Syllabus CHM6153, Spring 2023

Instructor – Charles R Martin, crmartin@ufl.edu, CLB 218

Course management - This class will be face-to-face only in Leigh Hall 242. This room is reserved for our class during Period 7 and 8 (1:55 PM - 3:50 PM) on Tuesdays and Thursdays. That is four 50-minute lecture periods per week, and the class only requires three periods per week. Here is what we will do. The Chemistry Department is interviewing faculty candidates during the month of January, and there is a seminar I should attend every Tuesday at 2:00. Therefore, let's start class at 3:00 every Tuesday and go until the end of Period 8, 3:50. Then on Thursdays we will start at 2:00, and I will lecture until about 3:45. In summary, our class will meet as follows:
Tuesdays – 3:00 to 3:50, Leigh Hall 242
Thursdays – 2:00 – 3:45, Leigh Hall 242
Finally, I will use the course Canvas page to communicate with you. Please check this page to stay up to date.

Lectures and interactive learning – During our class meetings, I will deliver lectures, and because an upper-level graduate class 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 both the theory and practice of these methods so that they can 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 – *Electrochemical Methods* (either the first or second edition) by Bard and Faulkner. I have been told that this text can be obtained online. The material to be covered this semester comes from **Chapters 1 through 6, and Chapter 12** of the text. These chapters are assigned reading for this course.

Homework – These problems come from the textbook, and are the same in both the first and second editions.

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 40% of the grade. These will be take-home exams with dates announced as the time approaches. The remaining 20% of your grade will come from your class participation efforts.

Office Hours – Wednesdays at 1:30 PM. I will attempt to do this both face-to-face, in my office (CLB 218) and via Zoom. I will send out the Zoom link via the Canvas page.