SYLLABUS

BIO-330 Environmental Plant Biology

(202402)

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)

Tuesday: 08:40-09:30 (FENS L029)

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

Office hours: Any time by appointment

Content

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 to lecture sessions (students who miss to attend >25% of class meeting hours cannot take the final exam)
- Midterm Exam (25%)
- Presentation (25%)
- Term Paper (25%)
- Final Exam (25%)

Weekly Activities (subject to minor changes)

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

- **Missed Assessments:** Absence on your own student presentation day, midterm, or final exam will result in a **zero grade** for that assessment. No scheduled make-ups will be provided.
- **Excused Absences:** In case of an emergency with a valid excuse (e.g., doctor's report from a public governmental hospital or official accident report by law enforcement agencies), you must inform both the **instructor and TA within the same week**. If approved, a separate assessment in a **structured essay format** will be scheduled at the instructor's discretion.
- **Academic Integrity:** Sabancı University's regulations on **plagiarism and cheating** will be strictly enforced. Any attempt to assist, attempt, or engage in cheating will be penalized. All assessment materials will be checked using plagiarism detection software.

Student Presentation Rules

1. Students will present during weeks 10-14, and during the course hours (see schedule below) face-to-face in the classroom according to the following schedule:

Chapters	Presenting Students* (group of five for each chapter/week)	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 days and sessions. Missing more than **10 minutes** of a session will be considered as absence.

    - You are allowed to miss **one student presentation day** without penalty.
    - Missing **more than one student presentation day** will result in **one-letter grade reduction** (e.g., A to A-).
    - In case of an emergency with a valid excuse (e.g., an official health or accident report), you must inform the instructor and TA **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 chapter will be responsible from sharing the chapter content (i.e., the sub-topics in a specific 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 (± 5 min) presentation. At the end of your presentation (in your last slide) ask a very important/relevant essay question and provide the answer in max. 50 words. 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 based on the following criteria, in order of priority:

    - **Comprehensive coverage** of the assigned chapter sub-topic(s).
    - **Relevance and scientific quality of the question** presented at the end of the presentation.
    - **Clarity and accuracy** in language, grammar, typesetting, and units of measurement.
    - **Visual quality** of slides, including titles, bullet points, tables, font size, figures, photos, and slide numbering.
    - **Effective time management** within the 20 ± 5 minute limit.
    - **Presentation skills**, including posture, gestures, voice modulation, and use of interactive strategies.
    - **Integration of information** from selected articles used in the term paper.

7. Presentations must be uploaded to the designated shared folder in SUcourse as a **PPTX file** before your presentation day.

Term Paper Rules

Find three 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** choose 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 three articles, read them thoroughly and learn all the scientific terms and vocabulary therein. The deadline to upload your term paper on SUcourse is the **last day of classes**. Please avoid procrastination, as this deadline **will not be extended**. All homework submissions will be **reviewed for potential use of generative AI** tools, and any detected unauthorized AI-assisted content may result in academic penalties in accordance with university policies.

Term Paper Outline and Grading Criteria

1. **Abstract (250 ± 25 words) – 15 pts.**
    - Summarize the introduction and conclusions concisely.
2. **Introduction (2000 ± 200 words) – 40 pts.**
    - Explain the importance and necessity of researching this topic.
    - Define the aims, scope, and expected outcomes.
    - Introduce and cite the reviewed articles, summarizing their methods, major findings, and conclusions.
    - Include relevant figures and tables from the articles (with proper citations) or create new ones using the presented data.
3. **Discussion and Conclusions (500 ± 50 words) – 40 pts.**
    - Evaluate the strengths and weaknesses of the articles.
    - Assess the clarity of research hypotheses and experimental designs.
    - Analyze whether the methods used were appropriate and sufficient.
    - Suggest potential modifications, extensions, or reductions in the studies.
    - Determine if the conclusions are fully supported by the results.
    - Provide your own conclusions on the topic, incorporating findings from the reviewed articles.
    - Discuss the implications of the results, highlight missing aspects, and suggest future research directions.
4. **References – 5 pts.**
    - Cite all referenced articles using **APA style** in the text, figures, and tables.