ANT4539 Evolutionary Medicine

Course Info: M3 (9:35-10:25am) TUR 2336
W3-4 (9:35-11:30am) TUR 2354

Professor: **Dr. Stephanie Bogart**
Office: B137 Turlington Hall
Email: sbogart@ufl.edu - preferred contact
through **Canvas communications**
Office Hours: T 11:00am-1:00pm and Zoom F 9:00-11:00am.
Office Hours Instructions: Use **Microsoft Bookings** to make an appointment. Zoom or in-person available.

> SEEN IN THE LIGHT OF EVOLUTION, BIOLOGY IS, PERHAPS, INTELLECTUALLY THE MOST SATISFYING AND INSPIRING SCIENCE. WITHOUT THAT LIGHT IT BECOMES A PILE OF SUNDRY FACTS – SOME OF THEM INTERESTING OR CURIOUS BUT MAKING NO MEANINGFUL PICTURE AS A WHOLE.
>
> - THEODOSIUS DOBZHANSKY -
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Course Description: Examines the intersection of evolution, culture, and environment as influencing factors on the emergence and existence of human diseases and pathogens using interdisciplinary methods, but focusing on Darwinian (evolutionary medicine) examination of illness. Students will explore, assess, and solve real world problems through critical-thinking assignments that solidify understanding of the scientific method.
Prerequisites: ANT3514C or BSC2011*
Speak to instructor about readiness for this class and prior evolutionary learnings.

NOTE: this class is eligible for elective credit towards the Anthro BS degree and the Medical Anthropology Certificate, speak to Dr. Bogart if it does not show up on the degree audit.

Course Objectives:
- Develop a deeper comprehension of the central and cross-disciplinary concepts of human biology, which include, but are not limited to genetics, metabolic adaptations, origins of human and pathogen diversity, as well as social behaviors; and how these factors shape human medicine.
- Foster students' process of identifying, exploring, assessing and solving real world problems through independent study and self-directed group projects that solidify their understanding of the scientific method, and basic scientific principles.
- Demonstrate understanding of ecological and evolutionary processes including the role of genetic variation, heredity, and natural selection as well as the implications these processes have for the origins and evolution of modern humans and their biology.
- Conceptualize biological knowledge into a socio-cultural context, especially how biology can contribute to the resolution of social, medical, and environmental issues.

Student Learning Outcomes: after taking Evolutionary Medicine students will be able to:
- Identify, describe, and explain factual, conceptual, and procedural knowledge in human evolution relating to medicine and disease.
- Apply the scientific method and develop critical thinking skills from an evolutionary framework to investigate human variation in its biological, social, and cultural dimensions.
- Integrate different sources and types of knowledge into holistic perspectives about diseases and medicine.
- Develop skills in reading and facilitating discussions over recent primary scientific literature, as well as public speaking skills.

Required Materials:

Principles of Evolutionary Medicine, by Gluckman, Beedle, Buklijas, Low, and Hanson (2016) Second Edition, Oxford University Press, ISBN: 978-0199663934

**Available FREE through Library e-reserves – Go to the Canvas page and click course reserves in left menu (works best in Firefox)

SCHEDULE: (*Subject to revision*)

Module	Topic	Textbook	Assignments
Module 1 1/13-17	Introductions, Syllabus, Evolutionary Medicine intro	1	
Module 2 1/20-24 M: MLK Jr. day	Evolution Review, Genetics	2 & 3	
Module 3 1/27-31	Genetics & Development	3 & 4	*R: Choose Article facilitator week*
Module 4 2/3-2/7	Life Histories	5	
Module 5 2/10-14	Human Origins & Diversity	6	R: Article discussions F: Topic Approval
	R-F: Midterm 1		
Module 6 2/17-21	Reproduction & Disease	8	R: Article discussions
Module 7 2/24-28	Nutrition & Disease	9	R: Article discussions
Module 8 3/3-3/7	Coevolution, infection, immunity	10	R: Article discussions
Module 9 3/10-14	Psychology & Behavior related to Disease	11	R: Article discussions
3/17-21	Spring Break		R: Article discussions
Module 10 3/24-28	Cancer	12	R: Article discussions F: Self & peer eval 1
Module 11 3/31-4/4	Medical Practice & EM Principles and Pathways	13 & 7	R: Article discussions
Module 12 4/7-11	Society and Our Future Review	14	R: Article discussions F: Disease Fact Sheet Group Check in
Module 13 4/14-18	**M-T: Midterm 2** **R: Student Presentations**		W: Presentation with notes due
Module 14 4/21-23	**T: Student Presentations**		W: Self & peer eval 2

Grading: *Letter grades assigned based on total percent of points. A = 93.0 or above; A- = 90-92.9; B+ = 87-89.9; B = 83-86.9; B- = 80-82.9; C+ = 77-79.9; C = 73-76.9; C- = 70-72.9; D+ = 67-69.9; D = 63-66.9; D- = 60-62.9; E = <59.9   ******grades will not be rounded****
UF grading policy: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

20%   Two Midterms (each 10%)

25%   Article Facilitator
              Prompts/activities/interaction
              Article Examination and discussion
15%   Article Discussion Participation (2pts per article)
10%   Attendance
30%   Research Project
              Topic Approval - 5pts
              Check-in - 10pts
              Disease Fact Sheet – 25pts
              Presentation - 40pts
              Slides and notes submission - 5pts
              Peer and self-evaluation - 10pts

Midterms: Midterms will be ***non-cumulative***, covering the material since the last exam (or from the start of term for midterm I). The exam will consist of multiple question types. Midterms will be conducted over Canvas. No proctoring services is used in this class. *Exams are open for 2 days starting at 12am on day one and ending at 11:59pm day two.*

- Exams must be taken at the scheduled time; there will be no makeup exams. Exceptions will be made only in the case of incapacitating illness or other university-approved absence. In such cases, you must provide Dr. Bogart with written documentation from an appropriate authority as soon as possible.

- **DRC (Disability Resource Center) student accommodations should be provided to the Instructor by the end of the first month of term and a <u>one-on-one meeting</u> is recommended.**

Articles Facilitator: Students will choose a topic/week to be the facilitator. Once the week/topic is chosen, facilitators will be provided a list of acceptable published articles to guide choices.
- Facilitators will prepare the other students for discussion, and lead, moderate, and ask questions. The goal is to get other students to contribute to the discussion but being well informed to answer and lead the class. Facilitators are not presenting the material.
  o Each Facilitator will have 20-40 minutes. The first 5-10 min will have the class split into small groups of about 5 students, during which the facilitators should have prompts for the groups to discuss. The remaining time will be full class discussion of the article.
- Facilitators and participants should think about the following article analysis elements:
  o Consider the methodology & design: What are the advantages and disadvantages of using this design? How could the authors' have used other designs? What limitations can you recognize about the particular methodology used in this article?
  o Conclusions: Are the authors' conclusions warranted based on the findings? Do you agree with the conclusions of the paper? What are the strengths and limitations of this study? