

Chem 4871/6871 Electrochemistry
Spring 2015

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Class Meetings: MM I 5: 30 pm – 8:15 pm, MW, January 12 – February 25
Class Location: Langdale Hall 527
Office Hour: Wednesday 2:00 pm – 3:30 pm, or by appointment

Suggested Books: A. J. bard and L. R. Faulkner, *Electrochemical Methods: Fundamentals and Applications*. 2nd Edition.
Electrochemistry chapters in *Instrumental Analysis (or Quantitative Analysis)*

Jan. 12 Basics in chemistry, physics and electronics; practical aspects: electrodes, cell, etc.
Jan. 14 Homogeneous electron transfer reactions, basic redox concepts
Jan. 19 **MLK holiday**
Jan. 21 Double layer, interface, mass transport
Jan. 26 Voltammetry I, Amperometry, Coulometry etc.
Jan. 28 Electrochemical sensors and electroanalytical applications
Feb. 2 Thermodynamics
Feb. 4 Kinetics
Feb. 9 **In class exam (30%); Lab experiment (details to be provided)**
Feb. 11 Voltammetry II, ET kinetics and MT kinetics
Feb. 16 Electrochemistry in Energy: batteries, supercapacitors and fuel cells
Feb. 18 Review and special topics
Feb. 23 Presentations I
Feb. 25 Presentations II; summary

Final: Friday February 27, 16:15-18:45 Final (50%)

In class presentation/discussion (**20%**): assigned/selected research topics/papers
Each student will present at least one selected journal paper or book chapter (in consultation with the instructor). The paper should be circulated to the whole class at least three-day in advance. Your grade will be based on your presentation (PowerPoint submitted after the discussion), your answers to the questions, and the question/s you raise regarding other presentations. Each presentation should be about 8 minutes plus 4 minutes for discussion.
Demo or lab experiments will be arranged (pending schedule).

This syllabus is a guideline of the lectures and is subject to change.

*** Honor Code Applies***