Research Topics 1 and 2
BIOL 3413 and BIOL 4413

Coordinator: Dr. Glenys Gibson
Office: BIO302
Phone: 902-585-1250
Office hours: by appointment
E-mail: glenys.gibson@acadiau.ca

Part 1: Course Information

Course Descriptions

BIOL 3413 Research Topics 1 - Laboratory or field investigations, or review of research topics in biology. Students participate in a research study which may include planning, developing suitable procedures and techniques, and/or undertaking a review or critical evaluation. Each student will write a research report and present findings. The research must be supervised by a member of the department. *Prerequisite(s): Permission of supervisor and Department.*

BIOL 4413 Research Topics 2 - This course consists of advanced laboratory and/or field investigations of some research topic in biology. Each student will write a research paper and present their findings. The research must be supervised or co-supervised by a faculty member in the Department of Biology. *Prerequisite(s): BIOL 3413 with a minimum grade of C-. Credit can only be obtained for BIOL 4413 if there is minimal overlap with BIOL 3413 and BIOL 407T/408T.*

These two research-based courses are designed to support students interested in undertaking a a research project under a supervisor's mentorship. Here, research is interpreted broadly and can include lab and/ or field skills, data analysis and presentation, or other areas determined in consultation with your supervisor(s).

The first step is to find a supervisor in the Biology Department. You may additionally have a co-supervisor (internal or external to Biology). Contact faculty in Biology who you think would be likely supervisors and obtain their permission before you can register. Once your supervisor has agreed, the supervisor and student should contact Lisa Taul, Administrative Assistant (lisa.taul@acadiau.ca) for help in registration.

Course Structure and Grade

The structure of a research topics course varies with project and supervisor. Students should talk with their (co-) supervisor(s) early in their research to identify shared goals and to design an individualized course syllabus. The syllabus should include expecations for the project, timelines, and the breakdown of the grade. Make sure both you and your supervisor(s) have a copy of the individualized syllabus for the course before you start.

BIOL 3413 and BIOL 4413 are not delivered in specific time slots but instead, are flexible and should fit into your existing course plan. The expectation is 6h/ wk, as is typical for most Biology courses with labs. At the start of the course, plan a timeline with your supervisor(s), including a regular meeting time.

Student Learning Outcomes

1) Identify a research question and develop a research plan with your supervisor(s).
2) Conduct research. Depending on the project, this may include collecting, analyzing and interpreting data.
3) Present your findings in a format agreed to with your supervisor at the start of the course (e.g., written lab report, oral presentation, technical report).
4) Develop professional skills such as teamwork, scientific communication, analytical skills and ethical scientific practices.

Part 2: Course Policies

For both lab and field-based research, candidates are required to have WHMIS (Workplace Hazardous Materials Information System) training, and may be required to have CCAC (Canadian Council on Animal Care) training, first aid training, and/or approval of the Acadia University Research Ethics Board, depending on your research project. Consult with your supervisor(s) regarding these requirements.

If applicable, candidates must discuss policies on research travel, boating safety, and/or expectations for external co-supervisors with their internal co-supervisor and make sure all appropriate documents are completed.

Training and/or approvals are required before your research can begin.

Part 3: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: https://www2.acadiau.ca/student-life/equity-judicial/equity.html

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully

participate in class should contact Accessible Learning Services directly as soon as possible. https://www2.acadiau.ca/student-life/accessiblelearning.html

The Use of Animals in Teaching and Research

The use of animals in teaching and research at Acadia University is done in accordance with guidelines on the care and use of animals published by the Canadian Council on Animal Care (CCAC). For more information on the CCAC, please visit their website at http://www.ccac.ca

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: https://registrar.acadiau.ca/AcademicCalendars.html

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: http://libguides.acadiau.ca/c.php?g=433650&p=5027078

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld.

Part 4: Program Learning Outcomes

Foundations of knowledge		**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Critical review of project-related literature; planning experiments, study or other research methodology	2
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Explain contributions of key researchers in your field	2
Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	(Depends on project)	
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	(Depends on project)	
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	(Depends on project)	
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	Depends on project. Some students may design and complete an experimental project	2

Safety	Work safely and productively in lab and field settings	(Depends on project)	
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry	(Depends on project)	
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change	(Depends on project)	
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	(Depends on project)	
Statistical analysis	Use R and or other programs to analyze biological data	(Depends on project)	
Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity and understand the principles of EDI in science	Discuss ethical considerations and norms for your discipline; demonstrate good scientific practices	2
Collaboration and group work	Work effectively in groups within and across disciplines	Be an active contributor to lab and field work; work effectively with lab mates and supervisor(s)	2
Critical thinking	Analyze and evaluate information to make science-based decisions	Understand greater implications of your research.	2
Computer proficiency	Use common and discipline- specific software	Depends on project. Many research topics students will use MS Word and Excel, R, Zotero, and/ or research-specific software	2
Scientific communication	Communicate science effectively to both scientific and general audiences	Depends on project. Many research topics students will develop more effective written and oral communicatuion skills	2