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**BIOL 537**  
**Research in Biology Honours Thesis**  
Fall Term 2016 – Winter term 2017

**CALENDAR DESCRIPTION**

**Individual research projects under the supervision of a staff member; reported in the form of a thesis, poster and seminar.**

LEARNING HOURS 444 (8L;36S;300Pc;100O)

NOTE In the spring preceding fourth year, students must select projects in consultation with potential supervisors. Registration is subject to availability of a supervisor. Work on the project during summer is advantageous if field studies are required. See also the statement on BIOL 501/3.0-BIOL 536/3.0 in the BIOL Department Information, preliminary information section.

PREREQUISITE Admission to the final year of a BSCH program in Biology and a minimum GPA of 2.0 in the Biological Foundations List and permission of the project supervisor and course coordinator.

EXCLUSION No more than 1 course from BIOL 537/12.0 and BIOL 541/12.0.

**Teaching team:**

Dr. Paul Grogan (Course coordinator), [groganp@queensu.ca](mailto:groganp@queensu.ca), 613-533-6152, Room 2508 Dr.

Fran Bonier, [bonierf@queensu.ca](mailto:bonierf@queensu.ca), 613-533-6000 x77024, Room 3523

Dr. Paul Young, [youngpq@queensu.ca](mailto:youngpq@queensu.ca), 613-533-6148, Room 2443

The Honours Thesis Course (BIOL 537/12.0) is one of the principal capstone experiences offered in the Biology undergraduate program. It provides students with the opportunity to develop and work on their own independent research project under the supervision of a faculty member in the Biology Department (or cross-appointed to the Biology Department). Students gain experience in the full range of activities involved in doing research in Biology, including project design, data analysis and interpretation, literature review, scientific writing, oral presentation and interactive collaboration with colleagues.

**Learning outcomes:**

By the end of this course, the student should be able to:

1. Apply fundamental scientific principles and critical thinking skills to independently develop and conduct a novel and discrete biological research study
2. Demonstrate key professional skills, such as advanced laboratory and/or field biological techniques, effective proposal and manuscript writing, oral communication, critical evaluation of the literature, lab team-work, and problem-solving
3. Verbally synthesize the study and defend the main research findings and their interpretation at a standard appropriate for a professional scientific conference
4. Analyse and interpret the study results, and present them and an evaluation of their significance in writing at a standard appropriate for a peer-reviewed science journal
5. Constructively critique the strengths and weaknesses of other students' studies to refine and improve their scientific value

## Learning Hours

<i>Teaching method</i>		<i>Average hours per week</i>	<i>Number of weeks</i>	<i>Total hours</i>
In-class hours	Lecture	2	4	8
	Seminar	3	8	24
	Laboratory			
	Tutorial			
	Practicum	12.5	24	300
	Group learning			
	Individual instruction			
Other	Online activity			
	Off-campus activity			
	Private study	6.16	24	148
Total hours on task				<b>480</b>

## Course Material

Material will be provided on an individual student basis by the supervisor

## Website

<http://post.queensu.ca/~biol537/>

## Assessment

Component	Value (%)	Marker(s)
Research Proposal (F)	10	Course coordinator (Grogan)
Lab/Field Skills	5	Supervisor
Seminar (F or W)	15	Supervisory committee (supervisor and co-supervisor if applicable, committee member) Seminar Chair
Poster (W)	15	Supervisory committee, faculty and grad students
Thesis - First Draft (W)	10	Supervisor
Thesis - Final Draft (W)	35	Supervisory committee (Moderation by course instructors)

Thesis Defence (W)	10	Supervisory committee (Moderation by course instructors)
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### **Academic Integrity and Queen's Code of Conduct**

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>), on the Arts and Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and at Biology's website (<http://www.queensu.ca/biology/undergrad/integrity.html>) and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

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The BIOL537 teaching team are committed to fully pursuing investigations of breaches of academic integrity because they are unfair to other students. Regrettably, we have reported to the Dean several findings of academic integrity breaches in both the lab and lecture sections of this course in the past, so please be very careful to ensure you are clear on your responsibilities.

### **Accommodation Policy, Exam Conflicts, and Other Conflicts**

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (<http://www.queensu.ca/biology/undergrad/integrity.html>). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>). In this case, the student should report to the Exams Office first to verify that there is a genuine exam

conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

#### Extenuating Circumstances:

The issue of extenuating circumstances and extensions is a difficult one for both instructors and students. On the one hand, unforeseen events and critical personal circumstances arise from time to time. On the other hand, a small number of students abuse the instructor's goodwill in various ways including frequently requesting extensions for trivial reasons. The teaching team in this course is committed to being understanding and sensitive, but also responsible and firm in assessing requests for accommodations. Each request will be considered in the context of fairness to all the other students on the course. See the Biology Department's website for information about our policy and the form that you will need for missed labs and/or for large assignments or presentations:

<http://biology.queensu.ca/academics/undergraduate/prepare-yourself/>

#### **Copyright**

The material on this website is copyrighted and is for the sole use of students registered in Biol 537. The material on this website may be downloaded for a registered student's personal use, but shall not be distributed or disseminated to anyone other than students registered in Biol 537. Failure to abide by these conditions is a breach of copyright, and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

#### **Accommodation of Disabilities**

*Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at:*

<http://www.queensu.ca/hcds/ds/>

#### **Course Schedule**

Sept 16	Welcome and information session – Paul Grogan and 537 alumnae
Sept 23	Faculty seminar: The science funding process, and How to write a strong research proposal - Paul Young

Sept 30	Faculty seminar: The Scientific Method, and How to give a great seminar - Fran Bonier
Oct 7	No class (Thanksgiving weekend)
Oct 14	Research proposals due (hardcopies to General office by 3.30pm) - No class
Oct 21	No class
Oct 28	No class
Nov 4	Seminars – Group 1 (P. Young) (Last day to drop classes)
Nov 11	Seminars – Group 2 (F. Bonier)
Nov 18	Seminars – Group 3 (P. Young)
Nov 25	Seminars – Group 4 (F. Bonier)
Dec 2	Seminars – Group 5 (P. Young)
Jan 13	Seminars – Group 6 (F. Bonier)
Jan 20	Seminars – Group 7 (P. Young)
Jan 27	Seminars – Group 8 (F. Bonier)
Feb 3	No class
Feb 10	No class
Feb 17	First draft of thesis due Faculty seminar: How to prepare an excellent poster – Dr. Chris Eckert
Feb 24	No class (Reading week)
Mar 3	No class
Mar 10	Poster day finale - Posters need to be up by 4pm on the previous Monday (Mar 6)
Mar 17	No class
Mar 24	No class
Mar 31	No class
Apr 5 (Wednesday)	Final thesis due. Immediately after submitting a hard copy of your final thesis in the General Office, you will be allowed to sign up for a defence date/time. CAUTION: Timetabling <i>all</i> of the people involved in the defences is a difficult exercise for the coordinator – Please don't sign up for a specific date/time until both your supervisor and committee member have agreed to it.
Apr 10-12	Thesis oral defences (Monday-Wednesday)

### **Grading Method**

In this course, some components will be graded using numerical percentage marks. Other components will receive letter grades, which for purposes of calculating your course average will be translated into numerical equivalents using the Faculty of Arts and Science Letter Grade Input Scheme. When letter grades are employed, the following scale will be employed for purposes of calculating your course average:

#### ***Arts & Science Letter Grade Input Scheme***

Assignment mark	Numerical value for calculation of final mark
A+	93
A	87
A-	82
B+	78
B	75
B-	72
C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

***Queen's Official Grade Conversion Scale***

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below