



# **Department of Chemistry Honours Project Handbook**

**2021/22**

## 1. General Comments

This handbook describes Department of Chemistry procedures and policies pertinent to the honours project, Chemistry 490 A/B. It is intended to help during the writing and submission of a thesis and provide information to students, supervisors, and examiners involved in Chemistry 490 A/B.

A thesis based on a selected research topic carried out under the supervision of a member of the chemistry department is to be submitted in the final year of an Honours Chemistry degree. Registration in Chemistry 490 A/B is restricted to those students who have honours standing.

All 490 A/B candidates are required to make two short oral presentations, a proposal and a final “defense” seminar. They are also required to submit a thesis which describes research completed as part of the requirement for 490 A/B.

Chemistry 490 A and B, combined, account for 6 credit hours toward the 120 credit hours required for an Honours Chemistry Degree. Therefore, the same time commitment is expected as for any other pair of courses contributing 6 credit hours towards the degree. This is on average 9 hours per week for the 13 weeks in each of the fall and winter semesters.

It is the responsibility of both the student and the supervisor to be familiar with all pertinent departmental, faculty and university regulations and requirements. This guide should not be construed as a replacement for or as superseding regulations or policies contained in the current University Calendar.

### 1.1 Selecting a Project/Supervisor

Students should browse the faculty webpages and discuss research projects with two or more faculty members in the Winter term preceding the Honours research year. These preliminary discussions should not be interpreted as a firm offer or acceptance of a particular research project.

The research project should be decided upon as early as possible. Ideally the student should identify a supervisor and project by the end of the spring semester before entering their Honours project year. The project and supervisor should definitely be in place no later than the end of the second week of classes in the Fall semester of the Honours project year. It is the responsibility of the student to inform the course coordinator ([b.power@mun.ca](mailto:b.power@mun.ca)) with an email cc'd to the supervisor(s) stating the title of the project and the name of the supervisor(s) by the end of the second week of classes of the Fall semester. This year that deadline is **Friday, September 17<sup>th</sup>**.

### 1.2 Other Noteworthy Points

A high degree of literacy is expected of all students. Grammatical and spelling errors in the thesis are no more acceptable than are typographical errors. Obscurities of meaning can arise from clumsy grammatical construction or from excessive use of jargon, and both should be avoided.

The thesis should demonstrate an appreciation of the literature relevant to the subject.

Material presented in the thesis should conform to the Intellectual Property guidelines of Memorial University or agreements with external funding or other agencies.

Research funded by CIHR, NSERC or SSHRC must conform to ethical guidelines in the Tricouncil Ethics Policy. <http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/>

## 2. Thesis Regulations

### 2.1 General Format

The components of a thesis should be ordered as in the Table below. Be aware that not all theses will necessarily require all components.

Order of Contents
Title Page
Abstract
Acknowledgments
Table of Contents
List of Figures
List of Abbreviations and Symbols
List of Appendices
Introductory Chapter
Methods Chapter (ie. Experimental and/or theoretical methods)
Chapter(s) of results and discussion.
Bibliography and References (each chapter may have its own list of references).
Appendices

#### 2.1.1 Title Page

The title page contains the copyright notice as well as the information used to identify the thesis in library database. The format should follow the example shown in Appendix 1. Care should be taken to ensure that the title describes the contents of the thesis as accurately as possible and contains electronically searchable key-words.

#### 2.1.2 Abstract

The purpose of an abstract is to summarize your thesis. Your abstract should provide sufficient information on the methods, results and conclusions to allow readers to make a decision about the relevance of your thesis to their studies. Abstracts should also contain appropriate key words and phrases designed to assist electronic searches. (see <http://graduate.asu.edu/abstractpurpose.html>)

#### 2.1.3 Acknowledgements

Intellectual and practical assistance, advice, encouragement and sources of monetary support should be acknowledged. It is appropriate to acknowledge the prior publication of any material included in the thesis either in this section or in the introductory chapter of the thesis.

#### 2.1.4 Table of Contents

A decimal system such as the one shown in Appendix 2 should be followed. Each heading and subheading appearing in the Table of Contents must appear in the text of the thesis.

### **2.1.5 Lists of Tables, Figures, Abbreviations, Symbols and Appendices**

List of tables, figures, and abbreviations must follow the Table of Contents if tables, figures, and/or abbreviations are incorporated in the thesis. Each list should appear on a separate page with its appropriate page number. It is advisable to use a decimal system (e.g. Figure 4.2 is the second figure in Chapter 4) if this system is followed for headings. An example is given in Appendix 3.

### **2.1.6 Thesis Text (Introduction, Methods, Results and Discussion)**

The text should normally begin with a brief review of the pertinent literature. Depending upon the nature of the work, experimental details may be included as a separate chapter, or they may be provided as a separate section in each chapter if several related but distinct sets of experiments are to be reported in individual chapters.

### **2.1.7 Bibliography and References**

Reference formatting should conform to one particular journal style. Consult with your supervisor about reference formatting.

### **2.1.8 Appendices**

Appendices are normally included to provide information that would detract from the readability of the main body of the text or to present data or information used in the thesis but not directly obtained by the author. For example, lengthy tables, reference data, detailed explanations of procedures or computer programs are typically included as appendices.

## **2.2 Paper**

Copies of the thesis can be printed on standard white photocopy paper.

## **2.3 Text Presentation**

The thesis must be printed single-sided using laser print quality. The general text of the thesis should be printed double-spaced in portrait format with single spacing used for footnotes. Font, font size, style of footnotes and references should be 12 point Time New Roman or similar. Fonts should be consistent throughout the thesis. Smaller fonts may be used for footnotes, graphs etc. but must be sufficiently clear to permit microfilming, photocopying and facsimile transmission.

## **2.4 Margins**

A margin of 3.8 cm (1.5 inches) on the left-hand side of the pages is required to allow for binding. Minimum margins of 3 cm (1.25 inches) are required at the top and the bottom. A 2.5 cm (1 inch) margin is required on the right-hand side. These requirements also apply to tables and diagrams.

## **2.5 Pagination**

Each page in a thesis must be identified by a number. Material preceding the first page of the text (i.e., acknowledgments, table of contents, etc.) is to be numbered using lowercase Roman numerals, centered at the bottom of each page. The title page is considered to be page (i) but is not numbered. Pages of the main text must be numbered consecutively in Arabic numerals beginning with the first page of the text. All figures, tables, appendices, and similar material are numbered as pages of the text through to the end of the thesis.

## **2.6 Illustrations**

Tables, figures, photographs, scanned images and other non-text material whether in black and white or colour should be legible, arranged neatly and effectively, and must always be referred to in the text. The title of a table should be placed above the table, and the title of a figure should be positioned below the figure.

Oversize maps, charts or diagrams must be folded so that they can be bound with the pages. If possible, media containing additional print or non-print material should be included in a pocket fastened to the inside of the back cover when the thesis is bound. It should be noted that with colour images detail may be lost if they are photocopied or transmitted by facsimile.

## **2.7 Intellectual Property and Copyright**

Canada's Copyright Act permits "fair use" of someone else's work. There is reasonable flexibility in the interpretation of what constitutes "fair use" and you are allowed to quote a reasonable extract provided it is properly cited. Extensive quotation requires written permission of the copyright holder (usually the publisher) which must be noted in the thesis. Students should note that incorporation of published material will require written permission from the copyright holder. Copies of the Canadian Copyright Act can be consulted at <http://laws-lois.justice.gc.ca/eng/acts/c-42/>.

At the time of submission of a thesis, students are requested to complete and sign a "Request to Include Copyright Material" form (Appendix 4) if appropriate.

## **2.8 Thesis Release**

At the time of submission of a thesis, students are required to complete and sign an "Undergraduate Honours Essays and Theses" form (Appendix 5) which authorizes the Department to deposit the thesis in the University library and deals with the issue of whether you as the copyright holder wish to assign free or limited access to your thesis.

## **2.9 Thesis Binding Fee and Number of Copies**

Normally, three copies of the examined and corrected thesis are submitted for binding to the undergraduate secretary, General Office. One copy of all accepted thesis is deposited in the University library, one copy is provided for the supervisor and one is for the student. The student must pay for his/her own thesis binding (see undergraduate secretary for payment form and approximate cost). Other personal copies may also be bound at the same time but the binding fee must be paid by the student at the time of final submission.

## **3. Procedures for Thesis Submission**

All theses for examination are to be submitted to the 490 A/B course coordinator (Dr. Barry Power) and must be accompanied by an "Appointment of Examiner" form (Appendix 6).

### **3.1. Thesis Submission Deadline**

Theses are due to be submitted for examination on the Friday before exams begin in the Winter Semester. For the **2021/22 academic year this date is Friday, April 8<sup>th</sup>, 2022**. With a late submission you risk not graduating at spring convocation and a significant late penalty (a **minimum 5 %** deduction) on your thesis mark. Remember that your supervisor must have read your thesis and you need to have made corrections prior to the submission deadline. You should discuss with your supervisor when they require submission so you can meet the submission deadline.

### **3.2. Examiner**

The examiner shall normally be a faculty member of the Department of Chemistry of Memorial University. The examiner shall be selected by the supervisor in consultation with the student and shall be recommended using "Appointment of Examiner" form (Appendix 6). Submission of this form with the copy of the thesis for examination is the responsibility of the student.

### 3.3 Examination Procedures

A thesis received in proper order by the course coordinator is normally sent immediately for examination. The examination is an arm's-length process and *there should be no contact between the supervisor or student and the examiner while the thesis is under examination.*

### 3.4 Examination Results

The 490 A/B Coordinator should receive a written Thesis Examination Report (Appendix 6) from the examiner *within one week of receiving the thesis* from the course coordinator. Examination of the thesis will result in one of the following recommendations by the examiner.

1. the thesis is acceptable without modifications;
2. the thesis is acceptable after minor revisions and will not require re-examination;
3. the thesis is unacceptable as submitted and requires major revisions and must be re-examined;
4. the thesis is totally unacceptable and is failed.

Note that if your thesis falls under 3 or 4 there may not be time for you to correct, resubmit, and have your thesis examined before the graduation deadline for submission of grades. It is in your best interest to put forth a quality piece of work the first time and not to write your thesis in a rush.

**The coordinator will forward a copy of the examiner's report to the supervisor.** Required revisions and corrections will be made by the student in consultation with the supervisor. **When these are made to the satisfaction of the supervisor, this shall be reported to the course coordinator on the Thesis Examination Report form.** In cases where re-examination is required, this sequence of events shall be repeated. In the unlikely cases of dispute between Supervisor and the Examiner concerning the acceptability of the thesis, the course coordinator shall review the evidence and seek advice from a second examiner if necessary and render a decision that shall be final. A numerical grade will also be forwarded by the examiner.

### 3.5 Time Limit for Corrections and Revisions

Students should notice that Chemistry 490 A and 490 B are courses within the University Calendar and as such all appropriate Calendar deadlines apply. ***The final submission of the thesis for binding is no later than five calendar days following the last day of the exam period (unless this falls on a weekend).*** Delays may result in not graduating at the spring convocation as a grade of INC will be entered until final submission has been made. A requirement for extensive revision of a thesis may result in a grade of "Incomplete" for Chemistry 490 B. Failure to complete all requirements prior to the first week of classes in the Spring semester (**Friday, May 13<sup>th</sup>, 2022**) will result in a "Fail". These requirements include completing all corrections or the re-examination of the thesis and the return of all keys assigned to the student as part of the 490 A/B project. Other requirements (at the supervisor's discretion) may include the cleanup of lab space used by the student during the project and the hand over of research data (lab notebooks, disks, etc.) to the supervisor, though the coordinator and student should be informed of these requirements well before hand, preferably in the Fall semester.

#### 4. Oral Components of Chemistry 490 A and 490 B

##### 4.1. Chemistry 490 A Symposium

At the beginning of Chemistry 490 A, (*date/time in early to mid October to be determined*), an oral presentation, **5 minutes in duration (plus 5 minute question period)**, will be given by the student to the Department. This presentation shall consist of a description of the *concept and plan* of the research including any pertinent literature. The student should be prepared to answer questions on the presentation.

