

COURSE SYLLABUS: CHEM 451
Senior Independent Study
Fall 2013

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Overview: CHEM 45100. SENIOR INDEPENDENT STUDY – SEMESTER ONE

An original investigation is conducted, culminating in a thesis and an oral defense of the thesis in CHEM 45200. During the Fall each student gives a research seminar on the Independent Study research topic. Projects are offered in selected areas of analytical, inorganic, organic, physical chemistry, and biochemistry. *Prerequisite: CHEM 21200 and 40100, C- or better, or approval of the Department.*

In other words, this is your opportunity to put into practice the knowledge and skills that you have developed over the course of your college career. It may sound daunting at first, but you've been provided with the tools that you need to succeed. You will work as an independent investigator by analyzing the current chemical literature, formulating a research question, carrying out a series of laboratory experiments, and drawing conclusions from your data.

You'll also find that, while the *product* of your work is certainly important, this is also an opportunity to develop skills of process in which you develop your independence, creativity, and responsibility.

Time

Management: The "laboratory season" for Senior I.S. may not be as long as you think it is – just one semester plus two short months in the spring. *Getting an early start and working consistently* in the laboratory are essential to making progress in research. To make satisfactory progress on your project, the Department of Chemistry suggests dedicating at least 15 hours per week to Senior I. S. This time may be divided between library research, writing, and laboratory work. To help you monitor your efforts, you will be asked to complete a progress sheet in preparation for each weekly research meeting.

Oral

Presentation: You will deliver a presentation on the background, goals, and preliminary results of your project as described in the *Department of Chemistry Handbook for Senior Independent Study*. The schedule will be determined by the Departmental Seminar Coordinator early in the semester. You should share a complete first draft of your slides and written abstract *one week* prior to your presentation.

Thesis

Drafting: You are expected to have a complete draft of your thesis Introduction, along with a working draft of your Experimental section, by the conclusion of the semester. You can facilitate this process by working gradually; refer to the schedule at the end of this document for deadlines and further information.

Grading:

Chem 451 is graded on an S / NC basis, to be determined by the quality of your laboratory work and writing of the draft thesis sections. I can provide written or oral feedback on your performance throughout the year and are welcome to ask at any time if you have any questions about your progress.

Weekly

Meetings: We will establish a time, by mutual agreement, for us to meet for one hour every week. The purpose of this meeting is to share data, progress, and troubleshooting ideas for your project. It is your responsibility to make sufficient progress every week so that you have something to talk about for every meeting. A Weekly Progress Sheet (see last page) is a tool that can help you to track your progress, accomplishments, and future work. You are required to bring a completed progress sheet to every I.S. meeting.

Statement on Academic Integrity

Students are expected to adhere to the Wooster Ethic, the Code of Academic Integrity, and the Code of Social Responsibility as described in *The Scot's Key* (<http://www.wooster.edu/Student-Life/Dean-of-Students>). The Timken Science Library Web site also has resources about digital scholarship at <http://libguides.wooster.edu/scholarlycommunication>. Ultimately, your choice to follow these guidelines is a matter of personal and professional respect for your instructor, your classmates, and yourself.

In the laboratory setting, violations of the Code could include (but are not limited to):

- falsifying laboratory records or results
- misrepresenting the work of another person as your own
- using another person's text, figures, chemical schemes, or data in your notebook or written thesis without proper citation

It is important to fully understand the consequences of violating the Code of Academic Integrity in Senior Independent Study:

1. If an instructor or lab assistant suspects that a violation has occurred, the student or students involved will be scheduled for individual appointments with the instructors.
2. If a violation of the Code is confirmed, the instructor will consult with the Dean for Curriculum and Academic Engagement.
3. The penalty will reflect the severity of the violation, and may include a **failing grade** for the course.
4. **In all cases**, a letter describing the violation will be sent to the student, the chair of the Department of Chemistry, the Dean of Students, and a letter will be filed with the Dean for Curriculum and Academic Engagement in the student's folder.
5. In all cases, the student or students have the right to appeal to the Judicial Board. The decision of the Judicial Board is final.

Timetable for Senior Independent Study Fall 2013

General: Attend all Tues/Thurs seminars (11:00 – 11:50 AM); check departmental schedule for location and a list of speakers

Date	Activity for the Week	Bring to I.S. Meeting
Week 1 Aug 26	Meet with advisor, receive laboratory notebook, pick up keys Schedule NMR training, if necessary, with Ronald Tebbe Check for new literature on your research topic Attend safety training on Thurs, Aug 29	Questions, ideas, or just enthusiasm
Week 2 Sept 2	Submit a draft Experimental Plan (the same style used in Organic Chemistry) for your first experiment by 5:00 PM on Mon, Sept 2 . Include in the plan a target date and time that you will begin this experiment. Attend safety training on Tues, Sept 3 – lab work can begin after this session and after you receive “green light” on your Experimental Plan.	Weekly Progress Sheet Plus a written list of recurring times (e.g. Monday afternoons, Tuesday evenings) that you can dedicate to laboratory work this semester
Week 3 Sept 9	Full-time laboratory work Begin first experiment on or before Mon, Sept 9	Weekly Progress Sheet Ideas for Copeland Funding, if interested
Week 4 Sept 16	Full-time laboratory work	Weekly Progress Sheet Printout of your current resume and ideas about “life after Wooster”
Week 5 Sept 23	Full-time laboratory work Submit by Fri, Sept 27 an updated annotated bibliography that shows growth since CHEM 401	Weekly Progress Sheet CHEM 401 annotated bibliography, for comparison
Week 6 Sept 30	Full-time laboratory work	Weekly Progress Sheet
Week 7 Oct 7	Full-time laboratory work	Weekly Progress Sheet
Week 8 Oct 14	FALL BREAK: Continue full-time laboratory work as you are able (No laboratory work is permitted during break)	Weekly Progress Sheet Completed midterm self-evaluation
Week 9 Oct 21	Full-time laboratory work Submit first draft of Experimental Section (whatever you have to date) on or before Fri, Oct 25	Weekly Progress Sheet
Week 10 Oct 28	Full-time laboratory work	Weekly Progress Sheet Draft abstract and slides, if you present soon
Week 11 Nov 4	Full-time laboratory work	Weekly Progress Sheet Draft abstract and slides, if you present soon
Week 12 Nov 11	Continue lab work, but adjust work-to-writing ratio if necessary	Weekly Progress Sheet Draft abstract and slides, if you present soon
Week 13 Nov 18	Taper laboratory work, begin enacting plan for thesis section writing	Weekly Progress Sheet
Week 14 Nov 25	THANKSGIVING BREAK – Eat a good meal (No laboratory work is permitted during break)	Weekly Progress Sheet
Week 15 Dec 2	Full-time writing and revision of thesis sections	Weekly Progress Sheet
	Submit by Fri, Dec 13: Introduction (complete, final, thesis-ready draft) Experimental (up-to-date draft) Reference list (JACS format, including article title)	

A grade of NC may be assigned if any of the above assignments are incomplete.

	Write the date and day of the week in the shaded boxes below:						
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reactions,							
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Weekly total:

TOTAL	
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SOVER THE PAST SEVEN DAYS (complete before I.S. meeting)

YOUR PROJECT (complete before I.S. meeting, if applicable)

> during I.S. meeting)