

Course Information

Course title: Evolutionary Medicine

Course: BIOL442/801

Course components: 2x1hr lecture, 1x2hr tutorial (weekly)

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

Year and term: Fall 2026

Number of credits: 3.0

Learning hours: 120

Mode of instruction: in person

Meeting location and time: *Lectures*: Kingston 301; Wednesday, 9:30am; Friday, 8:30am. *Tutorials*: Mondays 8:30 or 11:30am (Sutherland 448) or Wednesdays 3:30pm (Kingston 100)

Classroom accessibility: Wheelchair accessible, wide aisles, accessible seating, see <https://www.queensu.ca/classrooms/classrooms/kingston-hall#KING-301> for full details.

Instructor Information

Dr. Fran Bonier

email: bonierf@queensu.ca

office: Biosci 3522, office hours TBD

Course Description

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

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. better understand and apply fundamental evolutionary concepts
2. apply an evolutionary framework to better understand human medical conditions and illnesses
3. improve their critical thinking skills to evaluate evidence
4. improve their understanding of the application of the scientific method to test hypotheses relevant to evolutionary medicine
5. more clearly communicate complex topics to a general audience
6. discuss and debate topics relevant to evolutionary medicine with their peers

Assessments

Assessment	Due Date	Weighting	CLOs assessed
Quizzes (4)	25 Sept, 23 Oct, 13 Nov, 4 Dec	20%	CLO 1-4
Tutorial Assignments	8 across the term	36%	CLO 1-6
Final Exam	TBD (exams office)	40%	CLO 1-5
Participation	assessed across the term	4%	CLO 1-6

Students must earn a minimum of 50% across these assessments to pass BIOL442/801.

To earn graduate credit (BIOL801), students must lead half of one class session (25min), delivering an accessible lecture to the class on a topic relevant to the course.

Policy on Late or Missed Assessments

Students with an approved Academic Consideration or Accommodation that encompasses the due date for any assessment will have the weighting of the missed assessment applied to the weight of the final exam (e.g., if students have an approved absence that results in them missing one quiz, their final exam will be weighted 45% instead of 40%). Students are responsible for submitting requests for Academic Considerations or use of approved Accommodations prior to the date of the assessment. Due date extensions are not possible, as all assessments occur in-person during synchronous sessions. Final exams can only be deferred with an approved Academic Consideration prior to the exam date.

For information regarding what is considered extenuating circumstances and qualifications for Academic Consideration, please visit the [Faculty of Arts and Science's Academic Consideration webpage](#).

Course schedule and activities

Week	Topic
1	Fundamentals of Evolution
2	Pathogen evolution – antibiotic resistance & microbe ecology
3	Pathogen evolution – R0 equation, virulence evolution, modes of transmission, public health
4	Pathogen evolution – evolution-proof antimicrobial therapies
5	Pathogen evolution – zoonoses & disease emergence
6	Human evolution – defenses & disease
7	Human evolution – defenses, developmental origins of health & disease
8	Human evolution – reproductive medicine, familial fitness conflicts
9	Human evolution – mismatch to modernity, Hygiene/Old Friends
10	Human evolution – life history tradeoffs, aging
11	Cancer 1
12	Cancer 2 / course wrap-up

Important University Dates

Please visit the [Faculty of Arts and Sciences Sessional Dates website](#) for all academic deadlines.

Course Materials & Technologies

No Required Course Textbooks

See OnQ for required and recommended readings from the research literature

Supplemental Materials

Resource	Resource Type	Access	Further Information
Evolutionary Medicine by Stearns & Medzhitov	Other	Campus bookstore or other book vendor	Recommended text – not required

Educational Technologies, Help, Privacy, and Accessibility

This course makes use of OnQ for specific educational use/purposes.

Notice of Recording

Synchronous (live) classes involving guest lecturers will be delivered in this course through Zoom, a video conferencing platform supported by the University. Steps have been taken by the University to configure this platforms in a secure manner. All other classes will be delivered in person, on campus. Classes will not be recorded.

To learn more about how your personal information is collected, used and disclosed by Queen's University, please see the [Notice of Collection, Use and Disclosure of Personal Information](#).

Copyright of Course Material

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Inclusion

Equity, Diversity, and Inclusivity Statement

Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect, and systemic discrimination exists within our institutional structures, policies, and practices and in our community. These take many forms and work to differentially advantage and disadvantage persons across social identities such as race, ethnicity, disability, gender identity, sexual orientation, faith, and socioeconomic status, among other examples. In this class I will work to promote an anti-discriminatory, anti-racist, and

accountable environment where everyone feels welcome. Every member of this class is asked to show respect for every other member.

Building a Classroom Community

University is a place to share, question, and challenge ideas. Each student brings a different set of lived experiences. You can help to create a safer, more respectful classroom community for learners by following these guidelines:

- Make a personal commitment to learn about, understand, and support your peers.
- Assume the best of others and expect the best of them.
- Recognize and value the experiences, abilities, and knowledge each person brings to the course.
- Acknowledge the impact of oppression on other people's lives and make sure your words and tone are respectful and inclusive.
- Encourage others to develop and share their ideas.
- Pay close attention to what your peers say/write before you respond. Think through and re-read what you have written before you post online or send your comments to others.
- Be open to having your ideas challenged and challenge others with the intent of facilitating growth.
- Look for opportunities to agree with one another, building on and intentionally referencing peers' thoughts and ideas; disagree with ideas without making personal attacks, demeaning, or embarrassing others.

