

HBIO 405: Evolutionary Medicine**HBIO 405 – Evolutionary Medicine (4 units)**

Fall 2019

Lectures: Tuesday and Thursday 12:30-1:50

Location: VKC 261

Professor: Dr. Gioia Polidori

- Office: AHF B40
- Email: gpolidor@usc.edu
- Office Hours: Tuesday and Thursday 2-4pm

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. This course's objectives include:

- 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.

Prerequisite: BISC 120

Required Textbook:Principles of Evolutionary Medicine by Gluckman, Beedle, and Hanson (2015)**I. Grading Breakdown**

Midterm 1 (Week 5)	25%
Midterm 2 (Week 9)	25%
Midterm 3 (Finals week)	25%
Project	20%
Quizzes	5%

II. Additional Policies

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

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

III. Description and Assessment of Assignments/Exams

- Class material will be evaluated via quizzes and exams.
- Material covered in labs will be evaluated via laboratory assignments as well as laboratory and classroom exams.
- Quizzes will be given during lectures and will be based on the material discussed.
- Exams will not be given a letter grade. Only the final grade will be given a letter grade.
- A request to take a make-up midterm exam must be accompanied by evidence of necessity (ie: letter from a doctor) and must be made before the date of the scheduled exam. Make-up exams will be different from the scheduled exam and may be proctored by personnel who do not have extensive knowledge in the area being tested.
- 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 Nov 21st.

IV. Blackboard

- Blackboard will be used to post announcements, handouts, articles, rubrics, deadlines, feedback to quizzes and midterm exams so check this site periodically.
- Lecture slides will be posted on blackboard, 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.

V. JEP

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. At the beginning of the semester, a JEP representative will visit our class and tell you more about the opportunities available that semester. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>.

VI. Tentative Schedule

Date	Lecture Topics	Chapter
Aug 27	Intro & Evolution Basics	1
Aug 29	Evolution Basics and Evolutionary Medicine	2 & 7
Sep 3	Genetics I	3
Sep 5	Genetics II	3
Sep 10	Development I	4
Sept 12	Development II	4
Sep 17	Development III	4
Sep 19	Life Histories	5

Sep 24	Exam I	
Sep 26	Human Diversity	6
Oct 1	Disease – Reproduction I	8
Oct 3	Disease – Reproduction II	8
Oct 8	Disease – Reproduction III/ Nutrition I	8/9
Oct 10	Disease – Nutrition II	9
Oct 15	Disease – Nutrition III	9
Oct 17	Fall Recess	
Oct 22	Disease – Cancer I	12
Oct 29	Disease – Cancer II	12
Oct 31	Exam II	
Nov 5	Disease – Mental Health I	11
Nov 7	Disease – Mental Health II	11
Nov 12	Disease – Defense I	10
Nov 14	Disease – Defense II	10
Nov 19	Disease – Defense III	10
Nov 21	Check-in	
Nov 26	Medical Practice and Future I	13
Nov 26	Project Presentations	
Nov 28	Thanksgiving	
Dec 3	Project Presentations	
Dec 5	Project Presentations	
Dec 10	Study Days	
	Final Exam: See schedule of classes	

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 Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/departments/departments-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.