

Syllabus

Surface Engineering

Course Name	Course type (credit/hours)		전선(3/3)		Course code	
	Target students Division/major/grade		화학공학과/		Opening semester	
	Class time and classroom		수10(서302) 수11(서302) 수12(서302)(서302)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		김주형 (조교수/ 대학원에너지시스템 학부)			
	Office Room Number	서관 205-1호	Office phone Number	2386	e-mail	juhyungkim@ajou.ac.kr
	Office hours			Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This course will provide an introduction and overview to the principles, methods, and analytical techniques of modern surface science.

Students will learn the language of solid surfaces, including Miller indices and common acronyms.

Basic concepts of surface science (relating to surface structure, surface energy, work function, and interactions) and fundamentals of surface techniques (including scanning probe techniques) will be covered in this lecture.

Students should be able to read and assess research literature critically, and apply basic concepts in analysis of data.

2. Course Objectives

This course will provide an introduction and overview to the principles, methods, and analytical techniques of modern surface science.

Students should be able to read and assess research literature critically, and apply basic concepts in analysis of data.

3. Class types and activities

Course format: Lectures, presentations, and group discussion.

*The primary resource will be notes posted on AJOU Blackboard.

4. Teaching Method

There is presently no single textbook that covers surface chemistry in a manner that is appropriate for this course. The primary resource based on references will be notes (pdf slides) posted on AJOU Blackboard.

Basic concepts of surface science and fundamentals of surface techniques will be discussed in this lecture.

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		20	
midterm exam	1	40	
final exam	1	40	
quiz			
presentation			
discussion			
homework			
etc			

Mid-term exam. 40%

Final exam. 40%

Attendance 20%

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Lecture Notes			
참고자료	Surface Science. An Introduction	K. Oura, V.G. Lifshitz, A.A. Saranin, A.V. Zotov, and M. Katayama	Springer	2003

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Introduction: Solid surfaces	Lecture/Seminar	
2	Introduction: Solid surfaces	Lecture/Seminar	
3	Crystal structures I: Fundamentals	Lecture/Seminar	
4	Crystal structures II: 2D crystal surfaces	Lecture/Seminar	
5	Adsorption I: Chemisorption	Lecture/Seminar	
6	Adsorption II: Physisorption	Lecture/Seminar	
7	Adsorption III: Complexities	Lecture/Seminar	
8	Midterm exam.	Exam	
9	Interfacial structures	Lecture/Seminar	
10	Interfacial structures	Lecture/Seminar	
11	Interfacial structures	Lecture/Seminar	
12	Growth and Epitaxy	Lecture/Seminar	
13	Growth and Epitaxy	Lecture/Seminar	
14	Experimental probes and their related techniques	Lecture/Seminar	
15	Experimental probes and their related techniques	Seminar	
16	Final exam.	Exam	

9. Others

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