Chemistry 29b

Organic Chemistry Laboratory
Brandeis University

Syllabus, Spring 2014

Chemistry 29b Faculty and Staff:

Instructor: Dr. Christine M. DiBlasi (email: cdiblasi@brandeis.edu)
Office: SSC 00-08B, (phone: 736-2520)

Lab Supervisor: Mr. Gary Koltov (email: gkoltov@brandeis.edu)
SSC 00-18 (Prep Room), (phone: 736-2575)
(See for questions regarding instruments, glassware, etc.)

Office Hours:

- Dr. DiBlasi’s office hours will be held on Mondays 9–11am and Wednesdays 2–4pm in SSC 00-08B. If you need to talk about a grading issue, we can grab a private moment during these office hours, or make an appointment.
- Your Lab TA will hold office hours determined during your first lab section.

Course Learning Goals and Objectives:

- To recognize how basic concepts connect diverse chemical reactions
- To understand topics conceptually, minimizing the need for memorization
- To develop confidence in understanding through group work and peer review
- To gain experience in laboratory techniques and record-keeping used routinely in scientific research
- To read, follow, and adapt literature procedures for a synthetic goal
- To complete reaction sequence to a target molecule with research applications
- To gather and analyze data to critically interpret results of experiments
- To develop scientific writing skills through lab reports

Course Description:

This course will provide continuing experience in the synthesis, purification, and characterization of diverse organic compounds.

Prerequisite: A satisfactory grade (C- or better) in CHEM 29a or the equivalent.
Corequisite: CHEM 25b. Dropping CHEM 25b necessitates written permission from the lab instructor to continue lab. Two semester hour credits.

Class Times:

Friday Lectures, 11:00 – 12:20pm in Gerstenzang 123.
Lab Sections 1:00 – 5:20pm in SSC 00-08 (M, Section 1; W, Section 3; R, Section 4; F, Section 5)
If you are more than 5 minutes late to lab, both your report and prelab will be considered late. Medically excused absences communicated prior to the absence will be granted a make-up lab. If you attend lab, your report is due according to the schedule in the syllabus, regardless of excused absences.
Required Materials:
- Carbon Copy Laboratory Notebook
- Safety Goggles are provided for lab

Website Resources:
- LATTE Course Website: http://latte.brandeis.edu
- Physical data, structures, spectra, material safety data sheets (MSDS), etc. http://www.sigmaaldrich.com
- SciFinder Scholar Database (http://www.scifinder-cas-org.resources.library.brandeis.edu). For information about access and registration, see: http://brandeis.libguides.com/content.php?pid=16587&sid=213777
- Links to journals: http://ejournals.brandeis.edu/

Course Handouts:
All handouts are available on LATTE.

Credit and Grading:
Grades will be distributed as follows:

- Weekly Laboratory Reports 30%
- Metalloprotease Project Final Reports (includes two longer reports and presentation) 20%
- 2 Examinations 40%
- Participation (attitude, motivation, lab cleanliness, punctuality, interest, improvement, etc.) 10%

Course grades are determined based on the class average (typically set in the B range) and student distributions around the average.

Examinations:
- Exam 1 (Feb 28) will cover Metalloprotease Part I and NMR.
- Exam 2 (April 11) will cover Metalloprotease Part II and NMR.

There are no makeups for exams. If you arrive late, you must complete the exam within the time allotted. Documented medical excuses must be communicated prior to the exam, and will be handled individually.

Weekly Laboratory Reports:
Each Experiment will require a Preliminary Laboratory Report and a Weekly Laboratory Report. Please see the Report Information handout for information to always include in sections of each lab report.

Download the appropriate Lab Report file from the LATTE website, and do not modify any formatting. ChemDraw software is available to draw structures if desired (see previous link). Note each section of the Prelab/Report is limited to 1 page. Information
presented on the wrong page or exceeding the 1-page section limit will not receive any credit.

**Preliminary Laboratory Reports (Prelabs)**

- Preparation for lab is imperative to safely and efficiently complete experiments. This requires reading the assigned section of the textbook and any handouts and also completing the Prelab.
- See the Report Information handout for Prelab requirements.
- Your TA will check your Prelab at the beginning of lab before you begin the experiment. **You will lose 5 points from the Final Lab Report grade if your Prelab is not complete, and you will not be allowed to begin the lab until it is completed.**

**During Lab**

- A carbon copy notebook is required for lab to record your procedure, observations, and data collected. The carbon copy pages must be turned in with the final laboratory report.

**Weekly Laboratory Reports**

- See the Report Information handout for Report requirements. **Your Prelab and carbon copy notebook pages are part of your Weekly Report.** Revise Prelab information as needed, but only hand in one version for final grading. Printed data such as NMR spectra or GC traces are **always** required.
- Reports (including Prelab) are due by the beginning of the lab period following experiment completion. **Late reports lose 5 points per day (24 hour period).**
- Graded Weekly Reports will be returned by your TA at lab following the session when the report was due. Lab reports are graded out of 50 points, and rounded up to the next multiple of 5 (for example, 35-39 points rounded up to 40).

