
BIOL 442
Evolutionary Medicine
Fall Term (2022)

CALENDAR DESCRIPTION

An exploration of human disease, illness, and injury, and the symptoms and treatments of medical conditions, with an evolutionary framework.

Prerequisite: BIOL 206/3.0 and a minimum GPA of 2.0 in the Biological Foundations List

SCHEDULE

Lectures: 50-min; Mon 11:30am, Tues 1:30pm; Dunning Hall 12

Tutorials: 2 hours; once per week (attend the section you are enrolled in); Biosciences 3110

Instructor Information

Name: Dr. Fran Bonier

Office address: Biosci3522

Office hours: TBD

Telephone number: 613-533-6127

Email: bonierf@queensu.ca

Website: www.bonierlab.com

Learning Objectives

The goal of Biology 442 is to guide students in applying an evolutionary framework to better understand human medical conditions and illnesses, and to deepen students' understanding of fundamental evolutionary concepts. In the process, students will improve their critical thinking and communication skills through participation in in-class and tutorial discussions, writing independent and group projects, and delivering an oral presentation to their tutorial section.

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			
	Laboratory			
	Tutorial	2	10	20
	Practicum			
	Group learning			
	Individual instruction			
Other	Online activity	1	10	10
	Off-campus activity			
	Private study	6	11	66
Total hours on task				120

Course Outline

More information can be found at the course OnQ site

Overview of some topics to be covered in the course:

1. Parasites and pathogens
2. Evolution of virulence
3. Antibiotic resistance
4. Pathogen evolution & vaccines
5. Disease emergence
6. The scientific method and hypothesis testing
7. Fundamental evolutionary theory
8. Why Evolutionary medicine?
9. Pathogen diversity and human evolution
10. Human genetic variation of medical relevance
11. Life history tradeoffs and human health
12. Cancer

Textbooks/Readings

Recommended text: *Evolutionary Medicine* (first edition, 2016) by Stearns and Medzhitov – students can opt to purchase a hard copy book (available at the Queen’s Bookstore, and through other vendors) or an e-copy (available at coursesmart.com as well as other vendors).

Other readings from the primary literature to be provided on the OnQ site

Suggested Time Commitment

In this course, you should expect to invest on average 8 to 10 hours per week. This will include the time you spend in class or tutorial, studying course material, completing assignments, and preparing for quizzes. You are encouraged to use a term at a glance and a weekly study schedule (visit [SASS](#)) that distributes the 8-10 hours per week and avoid ‘cramming’. This way you will be more likely to complete the course successfully and remember what you learned longer.

Timing of Final Examinations

There is no final exam in BIOL442. Students will be assessed through frequent in-class or OnQ quizzes and other assignments.

Assessment

Students’ final marks will be based on the following assessments. Students wishing to pass BIOL442 must earn greater than 50% across all of these assessments for their final mark. The weighting below is subject to change.

Component	Weight (%)
Quizzes	40%
Science Communication project	30%
Tutorial assignments	24%
Participation	6%

Grading Scheme and Grading Method

All components of this course will receive numerical 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

Accommodations for Disabilities

Queen's University is committed to achieving full accessibility for people 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 their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at [Senate in November 2016](#). If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the **Queen's Student Accessibility Services (QSAS)** and register as early as possible. For more information, including important deadlines, please visit the [QSAS website](#).

Academic Consideration for Students in Extenuating Circumstances

Academic consideration is a process for the university community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to:

- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.)
- Responses to traumatic events (e.g., Death of a loved one, divorce, sexual assault, social injustice, etc.)
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.)

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the [portal where a request can be submitted](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

For guidance on **submitting requests**, please see refer to the Resource Guides available on the [Academic Consideration website](#) under "Applying for Academic Consideration."

N.B: The COVID-19 pandemic is an evolving situation. If you have symptoms or are deemed a close contact of someone with COVID, please access our **COVID-Related Absence Reference Guide** on the [Academic Consideration website](#). This guide will provide you with information on applying for consideration, the types of documentation (including non-medical documentation) you can use to support your request, as well as insight into how the Faculty office will assess these requests.

If you need to request academic consideration for this course, you will be required to provide the following name and email address to ensure it reaches our team accordingly:

Instructor/Course Coordinator Name: Frances Bonier

Instructor/Course Coordinator email address: bonierf@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been verified. Any delay in contact may limit the Consideration options available. Students must submit Academic Consideration requests PRIOR to missing class assessments (e.g., quizzes) or assignment deadlines. All assignments in this course are associated with a 72-hour grace period, so short-term Academic Considerations are not required to access this extension, and extensions beyond that period require an approved long-term Academic Consideration.

Please follow up with Dr. Bonier via email as soon as possible after receiving verification of your Consideration request.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, [please see our website](#).

Academic Integrity

Queen's students, faculty, administrators and staff all have responsibilities for upholding the fundamental values of academic integrity; honesty, trust, fairness, respect, responsibility and courage. These values 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 (see the Senate Report on Principles and Priorities).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1), on the Arts and Science website, and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery, use of forged materials, contract cheating, unauthorized use of intellectual property, unauthorized collaboration, failure to abide by academic rules, departure from the core values of academic integrity, 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 regulation on academic integrity carry sanctions appropriate to the severity of the departure 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.

Copyright of Course Materials

Unless otherwise stated, the material on the course OnQ site is copyrighted and is for the sole use of students registered in BIOL442. The material on the website may be downloaded for a registered student's personal use but may not be distributed or disseminated to anyone other than students registered in this course.

Technology Requirements

OnQ performs best when using the most recent version of the web browsers Chrome or Firefox. Safari and Edge are discouraged as these web browsers are known to cause issues with OnQ.

For technology support ranging from setting up your device, issues with onQ to installing software, contact [ITS Support Centre](#).

Late Policy

All assignments in BIOL442 are associated with an automatic 72-hour grace period. You can submit assignments any time before the end of that grace period without penalty, and do not need special permission to access the grace period. We will not accept assignments after the end of the grace period without an approved Long-Term Academic Consideration, which you must request through [the Arts & Sciences portal](#).

Attendance

Participation is an important component of this course, both in lectures and tutorials, and so students are expected to attend all class sessions. If you will miss a class due to an extenuating circumstance, please submit a request for Academic Consideration through the Arts & Sciences portal (link above) prior to the missed class to avoid losing marks for participation.