##### 4.2. Chemistry 490 B Symposium

Mid-March (*date/time to be determined*) an oral presentation shall be given by the student to the Department. This presentation shall be 15 minutes in length and will consist of a description and discussion of the *results* of the research. The time limit will be strictly enforced, as it would be in a conference presentation setting. Students are therefore encouraged to prepare and practice their presentation to fit within the time limit. The student should also be prepared to answer questions on the presentation for a five-minute period following the presentation.

#### 5. Grading and Reporting

##### 5.1. Chemistry 490 A

*All faculty in attendance at the 490 A symposium are asked to provide a grade out of 5 and at the end of the symposium will submit the grades to the course coordinator on the "Chemistry 490 A Grade Report" form (Appendix 7) that will be provided for them.* This grade out of 5 will be worth 5 % of the final grade calculated at the completion of CHEM 490 B. Evaluation is on the presentation itself, the successful review of your topic, and getting the point of the research to be undertaken across to the audience. **By the first day of exams in the fall semester (Wednesday, December 8<sup>th</sup>, 2021)**, the student must have submitted to his/her supervisor a first draft of the introductory chapter of their thesis and the supervisor will submit a grade out of 5 for this draft of the introduction. This grade, out of 5, will be worth 5 % of the final grade calculated at the end of CHEM 490 B. If for some reason the student has not completed a significant portion of his/her research by the beginning of the exam schedule in the fall semester, or has not put in the required effort to successfully complete the project, or has not submitted a first draft of their introductory chapter, it is the responsibility of the supervisor to inform the coordinator that the student has failed 490 A. In this case a grade of "fail" will be submitted for 490 A and the student will not be allowed to register in 490 B in the following winter semester.

##### 5.2. Chemistry 490 B

The final seminar will comprise 15 % of the overall score. All faculty in attendance at the 490 B symposium are asked to provide a numerical grade out of 15 and, at the end of the symposium, will submit the grades to the course coordinator on the "Chemistry 490 B Presentation Grade Report" form (Appendix 8) that will be provided for them. These grades will be averaged.

The examiner's grade of the thesis will make up another 30 % of the overall grade and will be provided on the Thesis Examination Report form. The supervisor also submits a grade (Appendix 9) to the coordinator which will constitute the final 45 % of the overall grade. This grade should reflect the completeness of work done by the student, the effort the student has put forth in the lab, and their own assessment of the thesis and lab work.

The final grade will be calculated by the coordinator and, following consultation with the supervisor, will be forwarded to the department for final approval by the head as is normal for all grades in the Department of Chemistry.

# Appendix 1

Title Page

TITLE OF THE THESIS

By

© Student's Name

A thesis submitted to the  
Department of Chemistry  
in partial fulfillment of the requirements for the degree of  
Bachelor of Science (Honours)  
in

The Department of Chemistry  
Faculty of Science  
Memorial University of Newfoundland

Month and Year Submitted

St. John's

Newfoundland



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*[Contents above are for example only!]*

**Appendix 4**  
**Request to Include Copyright Material**



**Department of Chemistry**  
**Request to Include**  
**Copyright Material**

**Student Information**

I \_\_\_\_\_ request that you permit the inclusion of the described

(Name and contact telephone number)

material in the thesis listed below and grant irrevocable, nonexclusive licence to Memorial University to reproduce, lend or sell the material described below as part of my thesis

**Title:**

To be submitted in partial fulfillment of the requirements for the degree of

\_\_\_\_\_ at Memorial University of Newfoundland.

Description of material to be included (attach extra sheet if necessary):

Signature:

Date:

**Appendix 4 (cont'd)**

**Permission of Copyright Holder**

I \_\_\_\_\_ do / do not grant permission for the indicated use  
(Name - please print or type)

of the material describe above.

