CHEM 490/H - Undergraduate Seminar - Syllabus
Fall 2015 - Section 001; 1 Credit

Instructor: Prof. Gary R. Kinsel Office: NKRS 224 Email: gkinsel@chem.siu.edu
Class: 3-3:50 pm; Neckers 218 Seminars: 4-4:50 pm; Neckers 240

Required Reading: On Being a Scientist: Responsible Conduct in Research, Third Edition
National Academy of Sciences, National Academy of Engineering, and Institute of Medicine,
http://www.nap.edu/catalog.php?record_id=12192
Go to website and click on “download free pdf” or just read it on-line.

References:

• ACS (American Chemical Society) Style Guide: Effective Communication of Scientific
• Advice to a Young Scientist, Peter B. Medawar, HarperCollins Publishers, New Ed.
• Alternative Careers in Science: Leaving the Ivory Tower, Cynthia Robbins-Roth,
• A Ph.D. is Not Enough: A Guide to Survival in Science, Peter J. Feibelman, New York,
• Mastering Your PhD: Survival and Success in the Doctoral Years and Beyond, Patricia A.
• The Ph.D. Process: A Student's Guide to Graduate School in the Sciences, Dale F.
  Bloom, Jonathan D. Karp and Nicholas Cohen, Oxford University Press, USA, 1999

Course Description:
Current topics in chemistry covered through literature review, presentations, reports of ongoing
research and discussions.

Goals:
Expose students to current topics in the diverse and interdisciplinary fields within chemistry
through review of the published literature, presentations of journal articles, oral reports of
ongoing research and discussions. The students will be able to follow the literature in different
fields, analyze articles in a current topic in any subfield within chemistry in preparation of a final
presentation at the end of the semester. Students will attend the departmental seminars
encouraging participation in departmental professional development activities. Topics of ethics
in science will also be discussed. Career workshops through Career Services at SIU are included
to provide resources in preparation for the students' applications to graduate school, professional
schools and jobs in chemistry-related fields.

Grade: The final grade will be based on a combination of reading and writing assignments, one
presentation, discussions, participation, planned activities, attendance and summaries of talks
from the regular departmental seminar series:

Ethics Assignment = 10% Seminar summaries = 30% Presentation = 20%
Ethics Discussion = 10% Mock Interview = 10% Participation and Attendance = 20%

The grades will be assigned as follows:
A = 100–90.0%, B = 89.9–80.0%, C = 79.9–70.0%, D = 69.9–60.0%, Fail = 59.9-0%
ETHICS ASSIGNMENT (10 points maximum):
Read the complete handout "On Being a Scientist: Responsible Conduct in Research, Third Edition". The first day of class, you will be assigned 2 Case Studies to discuss further. Read carefully the chapter associated with the Case Study in the handout, as well as the “Appendix: Discussion of Case Studies” section associated with your assigned Case Studies. Use this information to write your own discussion.

After reading the information:
1) Answer the questions from both sections (main chapter and appendix) for each Case Study. Please elaborate and provide your honest opinion.
2) Provide another example from the media. For example, you can find cases through these listed websites:
   http://www.ori.dhhs.gov/
   http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2013_08_08/caredit.a1300167
   http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2010_11_05/caredit.a1000106
   http://cen.acs.org/articles/91/i25/Warning-Shot-Data-Integrity.html
   http://www.acs.org/content/acs/en/careers/profdev/ethics.html
   http://www.acs.org/content/acs/en/careers/profdev/ethics/academic-professional-guidelines.html
   http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1457763/

The assignments should be written using 11-12 point font size (Arial-11 points or Times New Roman-11 or 12 points). Use 1.5 spacing and 1 inch margins. No more than 2-3 pages in length. The write-up should be turned in on the day of the discussion.

ETHICS DISCUSSION (10 points maximum):
Each student will present their two assigned topics and their examples to be discussed by everyone.

Case Studies from "On Being a Scientist: Responsible Conduct in Research":

<table>
<thead>
<tr>
<th>Number</th>
<th>Case Study</th>
<th>Discussion Date</th>
<th>Assigned To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A Change of Plans</td>
<td>Sept 4, 2015</td>
<td>Instructor</td>
</tr>
<tr>
<td>2.</td>
<td>The Selection of Data</td>
<td>Sept 11, 2015</td>
<td>Nathan Colley</td>
</tr>
<tr>
<td>3.</td>
<td>Discovering an Error</td>
<td>&quot;</td>
<td>Kalene Huber</td>
</tr>
<tr>
<td>4.</td>
<td>Fabrication in a Grant Proposal</td>
<td>Sept 18, 2015</td>
<td>Gregory Zimay</td>
</tr>
<tr>
<td>5.</td>
<td>Is It Plagiarism?</td>
<td>&quot;</td>
<td>Yue Lyu</td>
</tr>
<tr>
<td>7.</td>
<td>Tests on Students</td>
<td>&quot;</td>
<td>Nathan Colley</td>
</tr>
<tr>
<td>9.</td>
<td>Publication Practices</td>
<td>&quot;</td>
<td>Gregory Zimay</td>
</tr>
<tr>
<td>10.</td>
<td>Who Gets Credit?</td>
<td>Oct 9, 2015</td>
<td>Yue Lyu</td>
</tr>
<tr>
<td>12.</td>
<td>A Conflict of Commitment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHEMISTRY SEMINAR SUMMARIES (6 x 5 = 30 points maximum):
Summaries should be brief and consist of a 1-2 page summary for each presentation
demonstrating a basic understanding of the research presented and applications by answering the
questions below (5 points each summary). Please take notes, ask questions and attend seminars.

