

	2022		1		MECH403		01
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	(11:00 12:15) -						
E-Mail	JSRHO@POSTECH.AC.KR			Homepage	HTTP://PHOTONICS.POSTECH.AC.KR		
					279-2187		
Office Hours	By appointment or by email						
1. Understand fundamental material science and solid state physics, and apply the obtained knowledge to the study of nanoscale science and engineering# 2. To illustrate how material properties, such as electronic, optical, magnetic, mechanical properties, can be tailored at the nanoscale # 3. Understand the fundamental concepts in the design, fabrication, manufacturing, characterization and application of various nanoscale materials and structures# 4. Develop the skill to be conversant in the multiple disciplines involved in nanoscience and nanotechnology# 5. Aware of ethical and environmental issues resulted from nanoscience and nanotechnology							
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Senior standing or Graduate level in Engineering or Science# Required: MATH110 (Calculus), PHYS101/102 (General Physics I/II) or PHYS105/106# Preferred: EECE261 (Electromagnetics) or PHYS206 (Electromagnetism I)							
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Quiz: each lecture has short quiz, which counts total 50%.# Homework: 5 handed-in homework assignments count for total 25%# Exam: midterm 25%							
							ISBN

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1. Introduction to Nanoscience and Nanotechnology, by Chris Binns, John Wiley & Sons, 2010 # 2. Nanotechnology: An Introduction, by Jeremy Ramsden, William Andrew, 2011 # 3. Introduction to Nanoscience, by Stuart Lindsay, Oxford University Press, 2009 # 4. Introduction to Nanoscience and Nanotechnology, by Gabor L. Hornyak, H.F. Tibbals, Joydeep Dutta and John J. Moore, CRC Press, 2008# 5. , , , 2011							
Week 1: Introduction & Quantum mechanics# Week 2: Quantum mechanics (Homework)# Week 3: Solid state physics & Optical microscopy# Week 4: Optical microscopy (Homework)# Week 5: Fabrication# Week 6: Fabrication (Homework)# Week 7: Fabrication & Nanostructures Midterm (Exam)# Week 8: Midterm (Exam)# Week 9: Nanostructures & Nanophotonics (Homework)# Week 10: Nanophotonics & Metamaterials# Week 11: Metamaterials# Week 12: Plasmonics (Homework)# Week 13: Nanoelectronics# Week 14: Course Review							
* Online only class (100% pre-recorded lectures)# * No required textbooks. Lecture notes and additional materials will be distributed# * ME/CE Cross-listing course							

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* Policies:#

1. Students are responsible for all material reviewed and assignments (reading and homework) made.#
2. The instructor and the students will behave in a professional manner at all times.#
3. Appropriate referencing is required for ALL sources including web resources. Plagiarism will NOT be tolerated. For questions regarding plagiarism, see “<http://sja.ucdavis.edu/avoid.htm>” or talk with the instructor.#
4. The honor code will be followed and enforced. POSTECH is committed to the principles of intellectual honesty and integrity. All members of POSTECH community are expected to maintain complete honesty in all academic work presenting only what is their own work in tests and assignments. If you have questions regarding proper attribution of the work of others, contact your professors prior to submitting the work for evaluation.