

2024-Fall Environmental Engineering Laboratory (EVSE550-01) The course syllabus

1. Course Information

Course No.	EVSE550	Section	01	Credit	3.00
Category	Major elective	Course Type	Classroom Course	prerequisites	
Postechian Core Competence	<input type="checkbox"/> Interpersonal Relationship <input type="checkbox"/> Global Citizenship <input type="checkbox"/> Knowledge Research <input type="checkbox"/> Digital Literacy <input type="checkbox"/> Self Management <input type="checkbox"/> Creative Convergence				
Hours	FRI / 09:30 ~ 12:15 / Environ Bldg[208]Seminar Room THU / 17:00 ~ 18:15 / Environ Bldg[208]Seminar Room FRI / 15:30 ~ 18:15 / 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			

3. Course Objectives

Various analytical methods along with the background information for air-, water-, and soil-pollution, and solid wastes will be introduced. Students will also be responsible to conduct the relevant experiments weekly.

4. Prerequisites & require

None

5. Grading

6. Course Materials

Title	Author	Publisher	Publication Year/Edition	ISBN
-------	--------	-----------	--------------------------	------

7. Course References

- Handouts- Standard methods for the examination of water & wastewater (APHA)

8. Course Plan

(Prof. Lee, KT) Week 1: Determination of gas solubility (Henry's law constants) Week 2: Extraction and determination of gases dissolved in solution using micro-porous hollow fiber membrane contactor Week 3: Thermodynamic study of the carbonate system in aqueous environment Week 4: Automation of instruments for environmental studies
(Prof. Choi, WY) Week 5: UV-Visible spectrophotometry and Spectrofluorometry: The analysis of dyes, aromatic compounds, and hydrogen peroxide will be carried out. Week 6: Photocatalytic Degradation of 4-Chlorophenol (4-CP) 4-CP degradation will be performed in a UV-illuminated aqueous TiO₂ suspension. The degradation of 4-CP will be monitored by an IC for the quantitative chloride production, HPLC for 4-CP degradation, and a Total Organic Carbon (TOC) analyzer for full mineralization. Week 7: FTIR spectroscopy : principles and practices (gas analysis) Week 8: Due experimental reports (Pop quiz concerning the above lectures)
(Prof. Hwang, SH) Week 9: Biochemical oxygen demand (BOD)/ chemical oxygen demand (COD) Week 10: Nitrogen analysis: TN, TKN, organic nitrogen Week 11: Crude fat and fiber analysis Week 12: Solid analysis and mass balance with other components
(Prof. Hong, SB) Week 13: Synthesis of Zeolite A - 1 week 14: Synthesis of Zeolite A - 2 week 15: Microporous Materials Characterization - Powder XRD week 16: Microporous Materials Characterization - TGA/DTA and others

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