# Syllabus Chem 260 Synthetic Chemistry Laboratory (Summer 2024)

## Course Structure

Chemistry 260 is a lab course that runs for one term and is worth 1.5 credits. Students attend the laboratory two days per week; one four-hour period and one two-hour period. The four-hour periods are dedicated to synthesis and the two-hour periods are primarily analysis. This 12-week course incorporates topics from organic chemistry, inorganic chemistry and spectroscopy.

## Prerequisites

Completion of Introduction to Organic Chemistry (231) and Chemistry 101 & 102 are mandatory prerequisites for this course. Students must ensure that they have the proper prerequisites; they may be de-registered without warning at any time if found not to have the required courses.

## Manuals and Equipment

Access to a current laboratory manual is required. There are no assigned textbooks for the course, but your second-year organic text will always be valuable.
Lab manuals are available at the bookstore and electronically through the course website. Printed copies of the lab manuals will also be available in the laboratory in case you forgot yours at home; these must stay in the lab.
A notebook with fixed pages is mandatory, though it need not be exclusive to this course.
Safety Glasses and Lab Coats must be worn for all lab work; these are available from the UVic bookstore. Prescription glasses are not adequate as safety glasses. If you wear prescription glasses, you will need the type of safety eyewear that fits over your prescription glasses.

## Web Site

Information about the lab, marks, reference links, due dates, report templates, schedules, contact information, etc. are found on the website at https://web.uvic.ca/~berryde/chem260/index.html
Only a small fraction of this is duplicated on Brightspace. Make sure you can access the protected portions of the website with your netlink ID and password - contact Dave Berry (berryde@uvic.ca) if you are having trouble.

## Course Goals

*To learn new techniques as applied to problems in the synthetic chemistry laboratory.* Many of the techniques will be new and build on the basic lab skills acquired in first year. These include reflux, distillation, recrystallization, inert atmosphere reactions, chromatography, rotary evaporation, and how to work safely in a fumehood. These techniques build a foundation for the upper-level laboratory synthesis courses, Chem 362 & 363.

*To understand the relationship between a compound's structure, physical properties, and the spectra observed for the compound.* The physical properties of a compound can indicate if the correct product was isolated or not, as well as comment on the purity. Spectroscopic analysis (primarily IR & NMR) is paramount in determining the structure of small molecules. A variety of classes of organic and inorganic compounds are synthesized in the laboratory, and their structures can be understood in terms of their spectra. Additional techniques of analysis will include magnetic susceptibility, polarimetry, UV-Vis spectroscopy, gas chromatography, and mass spectrometry.

*To gain self-confidence in a laboratory setting.* Students are responsible for planning their time in the laboratory in order to complete the work on schedule. Preparation is key.

**Laboratory Times**
Chemistry 260 begins on ***Wednesday May 8th*** for Summer 2024 and ends Thursday July 25th. All students are expected to attend their introductory period. You are restricted to your own section unless alternative arrangements (for medical or compassionate reasons) are made in advance with Kelli Fawkes (fawkesk@uvic.ca). Late arrivals to the lab may not be permitted to perform the experiment and will receive a score of zero.

**Due Dates**
Most four-hour lab periods have an associated report due one week later. This report may incorporate experimental results from the associated two-hour session that follows later in the week. Please submit your completed report at the start of your next 4 h lab session unless a different deadline has been announced in advance. No reports will be accepted for any reason after the last day of labs, Thursday July 25th.

Some two-hour sessions are self-contained with workbooks completed during the period. There are several in-lab assignments which are due before the end of the period and/or pre-lab assignments that must be submitted before you begin. The in-lab work is generally completed in a peer-learning environment with discussion encouraged and TA support readily available.

Reports that are late up to one week past the deadline will be given a 25% penalty of the maximum mark. After that, a mark of zero will be recorded. Late reports will not be accepted after the last day of labs in the term.

**Evaluation**
The primary method of evaluation is the laboratory report. The report shows the understanding of the material, and the ability to communicate this understanding. Pre-lab assignments, in-lab assignments, and problem booklets will also contribute to the total. The total marks for each component will be posted during the term; no single component is worth more than 10%. The total marks per term is about 650-750 depending on the number of weeks in the term.

Assignments, results and reports (approx 90% of total mark).
Instructors assessments of professional skills (approx 10% of total lab mark).
There are no midterms, lab exam or final exam.

Marking guides are posted on the website. Criteria used by the lab instructors in making their evaluation of the professional skills are posted on the website. Lab reports and tutorial booklets are typically marked and returned to the students in one week. Requests for review of an assigned mark must be sent to the Course Coordinator within two weeks of the marked work being returned or by the last day of labs in the term, whichever is first. The grade determined by means of a review will be recorded as the final grade for the lab report or tutorial, regardless of whether it is the same as, higher than, or lower than the original grade.

A passing grade of 50% must be obtained in the course and a minimum of 70% of the assigned work must be completed and graded to earn 1.5 credits. Lab work may not be deferred.

Marks will be calculated as a percentage to 2 decimal points. Once all the marks are available for the class, they will be evaluated, and the marks will be rounded to a whole number.

**Important Dates**
Please refer to the University Calendar for add/drop/tuition deadlines and holidays.
https://www.uvic.ca/calendar/dates/index.php

**Policy on Academic Integrity**
Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. It is expected that students, faculty members and staff at the University of Victoria, as members of an intellectual community, will adhere to these ethical values in all activities related to learning, teaching, research and service. Any action that contravenes this standard, including misrepresentation, falsification or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community. This policy is designed to ensure that the university's standards are upheld in a fair and transparent fashion. Details are in the academic calendar. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties.

Details on the Tri-Faculties Standards for Professional Behaviour are given in the Student Code of Conduct at:
https://www.uvic.ca/services/advising/advice-support/academic-units/student-code-of-conduct/index.php

**Instructors**
There is a large team of Senior Lab Instructors (SLI) responsible for the content of the experiments and lab instructors (TAs) who teach the individual sections. Content is roughly divided into organic (odd-numbered experiments), inorganic (even-numbered experiments), and spectroscopy which is applied in almost every experimental analysis.

Dave Berry, berryde@uvic.ca office Ell 334c, 250-721-7170, Inorganic SLI
Kelli Fawkes, fawkesk@uvic.ca office Ell 334e, 250-472-5212 Spectroscopy SLI & Course Coordinator (*Primary Instructor on your registration**)
Michelle Mills, mbmills@uvic.ca office Ell 334a, 250-721-7172, Organic SLI
Desirée Mitchell, ddillman@uvic.ca office Ell 334b, 250-472-5142, Scientific Assistant
**Please contact the Primary Instructor for all absences and academic accommodation requests.*

**Territory Acknowledgment**
This course takes place in several laboratories on the third floor of the Elliott building at the University of Victoria. We acknowledge with respect the Lkwungen peoples on whose traditional territory the campus stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

**Equity and Human Rights**
The University promotes a safe, respectful and supportive learning, working, and living environment. University policies prohibit discrimination, harassment, and sexualized violence. We understand that such behaviours can undermine student success. The Equity and Human Rights office (EQHR) is a resource for all UVic community members, including students. EQHR provides education, information, assistance and advice in aid of building and supporting an inclusive and respectful campus. When issues and concerns arise, EQHR assists those involved through the range of support and resolution options available under the Sexualized Violence Prevention and Response policy and Discrimination and Harassment policy. EQHR staff are available by appointment—contact information and resources can be found at www.uvic.ca/equity.

The Department of Chemistry expects everyone participating in university activities in the department to model respectful behaviour and abide by applicable university policies.