

# BIOL 360

## Biotechnology and Society

Winter Term

### CALENDAR DESCRIPTION

The contributions and effects of biotechnology on humanity will be explored from the perspective of their impacts on society including moral and ethical issues. Biotechnological contributions to society will include those in medicine, industry, and agriculture.

### SCHEDULE

**Lectures, etc.: Please see University Timetable**

### Learning Objectives

This course will provide a sound basis in biotechnologies and their societal implications including ethical and moral issues, laws and regulations, etc., related to the biotechnologies.

### 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	12	24
	Seminar	0	0	0
	Laboratory Demos	0.5	12	6
	Tutorial	1	12	12
	Practicum	0	0	0
	Group learning	1	12	12
	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
Tutorial Activities	20	Throughout course
Participation	10	Throughout course
Peer Evaluation	10	Throughout course
Written Report	20	Week 7
Group Presentation	15	Week 10
Final Exam	25	Last week of lecture period

## **Course Outline**

### *Industrial Biotechnology*

- Enzyme Production

### *Pharmaceutical Biotechnology*

- Antibiotics Production
- Human Hormones

### *Agricultural Biotechnology-Plants*

- Herbicide Resistant Crops
- Pollen control
- Insect Resistant Crops
- Virus Resistant Crops
- Quality Enhances Crops

### *Agricultural Biotechnology-Animals*

- Animal Cloning
- Supermale Fish

### *Medically Related Biotechnology*

- Nanomedicine
- Gene Therapy
- Stem Cells
- Disease Animal Model Systems
- Mammalian Based Drug Production
- Fertility

## **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 (O)	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 - <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.

### **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.

### **Copyright**

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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/hcds/ds/>*