

Ocean Sciences Honours Programs Guide for Students and Supervisors | April 2023

Ocean Sciences Honours Research and Thesis

OCEA4201 and OCEA4202

Main Course Requirements: Refer to the Academic Calendar for the most up to date requirements

- [BSC \(120 CREDIT HOUR\) Concentrated Honours in Ocean Sciences](#)
- [BSC \(120 CREDIT HOUR\) Combined Honours in Ocean Sciences](#)

Honours Program Advisor: Faculty member responsible for instructing OCEA4201/4202 and coordinating all Ocean Sciences honours students.

Supervising Professor: Faculty member responsible for guiding a student through the honours project.

~ Honours course overview ~

Our **philosophy** regarding Honours is that students should have a high degree of independence and autonomy with respect to the research project. To that end, we stress that the key to success in the Honours Program is the relationship that the student develops with their supervisor. With the supervisor's guidance, the student is responsible for pursuing all aspects of the research project. Students learn how to formulate hypotheses and how to prepare a thesis proposal. They also learn how to conduct scientific research, how to collect and analyze data, and how to write a thesis and/or manuscript. These skills are all learned directly from their research experience, which means that the supervisor is responsible for mentoring the student. The student is expected to take command of the experience and seek out answers, but of course under the wing of a supervising professor. The Honours Advisor is available to advise the student too, or to suggest additional or alternate avenues that the student might explore to find answers. The Ocean Sciences Honours Program is structured this way because many of our students eventually enroll in graduate programs, and we believe that this kind of **independent but supervised** approach to research is the best way to prepare students for graduate school. Our program therefore differs from other Honours programs elsewhere at Dalhousie, where students often have structured classroom lectures, scheduled assignments, and exams.

Because the student-supervisor relationship is fundamental to student research projects, the department deems it important to outline certain expectations for undergraduate research. If, at any time, either the student or supervisor(s) do not feel the below expectations are being met, they are encouraged to contact the Honours Advisor.

- Students should expect to have regular communication with their supervisor(s) to receive help with defining the thesis, and to receive regular feedback as the thesis is being written.
- Students can expect to have a clear understanding of what is expected in thesis writing and to receive a thorough and fair assessment of their work, with explanations of any negative feedback.

- Students are expected to give serious and considered attention to the advice from their supervisor(s) concerning changes in the research and/or thesis.
- Students are expected to produce a thesis that is essentially their own work and to acknowledge direct assistance or borrowed material from other scholars or researchers.
- Students can expect their efforts to be focused on their research project. While students may choose to participate in other projects within the research laboratory, they should not be diverted from a timely completion of their thesis and other course obligations.

What should the student and supervisor expect from the Honours class (OCEA4201/4202)?

The Honours class has two functions. First, it serves as the administrative arm of the Ocean Sciences Honours Program. For example, students submit the written thesis to the Honours Advisor, where it is then distributed to 2 faculty evaluators. Once evaluated, the individual thesis scores are returned to Honours Advisor and are compiled so that a final Honours thesis grade can be calculated. Second, the Honours Advisor provides students with opportunities for engaging in science communication, classroom presentations of thesis work, and presentation at the annual CDOGS Conference. In class, students present the background and results of their thesis research and get direct feedback from their peers and from the Honours Advisor. At the CDOGS Conference, students present a poster on their thesis and receive additional feedback from faculty, post-docs, adjuncts, staff, graduate students, and fellow undergraduate students.

Ultimately, the grade that a student receives for the Honours course depends on the class presentation grades (10%), the CDOGS poster grade (10%) and the thesis grade (80%).

TIMELINE – Registration and Program Details

Honours course OCEA 4201 and 4202 – timeline to application

By the end of the **Third Year** (i.e. before beginning the Honours program) students should have:

- 1) Completed, or be close to completing, the core classes with a **minimum B+ (3.3) average**.
- 2) Identified a suitable thesis supervisor and research topic (see **Appendices 1 and 2**). Finding a supervisor is the student's responsibility. Prospective supervisors who are not regular faculty from the Oceanography Department, or have not supervised a student before, they must first be deemed suitable by the Curriculum Committee (**Appendix 1**). The student should contact the Honours Advisor, if they are considering someone from outside the Department.
- 3) Once a supervisor and project have been agreed upon, the student will draft a short thesis proposal and complete a signed **Departmental Honours Application (Appendix 7)**, which must be submitted to the Honours Advisor before the add date of the fall term.
- 4) Along with the Departmental application, the student will need to fill out an [Honours Application](#) from the Registrar's office. This must be filled in by the student and then reviewed and approved by the Honours advisor. Once the Honours advisor has signed the application, the student can then submit the form to the Registrar for final approval. ***It is best practice to submit this application before beginning fourth school year to avoid registration delays, but it MUST be submitted no later than the Fall term Add Date.***

During the **Fourth Year** (i.e. the year they are taking the honours course) students will:

- 1) Conduct research and write a thesis (**Appendices 2, 3 and 4**)
- 2) Attend the class and participate. Attendance is **mandatory** and will be recorded as this determines whether students pass the OCEA4201/4202.
- 3) Give a **poster presentation** at the CDOGS Conference (March each year) (**Appendices 5 and 6**). We ask that supervisors help their students prepare their presentation, and that supervisors attend the conference and help evaluate the presentations of other students.

- **NOTE TO SUPERVISORS:** We ask that all supervisors comment on drafts of their own students' theses. When completed theses are submitted at the end of the winter term in which students take OCEA 4202. Supervisors do not need to formally evaluate their own students' work. Rather, supervisors will evaluate the theses of other students. Ultimately, each student's thesis is evaluated by two faculty readers - as assigned by the Honours Advisor. It is therefore essential that all supervisors help in the assessment of other students, as other supervisors are helping in the assessment of their own.

