CHEM 250 – CURRENT TOPICS IN ANALYTICAL CHEMISTRY
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Class Meetings / Office Hours:
Seminar: T and R 06:00-07:15 PM DH-415
Office Hours: TR 09:30 – 10:20 or by appointment DH-004b

Prerequisites: Instrumental Analysis, Physical Chemistry and Science Writing. Familiarity with statistical concepts relevant to analytical chemistry like accuracy, precision, random and systematic error, limit of detection, sensitivity, selectivity, resolution etc.; familiarity with the major families of analytical chemistry such as separations, ultraviolet, visible and infrared spectroscopy, mass spectroscopy etc. consistent with an undergraduate degree in chemistry that includes training in analytical chemistry.

Objectives: This course will focus on several new developments in analytical chemistry covering topics in spectroscopy, separations, surface science and electronic sensing. Students should be prepared to read, understand and write reports based on the chemical literature such as articles in Analytical Chemistry and Science.

Grading: A single letter grade will be assigned for Chem 250. The final exam will be on Tuesday, December 16, from 05:15 to 07:30 PM in DH 415.

Preliminary plans for grading structure:
Lecture Grade: 550 points
One-hour exam: 100 points
Final two-hour exam: 200 points
Term Paper: 200 points
Oral presentation of term paper 25 points
Quizzes 25 points

Overview of Proposed Lecture Topics
Articles for review and study will be distributed to the class. The topics covered will range from electrochemistry, mass spectrometry, optical spectroscopy and scanning probe microscopy with emphasis on emerging technologies.

Term Paper: The term paper is a major part of the course that is designed to familiarize you with some area of current research in analytical chemistry. You will pick the topic from the current chemistry literature (within about 5 years of the present), have the subject approved by me and then write an approximately 10 page paper on the subject with at least five references from the chemical literature (no internet addresses). The topic of the paper may not be identical to that of one of the lectures, the references may not be identical to any one of those reviewed in the course, and if you want to discuss at topic similar to your research, please consult me.

The term paper should focus on a particular problem (eg. detecting genetic mutations) or analytical method (eg. ICR-MS), or both (e.g. detecting genetic mutations with ICR-MS). I suspect that the latter approach will often be the best because it places limits on the scope of the topic. The information from several sources should be integrated and the paper should ideally reflect an understanding of various issues or perspectives relative to the subject that you are studying. Almost always there is a way to summarize the overall issue that reflects a good level of understanding of the subject matter. Undergraduate, textbook-level review of the basic principles may be a good way to introduce some of the experimental methods.
(1) Read the article. (2) Understand as much as you can. (3) Write about what you understand in as much depth as you can and (4) don’t try to do go beyond what you understand. I enjoy hearing about what you know, but stretching this to try to sound smart is obvious and ill-advised. Write in a formal tone, but don’t try to impress me. When in doubt – just report the facts. Unfortunately, I do need to remind some that the report must be original writing – please do not to copy directly from the articles (plagiarize). Even if you properly cite the sentence or paragraph, it must be in your own words. A very limited number of direct quotes are allowable. The University defines plagiarism as “The act of incorporating the ideas, words, sentences, paragraphs, or parts thereof, or the specific substance of another’s work, without giving appropriate credit, and representing the product as one’s own work;” The university recommends that “violations of … this policy the recommended sanction shall be 3.1.2, failure in the evaluation instrument or 3.1.4, failure in the course”. OUCH!

Oral presentation: During the last few weeks of the semester, we will schedule short (ca. 15 min) presentations of the paper topics that you discuss. The recommended format will be overhead transparency – other accommodations will require advanced notice. These presentations will be worth 25 points.

Drop Policy:
The deadline to add and the deadline to drop classes without a W is February 10th. This is also the deadline to file academic renewal petitions as well as credit/no credit and audit requests. After the regular drop period ends, only documented medical or similar emergencies will be accepted as a valid reason to drop a course. Note particularly that a change in work schedule is no longer an acceptable reason. Therefore, it is critical that you inform your employer that you have a serious commitment for your scheduled class and laboratory times during the whole semester. If your employer cannot guarantee that you can meet this obligation, then you should drop the class in order to allow someone who can fulfill this commitment to register. Also, be aware of the fact that “unsatisfactory performance in course work and protection of your GPA is not a serious and compelling reason in itself for requesting permission to drop”. After the twentieth day of instruction, all petitions to drop classes or withdraw from school will be reviewed by the Director of Academic Services. Petitions are available in the Student Resource Center.