Materials Chemistry II - Course Syllabus

Course Number: CHEMS 210/CBE 210

Course Title: Materials Chemistry II

Academic Semester:	Spring	**Academic Year:**	2015/ 2016
Semester Start Date:	Jan 24, 2016	**Semester End Date:**	May 19, 2016

Class Schedule: Monday and Thursday 10:30am

Classroom Number:

Instructor(s) Name(s): Yu Han
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Teaching Assistant name:
Email:

Office Location: Building 4 R4221

COURSE DESCRIPTION FROM PROGRAM GUIDE

Presents students with a descriptive overview of Materials Chemistry with particular emphasis on the correlation between materials structure and their properties. This course will cover the following topics: molecular symmetry; basic crystallography; band theory; porous materials; nano-structured materials and some material characterization techniques including powder X-ray diffraction and physical adsorption.

COMPREHENSIVE COURSE DESCRIPTION

The course is designed to give students an introduction to various electron microscopy based techniques including scanning electron microscopy (SEM), transmission electron microscopy (TEM), scanning transmission electron microscopy (STEM), energy dispersive X-ray analysis (EDX), and electron energy loss spectroscopy (EELS). The electron diffraction (ED) section will feature the fundamental principles concerning “real space” and “reciprocal space” and their correlations; and will permit students to be able to index simple ED patterns of known crystalline structures. Furthermore, on-site demonstrations for SEM and (S)TEM will be arranged for better understanding the knowledge gained in the regular classes.

GOALS AND OBJECTIVES

Enable the students to understand the basic working principles and conditions of various electron microscopic techniques for materials characterization.

REQUIRED KNOWLEDGE

The student should have some basic knowledge of crystallography or have taken the course of Materials Chemistry I offered in the Fall semester.

REFERENCE TEXTS

Recommended Textbook (for reference only):

"Transmission Electron Microscopy — A Textbook for Materials Science"

David B. Williams and C. Barry Carter, Springer, 2008

Lecture handouts will be provided in PDF format.

METHOD OF EVALUATION

Graded content
Exams and Presentation: A total of two exams will be given, one mid-term and one final exam. Besides, each student will be assigned a topic relevant to the course taken, i.e. on electron microscopy. They will be expected to give a 20 minute presentation using up to 20 slides.

COURSE REQUIREMENTS

Assignments

All the students are required to participate the on-site demonstrations of SEM and TEM each student will be assigned a topic on electron microscopy to present in the class.

Course Policies

Attendance to class is expected. If any class session is missed, it is the responsibility of the student to find out if any assignments or schedule changes were made during the missed class.

NOTE
The instructor reserves the right to make changes to this syllabus as necessary.