

ANTHRO 4580

Evolutionary Medicine

About this course

Evolutionary processes and human evolutionary history have profound implications in the way in which we respond to and are susceptible to disease. Unlike many of the short-term biomedical understandings of human health, evolution can better inform on the ultimate causes and consequences of topics such as infection and inflammation, allergy, parasites, diabetes and cardiovascular disease, aging, cancer, reproductive issues, and mental disorders. As part of this class, students will use evolution to critically evaluate human health, and explore how natural selection can shape behaviors and physiological responses.

Course Objectives

By the end of this course students will be expected to:

- Be able to understand and apply evolutionary thinking to issues of human health
- Recognize the role of evolutionary history in shaping susceptibility to chronic and infectious diseases.
- Recognize the role of evolution in shaping physiological and behavioral responses to disease

Class will meet Tue & Thu 9:30 - 10:45 AM in Tate Hall 111

Instructor is Dr. Sean Prall. My office is in Swallow Hall 224, and my office hours are Tue/Thur from 12-2 PM or by appointment. You may contact me via email at sprall@missouri.edu

Readings

There are no text required for this course. All readings will be uploaded to Canvas.

However, interested students are recommended to purchase *Why we get sick* by Nesse and Williams (1994, Vintage Books).

Assignments and grading

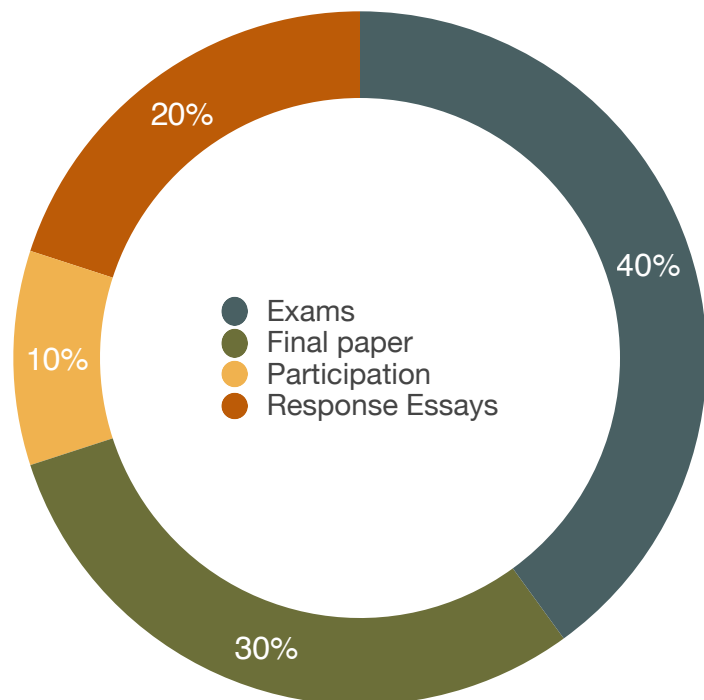
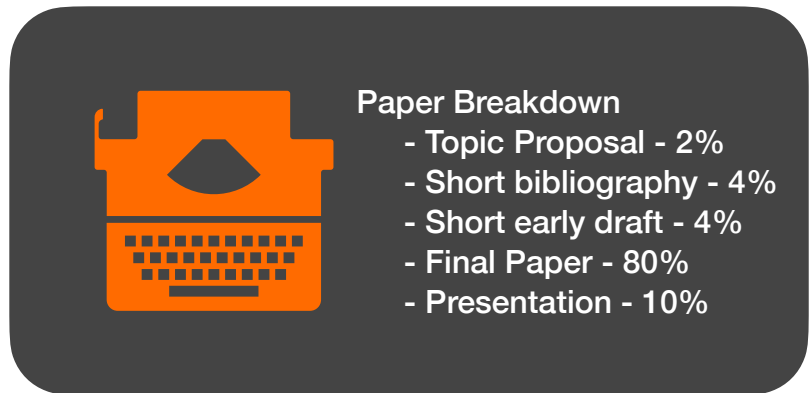
Grading for this class will be broken down into the following requirements and assignments as represented in the graph.

Final Paper/presentation - Students will write a final paper reviewing relevant aspects of a topic related to human health or disease. Topics should be focused on apply evolutionary principles to a specific health issue, and will be approved by the instructor. To ensure progress throughout the course of the semester, students will be expected to submit several items as described in the graphic, which highlights the grade breakdown of the paper. Expectations for each item will be posted on canvas. At the end of the semester, students will be expected to deliver a short presentation on their research (less than 10 minutes). Undergraduate paper should be 10-12 pages, while graduate papers should be 15-20 pages (double spaced, 12 pt font). A rubric will be provided prior to handing in the paper. Graduate students should speak to the instructor for additional expectations and details.