Fostering Accessibility

All of us have a shared responsibility for fostering accessibility and promoting meaningful inclusion of those with disabilities. The [Accessibility Hub](#) at Queen's University's Human Rights & Equity Office offer a host of [tutorials](#) that provide us all with practical tips for:

- creating accessible documents, e.g., to submit to your teaching team or share with peers in peer feedback activities/in a presentation,
- emails, e.g., while communicating with group members or your teaching team, and
- meeting practices (e.g., in tutorials/labs/seminars or virtual meetings).

Communication

Questions about the Course and Contacting the Teaching Team

Contact Dr. Bonier at bonierf@queensu.ca

Queen's Email

The university communicates with students via Queen's email. Please check your email regularly to ensure you do not miss important information related to your course.

Course Feedback

At various points during the course, you may be asked to take part in a variety of feedback activities, such as surveys and questionnaires. This feedback enables the teaching team to improve the course. All surveys are anonymous and are directly related to activities, assessments, and other course material.

Policies

Class Attendance

Your presence and participation in class contributes to the knowledge and skills that you will develop throughout this course. I expect that you attend class regularly, and participate in class conversations and learning activities. These types of activities provide active engagement, promote a deeper understanding of the course content, and contribute to your success in this course.

Academic Support

All undergraduate students face new learning and writing challenges as they progress through university: essays and reports become more complex; effectively incorporating research into writing becomes more important; the types of assignments become more diverse; managing your time and developing the skills you need to read and think critically gets more challenging. I encourage students to contact Student Academic Success Services (SASS). SASS offers many different ways to receive support:

- Free online or in-person [appointments](#) to get personalized support on writing and academic skills from expert staff and trained peers.
- [Workshops](#) and [drop-in programs](#). SASS' [Events Calendar lists events coming soon](#).
- [Online resources](#) that provide strategies for academic skills and writing development at university.
- If English is not your first language, SASS has specific resources for [English as Additional Language students](#), including weekly programs and EAL academic skills appointments. You can meet on an ongoing basis with an EAL consultant to work on your academic writing, speaking, listening, and reading skills.

Accommodations for Disabilities

Queen's University is committed to working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the [QSAS website](#) to learn more about academic accommodations or start the registration process with QSAS by clicking **Access Ventus** button at [Ventus | Accessibility Services | Queen's \(queensu.ca\)](#)

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: <https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students>

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 Illness or Injury (stomach flu, anxiety/depression, mononucleosis, concussion, broken bones, surgery, medical treatments, etc.)
- Traumatic Event/Confidential (Bereavement, serious injury, illness or required treatment for a significant other/family member or a traumatic event such as divorce, sexual assault, social injustice, etc.)
- Requirements by Law or Public Health Authorities (court dates, jury duty, requirements to isolate, etc.)
- Significant Event (varsity athletic event, distinguished event, serving in the Reserve Forces, 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. For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage on [Academic Consideration in Extenuating Circumstances](#) and submit a request via the [Academic Consideration Request Portal](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their instructor and/or course coordinator as soon as possible once academic consideration has been granted. Any delay in contact may limit the options available for academic consideration.

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 the Faculty of Arts and Science's [Academic Consideration website](#). ASO courses include links to information on **Academic Consideration** on your **Course Homepage** in onQ.

Please see the Teaching Team page for contact information for your instructor and TA(s), where relevant.

Queen's Policy Statement on Academic Integrity

Queen's University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge, and to share the ideas and knowledge that emerge from a range of intellectual pursuits. Queen's students, faculty, administrators and staff therefore 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 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.

The following statements from "The Fundamental Values of Academic Integrity" (2nd edition), developed by the International Center for Academic Integrity (ICAI), contextualize these values and qualities:

1. **Honesty** Academic communities of integrity advance the quest for truth and knowledge through intellectual and personal honesty in learning, teaching, research, and service.
2. **Trust** Academic communities of integrity both foster and rely upon climates of mutual trust. Climates of trust encourage and support the free exchange of ideas which in turn allows scholarly inquiry to reach its fullest potential.
3. **Fairness** Academic communities of integrity establish clear and transparent expectations, standards, and practices to support fairness in the interactions of students, faculty, and administrators.
4. **Respect** Academic communities of integrity value the interactive, cooperative, participatory nature of learning. They honor, value, and consider diverse opinions and ideas.
5. **Responsibility** Academic communities of integrity rest upon foundations of personal accountability coupled with the willingness of individuals and groups to lead by example, uphold mutually agreed-upon standards, and take action when they encounter wrongdoing.
6. **Courage** To develop and sustain communities of integrity, it takes more than simply believing in the fundamental values. Translating the values from talking points into action -- standing up for them in the face of pressure and adversity — requires determination, commitment, and courage.

Students are responsible for familiarizing themselves with and adhering to the Senate [regulations](#) concerning academic integrity, 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.

Policy on Use of Generative Artificial Intelligence (AI) Tools

Use of GenAI tools is **not allowed** in any part of student work for this course. Submitting AI-generated content constitutes a departure from academic integrity as defined by university Academic Integrity procedures.

Queen's [Student Academic Success Services](#) (SASS) offers a self-directed, online academic integrity module which we encourage all students to take which will help with:

- Understanding the nature of the academic integrity departure
- Understanding the expectations of and role of sources in scholarly writing
- Integrating sources into your writing (paraphrasing, quoting, summarizing)
- Understanding when and how to cite your sources
- Managing your time effectively to avoid the need for shortcuts
- Taking effective notes to ensure accuracy of source material and correct attribution