Class meetings: 11-11:50 MWF in Smith 203.

Course Description: Chemistry 397 is designed to help you prepare for the chemistry major’s capstone course, CHM 599. This course involves the integration & assessment of chemical knowledge at an advanced level, the exploration of ethical issues, research, and oral & written presentation.

Course objectives:
1. To increase students' skills in scientific communication, both oral and written.
2. To develop students' understanding of the way scientific ideas are developed and of how science is practiced ethically. (This is intended to be a detailed look at part of the scientific method.)
3. To enhance students' abilities to perform advanced studies (primarily library research).

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Office hours: Tu 9:30-11:30 & 3-4, Th 10:30-11:30, & Fr 10-11 (or by appointment)


Course activities:
1. Consider ethics, particularly as it applies to chemistry.
2. Hear presentations on employment in chemistry and engage in related discussions.
3. Learn to use library search tools specific for chemistry related topics such as Chemical Abstracts Online.
4. Carry out a detailed analysis of some primary scientific literature. This will take the form of a Journal Club, where a specific article (primary research, not a review) is selected and read by all members of the Journal Club. One of the students will then present the paper to other members of the club. A lively discussion based on comments and questions by students is expected to occur during the presentation.
5. Short oral presentations (approximately 15 minutes) on topics selected by students.
6. Observe and review long oral presentations (45-50 minutes) presented by students in CHM 599.
7. Critique oral presentations by other students in the class.
8. Preparation of term paper based on the subject that you used for your short presentation.

Attendance: You are expected to attend every class. If you must be absent, please let me know as soon as possible. I understand that life can sometimes be disrupted, and severe disruptions (illness, death in the immediate family, etc.) do constitute a legitimate reason for missing class. You may be required to document an absence if you want it to be excused. Students will be permitted one unexcused absence without penalty. Each unexcused absence beyond the first will cause two (2) points to be subtracted from the student's point total. This is based on a maximum possible 100 points for the course. It would not be appropriate to have an unexcused absence on a day of you are making a presentation.
<table>
<thead>
<tr>
<th>Grading:</th>
<th>Points</th>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td>15</td>
<td>Journal Club presentation</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Short oral presentation</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>short oral presentation practice session</td>
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<tr>
<td>15</td>
<td>reviews of long oral presentations by senior students</td>
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</tr>
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<td>30</td>
<td>Paper on short presentation topic</td>
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<td>Total</td>
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No final exam!

Grading scale: A = 90 > B+ = 87 > B = 80 > C+ = 77 > C = 70 > D+ = 67 > D = 60 > F

**Journal Club:** You will select a research paper from the chemistry literature for your 1st journal club presentation. This must be a primary reference as opposed to a secondary reference such as a review or news summary. **You must have the paper you select approved by the instructor 7 days in advance of your presentation (or a paper will be arbitrarily assigned to you). Submit an electronic copy of the paper to me 7 days before your journal club presentation so that I can forward copies to the other students.** You will make an informal, but detailed presentation (45-50 minutes in length) of this paper to the class. Journal Clubs traditionally focus more on methods and detailed descriptions of experimental data than some other types of presentations. Your grade will be based on the clarity of your presentation and your ability to answer questions (posed by students and the instructor) about the data in the paper. Ideally, you will thoroughly understand the paper and be able to answer any reasonable question about it.

**Short oral presentation practice session:** Students that did not complete this activity may substitute a written evaluation of their own presentation. (Revised sections are in red.)

**Short oral presentation:** You will select 3 (or more) primary literature articles in chemistry on a subject of interest to you. These articles must be related to the same specific topic. Using these articles, you will prepare a 15-20 minute presentation on this topic. You will then make the presentation to the class and other invited faculty and students. In this talk, you will describe how the results in the articles support (or contradict) a given hypothesis or model. Your presentation should include comments on the relevance of the subject, why the authors chose to pursue the work, and perhaps where you think this area of research will go in the future. If the work is primarily descriptive in nature, your discussion of relevance, etc. will be particularly important. Your topic can be related to your Journal Club presentations, but it should not sound (or read, for the written version) like three short journal clubs. By this I mean that you should unify the material under a specific theme, and then present specific sections of the papers you have read to describe/explain parts of the theme.