  - Prelab: 15
  - Notebook Pages: procedure, observations, etc.: 25
  - Results (including wt, yield, mp, etc.) discussion and conclusions: 10

  **There are no prelab or report questions for these weekly reports.**

**Research Project:**

*Metalloprotease Inhibitor Research Project* – small molecule inhibitor synthesis

- Weekly Lab Reports (see information above).
- Final Report Part I (due at Exam 1)
- Final Report Part II (due at Exam 2)

Literature Presentations will be given in Lab Week 10.

**Regrades:**

Any regrades must be submitted in writing to the instructor within 1 week after the graded document is returned. **Note: the entire document will be regraded.** TAs cannot adjust grades after documents are returned to students. Discuss any questions with your TA first, then with the instructor as needed.
Laboratory Safety and Clean-Up:
At Check-In, you will be asked to read and sign a Laboratory Safety Handout. A large portion of your participation grade will be based on how well you clean up after yourself in lab.

Student Disabilities:
*If you are a student who needs academic accommodations because of a documented disability, please contact me and present your letter of accommodation as soon as possible.*

If you have questions about documenting a disability or requesting academic accommodations, you should contact Beth Rodgers-Kay in Academic Services (x6-3470 or brodgers@brandeis.edu.) Letters of accommodation should be presented at the start of the semester to ensure provision of accommodations. Accommodations cannot be granted retroactively.

Academic Integrity:
Each student in this course is expected to abide by the Handbook on Rights and Responsibilities provided by the Department of Student Rights and Community Standards (http://www.brandeis.edu/studentaffairs/srscs/rr/index.html), with particular emphasis on section 4 (Maintenance of Academic Integrity). Any work submitted by a student for academic credit will be the student’s own work. If you are unsure to what extent collaboration is permitted, please speak with me directly. I would encourage you to work on your lab reports separately to avoid the temptation of unacceptable levels of collaboration. Do not email files to your classmates. A first offense may result in zero assignment credit for all involved and will be reported to the Brandeis Student Rights and Community Standards Office.
## Course Schedule:

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<tr>
<th>Week</th>
<th>Mon</th>
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<td>Check In Week 1</td>
<td>Lecture 2</td>
<td>Check In Week 1</td>
<td>Reaction 1 Prelab Due (Making an Unnatural Phenylalanine Derivative)</td>
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<td>30</td>
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<td>Week 2</td>
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|      | Last day to Check In Week 1 | Week 2 | Week 2 | Lecture 3 | Week 2 | Reaction 2a Prelab Due (Boc Aminson Protection)  
|      | 30  | 31   | 32  | 33    | 34  | Week 3              |
| Feb  | 3   | 4    | 5   | 6     | 7   | Lecture 4           |
|      | Week 2 | Week 3 | Week 3 | Lecture 4 | Week 3 | Reaction 2b (Boc Protection) continued  
|      | 10  | 11   | 12  | 13    | 14  | Week 4              |
|      | Week 3 | Week 4 | Week 4 | Lecture 5 | Week 4 | Reaction 3 continued (Making an Unnatural Tyrosine Derivative) |
|      | 17  | 18   | 19  | 20    | 21  | Midterm Recess      |
|      | 24  | 25   | 26  | 27    | 28  | Week 5              |
|      | Week 4 | Week 5 | Week 5 | Exam 1 | Week 5 | Reaction 4 Prelab Due (Amine Coupling to a Protected Amino Acid) |
| Mar  | 3   | 4    | 5   | 6     | 7   | Week 6              |
|      | Week 5 | Week 6 | Week 6 | Lecture 6 | Week 6 | Reaction 4 continued (Amine Coupling to a Protected Amino Acid) |
|      | 10  | 11   | 12  | 13    | 14  | Week 7              |
|      | Week 6 | Week 7 | Week 7 | Lecture 7 | Week 7 | Reaction 5 Prelab Due (Deprotection of the Amino Group)  
|      | 17  | 18   | 19  | 20    | 21  | Week 8              |
|      | Week 7 | Week 8 | Week 8 | Lecture 8 | Week 8 | Reaction 7 Prelab Due (Acid Coupling to Amino Acid Derivative) |
|      | 24  | 25   | 26  | 27    | 28  | Week 9              |
|      | Week 8 | Week 9 | Week 9 | Lecture 9 | Week 9 | Reaction 8 Prelab Due (Hydroxamic Acid Synthesis) |
|      | 31  | 1    | 2   | 3     | 4   | Week 10             |
|      | Drop Deadline Week 9 | Week 10 | Week 10 | Lecture 10 | Week 10 | Presentations |
| Apr  | 7   | 8    | 9   | 10    | 11  | Exam 2              |