

Syllabus Chem 6153, Spring 2021

Instructor – CR Martin, crmartin@ufl.edu

Course management - This class will be online and synchronous this semester. Specifically, unless otherwise instructed, the class will meet live online through UF Zoom at the class times listed by the registrar – **MWF 3:00 to 3:50 pm**. I will send out invitations and links to these lectures using the CHM6153 eLearning (aka Canvas) site. I will communicate with you through this site.

Lectures and interactive learning – At the Zoom class meetings I will deliver lectures similar to those used when I teach this class face-to-face. In addition, because upper-level graduate classes should be interactive, I will regularly call on students to be part of the discussion. I will also ask students to work assigned homework problems (*vide infra*).

General statement of objectives - In broadest terms, the objective of this course is to teach you how to use electrochemical methods to solve problems in scientific and engineering research and development. Methods of interest include cyclic voltammetry, coulometry, amperometry, and potentiometry. I want you to learn such methods so that they might be included in your research-techniques tool box.

Course plan - Electrochemistry is challenging because you must learn from many different fields of science and engineering, including thermodynamics, kinetics, transport theory, instrumentation, and electronics. My job as the teacher is to sift through this enormous database, and give you the right information, in the right order, to allow you to understand and use electrochemical methods. I will give you this basic science and engineering background information during the first part of the semester. We will then turn to our study of the methods.

Text – I will use the textbook *Electrochemical Methods*, 2nd Edition (Bard and Faulkner) as a source of background information. The first edition of this text contains the same information. The material to be covered this semester comes from **Chapters 1 through 6, and Chapter 12** of these texts. These chapters are assigned reading for this course.

Homework – These problems will be made available as PDF files. They come from the 2nd Edition of *Electrochemical Methods*.

Chapter 1 - 1.1, 1.4, 1.5, 1.6, 1.10

Chapter 2 - 2.1 (a,b,c,d), 2.3, 2.4 (a,b,c,d), 2.6, 2.10, 2.13, 2.14 (a,b), 2.18

Chapter 3 - 3.1, 3.5, 3.6, 3.7, 3.9, 3.11, 3.12

Chapter 4 - 4.1, 4.2, 4.3, 4.4, 4.5

Chapter 5 -5.2, 5.3, 5.4, 5.6, 5.7, 5.14, 5.17,
Chapter 6 - 6.3, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10
Chapter 12 - 12.1,12.3, 12.5, 12.8, 12.12

These will not be collected. But as noted above, I will periodically ask students to share detailed solutions of these problems with the class.

Grading – There will be a midterm and a final exam, each worth 45% of the grade. These will be take-home exams with dates announced as the time approaches. The remaining 10% of your grade will come from your class participation efforts.

Office Hours – Wednesdays at 1:30 PM via Zoom meeting