2026-Spring Environmental Biotechnology (EVSE540-01) The course syllabus

1.Course Information

Course No.	EVSE540	Section	01	Credit	3.00
Category	Major elective	Course Type		prerequisites	
Postechian Core Competence	☐ Interpersonal Relationship ☐ Global Citizenship ☐ Knowledge Research ☐ Digital Literacy ☐ Self Management ☐ Creative Convergence				
Hours	MON, WED / 09:30 ~ 10:45 / Environ Bldg[208]Seminar Room | MON, WED / 09:30 ~ 10:45 / Environ Bldg[208]Seminar Room			Grading Scale	G

2. Instructor Information

Name	Hwang Seok Hwan	Department	Div. of Environmental Science & Eng.
Email address	shwang@postech.ac.kr	Homepage	http://best.postech.ac.kr/
Office		Office Phone	054-279-2282
Office Hours	by appointment		

3. Course Objectives

To understand the theoretical principles of biotechnology to control environmental pollution, and develop the quantitative and analytical tools necessary to perform bioprocess design to provide solution(s) for pollution.

4. Prerequisites & require

- General Biology, Microbiology, Biochemistry, Statistics (Not pre-requisite)

5. Grading

Midterm Exam	Final Exam	Attendance	Assignment	Project	Presentation/Discussion	Laboratory/Practice	Quiz	Others	Total

비고	- Midterm, Final, Personal project

6. Course Materials

Title	Author	Publisher	Publication Year/Edition	ISBN

7. Course References

- Biochemical Engineering Fundamentals, 2nd Ed, J. E. Bailey, D. F. Ollis., McGraw-Hill, Inc. - Wastewater Engineering (Treatment, Disposal, Reuse), 3rd Ed,Metcalf & Eddy, McGraw-Hill, Inc. - Class Handouts

8. Course Plan

1 Introduction – The development of biotechnology
2 Microorganisms (Structure and Functions)
3 Microorganisms (Metabolic Classification)
4 Sugars
5 DNA/RNA/PROTEIN
6 Recombinant DNA Technology
7 Manipulation in Prokayotes
8 Metabolic pathways I (Carbohydrates, Proteins, Lipids)
9 Midterm
10 Metabolic pathways II (Carbohydrates, Proteins, Lipids)
11 Microorganisms in environment (Structures, Growth factors, Growth kinetics)
12 Degradation of pollutants (Aerobic, Anaerobic, Cometabolism)
13 Bioreactor designs for water and wastewater
14 Treatment processes for non-aqueous pollutants
15 Designand analysis of experiments
16 Final Exam

9. Course Operation

10. How to Teach & Remark

11. Supports for Students with a Disability

- Taking Course: interpreting services (for hearing impairment), Mobility and preferential seating assistances (for developmental disability), Note taking(for all kinds of disabilities) and etc.

- Taking Exam: Extended exam period (for all kinds of disabilities, if needed), Magnified exam papers (for sight disability), and etc.

- Please contact Center for Students with Disabilities (279-2434) for additional assistance