BIOL 504
Extremophiles

Fall Term

CALENDAR DESCRIPTION

The course explores biology of extraordinary organisms that flourish under conditions of stress and how more ordinary organisms deal with periodically unfavourable circumstances. Emphasis is placed on understanding of the relevant adaptations and processes involved.

SCHEDULE

Lectures, etc.: Please see University Timetable

Instructor	
Instructor Contact	
Office Hours	TBA
TA:	None
TA Contact Information	
Office Hours	

Learning Objectives

This course will provide a sound basis in the strategies of extremophiles that cope with and even thrive in potentially stressful environmental conditions. Please bear in mind that the stressful conditions may be temporary or permanent for any given organism. You will learn about the adaptations of organisms from unicellular prokaryotes through to multicellular eukaryotes.

Learning Hours

Teaching method		*Average hours per week*	*Number of weeks*	*Total hours*
In-class hours	Lecture	1.5	12	18
	Seminar	1.5	12	18
	Laboratory Demos	0	0	0
	Tutorial	0.75	12	9
	Practicum	0	0	0
	Group learning	0.75	12	9
	Individual instruction			
Other	Online activity	1	12	12
	Off-campus activity			
	Private study	4.5	12	54

Total hours on task	120

Textbooks/Readings

No textbook.
See website for lecture notes and assigned readings from scientific books, journals and selected websites.

Grading Scheme (Approximate)

Component	Weight (%)	Date
Class Participation	10	Throughout Course
Tutorials	20	Throughout Course
Voice Over Presentation 1	5	Week 3
Term Paper Outline	10	Week 5
Voice Over Presentation 2	5	Week 6
Seminar	20	Weeks 9-12
Term Report	30	One Week After Last Class

Course Outline

General Introduction to Course
- Definition of Extremophile
- Course Philosophy

Thermophiles
- Hot and Cold

Acidophiles and Alkaliphiles
- Extreme pH Tolerance

Xerophiles
- Drought

Metallotolerance
- Heavy Metals

Halophiles
- Osmotic and Saline Conditions

Student Seminars
- Last 4 weeks of this course.

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

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 and at Biology's website. 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. 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. 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.