Advanced Topics in Research Methods  
Chem 4150  
Spring, 2017

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Lab meeting times & place: Mondays after ~3 pm – 5 pm and other times as needed in ROB B112

Office hours time & place: Tuesdays 9 am – noon and 2 - 5 pm and Fridays 9 – 11 am or by appointment in ROB B106.

Grading:

The final grade in this course is a pass or a fail.

The following criteria must be met in order to obtain a passing grade:

1. Attendance and participation in weekly lab activities and timely updates made to the electronic lab notebook.
2. Approximately 4 - 6 hours a week of time spent on the research project. This time includes the student: being in the lab, reading the appropriate background material for the project, doing computer/internet research about the project and/or analyzing experimental data.
3. A final formal lab report over your research project, more details on the format for this lab report is provided below. Please note: this comprehensive written report will serve as a report that is needed in order for your degree to be certified by the American Chemical Society.

The final formal lab report is due on Friday, May 5, 2017 at 1 pm.

Course objective: For students to utilize lab skills acquired in previous courses towards the investigation of a unique research project. Each student will be working independently on a project but meet as a group to learn about the various projects and help trouble-shoot issues together.
Independent Research Report Guidelines

A laboratory report is a formal paper (including tables, figures, graphs, etc.) that reports the purpose, results, interpretation, and theory behind what was done in the lab. The lab results are not graded here. The report must be typed and double-spaced using a font size or 11- or 12-point. **You must submit BOTH an electronic and a paper version of this report.**

All reports should have the following format (details and points for each piece of the report are provided), clearly separate these sections from one another by using the section titles (given in bold print and underlined) to distinguish each section:

- **Title page.** This should have the title of the report, your name, the name(s) of your lab partner(s), the date the experiment was performed, and the date the report is turned in.

- **Abstract.** A short statement of what you did and what the results were. It summarizes all essential information. For an example, look up a research article in one of the journals.

- **Introduction.** This section is a very important part of the report. Here you are to discuss the theory behind the techniques and the overall goal of the experiments included in your report. The discussion does not have to be limited to the immediate experiment, but to the topic of the experiment.

- **Materials and Methods** This should include a concise summary of the procedure and a list of special equipment used. Give the reference to the procedure used unless it is your original procedure. In that case, the procedure should be given completely with enough detail that anyone could duplicate it. A section on safety must be included here, this should explain about the safety precautions taken with the chemicals and techniques you are using in your research.

- **Data and Conclusions** The data should be given in picture, graphic and/or tabular form, whichever is needed to show what the results are. The clearer and more concise findings provided in graphs and pictures needs to be accompanied by a discussion of the data along with a discussion of any errors.

- **References** List all sources used to write the paper. Use the proper ACS format for references. At the very least, five different references must be included in each report.