Syllabus: Chem 7 – Lower Division Seminars in Nanoscience

Session A: Monday, July 24, 2017 – Friday, July 28, 2017

Session B: Monday, July 30, 2017 – Friday, August 4, 2017

Times: 9AM to 5:00PM, daily

Monday – Superhydrophobic Surfaces: the lotus Effect and Nanoscale Structures on Surfaces

Seminar Topics:

1. The Lotus Effect and Nanoscale Structures on Surfaces
2. *Bio-inspired Surfaces and Materials*

Laboratory Activities:

1. Superhydrophobic Surfaces Experiment
2. Demonstration Lab: Atomic Force and Other Surface Probe Microscopy

Tuesday – Dye-Sensitized Solar Cell: Solar Cells and Energy Conversion

Seminar Topics:

1. Solar Cells and Energy Conversion
2. *Solar Cells – Principles and Recent Progress*

Laboratory Activities:

1. Dye-Sensitized Solar Cells Experiment
2. Demonstration Lab: *Scanning Electron Microscope (SEM)*

Wednesday – Biotoxicity: Silver Nanoparticles and Applications

Seminar Topics:

1. Silver Nanoparticles and Applications
2. *Nanoparticles and the Environment*

Laboratory Activities:

1. Biotoxicity Experiment
2. Demonstration Lab: Cryo Electron Microscopy and Confocal Fluorescence Microscopy

Thursday – Photolithography: Photolithography and the Top-Down Approach

Seminar Topics:

1. Introduction to Photolithography and the Top-Down Approach
2. *MEMS – The Science and Technology of Making Small Things*

Laboratory Activities:

1. Photolithography Experiment
2. Demonstration Lab: Cleanroom Fabrication Facility

Friday – Supercapacitors: Energy Storage

Seminar Topics:

1. *Next generation of batteries: Supercapacitors*

Laboratory Activities:

3. Supercapacitors Experiment
4. Demonstration Lab(Optional): Electrochemical Measurements
5. Final Group Presentation