Exams - Students will complete two exams during the semester. Exams will be composed of a mix of multiple choice, short answer, and essay questions. The last exam will not be cumulative.

Response essays - For each class session, students will be asked to write a response essay to a question based on required readings. Response essays should be relatively short, no more than one page in length, but should illustrate the student's ability to synthesize material and address questions based on that day's required readings. Essay prompts will be posted on canvas, and essays are due on canvas at by 11:59 PM on the day before class, allowing the professor to read them prior to class.

Class Participation - Students will be expected to be present in class, to come prepared having read the assigned readings for that day, and participate in thoughtful discussion



Course Schedule

Week	Date	Day	Daily Topic
Week 1	24-Aug	Tuesday	Introduction to the course
	26-Aug	Thursday	Evolutionary thinking for health and medicine
Week 2	31-Aug	Tuesday	Evolutionary thinking for health and medicine
	2-Sep	Thursday	Evolutionary history and human genetic variation
Week 3	7-Sep	Tuesday	Health and Human Life History
	9-Sep	Thursday	Sex differences in health and disease
Week 4	14-Sep	Tuesday	Menstruation and oral contraceptive use
	16-Sep	Thursday	Evolutionary conflicts in pregnancy and childhood
Week 5	21-Sep	Tuesday	Individual meetings to discuss paper topics Topic Proposal Due
	23-Sep	Thursday	Morning sickness and the evolution of childbirth
Week 6	28-Sep	Tuesday	Developmental origins of health and disease
	30-Sep	Thursday	Human evolution, diet, and nutrition
Week 7	5-Oct	Tuesday	Activity, energetics, and health
	7-Oct	Thursday	Exam 1
Week 8	12-Oct	Tuesday	Cancer
	14-Oct	Thursday	Evolution of virulence
Week 9	19-Oct	Tuesday	Fever, Injury and Pain Short bibliography due
	21-Oct	Thursday	Hygiene hypothesis and allergy
Week 10	26-Oct	Tuesday	Behavioral immune system
	28-Oct	Thursday	The evolution of senescence
Week 11	2-Nov	Tuesday	Aging and degenerative disease
	4-Nov	Thursday	Addiction Short early draft due
Week 12	9-Nov	Tuesday	Mental Disorders
	11-Nov	Thursday	Social stress and health
Week 13	16-Nov	Tuesday	The evolutionary ecology of human sleep
	18-Nov	Thursday	Exam 2
Week 14	30-Nov	Tuesday	The evolution of medicine
	2-Dec	Thursday	Student Presentations
Week 15	7-Dec	Tuesday	Student Presentations
	9-Dec	Thursday	Student Presentations
Finals			Final paper due

Course Policies and Expectations

Students are expected to be present for class (until otherwise notified). Attendance will not be taken, but students who fail to attend may miss pop quizzes and valuable in-class learning opportunities. Students who have a *legitimate* reason to miss class must alert the instructor BEFORE class (at least 24 hours in advance). Students who miss class without legitimate reasons and advance warning may not make up missed quizzes, exams, or hand in materials late.

Weather Policy

As a university policy change for spring of 2021, severe inclement weather will no longer result in class cancelation. In the event face-to-face classes cannot be held due to weather, class will be held on Zoom unless otherwise notified. Students will receive an email with instructions and a link. Do not assume class will be moving to Zoom until you receive announcement on canvas or hear an official announcement from the university that classes will not be held on campus.

Decreasing the Risk of COVID-19 in Classrooms and Labs

If you have tested positive for COVID-19 or have been identified as someone who needs to quarantine, do not attend class in person until the mandated period for isolation or quarantine has passed. Your instructor will work with you on arrangements to access class material while you are in isolation or quarantine. Additionally, if you are experiencing any COVID-related symptoms, or are otherwise feeling unwell, do not attend in-person classes and contact your health care provider and/or student health immediately. COVID symptoms include: fever greater than 100.4 or chills; cough, shortness of breath or difficulty breathing; fatigue; unexplained muscle or body aches; headache; new loss of taste or smell; sore throat; congestion or runny nose; nausea or vomiting; diarrhea. Instructors or students with concerns about how a student is following any University-mandated COVID-19 policies and protocols should report those concerns to the Office of the Dean of Students. Concerns can be documented on a COVID Safety Measures Reporting Form.

Academic Integrity

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor or the Office of Academic Integrity. Students are expected to adhere to this honor pledge on all graded work whether or not they are explicitly asked in advance to do so: "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work."

