

# BIOL 510

## The Biology of Sustainability

Fall Term (2022-23)

### CALENDAR DESCRIPTION

#### BIOL-510 (3.0) The Biology of Sustainability

This ecology course is aimed at identifying and critiquing potential mechanisms by which our civilization could most effectively move toward more sustainable living. Biology can explain current environmental sustainability issues, but is also at the fundamental root of their underlying causes – human behaviour. Therefore, the biology of sustainability incorporates biogeochemical, ecological, economic, social, genetic, and philosophical features and constraints. Each iteration of the course will focus on a unique specific thematic question related to at least some of those components.

The course is for final year undergraduates and is specifically aimed at enhancing their capacities for critical thinking, intelligent open discussion, group work, and independent learning. Emphasis will be on interactive discussions and student-led seminars in which participants will have ample opportunities to explore, analyze and synthesize scientific information, to learn how the scientific process works, to speak and write effectively, and to develop their understanding of the philosophies underlying human behaviour and how they relate to global change issues, and the sustainability of our current civilisation.

**Professor:** P. Grogan **PREREQUISITES** BIOL 300 strongly recommended.

LEARNING HOURS 120 (36S; 12T; 12G; 36I;12O; 12P)

### SCHEDULE

**Seminars: Monday 12:30-2:00, Wednesday 11:30-13:00. 3112 Biosciences.**

<b>Instructor</b>	<b>Dr. P. Grogan</b>
<b>Instructor Contact</b>	<a href="mailto:groganp@queensu.ca">groganp@queensu.ca</a> – Phone 613-533-6152)
<b>Office Hours</b>	TBA
<b>TA:</b>	Not applicable
<b>TA Contact Information</b>	Not applicable
<b>Office Hours</b>	Not applicable

### 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			
	Seminar	3	12	36
	Laboratory			
	Tutorial	1	12	12

	Practicum			
	Group learning	1	12	12
	Individual instruction	3	12	36
Other	Online activity	1	12	12
	Off-campus activity			
	Private study	1	12	12
Total hours on task				120

### **Course Outline**

Each iteration of this course has a different theme question that relates to the overall course description outlined in the opening paragraph above. The 2022 course is subtitled: **The Biology of Sustainability: Maybe our greatest need now is not more knowledge but more wisdom**

The principal question that the 2022 course will address is:

**Interconnectedness and impermanence: Is enhanced deep awareness of these fundamental biological principles the ultimate key to significantly advancing our species toward more sustainable living?**

Students will lead informal seminar discussions on some component of this theme that is of particular interest to them. The 2022 course was largely focussed on reading and discussion of biology professor Robin Wall Kimmerer's 2013 book *Braiding Sweetgrass. Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants* but will also include other course theme-associated readings and activity exercises/workshops.

### **Learning Outcomes for the 2022 iteration:**

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

1. Explain and contrast the term 'ways of knowing' from Indigenous, Western Science and Arts perspectives, and outline their historical roots and interconnections
2. Describe the 17 United Nations Sustainable Development Goals and their unique significance, and evaluate them in the context of Indigenous values
3. Discuss and critique the strengths and weaknesses of each of the core sustainability-related arguments proposed in Robin Kimmerer's book *Braiding Sweetgrass*
4. Formulate clear, original, challenging, and concise thematic questions from course reading materials that are likely to lead to focussed and intellectually-probing seminar group discussions, student-led seminar topics, and short essays
5. Lead a stimulating, informative and creative seminar interpreting selected material from Robin Kimmerer's book *Braiding Sweetgrass* in the context of this course's focal question about interconnectedness and impermanence (see above)
6. Develop and present a cohesive, original, synthesis final essay/media project on the potential value of incorporating the concepts of interconnectedness and impermanence to promote more sustainable living across our society
7. Use the learning achieved in this course to develop lasting personal solutions for coping with, and constructively responding to, the major environmental and social sustainability issues of the 21<sup>st</sup> century.

### **Textbooks/Readings**

Reading list to be provided at beginning of the course and further required readings will be chosen by the

students as the course progresses.

**Website:** <https://www.queensu.ca/terrestrial-ecosystem-ecology/teaching/biol-510-biology-sustainability/biol-510-biology-sustainability-fall-2022>

### **Grading Scheme**

<b>Component</b>	<b>Weight (%)</b>	<b>Date</b>
Active participation in discussions (questions, comments, suggestions)	15%	Ongoing
Seminar written questions	20%	Ongoing
Seminar presentation	25%	TBA
Final synthesis exercise (essay/media project)	40% (10% outline; 30% final submission)	TBA

## **Grading Method**

As part of the Grading Scheme, the instructor will use a combination of the various Grading Method approaches outlined below to assess the different components of the course (itemized above), and will combine those grades into a final course letter grade.

a. Sample syllabus text for the “letters in, letters out” method:

All components of this course 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 approved scale (see below). Your course average will then be converted to a final letter grade according to Queen’s Official Grade Conversion Scale (see below).

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

<b>Assignment mark</b>	<b>Numerical value for calculation of final mark</b>
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

### **Queen’s Official Grade Conversion Scale**

<b>Grade</b>	<b>Numerical Course Average</b>
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

b. Sample syllabus text for the “numbers in, letters out” 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:

**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

c. Sample syllabus text for mixed marking:

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 approved scale (see below). Your course average will then be converted to a final letter grade according to Queen’s Official Grade Conversion Scale (see below).

**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
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D+	57-59
D	53-56
D-	50-52
F	49 and below

### **Statement on Academic Integrity**

The following statement on academic integrity builds on a definition approved by Senate and is designed to make students aware of the importance of the concept and the potential consequences of departing from the core values of academic integrity. It is highly recommended that this statement be included on all course syllabi. Instructors may also consider including this statement with each assignment.

Queen's students, faculty, administrators and staff all have responsibilities for supporting and upholding the fundamental values of academic integrity. Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see [www.academicintegrity.org](http://www.academicintegrity.org)) and by the quality of courage. These values and qualities are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University.

Students are responsible for familiarizing themselves with and adhering to the regulations concerning academic integrity. General information on academic integrity is available at [Integrity@Queen's](mailto:Integrity@Queen's) University, along with Faculty or School specific information. Departures from academic integrity include, but are not limited to, plagiarism, use of unauthorized materials, facilitation, forgery and falsification. Actions which contravene the regulation on academic integrity carry sanctions that can range from a warning, to loss of grades on an assignment, to failure of a course, to requirement to withdraw from the university.

### **Turnitin Statement**

Queen's University has partnered with the third-party application Turnitin to help maintain our standards of excellence in academic integrity. Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Submitted files are compared against an extensive database of content, and Turnitin produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

### **Copyright of Course Materials**

Any written or visual material an instructor produces is automatically copyrighted, and an instructor may pursue any violator of that copyright whether or not a notice is placed on the course material. The materials presented in this course are designed for use as part of BIOL 411 at Queen's University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.

## **Privacy Statement for Instructors Who Use External Software in Their Course**

This course may make use of Turnitin. Be aware that by logging into the site, you will be leaving onQ, and accessing [the name of company's] website and [name of software application]. Your independent use of that site, *beyond what is required for the course* (for example, purchasing the company's products), is subject to [name of company's] terms of use and privacy policy. You are encouraged to review these documents, using the link(s) below, before using the site.

Links to the most common websites used by instructors are listed below:

- Crowdmart - <https://crowdmart.com/privacy/queens/>
- Pearson & Peer Scholar- <http://www.pearsoncanada.ca/pearson-canada-at-a-glance/legal/privacy-statement>
- Wiley - <http://ca.wiley.com/WileyCDA/Section/id-302344.html>
- McGraw Hill - <https://www.mheducation.ca/privacy/>
- Turnitin - [http://turnitin.com/en\\_us/about-us/privacy](http://turnitin.com/en_us/about-us/privacy)
- Rosetta Stone (formerly Tell Me More)  
- [http://resources.rosettastone.com/CDN/us/agreements/US\\_Privacy\\_Policy-102513.pdf](http://resources.rosettastone.com/CDN/us/agreements/US_Privacy_Policy-102513.pdf)
- Coglab - <https://coglab.cengage.com/info/privacy.shtml>

## **Accommodations Statement**

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 Student Wellness Services (SWS) and register as early as possible. For more information, including important deadlines, please visit the Student Wellness website at: <http://www.queensu.ca/studentwellness/accessibility-services/>

## **Academic Considerations for Students in Extenuating Circumstances**

The Senate Policy on Academic Consideration for Students in Extenuating Circumstances (<http://www.queensu.ca/secretariat/sites/webpublish.queensu.ca.uslwww/files/files/policies/ExtenuatingCircumstancesPolicyFinal.pdf>) was approved in April, 2017. Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and which have a direct and substantial impact on their ability to meet essential academic requirements. The Faculty of Arts and Science is developing a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances, which will be posted on the Faculty of Arts and Science website in Fall, 2017.

### **Location and Timing of Final Examinations**

As noted in Academic Regulation 8.2.1, “the final examination in any class offered in a term or session (including Summer Term) must be written on the campus on which it was taken, at the end of the appropriate term or session at the time scheduled by the Examinations Office.”

The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar’s webpage. A detailed exam schedule for the Fall Term is posted before the Thanksgiving holiday; for the Winter Term it is posted the Friday before Reading Week, and for the Summer Term the window of dates is noted on the Arts and Science Online syllabus prior to the start of the course. Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel /holiday plans or flight reservations.