- **NOTE ON SABBATICAL LEAVES:** If a supervisor agrees to supervise an Honours Student during their sabbatical, this does not relieve the supervisor from thesis evaluations. Supervisors will still be required to read and evaluate their own student's thesis, as well as the additional theses assigned by the Honours Advisor. Failure to meet this expectation may preclude one from supervising our Honours students in the future.

Appendix 1: Procedure for having an external, non-Oceanography faculty scientist approved as an Ocean Sciences supervisor

First students should meet with the Honours Advisor to discuss the potential external supervisor.

The supervisor must be a member of the Faculty of Graduate studies or have adjunct status with the ability to supervise students in the Department of Oceanography to be considered.

The Curriculum committee will review the Departmental application form to determine if the topic and supervisor are suitable for an Ocean Science honours project.

Appendix 2: General Guidelines

The honours thesis in Ocean Science constitutes a report of a scientific investigation, conducted by the student under the supervision of a faculty member and normally completed within 6 to 8 months. It is designed to provide training in the design of a research project, data collection and analysis, and in formal scientific writing. Theses may differ considerably in approach and content within and particularly among disciplines. However, the quantity and quality of presented scientific work should exceed that of a term paper. It is not an expectation that alone, a thesis should be equivalent to a publishable journal paper. The research topic investigated must be applicable to biological, chemical, geological, or physical oceanography, or a combination of areas, to be deemed suitable for an Ocean Sciences honours degree.

The research projects that Honours students use for their Honours theses **MUST BE DIFFERENT FROM ANY OTHER RESEARCH PROJECTS FOR WHICH THEY MAY GET CREDIT IN OTHER CLASSES**. This applies to projects that are submitted as part of credit for an Independent Research class at Dalhousie and/or for research-based classes at another University. There must not be any overlap between the Honours thesis research and any other research for which the student has already or will receive credit. If a student or supervisor has questions about this, contact the Honours Advisor.

Appendix 3: Formatting

The thesis should follow the usual format of a scientific report in the student's discipline. It should be double-spaced with 1.0-inch along all the other edges to allow binding space. Figure captions should accompany their figures in a consistent fashion, either on the same page as the figures (preferred) or on the preceding page if they do not fit. All pages should be numbered consecutively, including pages with figures, tables, or photographs. The preliminary pages (i.e., dedication page, table of contents etc.) are numbered with lowercase Roman numerals (i, ii, iii, iv etc.), whereas the text of the thesis, including the list of references and appendices are numbered with Arabic numerals (1,2,3 etc.). The font size and type should be consistent throughout and should be no smaller than 12-point. Literature citations must be in a consistent format.

Sections of the thesis in their order of appearance:

1. Title page (see sample on next page)
2. Dedication page
3. Table of Contents
4. List of Illustrations and/or Tables
5. Abstract (1 page)

6. List of abbreviations and symbols used
7. Acknowledgments
8. Introduction
9. Materials and Methods
10. Results
11. Discussion
12. Literature cited
13. Appendices

Assignment of Letter Grades (scale for conversion from percentage to letter grades)

A+: 90-100	B+: 77-79	C+: 65-69	D: 50-54
A: 85-89	B: 73-76	C: 60-64	F: <50
A-: 80-84	B-: 70-72	C-: 55-59	

A Sample of a title Page: (should be appropriately centered on page)

Plate tectonics and the origin of life

by

Joanna Smith

Submitted in partial fulfilment of the requirements for the
degree of Combined Honours Bachelor of Science in Earth Sciences (or Chemistry) and Oceanography

at

Dalhousie University
Halifax, Nova Scotia
April, xxxx

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Appendix 4: Thesis Evaluation Form:

Student's name: _____ Reader's name: _____

Please, evaluate the thesis under the following categories:

Writing skills: (30%)

- Some criteria to consider:
- Grammar, clarity, organization
 - Logical development of ideas
 - Conventional, formal scientific writing (e.g. appropriate use of tables, figures, literature)

Comments: /30

Scientific method and experimental design: (20%)

- Some criteria to consider:
- Sampling regime, controls, replication with justification
 - Addressing limitations in methods used and data and their effects on interpretation

Comments: /20

Analysis and interpretation: (50%)

- Some criteria to consider:
- Quality of data presentation and analysis
 - Interpretation of results
 - Integration of the study in the existing literature
 - Assessment of significance of study to the discipline

Comments: /50

Overall comments:

Total grade: /100

Appendix 5: CDOGS CONFERENCE

Sponsored by: Department of Oceanography, Dalhousie University
Dalhousie Oceanography Students Association

CDOGS is held annually to showcase the diversity of research conducted by the Oceanography graduate and Ocean Sciences Honours students. The conference format is similar to that of an international scientific conference and includes sessions oral presentation sessions and one midday poster session.

All Honours students must present a poster presentation. These presentations will highlight student research

- Posters will be **47" x 47" or smaller, e.g. 40" x 36"**.

Appendix 6: CDOGS Poster Evaluation

Student's name: _____

Reader's name: _____

1) Scientific content

/4

The poster may not represent the entire thesis, but it should provide a coherent presentation including context, objectives, results (may be preliminary) and conclusion

2) Response to questions, discussion

/3

The student should be able to show understanding of the material including limitations and future studies

3) Quality of Presentation

/3

Overall comments:

Appendix 7:

Ocean Science Departmental Honours Application

Student:

Supervisor(s):

Thesis title:

Summary of proposed research project (max 500 words):

Signatures- by signing both student and supervisor agree to the terms and expectations as outlined in the *Honours Guide for Students and Supervisors* (linked)

student

primary supervisor

co-supervisor (if applicable)

The completed form should be forwarded to the Department of Oceanography Honours Advisor.