

# COURSE SUMMARY

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## Ecological Structure in Northern Environments

(0-0;3-0)

**BIOL/ENST/NORT 3313 - 2019**

**Instructor:**

**Dr. Douglas Morris**

Office: CB4017 Lab: CB3019

**Teaching assistant:**

**Scott Bergson**

GA Office TBA

**Text:**



There is no text for this course. Students will build their notes and understanding from material presented in lectures and workshops and from assigned readings available through the internet.

**Office Hours:**

Monday & Tuesday: 11:00-12:00 (7 January - 2 April 2019 only) or by appointment

**Lectures:** Monday & Wednesday 13:00-14:20 Room RB 2024

**ELECTRONIC DEVICES.** Unless instructed to do so, students in class are not allowed to take photographs, send or receive phone or text messages, to use E-mail or social networks, download files, stream content, or surf the internet. Audio and video recording during lectures and tutorials is strictly prohibited unless permission is granted on an individual basis by the course instructor. All electronic devices other than notepads or laptops used to take notes, and calculators required for assignments and tutorials, must be left out of the room or turned off and located out of sight. No electronic devices other than calculators are allowed during quizzes. Students anticipating or sending urgent messages are expected to remain outside of the classroom.

**BEHAVIOUR DURING LECTURES AND TUTORIALS.** Students must respect the rights of others by

conducting themselves at all times in a professional, polite, unbiased and civil manner.

There may be one or more guest lectures during the course. GUEST LECTURES ARE AN INTEGRAL COURSE COMPONENT AND STUDENTS WILL BE EXAMINED ACCORDINGLY.

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#### Introduction:

This course is designed for the advanced undergraduate who wants to apply ecological and evolutionary concepts to understand and conserve the ecological structure of northern environments. Course instruction will include a mixture of lectures, tutorials, workshops, and quizzes. The lectures will emphasize conceptual, empirical, and experimental approaches to ecology and evolution in northern ecosystems. Tutorials and workshops may include a mixture of seminars, reviews of the current literature, problem solving exercises, and student presentations. Short quizzes will be administered during lecture periods intermittently throughout the course.

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#### Course Outcomes and Assessment:

1. Students will become familiar with ecological and evolutionary principles applicable to northern environments with theory in lecture and cogent examples in their required readings. Evaluation of progress will occur through intermittent in-class quizzes assessing comprehensive understanding of principles with a mixture of short-answer and problem-solving exercises.
2. Students will know the sources and content of relevant and recent literature on ecological structure in the north by incorporating required and recommended readings, as well as independently demonstrated scholarship, in the class research proposal and in each student's term report.
3. Students will question and discuss current concepts in ecology and evolution during student-lead weekly workshops aimed at developing a class research proposal. Students will self-identify working groups, move among groups, and rotate leadership roles throughout the term.
4. Students will develop the skills, discipline, and study habits necessary for self-instruction in this and other areas of ecology by using NSERC's peer review manual to write a final term report assessing the

class-generated research proposal. The assessment must use relevant aspects of NSERC's published review criteria available at [NSERC's Website](#).

5. Students will attain the theoretical and empirical background necessary to solve ecological and conservation problems in the north by fully incorporating required readings, and the lectures' rigorous theory and concepts, in the course research proposal and in each student's final written term report.

6. Students will contribute to research and conservation strategies and priorities in the north by actively participating in weekly workshops in order to write a collaborative research proposal structured as a NSERC Discovery Grant application. Evaluation of the proposal by the course instructors will follow the same criteria used by NSERC.

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Evaluation:

In-class workshops and quizzes - 80%; assignments, participation and final term report - 20%.

Workshops will centre on writing a class-generated research proposal in a NSERC Discovery Grant style. A full proposal will include a table on proposed expenditures (5-yrs) by category, a budget justification not exceeding two pages, a research proposal of 5 pages or less and a maximum of two pages for references (maximum length of the complete application = 10 pages, Font = Times New Roman 12 Point). Details on preparing Discovery Grant Applications can also be found at [NSERC's Website](#) Any additional instructions on completing the proposal will be given to the class during the first workshop. *Printed and WORD versions of the final proposal must be submitted no later than the end of class (14:20) on 27 March 2019. Failure to submit the proposal on time will result in a grade of zero for the final term report.*

Performance will be evaluated regularly. The evaluation will be based on the student's grasp of important issues, logical reasoning, non-trivial criticisms of the material, and the ability to solve ecological problems. Students are encouraged to share their ideas and questions.

