

Nano-Fabrication and Nano-devices

Course Name	Course section (credit/hours)		Elective course(3/3)			course code	G088
	course item					course component	
	Target students Division/major/grade					opening semester	2021 1ST SEMESTER
	Class time and classroom		Wed B(Seong337)Fri B(Seong337)			English Grade	A(100%English)
Reference to this course	Credit compositon		Theory(0) + Design(0) + Practice(0)				
	Prerequisite courses						
	Related basic courses		General Physics				
	Recommanded concurrent courses						
	Related advanced course						
Instructor	Name (title/division)		Hyungwoo Lee(Assistant Professor, Energy Systems Research)				
	Office Room Number	원천관 416호	Extension Number	2581	e-mail	hyungwoo@ajou.ac.kr	
	Office hour				Homepage address	http://oxide-physics.ajou.ac.kr/	
Teaching Assistant	Name (title/division)						
	Office Room Number		Office phone Number		e-mail		

1. Course Introduction

2. Course Objectives & course outcome

A comprehensive understanding of the technologies used for structuring matter at the nanometer scale, which covers nanoscale device fabrications, characterization tools, applications and underlying physics.

3. Class types and activities

4. Teaching Method

<input checked="" type="checkbox"/> lecture	<input checked="" type="checkbox"/> discussion and debate
<input type="checkbox"/> team project(presentation and case studies)	<input type="checkbox"/> experiments(role-playing,etc)
<input type="checkbox"/> designing and production	<input type="checkbox"/> on-site learning(on-site training)
<input type="checkbox"/> others	

5. Support Systems in Use

<input checked="" type="checkbox"/> AjouBb	<input type="checkbox"/> automatic recording system	<input type="checkbox"/> web-based assignment
<input type="checkbox"/> cyber lecture	<input type="checkbox"/> online content	
<input type="checkbox"/> class behavior analyzing system	<input type="checkbox"/> others	

6. Teaching Tools

<input type="checkbox"/> PBL(Problem Based Learning)	<input type="checkbox"/> CBL(Case Based Learning)	<input type="checkbox"/> TBL(Team Based Learning)
<input type="checkbox"/> UR(Undergraduate Research)	<input type="checkbox"/> FL(Flipped Learning)	<input type="checkbox"/> DSAL(Data Scienced Active Learning)
<input type="checkbox"/> others		

7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10%	
midterm exam	1	45%	
final exam	1	45%	
quiz			

7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
presentation			
discussion			
homework			
etc			
study hours			

8. Textbook and Reference material

Main/Sub	Title	Writer	Publisher	Publication year
Main	Introduction to Nanoscale Science and Technology	Massimiliano Di Ventra, Stephane Evoy, James R. Heflin Jr.,	Springer	2004
Sub	Nanoscale Science and Technology	Robert Kelsall, Ian W. Hamley and Mark Geoghegan	Wiley	2005
Sub	"Nanophysics and Nanotechnology: An Introduction to Modern Concepts in Nanoscience	Edward L. Wolf	Wiley	2006

9. Class system and Class shedule

<ul style="list-style-type: none"> - Intoroduction to nanoscale science and technology - Top down and "ottom up techniques - Imaging technologies - Functional Device Applications - Contemporary research topics
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< Schedule >

* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
1	Introduction to nanosceice and technology	E	3			비대면 온라인 녹화 /실시간 강의	
2	Theoretical background	E	3			비대면 온라인 녹화 /실시간 강의	
3	Theoretical background	E	3			비대면 온라인 녹화 /실시간 강의	

< Schedule >

* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
4	Nanocharacterization 1	E	3			비대면 온라인 녹화 /실시간 강의	
5	Nanocharacterization 2	E	3			비대면 온라인 녹화 /실시간 강의	
6	Nanocharacterization 3	E	3			비대면 온라인 녹화 /실시간 강의	
7	Nanocharacterization 4	E	3			비대면 온라인 녹화 /실시간 강의	
8	Mid-term Exam	E	3			중간고사 (대면예정, 변동가능)	
9	Micro-Nano Fabrications 1	E	3			비대면 온라인 녹화 /실시간 강의	
10	Micro-Nano Fabrications 2	E	3			비대면 온라인 녹화 /실시간 강의	
11	Nanomaterials 1	E	3			비대면 온라인 녹화 /실시간 강의	
12	Nanomaterials 2	E	3			비대면 온라인 녹화 /실시간 강의	
13	Nanomaterials 3	E	3			비대면 온라인 녹화 /실시간 강의	
14	Nano-devices 1	E	3			비대면 온라인 녹화 /실시간 강의	
15	Nano-devices 2	E	3			비대면 온라인 녹화 /실시간 강의	
16	Final Exam	E	3			기말고사 (대면예정, 변동가능)	

10. Contribution index of the course for attaining ABEEK program outcomes

course outcome	contribution scale
No Data	

11. Analysis of improved matters for the previous semester

13. Reference items

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