강의계획서

년도	2024	학기	2학기	학수번호	MECH539	분반	01
개설학과	기계공학과					학점	3-0-3
과목명	고급 나노 공정 및 생산					이수구분	전공선택
선수과목							
강좌유형	온라인 강좌						
강의시간	화 목 (09:30 ~ 10:45) -						

담당교수	노준석	소속	기계공학과
E-Mail	JSRHO@POSTECH.AC.KR	Homepage	HTTP://PHOTONICS.POSTECH.AC.KR
연구실		연락처	054-279-2187
Office Hours	Tue/Thurs 14:00 ~ 15:30		

강의목표

1. Understand fundamental material science and solid state physics, and apply the obtained knowledge to the study of nanoscale science and engineering#
2. Understand the fundamental concepts in the design, fabrication, manufacturing, characterization and application of various nanoscale materials and structures#
3. Develop the skill to top-down and bottom-up approach of nanoscale fabrication and manufacturing methodology

강의선수/수강필수사항

Graduate level in Engineering or Science or Undergraduate with solid background in nanoscience#
Required: MECH403, CHEB463 or closely related courses such as micro/nanofabrication

성적평가

Attendance and participation 20% #
Term project presentation and reports 80%

강의교재

도서명	저자명	출판사	출판년도	ISBN

참고문헌 및 자료

Fundamentals of Microfabrication, Marc J. Madou #
Nanofabrication: Primciples and Applications, Christo Papadopoulos

강의진도계획

Week 1 : Nanofabrication overview (2 lectures)#

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Week 2 : Photo-lithography I (2 lectures)#

Week 3 : Photo-lithography II (2 lectures)#

Week 4 : EUV lithography (1 lecture) / Term project proposal (5mins presentation for each team)#

Week 5 : X-ray lithography (2 lectures)#

Week 6 : Electron-beam lithography (2 lectures)#

Week 7 : Focused ion-beam lithography (2 lectures)#

Week 8 : Midterm week (no class) #

Week 9 : Nanoimprint lithography (2 lectures)#

Week 10 : Nanoimprint lithography (1 lecture) / Scanning probe lithography (1 lecture)#

Week 11 : Scanning probe lithography (1 lecture) / Soft lithography (1 lecture) #

Week 12 : Self-assembly (2 lectures) #

Week 13 : Term project presentation (30mins presentation for each team) #

Week 14 : Term project presentation (30mins presentation for each team) #

Week 15 : Term project presentation (30mins presentation for each team) #

Week 16 : Final week (no class)

수업운영

Recorded video lecture (non-live)

학습법 소개 및 기타사항

N/A