation (in your last slide) ask a very important/relevant essay question and give the answer to it. Note that your question will appear in the final exam (with or without modifications). Trivial questions that are not relevant, professionally thought, grammatically perfect or do not really teach anything will be disregarded and replaced by the instructor.
6. Your presentation will be evaluated according to the criteria below (in order of priority):
 - A comprehensive coverage of the chapter sub-topic(s) assigned.
 - Use of information (results and conclusions) from those articles you selected to prepare your term paper.
 - Use of language, grammar, typeset, units of measurement.
 - Visual quality of the presentation material (titles, bullets, tables, font size, figures, tables, photos, slide numbers, etc.).
 - Time management (20 ± 5 min).
 - Posture, gestures, voice modulation, use of interactive strategies.
 - Quality and relevance of the question that you will ask at the end of your presentations.
7. Presentations must be uploaded to SUcourse+ Google shared drive as a PPTX file before your actual presentation day.

Term Paper Rules

Find 3 articles (published in a Q1 level journal within last five years) on the same sub-topic of your presentation. These articles must focus on a similar and narrowed-down problem. Do not chose articles with broad/unrelated research topics, since you will not be able to make connections among these. Consider your term paper as a meta-analysis of a very focused research topic, where different research groups have been recently working on it. After finding your favorite 3 articles, read them thoroughly and learn all the scientific terms and vocabulary therein. Deadline to upload your term paper on Sucourse is last day of courses.

Your term paper must have the following outline:

- 1. Abstract (250 ± 25 words):** Summarize your introduction and conclusions. (15 pts.)
- 2. Introduction (2000 ± 200 words):** Introduce the research topic (why is it important and necessary to research on this topic, what are the aims, scope, and expected outcomes), introduce and cite the articles you reviewed (methods used, major findings and conclusions from each article). You may copy a few figures and tables from the articles you selected (or make new figures and tables using the data presented in the articles). If you chose to copy, do not forget to cite the article it your figure/table caption, as well as the introduction. (40 pts.)
- 3. Discussion and Conclusions (500 ± 50 words):** Discuss the strengths and weaknesses of the articles (Did the authors clearly defined the research hypothesis and the experimental design? Are the materials and methods properly selected and adequate to address the hypotheses? How would the articles benefit from an extension or reduction? If yes, what could be deleted/added/modified? Are the conclusions made can be fully derived from the results obtained? Finally, make your own conclusions about the topic considering the results and conclusions from the articles you selected and reviewed. Write down the possible implications of the results and benefits from these articles, and mention about what is really missing, and what can be done in future research. (40 pts.)
- 4. References:** Use APA style for referencing all the articles cited throughout the text, figures, and tables. (5 pts.)