

**CHM 416S/1104S – Separation Science
Winter/Spring 2018**

Course Staff:

Instructor: Prof. Aaron Wheeler
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Office Hours: Tue. 4:00-5:00 PM, Thu. 4:00-5:00 PM or by appointment
(in LM629 unless otherwise posted)

Lecture Schedule and Format:

Lectures are held on Tuesdays and Thursdays from 3:00-4:00 PM in LM157, beginning on Jan 4th and ending on April 3rd. The instructor will give the first set of lectures (which will form the basis for the first term test), graduate students in CHM1104 will give the second set of lectures (which will form the basis for the second term test), and undergraduate students in CHM416 will give presentations (working with a grad. student mentor) that make up the third set of lectures (which will form the basis for the final exam).

Topics:

1. Theory of Separation Science
2. Gas Chromatography
3. Liquid Chromatography
4. Supercritical Chromatography
5. Capillary Electrophoresis
6. Sample Extraction
7. Enantiomeric Separations
8. Preparative Separations
9. Separations of Biomolecules
10. Other Topics

Texts:

- *Principles of Instrumental Analysis*, Skoog, Holler and Crouch, 6th Edition (Thomson & Brooks/Cole) or 7th Edition (CENGAGE Learning)
- *Introduction to Modern Liquid Chromatography*, Snyder, Kirkland, Dolan, 3rd Edition (Wiley) – available electronically at the library
- *High Performance Capillary Electrophoresis*, Lauer and Rozing, 2nd Edition (Agilent) – available electronically at http://www.agilent.com/cs/library/primers/Public/5990_3777EN.pdf

Marking Scheme:

Your final mark in this course will come from equally weighted graded assignments, including two tests, a presentation, and a final exam (for undergrads in CHM416), or a test, a lecture, and a presentation (for graduate students in CHM1104). The two tests will be held outside of regular lecture time (*February 1 6:00-8:00 PM & March 8 6:00-8:00 PM, both in Bahen Centre Room 3116*), and the final exam will be held after the end of lectures (location and time TBD). You are advised to mark these dates and times in your calendar and make every effort to attend them, as *alternate dates (and makeup tests) will not be offered*. If an emergency or other unavoidable circumstance causes you to miss an assignment, appropriate arrangements should be made with the instructor.

CHM416 (undergrads)	CHM1104 (grad students)
Test 1 (25%)	Test 1 (33.3%)
Test 2 (25%)	Lecture (33.3%)
Presentation (25%)	Presentation (33.3%)
Final Exam (25%)	

Course website:

<https://portal.utoronto.ca/>

- Lecture notes
- Course schedule
- Announcements
- Assignments
- Problem Sets

Lecture Assignment:

Graduate students in CHM1104 will give one 40-45 min lecture to the class on a topic assigned by the instructor. Detailed information about expectations, format, and scheduling will be provided separately.

Presentation Assignment:

Undergraduates in CHM416 will give one 15 min presentation to the class. Each undergraduate (or team of undergraduates) will be assigned a graduate-student mentor, who will identify the topic of the presentation (a paper in the primary literature). Detailed information about expectations, format, and scheduling will be provided separately.

Problem Sets:

There will be three problem sets assigned, each corresponding to a test or final exam. The problem sets will not be collected or marked, but working them is the best method to prepare for the tests and exam.

Plagiarism:

Plagiarism is a serious offense. Assignments found to be plagiarised will be given a zero. More information about what constitutes plagiarism and how to avoid it can be found at: <http://www.chem.utoronto.ca/undergrad/plagiarism.php>.

E-mail Policy:

E-mail is the worst way to contact the course instructor; *there is no guarantee that e-mails will be answered*. Communication is far better in person before or after lectures, in office hours, or by special appointment. If you must send the instructor an email, include your full name, course, and student number. E-mails must be sent from utoronto accounts. Do *not* forward your utoronto account to a Hotmail or gmail account since Hotmail and gmail periodically block or delay e-mail from utoronto accounts. E-mails should follow the guidelines: <https://www.studentlife.utoronto.ca/hello/your-profs#node-2448>.

Absences:

Students are advised to attend and participate in all course lectures, but attendance will not be marked or collected. Participation in all graded assignments [the term tests, your lecture (for graduate students), your presentation, the final exam (for undergrads)] is mandatory; absences are only excusable because of illness or other medical emergency. In such a case, you must submit a "Verification of student illness" form completed by the medical professional with whom you consulted (<http://www.illnessverification.utoronto.ca/>). If you need to submit this form for more than one course, contact your college registrar's office for assistance.