Written reports may be assigned at intervals during the course. Evaluation of the reports will be based on the student's ability to synthesize a field of enquiry, to apply that synthesis to a particular problem, or to develop significant new insights into ecological or evolutionary issues. Reports will not, in general, be review papers. Rather they will require the student to apply what is known (and what's not known) to an unresolved question in ecology. Evaluation will be devoted equally to clarity of presentation, rigour of treatment, and suitability of the report to the assignment.

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Report Format:

Read each assignment carefully and include only relevant material. Maximum length of regular reports including tables, figures, and references will be 1000 words (double-spaced, 2.5 cm margins, minimum height of lower-case letters = 2 mm).

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Report Due Date:

All regular reports will be due two weeks after the assignment date. Late submission will be penalized at the rate of 10% per calendar day unless prior permission is received. *The due date for the final report is at the end of class on 3 April 2019. Reports submitted after the final class on 3 April 2019 (14:20) will not be accepted for grading.*

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Report Style:

Be concise. Use the active voice. Organize your thoughts before you begin writing. Omit needless or redundant words. Express your thoughts as clearly as possible even if it means re-writing the report. Write in your own words. Use quotations only when you cannot express the thoughts yourself. Never borrow a phrase without quotations. Never repeat observations, interpretations, or ideas without proper citation.

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## FINAL TERM REPORT

Each student will be required to submit a TERM REPORT that evaluates the class-generated research proposal. The review will be similar to that solicited by granting councils. Evaluation will be based on the quality and integrity of the review, and its correspondence with an independent assessment of the class proposal. Students must use the [template](#) that will be provided to them. Insights into writing and evaluating proposals can be gleaned from NSERC's Discovery Grants Peer Review Manual 2018-19 available from [NSERC's Website](#).

Please note: The term report is a term project and not a final examination. Students will be ineligible to write a special examination as outlined in regulation VII in the Lakehead University Calendar.

## SOME SUGGESTIONS:

DO start background work on each assignment as soon as you receive it.

DO read required readings (and appropriate related literature) on time so that you are always up-to-date on course material.

DO re-write your essays and reports as many times as necessary to meet the length restriction, to improve your prose, and to make your material as readable, interesting and informative as possible.

DO interact with classmates in order to ensure that you fully understand course material and assignments.

DO read professional scientific essays (eg., the "News and Views" section in the journal "Nature" or perspectives in "Science") in order to appreciate the value of concise, clear writing.

DO NOT leave the term report until the "last minute".

**DO NOT** stray from the instructions.

**DO NOT** use web-based material other than to search for and download properly reviewed and edited documents.

**DO** seek classmates' opinions, but other than the research proposal, **DO NOT** work on a joint term report.

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### Tentative Timetable - 2019

DATES	TOPIC
7-14 January	<a href="#"><u>Northern Ecosystems are Dynamic</u></a>
16 Jan.- 28 Jan.	<a href="#"><u>Latitudinal Gradients in Diversity</u></a>
30 Jan. -6 February	<a href="#"><u>Latitudinal Gradients in Body Size</u></a>
11 Feb.- 4 March	<a href="#"><u>Population Dynamics of Northern Species</u></a>
18-22 February	FAMILY DAY AND STUDY WEEK - NO CLASSES
6-13 March	<a href="#"><u>Northern Food Webs</u></a>
18-25 March	<a href="#"><u>Conservation and Management</u></a>
<b>27 MARCH</b>	<b>FINAL RESEARCH PROPOSAL DUE 14:20</b>
27 March - 3 April	<a href="#"><u>Northern Climate Change</u></a>
<b>3 APRIL</b>	<b>FINAL REPORT DUE 14:20</b>

Guest lectures, tutorials, and workshops may be scheduled at irregular intervals.

*Lectures: 13:00-14:20 Monday and Wednesday Room RB 2024*

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