

**USC Dornsife**  
College of Letters,  
Arts and Sciences

**HBIO 405 – Evolutionary Medicine (4 units)**  
Spring 2025  
Lectures: Tuesday and Thursday 2:00-3:20

**Professor:** Dr. Gioia Polidori

- Lecture Location: THH 118
- Office: AHF B40
- Email: [gpolidor@usc.edu](mailto:gpolidor@usc.edu)
- Office hours Tue & Thu 11:30-12:30 pm in AHF 251 and Fri 11:00-1pm on zoom (link on Brightspace).

**I. Course Content:** This is an interdisciplinary course discovering the evolutionary, cultural, and environmental factors in the emergence and existence of human diseases with a focus on the Darwinian (evolutionary medicine) examination of illness.

**II. Learning Objectives**

- Explain how selective pressures led to the evolution of pathogens as well as the evolution of human anatomy, physiology and pathology.
- Apply knowledge of human evolutionary biology to explain how genetic variation in humans affects risk, diagnosis, and treatment of disease.
- Apply knowledge of human evolutionary biology to explain how sociocultural factors affect risk, diagnosis, and treatment of disease.
- Explain how evolution contributed to variation in pathogen populations, thus affecting their virulence and therapeutic approaches.
- Identify, compile, analyze, interpret, synthesize and criticize relevant sources of scientific evidence to effectively present to peers selected topics in the evolutionary biology and medicine
- Use relevant sources of scientific evidence to construct a well-supported, logical argument for the resolution of ethical, social, and environmental issues
- Apply biological knowledge for the resolution of ethical, social, medical, and environmental issues.

**III. Prerequisite:** BISC 120

**IV. Required Textbook:**

Principles of Evolutionary Medicine by Gluckman, Beedle, and Hanson (2015)

**V. Grading Breakdown**

Exam 1	25%
Exam 2	25%
Exam 3	25%
Project	20%
Quizzes	5%
JEP	2.5% extra credit

## VI. Grading scale

- The grading scale is based on the traditional scale as follows:

	<b>A (≥93%)</b>	<b>A- (≥90%)</b>
<b>B+ (≥87%)</b>	<b>B (≥83%)</b>	<b>B- (≥80%)</b>
<b>C+ (≥77%)</b>	<b>C (≥73%)</b>	<b>C- (≥70%)</b>
<b>D+ (≥67%)</b>	<b>D (≥63%)</b>	<b>D- (≥60%)</b>
<b>F (≤59.9%)</b>		

## VII. Description and Assessment of Assignments/Exams

- Class material will be evaluated via quizzes, the final project, and exams.
- Quizzes will be given during lectures and will be based on the material discussed as a way to promote interactive learning.
- For the project you will choose a disease to thoroughly investigate in terms of evolution, previous and current treatments, genetic impacts/coevolution, and possible future implications. A handout with further instruction will be presented in class. This project includes a mandatory approval for your topic at Week 6 and a check-in with the professor on Oct 6th.
- Exams will include a variety of question formats, such as short answers, fill-in, true/false and multiple-choice questions.

## VIII. Tentative Schedule

Date	Lecture Topics	Chapter
Jan. 14	Introduction	
Jan. 16	Evolution Basics	1, 2
Jan. 21	Evolutionary Medicine Introduction	7
Jan. 23	Genetics I	3
Jan. 28	Genetics II	3
Jan. 30	Genetics III	3
Feb. 4	Development I	4
Feb. 6	Development II	4
Feb. 11	Development III	4
Feb. 13	Life Histories	5
Feb. 18	Human Diversity	6
Feb. 20	<b>Exam I</b>	8
Feb. 25	Disease – Reproduction I	8
Feb. 27	Disease – Reproduction II	8