Summaries should be written using 11-12 point font size (Ariel-11 point or Times New
Roman-11 or 12 point). Use 1.5 spacing and 1 inch margins. Torn notebook pages or scrap
paper will not be accepted. The summary for each presentation is due the next class after
seminar (i.e. talk on 8/23, summary due 8/30 at the beginning of class). Summaries can also be
saved as a pdf and then e-mailed to the instructor before they are due (IMPORTANT: name
your file with your last name and a descriptive name). Requesting the slides for the presentation,
pasting on-line articles written about the research of the presenting faculty, or cutting and
pasting excerpts from the presenting faculty's website is unacceptable and could be construed as
Paraphrasing material from the speaker’s websites is unacceptable and, if not cited, is
considered plagiarism. Late summaries and summaries with plagiarized material will not
be accepted and will receive zero credit. Try to attend presentations as soon as possible, since
there are always inevitable cancellations. When writing a summary, please answer and
elaborate on the following questions/topics and put them into paragraph format.

Faculty Presentations Guidelines:
• Very brief introduction summarizing the speaker's presentation (no more than 150
words). Avoid anything verbatim from the presentation. Put it in your own words. Also,
do not paraphrase research interests from the speaker’s website.
• What are the specific techniques commonly used in the lab?
• How would you envision establishing a collaborative project with that lab even if you are
interested in a different area of research?
• Are you familiar with any of the specific techniques, specific instrumentation or specific
methods used in that lab? Please explain how (which classes – be specific)?
• Before the presentation, were you aware of the research associated with that lab? If yes,
explain how? If not, explain what assumptions you had regarding the area of research
before the talk.

NOTE: A 7th summary could be turned in to replace a summary with a low score.

PRESENTATION (20 points maximum - select one of two options):
Option 1 - Journal Article Presentation:
The presentation (20-25 minutes presentation including 5 minutes for questions) will
cover a high visibility journal article (current or a classical highly cited paper from a peer
reviewed scientific journal) approved by the instructor. A suggestion is that you select topics
that you feel comfortable with and are related to your favorite area of chemistry. Students
should use power point or transparencies for their presentation and cover in detail every aspect of
the article including: title; significance and objectives of the study; introduction/background;
summary of detailed experimental methods used and why they were used highlighting critical
steps only; present and discuss the results; and elaborate on the authors conclusions by using
other comparisons in the literature related to the paper. Speakers should email the article in pdf
format for approval and to be posted in D2L so it is available to everyone. A projector will be
available for all presentations, but arrangements should be made for other equipment needs with
the instructor ahead of time.
Option 2 - Research Presentation:
The presentation will be on a topic (approved by the instructor) in any of the major subfields of chemistry, which is the result of undergraduate research at SIU. At least 5 journal articles of suggested periodicals mentioned in class should be used as a reference to prepare the talk. Review articles may be used for guidance. A suggestion is that you select the most recent research that you have (or are) participated (participating) in. You will present your research project and results and use the reference articles to prepare the Introduction/Background and Significance portion of your presentation. These are individual presentations (20-25 minutes presentation including 5 minutes for questions). Students should use power point or transparencies for their presentation and break the presentation into sections such as: title; significance and objectives; introduction/background; detailed experimental methods used and why they were used; discuss results; elaborate on your conclusions by using other comparisons in the peer-reviewed literature; conclusions and future directions; and acknowledgments / references / bibliography.

Mock Interview (10 points maximum):
Completing a “mock” interview offered by Career Services is a requirement for this class. Setting up an appointment through: http://careerservices.siu.edu/students/interview/index.html or by calling (453-2391) or visiting Career Services should be done at the beginning of the semester. You will have to complete first a virtual mock interview (www.siu.interviewstream.com), before being able to schedule an in-person mock interview. Their spots fill up fast and if you do not schedule an interview within the first 2 weeks of the semester you will not be able to complete the assignment.

Attendance and Participation (20 points maximum):
Attendance: Attendance is mandatory. Arrive on time and do not leave early. Please turn off your cell phones and be respectful to every speaker and considerate to your peers (i.e. no talking, newspaper reading, texting). Attendance to a minimum of 6 seminars in the Department of Chemistry and Biochemistry is mandatory (Neckers 240 or other Auditorium, 4-4:50 pm, Friday). Attendance to as many as possible is highly encouraged. Summaries are due on the next Friday immediately after a seminar.

Participation:
(1) Active participation, asking questions after presentations and engaging in class discussions is an important element of this class. Attendance to class is not sufficient to earn participation points. Participation points will be tabulated on a weekly basis, so if you do not attend class and seminars or do not participate by engaging in discussions, you will lose the equivalent percentage towards your grade. Unless you participate, you will NOT get any points for participation.
(2) Attendance to 6 seminars
(3) Discussions on speakers’ presentations