Physical & Environmental Sciences
UNIVERSITY OF TORONTO
SCARBOROUGH

DIRECTED RESEARCH IN CHEMISTRY

CHMD90/91

RESEARCH PROJECTS BOOKLET

2020 Fall – 2021 Winter

CHMD90Y3 & CHMD91H3
DIRECTED RESEARCH IN CHEMISTRY

***Course Coordinator*: Prof. Xiao-an Zhang** (xiaoan.zhang@utoronto.ca)

Admittance requirements:

- A Cumulative Grade Point Average of at least **2.3**. Students who do not meet this requirement are encouraged to enroll in CHMD92H3 instead.
- Completion of at least 15 full credits
- Completion of at least 1.0 full credits of C-level CHM courses containing a lab component (i.e. CHMC16H3, CHMC31Y3, CHMC41H3 or CHMC42H3, CHMC47H3, BIOC23H3)

Plan of action for students planning to register in CHMD90Y3 or CHMD91H3

1. Look through the projects listed below.
2. **Find a research supervisor** who will take you to do a project of your choice (to expedite the process send to your prospective supervisor your unofficial transcript, your CV along with the letter of intent).

Considering the restricted lab access due to Covid-19, please communicate with potential supervisor regarding the timeline. Some projects without "wet-lab" component may not be impacted by the restriction, but other project may have to be extended to the following semester, depending on when the lab can be fully accessible.

3. Request the course on ACORN and contact the course Coordinator (listed in the timetable as the instructor) to inform of your intent to take the course. Your status will be INT. You will not be officially enrolled until you complete the remaining steps (below)
4. Obtain the D90/91 Supervised Study form, which is available online at https://www.utsc.utoronto.ca/registrar/supervised-study-form or at the Office of the Registrar (Highland Hall, Main Floor).
5. Meet with your Supervisor and obtain their signature on a 'Supervised Study form'. Make sure the course code, supervisor name, title of the project are **clearly** printed on the form as this information will appear on your transcript. Your supervisor will also complete information regarding the grading structure of the project.
6. Collect the two required signatures under the Physical and Environmental Sciences section. The Department Chair or the Associate Chair Undergraduate can sign under the 'Chair' section; the course coordinator, Prof. Xiao-an Zhang (xiaoan.zhang@utoronto.ca) or Chemistry Discipline Representative Dr. Effie Sauer (effie.sauer@utoronto.ca) can sign under the 'Secretary' section.
7. Once the above steps are complete, please submit the form to the Assistant to the Chair (Room EV241). The completed forms will be collected and forwarded to the Registrar's Office to process enrolment. Once finalized, your course status on ACORN from interim (INT) to approved (APP). Students are advised to complete this process early so that the required forms can be submitted and processed by the last day to add courses for the session.

Note, it will be impossible to enroll without finding the research supervisor, thus this search is crucial. You could diversify your search by initiate conversations with more than one faculty members offering projects.

Course description:

These courses involve participation in an original research project under the direction of a faculty supervisor. Approximately 260 hours of work are expected in CHMD90Y3 and 130 hours in CHMD91H3. Topics will be selected in conference with the course coordinator who will provide project descriptions from potential faculty supervisors. Progress will be monitored through periodic consultation with the faculty supervisor as well as the submission of written reports. The final results of the project will be presented in a written thesis as well as an oral, poster or online presentation at the end of the term.

Prerequisite: Permission of a course coordinator.

Exclusion: Students may take either CHMD90Y3 or CHMD91H3 but not both. Note that CHMD92H3 is an exclusion to both CHMD90Y3 and CHMD91H3.

EVALUATION FOR CHMD90 and CHMD91:

Grade contribution:
Thesis report: 80% (Supervisor: 30%; reader A: 25%; reader B: 25%)
Presentation: 20% (presentation will be assessed by two or more evaluators, not including your supervisor/co-supervisor. Each evaluation will be weighted equally).

Important Dates for CHMD91 (2020 Fall)

- **Submission deadline for the 1st draft of your thesis to your supervisor: November 27, 2020**. Find two external readers and presentation evaluators among faculty or postdoctoral fellows.
- **Final report is due December 04, 2020.**
- **Final oral, poster or online (TBD) presentation** 20% (Tentative date: **December 08, 2020**)
- **All marks due December 11, 2020**

Important Dates for CHMD90 and CHMD91 (2021 Winter)

- **Submission deadline for the 1st draft of your thesis to your supervisor: April 02, 2021.** Find two external readers presentation evaluators among faculty or postdoctoral fellows.
- **Final report is due April 09, 2021.**
- **Final oral, poster or online (TBD) presentation** 20% (Tentative date: **April 15, 2021**)
- **All marks due April 19, 2021**

Guidelines regarding the thesis reports: **The thesis reports should be prepared in max. 20 pages, single-spaced using Times New Roman font-12 including the following sections:**

1. **Title page** with the title of your project, your name and number, your supervisor(s) name, the course code, and the date of submission. **(1-page)**
2. **Table of Contents (1-page)**
3. **Abbreviations (if necessary, 1-page)**
4. **Introduction (max. 3 pages)**
5. **Experimental** with subsections such as reagents and chemicals, instruments, and procedure.
6. **Results and Discussion**
7. **Conclusions**
8. **Acknowledgments**
9. **References (max. 2 pages) References should be prepared using the *Journal of American Chemical Society* guidelines.**

Appendix can be attached to your thesis report with unlimited page numbers displaying raw experimental results such as MS, NMR, and IR data.

Lab Safety & Onboarding Training Requirements

The Department of Physical and Environmental Sciences has recently introduced new safety and on-boarding training requirements, for all new laboratory personnel, including CHMD90/91 students whose research projects include "wet-lab" components:
https://www.utsc.utoronto.ca/physsci/onboarding-and-training

Please carefully review the webpage. It covers guidelines for both safety training and registration requirements to gain access to the research building.

Safety Training: The EHS courses listed in the webpage above are required for wet-lab experiments. Please discuss this with your supervisor. Students are recommended to complete the online training courses on time, so there will be no delay to gain the access to the lab. Specific instructions also could be found in the Department Personnel Registration and Emergency Preparedness (PREP) document:
https://www.utsc.utoronto.ca/physsci/sites/utsc.utoronto.ca.physsci/files/u35/PREP%20Form%20Final_1.pdf
You can enroll into the required online EHS courses, including the WHMIS training via the link: https://ehs.utoronto.ca/training/my-ehs-training/

Training certification submission: After finishing the online training successfully, you should give/email a copy of your certificate to your supervisor.

Biosafety course: Please, consult with your supervisor whether a Biosafety Certificate is required for your project. The course can be found from the following link:
https://ehs.utoronto.ca/our-services/biosafety/biosafety-training/
(You should give a copy of your certificate to your supervisor)

***Note: Please, consult your supervisor about the attached NSERC Consent Form on the next page.**