



## HARVARD SUMMER SCHOOL 2015

### CHEM S-101 EXPERIMENTAL CHEMISTRY CRN: 33045

#### COURSE INFORMATION

**Course Staff:**

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**Course Location:**

Northwest Lab  
52, Oxford Street  
Harvard University  
Cambridge, MA 02138

Laboratory Session: Northwest 158 (first floor)  
Meetings: Northwest 158 (Conference Room)

**Course Website:**

<http://www.summer.harvard.edu/courses/33045>

**Important Dates**

First Course Meeting: Monday June 22, 2015 at 4.00-6.00 pm  
Independence Day: Friday July 3, 2015 (No Classes)  
Last Lab Day: Friday, August 31, 2015  
Research Report Draft 1: Due by 5.00 pm, Thursday, July 30, 2015  
Research Report Draft 2: Due by 5.00 pm, Monday Aug 03, 2015  
Final Research Report: Due by 5.00 pm, Thursday, August 06, 2015

**Enrollment:**

Enrollment is open to a limited number of students with Chemistry S-20ab or an equivalent organic chemistry background, and permission of the instructor. Enrolled students will be asked to provide information in May so that projects may be assigned. At the first meeting, further information will be provided.

**Course Meetings:**

All students will gather once each week on Monday 4.00-5.30 pm to present their research progress, share goals, and exchange ideas. These meetings will take place in the NW 158 conference room. Students will learn to use Powerpoint, Chemdraw and other presentation tools, and will have the opportunity to practice scientific speaking.

Lab research time will be arranged with course staff as mutually convenient, and will approximate to three five-hour lab sessions each week.

**Project Meetings:**

Each student or team of students will meet weekly with a member of the course staff to assess recent progress and formally set goals for the next week. These meetings will be scheduled as mutually convenient.

**Notebook guidelines**

- Each student keeps a notebook of plans, goals, literature research and experiments.
- This should be updated in **real-time as experiments are performed.**
- All experiments must be dated, and recorded according to general notebook guidelines. Example: Date, Title, References, Reaction Scheme, Reagent table (g, mmol/mol, equivalents, formula weight, density, source), Method, Results (draw tlc, column conditions, yield), and Conclusion.
- Please attach or have a separate file for spectroscopic characterization data. Make sure to label all spectra, and cross reference with your notebook pages.
- All samples should be labeled as Your Initials – Notebook Number – Notebook Page number.

**Research Report:****(a) Introduction (Draft) – Project Overview**

The introduction for your project, mainly your project overview (~about 2 pages), is due within the first 2-3 weeks. Please email your introduction along with the list of references in a timely fashion. We will give our feed back on your draft.

**(b) Experimental Write up**

As soon as you make any target compounds or intermediates, please write up the experimental according to the *JACS* (Journal of the American Chemical Society) style-guide, and email it to us. Please feel free to ask for help in writing experimental procedures, and analyzing spectral data.

**(c) Draft & Final Research Report**

Students will prepare a report to summarize and document their progress for future researchers. All experiments will need to be written up, all compounds characterized, and a summary of progress provided.

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Research Report Draft 2: Due by 5.00 pm, Monday Aug 03, 2015

Final Research Report: Due by 5.00 pm, Thursday, August 06, 2015

**Course Gradings:**

The course is letter graded, based on the following evaluation:

Research Report Drafts 1 & 2	25%
Final Research Report	25%
Weekly presentations	20%
Notebooks	20%
Safety	10%

**Useful Text Books\*:**

*The Organic Chem Lab Survival Manual*, by Zubrick, Wiley 2009.

*The Synthetic Organic Chemists Companion*, by Pirrung, Wiley 2007.

*Organic Structure Analysis*, by Crews, by Rodriguez and Jaspars, Oxford 2010.

\* These books can be consulted at the CCB or Cabot Science Libraries.

**Safety guidelines**

- All students must wear goggles/safety glasses and lab coats all of the time. There are no exceptions!
- No open-toed shoes; if not, wear rubber shoe covers.
- Shorts or skirts are not permitted in the lab.
- No food or drink in the lab.
- Minimize exposure to solvents or vapor.
- Please keep your head out of hood.
- All reactions must be carried out in your hood.
- Place leftover solids, filter paper etc in the solid waste buckets.
- Please follow course safety policies at all times.
- Wash your hands well before you leave the lab.

**Cleanliness / End of the Day Check List**

- Maintain a clean and safe environment while working
- Clean up at the end of each lab session and return equipment and glassware to the correct locations.
- Please make sure the drying racks are empty at the end of the lab. Turn off rotovaps and oil pumps, and the nitrogen and water supplies as necessary.