Mar. 4	Disease – Reproduction III	9
Mar. 6	Disease – Nutrition I	9
Mar. 11	Disease – Nutrition II	9
Mar. 13	Disease – Nutrition III	9
<b>Mar 18</b>	Spring Break	
<b>Mar. 20</b>	Spring Break	
Mar. 25	Project check in	
Mar. 27	Disease – Defense I	10
Apr. 1	Disease – Defense II	10
Apr. 3	Disease – Defense III	10
Apr. 8	<b>Exam II</b>	
Apr. 10	Disease – Mental Health	11
Apr. 15	Disease – Mental Health	11
Apr. 17	Disease – Cancer	12
Apr. 22	Disease – Cancer	12
Apr. 24	Evolutionary Medicine – Considerations	
Apr. 29	Project Presentations	
May 1	Project Presentations	

### IX. Additional Policies

- A midterm exam can be taken after the specified date **ONLY** if the student has a documented excuse.
- A request to take a make-up exam must be accompanied by evidence of necessity (e.g.: athlete excuse form or interview notice) and must be made before the date of the scheduled exam.
- Lecture slides will be posted on brightspace however, please do not rely entirely on slides, these are meant as a starting point for note-taking. Class notes and textbook information will form the basis of the material that will be on the exams. If you attend class regularly, you will be updated on the status of lecture notes and course material/announcements.
- Quiz submission: **quizzes are in-class activities** so will only be available during class time for students present in class. Students who have to miss class should notify the instructor to request an exemption. **Submitting quizzes when not present in class will be considered an violation of academic integrity and will be reported to OAI.**
- The only extra credit offered for this course is JEP. This is a semester-long commitment and you will receive extra credit in the class based on your performance in the program. JEP is the oldest and largest university service-learning program in the country. It offers students the unique opportunity to combine academic coursework with experiences in the community surrounding the campus. JEP assignments will be relevant to the course content and unique to HBIO 370. At the beginning of the semester, a JEP representative will visit our

class and tell you more about the program. Deadline for registration is usually during the first two weeks of classes so make sure you register on time and notify the instructor. JEP assignments must be completed before the scheduled final examination. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>.

- Grades will not be rounded. A final grade of 89.99% will NOT be reflected as an A-. It is always difficult to miss a grade boundary by a small amount, but rounding up would defeat the purpose of having an objective grading scale.
- Science and the Evolving Language - As our understanding of science is constantly evolving, so are the terms used in scientific discussions. Therefore, there are terms and concepts that are in the process of being updated by the scientific community but remain outdated, and do not reflect our current values of equity or inclusivity (e.g., the word obesity or that current medical nutritional guidelines utilize a binary dichotomy of men vs women). Despite our own personal values and beliefs, such terms and concepts are part of a global science curriculum and thus will be covered in this class in order to best prepare students professionally. We acknowledge the fact that terms and concepts are in the process of being updated to better reflect our evolving understanding of science and humanity, and hope that you and your colleagues will continue to advocate for and build an equitable academic community in your classrooms and beyond.
- Academic Dialogue: The foundations of academic learning are rooted in our capacity to listen to each other, learn from each other, and respect each other, particularly when we disagree with each other. Academic dialogue is not about winning, but about learning together. To facilitate our building of a robust academic community in this class, we will be creating a living document of norms and expectations of engagement for respectful dialogue.
- Use of Generative Artificial Intelligence  
Since creating, analytical, and critical thinking skills are part of the learning outcomes of this course, all assignments should be prepared by the student working individually or in groups. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated tools is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

## **XII. USC's Statements on Academic Conduct and Support Systems**

### **Academic Conduct**

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious

consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](https://policy.usc.edu/scientific-misconduct).

### **Support Systems:**

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](https://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298*

[equity.usc.edu](https://equity.usc.edu), [titleix.usc.edu](https://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

[usc-advocate.symlicity.com/care\\_report](https://usc-advocate.symlicity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

*The Office of Disability Services and Programs - (213) 740-0776*

[dsp.usc.edu](http://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

*USC Support and Advocacy - (213) 821-4710*

[uscsa.usc.edu](http://uscsa.usc.edu)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](http://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.