Academic Inquiry, Course Discussion and Privacy

When students record something that happens in a course (a lecture, class discussions, meetings, etc.) it has an impact on the rights of the people captured in that recording. For example, the instructor and the University may have rights to the intellectual property contained in that recording. At the same time, another student who may have been recorded has the right to privacy. In order to protect these rights, MU employs a policy (called "Executive Order No. 38") to govern both situations you may encounter while taking a course – when an instructor allows recordings and when they do not. In this class, students may not make audio or video recordings of course activity, except students permitted to record as an accommodation under section 240.040 of the Collected Rules. Students who violate this policy are subject to discipline in accordance with provisions of section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

FERPA

The Family Educational Rights and Privacy Act (FERPA) of 1974 is a federal law designed to protect the privacy of educational records; to establish the rights of students to inspect and review their education records; and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. The law applies to any individual who is or has been in attendance at an institution and regarding whom the institution maintains educational records. Once students have matriculated to the University of Missouri, i.e. enrolled in course work, FERPA rights transfer to the student, regardless of the student's age. Students can enable certain individuals to have access to their education records by signing a FERPA waiver. The consent must specify records to be disclosed, state the purpose of the disclosure and identify the party or class of parties to whom the disclosure must be made.

Intellectual Pluralism

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director, the Office of Academic Integrity, or the MU Equity Office.

Netiquette

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance.



Grading scale

97 - 100% = A+
93 - 96% = A
90 - 92% = A-
87 - 89% = B+
83 - 86% = B
80 - 82% = B-
77 - 79% = C+
73 - 76% = C
70 - 72% = C-
67 - 69% = D+
63 - 66% = D
60 - 62% = D-
Under 60% = F

Religious Holidays & Accommodations

Many religious faiths are represented in the student body. The University of Missouri does not restrict student free exercise of religion, unless 1) the restriction is in the form of a rule of general applicability, and does not discriminate against religion or among religions; and 2) it can be demonstrated that the application of the restriction is essential to furthering a compelling university interest, and is not unduly restrictive considering the relevant circumstance. The policy of the University attempts to strike a reasonable balance between accommodating the religious practice of students and meeting academic needs and standards. Consult IDE's Guide to Religions for the form that can be used to notify an instructor of an absence associated with religious practice. Students are expected to notify their instructor(s) by completing and submitting this form in a manner that is consistent with the procedure outlined in the university's policy on student religious accommodation. Providing false information regarding sincerely held religious practice is a violation of the university's Standard of Conduct and will not be tolerated.

Nondiscrimination Policy (Prohibited Discrimination)

The University of Missouri does not discriminate on the basis of race, color, national origin, ancestry, religion, sex* (including gender), pregnancy, sexual orientation, gender identity, gender expression, age, disability, protected veteran status, and any other status protected by applicable state or federal law. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. *Sex discrimination includes rape, sexual assault, sexual harassment, unwanted touching, stalking, dating/domestic violence, stalking, and sexual exploitation. Retaliation for making or supporting a report of discrimination or harassment is also prohibited. If you experience discrimination or sexual violence, you are encouraged (but not required) to report the incident to the MU Office for Civil Rights & Title IX. Learn more about your rights and options at civilrights.missouri.edu or call 573-882-3880. You also may make an anonymous report online. If you are a survivor, or someone concerned about a survivor, and need immediate information on what to do, see RSVP.missouri.edu/get-help. Both the Office for Civil Rights & Title IX and the RSVP Center can provide assistance to students who need help with academics, housing, or other issues. In the event that you choose to write or speak about having experienced any of these forms of prohibited discrimination or harassment, Mizzou policies require that, as your instructor, I share this information with the MU Office for Civil Rights & Title IX. They will contact you to offer information about resources, as well as your rights and options as a member of our campus community.

Students with Disabilities

The goal of the University of Missouri is to ensure an inclusive learning environment for all students. The University of Missouri Disability Center provides services and accommodations for students to participate fully in the learning experience and to experience equitable evaluation of their performance. Students (including online students) with a documented disability can contact the Disability Center to establish an Accommodation Plan. Documented disabilities include hearing, vision, mobility, learning and attention, psychological health, and physical health. Students' accommodations are implemented with the input of students to maximize the learning experiences. The MU Disability Center keeps information about a student's disability confidential.

Please notify me of your eligibility for accommodations as soon as possible. Additionally, if there are aspects of the course that present as barriers, such as inaccessible course content (e.g., learning assessments, PowerPoints, non-captioned videos, images, tables, PDFs) or if you need an immediate accommodation due to an injury, please contact me or the Disability Center as soon as possible.

Please note that course schedule and any deadlines listed are subject to change. Instructor may change course content, assignments, grading, and reading at his discretion. Students will be notified of updates to this syllabus as they occur.