**Critique of other students practice presentations:** You will attend other students’ practice presentations (2) and take notes on the style and content of their presentation as they are giving it. You will then use your notes to write a 1-2 page (double-spaced, 12 point Times Roman font) analysis of the strengths and weaknesses of other students’ presentations. When noting a weakness or strength, you must cite specific elements of a student’s presentation to support your point. **Hand in both your handwritten notes and the 1-2 page summary.** 5 points for each critique. You must attend the presentation to critique it. If you miss a practice presentation, there is no opportunity to make-up this portion of your grade. **Note:** I will not give the comments you make in your critique to the student that made the presentation. This will allow you to be candid in your assessment with no fear for your kneecaps.

**Paper on short presentation topic:** You will write a paper based on the subject of your long oral presentation. The paper should follow the format described in the ACS style guide (more on this later). A rough draft or detailed outline of this paper is due two weeks after your oral presentation. If the draft/outline is not turned in, your final grade will be lowered by 5 points. The instructor will
return the draft to you with editorial comments that you may use to improve your final draft. The final draft of the paper is due three weeks after your oral presentation. The paper should be 5-6 pages long, not including any figures. It probably will be easier to write if you do include some figures (worth a 1000 words?). You should start the first page with a brief title (located at the top of the page), skip one line and then begin the body of your paper. If you do not staple the pages together, include your last name and first initial on each page as a footer. Include page numbers on each page at the bottom right. Margins should be 1" top, left, and right, and 0.5" at the bottom. For citation (to the three papers you read and any others you need to cite) you may choose the citation format used by the journal that published one of the papers you used. Just be consistent throughout.

Finally, send me pdf’s of the papers you are using for your paper if you have them. If not, contact me by email so I will know what I need to manage re. the library.

No late papers will be accepted. Because of the rough draft/editing process, you should use a word processor to prepare your paper.

Bonus points: It is possible for students to be awarded "Bonus Points." This would occur when a student asks a particularly creative, or insightful question during Journal Club when they are not presenting or at some other student's oral presentation. These Bonus Points will be documented by the instructor in writing. (i.e., It will be noted why the question was considered creative or insightful.)

Font comments re. writing your paper

Comment re. Font/point selection for your paper. People who are interested in such things have taken time to study the effect of fonts on efficiency of written communication. See for example: http://alexpoole.info/which-are-more-legible-serif-or-sans-serif-typefaces
My read of this is that Mr. Poole has concluded neither font type is inherently more efficient. Therefor you can use any of the font/point combinations shown below, as fits your preference. The characters for “one,” “lower case L,” and “upper case I” are shown below in 14 pt font.

1 l I Times New Roman
1 l I Garamond
1 l I Palatino Linotype
1 l I Verdana
1 l I Arial
1 l I Calibri

You can see that these fonts have different levels of clarity/ambiguity with respect to these characters. The “lower case L,” and “upper case I” in Arial are indistinguishable to my eyes, and in Calibri, barely distinguishable. Problems can occur with other characters, but these are among the more common issues that occur when writing on chemical topics. If you will need to use these characters regularly in situations that could have ambiguity, use a serif font.

Font/pt combinations that you may use for your paper:

Serif fonts:
Times New Roman 12pt Do use a font that is space efficient!
Garamond 12pt Do use a font that is space efficient!
Palatino Linotype 11pt Do use a font that is space efficient!
Verdana 10 pt Do use a font that is space efficient! (This font has some serif-free characters.)

Sans serif (Mostly. Depends a bit on which characters. [See the I, below.]) fonts:
Arial 11pt Do use a font that is space efficient!
Calibri 11pt Do use a font that is space efficient!