

## CHEM 397/398/399

### SYLLABUS

**COURSE INSTRUCTOR:** Prof. Igor Kozin

Room: Chernoff Hall 124

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**OFFICE HOURS:** Chernoff Hall room 124, Fridays at 1:30-2:30 pm., also by appointment

**SUBJECT:** Experimental Chemistry

**PREREQUISITES AND COREQUISITES:**

For Chem397, the prerequisite is at least 2.0 credits at the 200 level in CHEM and a pre- or co-requisite is at least 0.5 credits at the 300 level in CHEM. For Chem398 and Chem399, the prerequisite is at least 1.0 credit at the 200 level in CHEM and a pre- or co-requisite is at least 0.5 credits at the 300 level in CHEM. You do not have to have taken Chem398 in order to take Chem399. Most students who take Chem399 will not have taken Chem398.

**REQUIRED MATERIALS:**

- a pair of approved goggles, lab coats
- Chem397/398/399 lab manual
- “Basic Laboratory Chemistry” CD
- “Organic Laboratory Techniques” by Fessenden, Fessenden and Feist  
(Note: you must have already purchased this book in 2<sup>nd</sup> year)
- “Student Lab Notebook” published by Hayden McNeil (a lab notebook with carbonless copies)

**COURSE WEBSITE (for Chem397, Chem398 and Chem399):**

<http://www.chem.queensu.ca/Courses/09/chem397/>

**LABORATORY:** Held in Chernoff Hall, room 120 – 122.

**LAB TECHNOLOGIST:** Mr. Lyndsay Hull (email: [lyndsay.hull@chem.queensu.ca](mailto:lyndsay.hull@chem.queensu.ca); phone: (613) 533-6000 x74661)

**TUTORIAL:** Tuesday, 12:30 to 1:30 PM, room CHE-117. The first two tutorials will be held at the Science Library (Douglas Building, e-classroom), and at the NMR facility (Chernoff Hall, ground floor near the Chemistry Stores) in two alternate groups (to be assigned during the Week 1 introductory lab sessions). Attendance of all tutorials is mandatory. Unannounced quizzes may be given. If you have missed a tutorial (or a laboratory) session, bring a doctor’s note to course instructor during your next laboratory session. Note: *Chem397 students in their second term are not required to attend the winter tutorial sessions.*

**MARKS:** Your final mark will be based on your laboratory, quizzes and final exam marks (70%, 10% and 20% weight respectively). The laboratory mark will be an average of your marks for the experiments, each of which will be evaluated based upon your lab reports and performance in the lab (as evaluated by your TAs). The

The lab TA’s are authorized to deduct points from your laboratory mark for safety violations or for hiding or failing to report an accident or spill. The TA’s will deduct points (5% of the current experiment) if they notice that you are not wearing goggles when you should be wearing them. However, students will NOT be penalized for reporting accidents or spills, even if they caused the problem.

**REPORTS** are required for all experiments that you have been assigned to carry out during the term. Each lab will require completing a pre-lab section (to be done individually) and an experiment report (full formal report) that can be submitted either by a lab team (pair) or individually if you prefer to do so.

Reports are due at the **beginning** of the lab period one week after the lab period in which you completed the experiment. Hand in the report to the TA under whose supervision you performed the experiment. **10%** of the possible total report mark will be deducted for each working day late, with the report mark becoming **zero** after 2 weeks or by **5:30 pm on December 4<sup>th</sup> (April 9<sup>th</sup> in the winter term)**, whichever comes first. Even if a report will receive a grade of zero, you **must** hand in an acceptable report. The reports must be in the TA's or instructor's possession to be considered. **Students who have not handed in all reports by 5:30 PM on the 4<sup>th</sup> of December (9<sup>th</sup> of April, winter term) will receive a failing grade for the course. DO NOT MISS THIS DEADLINE.**

**EXAMINATION:** The final examination will take place during the last lab session of the course. The content and format of that exam will be described in detail in the first week of the course.

**EXPERIMENTS:** Students will do the experimental work in pairs. The first session will consist of signing in, assigning lab pairs, safety matters, and an introductory lecture. In subsequent sessions, the pairs of students will rotate through the experiments according to the schedule in the lab manual.

There are 18 lab experiments (see below). Students in CHEM 397 must complete all 18 labs, while those in CHEM398 and CHEM399 must complete those to which they were assigned at the beginning of the course (generally, 9 labs in total). If you have already done one of the labs in a previous course, talk to the course instructor.

### CHEM 397/398/399 EXPERIMENTS

<b>A</b>	A Molecular Sieve Zeolite	<b>J</b>	Preparation of a Thiazolium Salt
<b>B</b>	Copper(II) Complexes	<b>K</b>	Synthesis of a Solvatochromic Dye
<b>C</b>	Supramolecular Chemistry with Cyclodextrins	<b>L</b>	Diels Alder Mechanisms
<b>D</b>	Organometallic Chemistry with Phosphine Ligands	<b>M</b>	Synthesis and Analysis of Analgesics
<b>E</b>	Homogeneous Catalytic Hydrogenation	<b>N</b>	HPLC Analysis of Hot Pepper Sauces
<b>F</b>	Copper Tetraphenylporphyrinate	<b>O</b>	Analysis of Water Contaminated by Diesel Fuel
<b>G</b>	Asymmetric Robinson Ring Annulation	<b>P</b>	Particle-in-a-Box
<b>H</b>	A Grignard Reaction	<b>Q</b>	Surface-Modified Gold
<b>I</b>	Synthesis of Peptides	<b>R</b>	Rotameric Stability

For your information, the Queen's Senate document on Academic Integrity states that 'Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see [www.academicintegrity.org](http://www.academicintegrity.org)). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate [Report on Principles and Priorities](#)). Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar ([Academic Regulation 1](#)), and on the Arts and Science website at:

[http://www.queensu.ca/calendars/artsci/Regulation\\_1\\_Academic\\_Integrity.html](http://www.queensu.ca/calendars/artsci/Regulation_1_Academic_Integrity.html)

Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university'.