

## OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

<b>Course Code and Number:</b> BIO 499		<b>Number of Credits:</b> 9 <a href="#">Course credit policy (105)</a>																	
<b>Course Full Title:</b> Honours Research Thesis																			
<b>Course Short Title (if title exceeds 30 characters):</b>																			
<b>Faculty:</b> Faculty of Science		<b>Department (or program if no department):</b> Biology																	
<b>Calendar Description:</b> <p>Students will conduct a biology research project under the supervision of a researcher (e.g. faculty member) over two semesters. The research results will be written as a thesis and presented as a seminar and at a research conference.</p> <p>Note: Students with credit for BIO 408 or BIO 409 cannot take this course for further credit.</p>																			
<b>Prerequisites (or NONE):</b>		Admission to the Biology Honours and completion of at least 10 BIO credits 300-level or above.																	
<b>Corequisites (if applicable, or NONE):</b>																			
<b>Pre/corequisites (if applicable, or NONE):</b>																			
<b>Equivalent Courses (cannot be taken for additional credit)</b> Former course code/number: Cross-listed with: Equivalent course(s): <b>BIO 408, BIO 409</b> <i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		<b>Transfer Credit</b> Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Transfer credit requested (OREg to submit to BCCAT): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No To find out how this course transfers, see <a href="http://bctransferguide.ca">bctransferguide.ca</a> .																	
<b>Total Hours:135</b> <b>Typical structure of instructional hours:</b> <table border="1"> <tr><td>Lecture hours</td><td></td></tr> <tr><td>Seminars/tutorials/workshops</td><td>5</td></tr> <tr><td>Laboratory hours</td><td></td></tr> <tr><td>Field experience hours</td><td></td></tr> <tr><td>Experiential (practicum, internship, etc.)</td><td></td></tr> <tr><td>Online learning activities</td><td></td></tr> <tr><td>Other contact hours: Student directed learning</td><td>130</td></tr> <tr><td><b>Total</b></td><td><b>135</b></td></tr> </table>		Lecture hours		Seminars/tutorials/workshops	5	Laboratory hours		Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours: Student directed learning	130	<b>Total</b>	<b>135</b>	<b>Special Topics</b> Will the course be offered with different topics? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit <i>Note: The specific topic will be recorded when offered.</i>	
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<b>Total</b>	<b>135</b>																		
		<b>Maximum enrolment (for information only):</b> 12 <b>Expected frequency of course offerings (every semester, annually, every other year, etc.):</b> every semester																	
<b>Department / Program Head or Director:</b> Allan Arndt		<b>Date approved:</b> February 2017																	
<b>Faculty Council approval</b>		<b>Date approved:</b> March 3, 2017																	
<b>Campus-Wide Consultation (CWC)</b>		<b>Date of posting:</b> n/a																	
<b>Dean/Associate VP:</b> Lucy Lee		<b>Date approved:</b> March 3, 2017																	
<b>Undergraduate Education Committee (UEC) approval</b>		<b>Date of meeting:</b> August 31, 2017																	

## Learning Outcomes

Upon successful completion of this course, students will be able to:

1. apply the scientific method to design and carry out experiments or field projects
2. interpret their own scientific data using current quantitative, qualitative and analytical methodologies and techniques
3. develop a budget accurately reflecting the cost for conducting the research
4. interpret current scientific concepts from primary research and integrate into thesis information
5. effectively communicate research proposal, analyses and conclusions, to a range of audiences, (specialized and general) in graphic, oral, and written form

## Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

## Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Students will work closely with research supervisors and, where appropriate, with off-campus sponsors. Empirical research, seminars, reading primary literature, writing thesis.

**Grading system:** Letter Grades: ☒ Credit/No Credit: ☐ Labs to be scheduled independent of lecture hours: Yes ☐ No ☐

**NOTE:** The following sections may vary by instructor. Please see course syllabus available from the instructor.

## Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.		<input type="checkbox"/>		
2.		<input type="checkbox"/>		

## Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)

Will vary with project requirements.

## Typical Evaluation Methods and Weighting

Final seminar presentation (marked by Biology Department):	15%	Research poster:	10%	Final thesis (students must hand in an acceptable thesis in order to pass the course):	35%
Project proposal - seminar:	5%	Project proposal – written project proposal (includes budget):	15%	Technical ability, organization and time management (includes research notebook, lab and field work skills):	20%

## Typical Course Content and Topics

A student will be expected to spend no fewer hours on this project per semester than the time expected to complete three (3) upper level 3 credit Biology courses (135 hrs). The student experience may be considered to consist of several stages:

### Selection of a suitable area

The student may already have a specific area of research in mind or a specific instructor with whom he or she would like to interact. In this case, the student and instructor will strike an agreement depending on (i) admission to honour's degree (ii) available equipment and space, and (iii) budget for consumables. Otherwise, an instructor may suggest a project that would be suitable for the student. In all cases, it will be the instructor's responsibility to ensure that the proposed project is appropriate for an honour's level student to accomplish in the proposed time. It is also the responsibility of the instructor to ensure that equipment, funding, and space are available for the project. In some cases, students may benefit from expert advice and input in addition to that of the supervising instructor. However, it is always the responsibility of the instructor to ensure that the project conforms to UFV academic standards.

### Design of research project

The student will survey the literature in a particular field under the guidance of the appropriate instructor. The student will be assisted to build on the literature to formulate a testable hypothesis and design an appropriate experimental approach. The student will address questions such as: novelty of the approach, statistical analysis to be carried out, use of controls, and use of replicates. The student will write a research proposal and present the project proposal in a departmental seminar.

### Carry out research

The instructor will aid the student in attaining mastery of the techniques necessary to carry out the research. The student will be responsible for scheduling time for the various stages of the project, making sure equipment is available, reporting to the instructor and off-campus sponsor where appropriate. Regular meetings of student and instructor are required for all projects. A lab or field notebook will be maintained by the student and submitted as part of the evaluation of the course

### Production of thesis, poster, and final seminar

The student will produce a thesis that is clear and scholarly and written in the style that is appropriate for the area of study. The instructor will aid the student in producing a high quality piece of science communication. The student will present a research poster to be presented at an undergraduate student research forum. The student will defend their thesis in a final seminar to the Biology Department. All students registered in BIO 499 are expected to attend all proposal and final defense seminars in the semesters they are registered.