CAU 2019 International Summer Program Course Syllabus

Course Title	Nanotechnology in Everyday Life
Instructor & Profile	Jongin Hong, Ph.D., MRSC Associate Professor, Department of Chemistry, Chung-Ang University
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Course Description	The course is for students that are interested in a tiny world smaller than anything they ever saw and provides a broad overview of nanotechnology in your everyday life, discussing the fundamental principles and current research directions in nanoscience and nanotechnology and how the different basic sciences merge to create this field. Specifically the course covers (1) fundamental physical scaling laws to understand the properties of materials at nanoscale, (2) practical applications of nanoscience and nanotechnology in everyday life, (3) synthesis and characterization of nanomaterials, (4) self-assembly, surfaces and interfaces in nanotechnology.
Learning Outcomes	An ability to apply knowledge of science and engineering An ability to design and conduct experiments as well as to analyze and interpret data An ability to function on multidisciplinary teams and communicate effectively An ability to identify, formulate and solve multidisciplinary problems
Grading And Evaluation	Attendance & attitude: 30 % (deduction for each missing class and unacceptable attitude; can be negative) Homework/Essay/Report assignments: 30 % Exams (2, 20% each): 40 %
Text and required supplies	Lecture notes Handouts “Nanotechnology for dummies” by E. Boysen & N.C. Muir “Introduction to nanoscience and nanotechnology” by G.L Hornyak & H.F. Tibbals “Scanning probe microscopy in nanoscience and nanotechnology” by B. Bhushan

Course Schedule			
Time	**Topics**	**Assignments**	**Remarks**
1	Course introduction		
2	Nanoscience and Nanotechnology	Homework #1	Overview
3	Bioinspiration and Biomimetics	Extra-reading #1	
4	Color and Nanotechnology	Extra-reading #2	
5	Nanotechnology in Displays	Extra-reading #3	
6	Scanning Probe Microscopy – 1		Basics
7	Scanning Probe Microscopy – 2	Report #1	Training
8	Mid-term exam		
9	Nanotechnology in Smartphones	Extra-reading #4	
10	Nanotechnology in Labtops	Extra-reading #5	
11	Nanotechnology in Automobiles and Roads	Extra-reading #6	
12	Nanotechnology in Houses and Buildings	Extra-reading #7	
13	Nanotechnology in Photovoltaics		Basics
14	Dye-sensitized solar cells	Report #2	Fabrication
15	Final Exam		