

SPECIAL TOPICS (ELECTROCHEMISTRY) -- CHEM 400B Fall 2012 TENTATIVE LECTURE SCHEDULE

INSTRUCTOR: Dr. Petr Vanýsek; Office, Faraday West 418
Meeting place for all sections: Faraday West 201 at 18:00-19:15 Mondays and Wednesdays

OFFICE HOURS: 9:30 – 10:30 Tuesdays and Thursdays. Other times by appointment only. I will help you with your problems, but when you come to see me, have your questions and problems already at least partially prepared. Bring your class notes along; I will want to see what you write down. Do not expect the instructor to give you your own private make-up class. When coming to the office hours, be prepared to share the office or the time with other students.

TEXTBOOK: There is no specified textbook. Instead, for various classes various materials, from different sources will be recommended. The major source of information will be the lecture itself.

DATE dd.mm.yy	TOPIC	CHAPTER
27.08.12	Class cancelled	
29.08.12	Class Cancelled	
3.09.12	Labor Day	
5.09.12	Fundamental aspects of electrochemistry	
10.09.12	Thermodynamics (as it pertains to electrochemistry)	
12.09.12	Overview of electroanalytical methods	
17.09.12	Voltammetry, RDE, numerical treatment of data	
19.09.12	Impedance in electrochemistry	
24.09.12	Impedance in electrochemistry	
26.09.12	Impedance in electrochemistry	
1.10.12	Impedance in electrochemistry	
3.10.12	Impedance in electrochemistry	
8.10.12	No class	
10.10.12	No class	
15.10.12	Impedance in electrochemistry	
17.10.12	Test I	
22.10.12	Stability of materials: potential-pH diagrams, the 'electrochemical series,' the electrochemical basis of corrosion, discussion of various types of corrosion.	
24.10.12	Corrosion protection	

29.10.12	Electrochemical power sources	
31.10.12	Electrochemical power sources	
5.11.12	Electrochemical power sources	
7.11.12	Electrochemical power sources (materials)	
12.11.12	Electrochemical power sources (materials)	
14.11.12	Test II	
19.11.12		
21.11.12	Thanksgiving, no class	
26.11.12	Energy sources beyond petroleum	
28.11.12	Energy sources beyond petroleum	
3.12.12	Energy sources beyond petroleum	
5.12.12	Energy sources beyond petroleum	
10.12.12.	Final (6 PM – 8 PM), same room as the lectures	

Recommended Books:

This class will rely heavily on the lectures given by the professor and any notes that might be provided by him. However, there are some books that can be generally useful, listed below.

A. Bard and L. Faulkner: *Electrochemical Methods*, Wiley, 2001.

D. Pletcher and F. C. Walsh: *Industrial electrochemistry*, Chapman and Hall 1989

J. O'M. Bockris and A. K. N. Reddy: *Modern Electrochemistry*, Vol. 1, Plenum Press 1998.

J. O'M. Bockris and A. K. N. Reddy: *Modern Electrochemistry*, Vol. 2B, Kluwer Academic 2000.

J. O'M Bockris, A. K. N. Reddy and M. Gamboa-Aldeco: *Modern Electrochemistry*, Vol. 2A, Kluwer Academic 2000.

D. Pletcher: *A first course in Electrode Processes*, The Electrochemical Consultancy, Romsey 1991.

F. Walsh: *A first course in Electrochemical Engineering: The Electrochemical Consultancy*, Romsey 1993

Supplementary material: Oldham and Myland, *Fundamentals of Electrochemical Science*, Academic press 1994; Bockris and Khan: *Surface Electrochemistry*, Plenum

1993. P. A. Christensen, Techniques and mechanisms in electrochemistry. Chapman and Hall, 1994.

Grading:

Test I	20 %
Test II	20 %
Term paper	20 %
due 28 November 2012	
Final examination (Dec. 10)	40 %

100 – 85 %	A
85 – 75 %	B
75 – 65 %	C
65 - 55 %	D
< 55%	F

ACADEMIC INTEGRITY: In general, cheating means presenting or using work that was not done entirely by you and, in the case of in-class examination, it includes also presenting or using your work that was written outside the classroom. You may not talk or pass notes to each other on any subject. Having other materials than those allowed for the work within your reach during test or sharing calculators is cheating as well. During tests you must put away any devices that would allow you to communicate with others or access databases. Be very careful not to use work of somebody else (a lab mate, previous years' reports, web downloaded material) for the laboratory report. Violation of these rules will result at minimum of a zero score on your work.

Other issues:

- Calculators: For tests only calculators without data storage/retrieval capability can be used. The calculator function on cell phones cannot be used during tests. Cell phones must stay away out of your reach during any tests or quizzes.
- No smoking in the building, no food or drink in the class or the laboratory.
- TAPING/RECORDING OF THE LECTURE: You are encouraged to take good notes, reflecting your interpretation and understanding of the lecture. However, you are not permitted to make verbatim recording or transcription of the lecture.
- ATTENDANCE: The material in the lectures is essential for understanding the subject. Although there is no formal enforcement of attendance, due to the size of the class your absence will be clearly apparent to me. Be prepared to explain and justify your absence to me.

- CELL PHONES AND THE LIKE: Cell phones are great technology and it is great to have one with you for emergency. (Campus police: 815-753-1212). However, please, turn off your phones and other noise-making devices as a courtesy to others, and do not distract yourself by reading and sending text messages.

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Additional material, not distributed to the students:

GPA target x.x?