

# BIOL 506

## Biochemical adaptations of life in extreme environments

Fall Term (2013-14)

### SCHEDULE

Seminar: Tuesday 11:30-1:30, Friday 11:30-12:30. BIOSCI 3112.

<b>Instructor</b>	<b>Dr. Wm. Plaxton</b>
<b>Instructor Contact</b>	<a href="mailto:Plaxton@queensu.ca">Plaxton@queensu.ca</a> Phone: 613-533-6150
<b>Office Hours</b>	TBA
<b>TA:</b>	Not applicable
<b>TA Contact Information</b>	Not applicable
<b>Office Hours</b>	Not applicable

### Learning Objectives

Life on earth has radiated to exploit virtually every conceivable habitat and lifestyle. Biochemical adaptation is a fundamental aspect of biological diversity because it integrates molecular structure, with metabolic function and control. The purpose of the course is to evaluate the impressive array of mechanisms whereby animals, plants, and microbes adapt at the biochemical level to 'extreme' environmental conditions such as temperature stress, high pressure, lack of oxygen, salt stress, oxidative stress, and desiccation. Students are expected to read and to lead discussion on original research publications, and to develop a general literature review and research proposal on a relevant topic that will be presented in a seminar and submitted as a written report.

RECOMMENDATION (BIOL301 or BIOL 341) and BIOL 322

PREREQUISITES BIOL 334 or (BCHM 315 and BCHM 316) or BCHM 310

### 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	1.5	12	18
	Seminar	1.5	12	18
	Laboratory			
	Tutorial			
	Practicum			
	Group learning			
	Individual instruction			
Other	Online activity	2	12	24
	Off-campus activity			
	Private study	4	12	4
Total hours on task				108

### Course Goals and Objectives

- To understand the diversity and scope of biochemical adaptations of species to environmental extremes (and practical applications of this research area to helping humanity & our planet)
- To develop the ability to critically analyze and synthesize science literature
- To improve oral and written communication skills

### Textbooks/Readings

There is no textbook for this course. Relevant readings will be assigned from the appropriate scientific literature and uploaded onto Moodle.

### Grading Scheme

Component	Weight (%)	Date
Participation	20	Throughout term
Research Seminar (30-35 min)	20	TBA
Written Critiques of Original Research Publications	20	TBA
Final Research Essay	40	Dec. 2, 2013

### Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale.

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

### **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 - %, 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.

### **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.

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### **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/hc/ds/>*