

**CHEM 980: Advanced Topics in Chemistry**  
**“Electrochemistry: Fundamentals and Applications”**

Fall 2017  
M/W, 1:00–2:15 pm, 3059 Malott Hall

**Syllabus**

**Instructor:** James Blakemore  
Assistant Professor, Department of Chemistry

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**Office hours:** Monday, 2:15-3:15 pm, and other times by appointment

**Description from course catalogue:** A course covering special advanced topics in chemistry not included in other graduate courses. One or more topics will be covered in a given semester and an announcement of the course content and prerequisites will be made at the end of the previous semester. This course may be taken more than once when the topic varies.

**Instructor’s description:** Discussion of the structure of the electrode-electrolyte interface, the mechanism by which charge is transferred across it, and experimental techniques used to study electrode reactions. Special emphasis will be placed on diffusion currents, coulometry, irreversible electrode reactions, and the kinetics of electrode processes. Photoelectrochemistry, catalysis, and sensors will be discussed as time allows.

**Primary Text**

Pletcher, Derek; *A First Course in Electrode Processes*, **2009**, 2nd edition, RSC Publishing, ISBN-13: 978-1-84755-893-0

**Secondary Text**

Bard, A. J., and Faulkner, L. R.; *Electrochemical Methods: Fundamentals and Applications*, **2001**, 2nd edition, John Wiley and Sons, ISBN-13: 978-0471043720

**Grading**

Problem Sets (2 x 25%; 100 pts each)  
Midterm Exam (1 x 25%; 100 pts)  
Final Project and Presentation (1 x 25%; 100 pts)  
Total: 400 points

**Exams**

There will be one midterm exam. The midterm exam will be administered during the usual class period, and will cover all material presented to-date. The final project and presentation will be completed before the scheduled final-exam period (Friday, December 15; 10:30–1:00 pm).

For more information: <https://registrar.ku.edu/exams>

### **Problem Sets**

Two sets will be assigned throughout the semester, based on textbook reading, lecture content, and outside sources. Your solutions (show your work!) to these problems will be due in class on the specified "due dates." **Absolutely no late sets will be accepted.** Students are encouraged to work together on solving the problems, including discussion of the problems and their possible solutions. However, do not copy solutions from others.

### **Lecture Material**

Some lectures may emphasize topics not covered in the primary or secondary texts, or could discuss topics in a context not provided in the texts. Additionally, the time sequence of the presentation of certain topics will evolve naturally based on in-class discussions and student questions. *Therefore, it is highly recommended that students attend all lectures and take notes.*

### **Course website**

All students enrolled in the course (plus those auditing) have been granted access to the Blackboard site for the course. Please ensure that you can access the site, as it will be the platform for distribution of electronic handouts, problem-set answer keys, course announcements, important links, etc. You will be prompted for your KU Online ID and password to access these materials. If you have any trouble accessing the course website, contact the instructor immediately.

### **Special Needs**

The Academic Achievement and Access Center (AAAC) coordinates accommodations and services for all students that are eligible. If you have a disability for which you wish to request accommodations and have not yet contacted the AAAC, please do so as soon as possible. Their office is located in 22 Strong Hall, and the phone number is (785) 864-4064 (V/TTY). Information about their services is available at <http://disability.ku.edu>. *All arrangements for special needs must be set well in advance of exam administration or problem set distribution to ensure fairness to all students.*

### **Course Evaluation**

Both the University and the instructor value effective teaching. Student evaluations are an important component of teaching assessment, and the instructor places strong emphasis on feedback provided by students. The Department of Chemistry uses online student-evaluation surveys instead of paper forms.

Surveys in this course will be administered via Blackboard, and are configured such that student anonymity is guaranteed. Students will receive an email from the KU Center for Online and Distance Learning with instructions for completing the survey in Blackboard. Students can only access the survey once, and reminders will be sent to those who have not completed the survey. The survey period is Sunday-Sunday of the last week of classes (ending just before finals week).

Students will be provided time during a class period to complete the electronic course evaluation.

A full description of procedures is found in the KU Policy Library at:  
<http://policy.ku.edu/provost/student-eval-procedures-for-admin>.

**Academic Integrity**

We expect that all students will maintain the highest standards of personal, academic, and scientific integrity. The study of science is worth little unless findings are reported accurately and proper authorship is attributed.

From the KU Student Handbook:

“The following policy . . . defines a uniform approach to acts of academic misconduct involving students in courses offered by the KU College of Liberal Arts and Sciences (CLAS). Academic integrity requires the honest performance of academic responsibilities by students. Academic responsibilities include, but are not limited to: the preparation of assignments, reports, and term papers; the taking of examinations; and a sincere and conscientious effort by students to abide by the policies set forth by instructors. Any subversion or compromise of academic integrity thus constitutes academic misconduct. Examples of misconduct include (among others) falsification, unauthorized assistance or plagiarism or reports, term papers, research papers, or other written documents; giving or receiving unauthorized aid on examinations; disruption of classes; and the offering of gratuities or favors in return for grades.”

For more info on this issue, including charges and sanctions, see:

<https://college.ku.edu/undergrad/students/policies>

Any incidents of academic misconduct will be prosecuted to the fullest extent possible within the scope of University policies, as described in the Student Handbook that is available at the website quoted above. At a minimum, this will include receiving zero credit for the work in question for any party involved. Additional penalties may include a grade of “F” for the entire course as well as suspension or expulsion from the University. If you have any questions about what constitutes academic misconduct, please consult with the instructor or the Student Handbook.

**Statement on Diversity and Inclusion**

As a premier international research university, the University of Kansas is committed to an open, diverse and inclusive learning and working environment that nurtures the growth and development of all. KU holds steadfast in the belief that an array of values, interests, experiences, and intellectual and cultural viewpoints enrich learning and our workplace. The promotion of and support for a diverse and inclusive community of mutual respect require the engagement of the entire university.

**Materials**

Prepared course materials and delivered lectures are the property of the instructor. Video and audio recording of any lecture without instructor's consent is prohibited. On request, the instructor may grant permission for students to record lecture audio; this will be on the condition that the specific individual use the recordings only as a study aid. Unless explicit permission is obtained from the instructor, electronic copies of any course-related materials may not be transmitted or transferred to any other person, regardless of whether or not that individual is enrolled in the course.

**Commercial Note-Taking Ventures**

Pursuant to the University of Kansas' Policy on Commercial Note-Taking Ventures, commercial note-taking is not permitted in this course. Lecture notes and course materials are provided for personal use in mastering the course material; these materials may not be sold to any person or entity in any form. Any student engaged in or contributing to the commercial exchange of notes or course materials will be subject to discipline, including academic misconduct charges, in accordance with University policy. Please note: note-taking provided by a student volunteer for a student with a disability, as a reasonable accommodation under the ADA, is not the same as commercial note-taking and is not covered under this policy.

For more information:

<http://policy.ku.edu/provost/commercial-note-taking>