Company:

\_\_\_\_\_

—  
Title:

\_\_\_\_\_

—  
Address:

\_\_\_\_\_


—  
Signature:

\_\_\_\_\_

Date:


\_\_\_\_\_

## Appendix 5 Thesis Deposit Form

 <p><b>MEMORIAL UNIVERSITY</b> <i>Department of Chemistry</i></p>	<p style="text-align: center;"><b>Undergraduate Honours Essays and Thesis</b></p> <p>(Signed release forms must accompany an Honours Essay/Thesis when it is submitted to the University Library)</p>
<p>STUDENT NAME: _____ STUDENT NUMBER: _____</p> <p>DEGREE PROGRAMME: _____ MAJOR: _____</p> <p>TITLE OF ESSAY/THESIS: _____</p> <p>In accordance with the regulations for the Honours degree of Bachelor of Arts/Bachelor of Science, a copy of the essay/thesis which was required of me in herewith submitted to the University Library.</p> <p>I recognize that the copyright on the essay/thesis belongs to me, and that the Regulations require that the essay/thesis shall be available for unrestricted consultation by students and faculty, except under very exceptional circumstances which must be approved by the Senate Committee on Undergraduate Studies.</p>	
<p><b>PLEASE CHECK EITHER A OR B BELOW:</b></p> <p>____ A. I <b>do not</b> wish to request restrictions on the time at which the essay/thesis shall first be made available.</p> <p>____ B. I <b>do</b> wish to request a restriction so that the essay/thesis will be withheld from public use for a period of ____ months from the date of submission. My supporting reason for this request is:</p> <p style="margin-left: 40px;">         ____ (a) it is my intention to have my work published          ____ (b) an academic extension of the work will be made in a short time,          ____ (c) patent possibilities exist which I wish to protect,          ____ (d) other - please specify:       </p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>I hereby request the Senate Committee on Undergraduate Studies to consider this application for restriction and to inform me of its decision in due course.</p> <p>I understand that the Senate Committee is entitled to receive applications for the restriction of availability of my essay/thesis from third persons and to adjudicate on such applications.</p>	
<p>Signature of Student</p> <p>_____</p>	<p>Signature of Head of Department</p> <p>_____</p>
<p>Signature of Witness</p> <p>_____</p>	<p>Date</p> <p>_____</p>

## Appendix 6

### Appointment of Examiner and Thesis Examination Report

 <b>MEMORIAL</b> UNIVERSITY <i>Department of Chemistry</i>	<b>Appointment of Examiner</b>
MUN #	Student Name (last name, first-name)
Supervisor's Name	Signature
Examiner's Name	Signature
Thesis Title (print or type)	
<b>Thesis Examination Report</b>	
<b>Examiner's Instructions</b>	
Please return this report with a list of required changes within one week of receipt. Please indicate the results of your examination by checking one of the categories below.	
totally acceptable – acceptable as it stands.	
acceptable after changes but does not require re-examination – requires only minor modification. .... Minor modification implies corrections of typographical errors and errors in nomenclature, improvement in phrasing, or the rewriting of small sections.	
unacceptable as submitted – requires major modification or correction and re-examination. Minor modification implies corrections of typographical errors and errors in nomenclature, improvement in phrasing, or the rewriting of small sections.	
totally unacceptable – failed. A detailed list of the reason(s) for failure should be included in the report.	
In the case of 1 or 2 above, provide a numerical grade out of 30 and any comments.	
<div style="display: flex; justify-content: space-between;"> <span>Name (please print):</span> <span>Signature:</span> <span>Date:</span> </div>	

## Appendix 7



### Chemistry 490 A Oral Grade Report


Examiner's Name:	Title	Grade / 5	Comments

**Appendix 8**  
**490 B Presentation Grade Report**

Examiner's Name: \_

Student Name	Title	Grade /15
Comments:		

**Appendix 9  
Supervisor Grade Form**

 <p><b>MEMORIAL</b> UNIVERSITY</p> <p><i>Department of Chemistry</i></p>	<b>CHEM 490 B Supervisor Grade Report</b>	
MUN #	Student Name (last name, first-name)	
Project/Thesis Title (print or type)		
<b>Supervisor's Report</b>		
<b>Instructions: Please forward this form to the coordinator with a grade out of 45 and any comments that you feel necessary.</b>		
<p style="text-align: right; margin-right: 100px;">Grade _____ 45</p>		
Name (please print):	Signature:	Date: