Organic Chemistry Lab II
CHEMS223, Summer 2023

Syllabus

WELCOME
This class welcomes participation from any student who has satisfied the appropriate prerequisites, described below. Students journey to this course along many different pathways with a range of abilities, skills, knowledge, experiences, and expectations. We invite students to ask questions. Asking questions helps to clear the path of stumbling blocks for you and for others. Your input contributes to a healthy teaching and learning environment. Diverse intellectual engagement helps your teachers to thoughtfully construct educational materials, instructions, delivery style, and thereby grow professionally. Contact me, jonathan.parr@yale.edu, to discuss strategies for your best performance.

INSTRUCTOR
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STAFF
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Lisa Vitale, elisa.vitale@yale.edu, Laboratory Assistant, Undergraduate Organic Lab

COURSE DESCRIPTION
In Organic Chemistry Lab II, CHEMS223L, students engage with concepts, trainings, and skills required for safe and effective laboratory work. This is accomplished by focusing efforts on eight teaching and learning areas: safety, scientific reporting, chemical information literacy, spectroscopic analysis, non-spectroscopic analysis, standard bench techniques for separation and purification, and synthesis of organic compounds, drawing connections between laboratory procedures and reaction mechanisms. Evaluation of student work is an ongoing process, with the aim of continual improvement and ultimate proficiency in all skill areas. Evaluative tools include prelab and post-lab assignments, lab notetaking, reports, and quizzes.

PREREQUISITES
The Department of Chemistry enforces prerequisites for chemistry laboratory courses rigorously. Students must have received a grade for General Chemistry CHEM 134L and 136L, or their equivalents, and CHEM 222L, in order to be eligible to enrol. Organic Chemistry Lecture II (CHEM 221, S221 or 174 or their equivalents) is a pre-requisite or co-requisite. When in doubt, contact the instructor (jonathan.parr@yale.edu).
COVID STATEMENT
The organic chemistry lab operates in such a manner to ensure that students, teaching assistants, instructors, and support staff are safe in the time of Covid-19. This includes daily decontamination, appropriate PPE, social distancing in the lab.

CANVAS
Canvas is the learning management platform used to facilitate communication of all course content. The important features of our course Canvas site that enable us to work together effectively include:

- **Syllabus:** The syllabus serves as a roadmap for the course, describing required materials and outlining the schedule/due dates for content, assignments, and quizzing. It also describes policies about enrollment, grading, penalties, attendance, academic integrity and citing sources.
- **Announcements:** Important course information is posted here for the group and delivered to your yale email account.
- **Modules:** Modules, organized by lab week, comprise all curricular course content.
- **Assignments:** This Canvas tool allows students to submit course work for grading.
- **Grades:** Students are able to access feedback on their submitted assignments using this tool.

Expect the Canvas site to be a living document, evolving as our course takes shape.

REQUIRED MATERIALS:

2. Technology that allows access to Canvas, Zoom, Word, Excel. The ability to convert student work to pdf files and the ability to use Google Chrome or Mozilla for taking Canvas quizzes.
3. Personal face coverings, to be worn in all public spaces.

LABORATORY LOCATION, DAY, AND TIMES

- Organic Chemistry Labs take place in Room 233 Sterling Chemistry Lab (SCL 225 Prospect Street, 3rd floor).
- The lab course runs on both Tuesday and Thursday afternoons, from 12:30-4:30pm.
- Students attend both lab sessions for each of the 5 weeks of the summer session. Students need to be available for the entire laboratory period with no overlap with other courses, job, volunteer, or research commitments.

ASSIGNMENTS
There are several types of assignments in this course. Each assignment will be explained in detail in advance of its due date. A tentative schedule of activities and the due dates of related assignments appears at the end of this syllabus.

Assignment types for ChemS223L include: experimental plans (EP); lab notes (LN), post lab assignments (PL), quizzes, and Worksheets (IR, $^1$H NMR)
**GRADING**

Letter grades are assigned at the end of term by the instructor. Students who attend all scheduled sessions, submit all work on time, make a good faith effort in all areas of work, typically earn A and B grades. No student who completes everything on time earns lower than B-. 

Grades are calculated as $[\text{total points earned} – \text{penalties}] / \text{total points available}$. Scaling is applied as required. Several types of assignments contribute to letter grades. Broadly, the assignments include the following:

- Proper preparation, full participation, submission of related documentation (~64%)
- Quizzing (~36%)

**Penalties include**

a) Submitting graded assignments after the due date/time. The penalty is 5% per day beginning at the due date/time. Work is always due on your regularly scheduled lab day, even if you are sick. If you have an exceptional situation, please make contact with Parr.

b) Unexcused absence from scheduled zoom sessions. -20 points per session.

c) Complete/incomplete assignments are not accepted late and will be penalized their full point value if not submitted.

**Questions about graded assignments**

Please ask for an explanation from your grader if you do not understand comments/deductions. Everything we do is for your education, including deductions. We want you to learn through the explanations of why points are taken away.

**Attendance, Reschedules, Tardiness**

Due dates apply for all students, even when a student is not present for their regular lab session.

**Academic Integrity**

It is the goal of the Chemistry Department Teaching Staff to assist you in your personal and professional growth. Assignments and assessments are designed with this goal in mind. Breaches in academic integrity undermine our goals. Knowing the rules of academic integrity and applying those rules to your conduct, bench work and written submissions is integral to your advancement as a scientist.

Link to our full policy here: academic integrity policy

**Schedule of Activities**

- The schedule is provisional, updated to reflect changes in activities, due dates, point values, and any other dynamic course content.
- Links to materials will be available through Canvas/Modules/Week of Session
WEEK 1
Week 1 Lab 1: Tour of Facility
- Student Information Sheet
- Community Pledge
- Academic Integrity Policy
- Lab Safety

Week 1 Lab 2: NMR and Writing Science
Due in lab: NMR Worksheet
Quiz 1 (20 points)

WEEK 2
Week 2 Lab 3: Cycloaddition
EP 3 including chemical table (10 points, C/I) (due before lab)

Week 2 Lab 4: Electrophilic Aromatic Substitution
EP 4 including chemical table (10 points) (due before lab)
QUIZ 2: Labs 3 and 4 (20 points)
PL 3 and LN 3 (20 points, graded)

WEEK 3
Week 3 Lab 5: Carbonyl Chemistry - Benzoin, Benzil I
EP 5 including chemical table (10 points) (due before lab)
PL 4 and LN 4 (20 points)

Week 3 Lab 5 Carbonyl Chemistry - Benzoin, Benzil II
QUIZ 3: Labs 5 (20 points)

WEEK 4
Week 4 Lab 6: Esterification, Two Ways
EP 6 including chemical table (10 points) (due before lab)
PL 5 and LN 5 (20 points, graded)
WEEK 4 (cont.)

Week 4 Lab 7: Aldol Condensation

- EP 7 including chemical table (10 points) (due before lab)
- QUIZ 4: Labs 6 and 7 (20 points)
- PL 6 and LN 6 (20 points, graded)

WEEK 5

Week 5 Lab 8: Acetaminophen

- EP 8 including chemical table (10 points) (due before lab)
- PL 7 and LN 7 (20 points, graded)

Week 5 Checkout

- QUIZ 5: Lab 8 (10 points)
- PL 8 and LN 8 (20 points, graded)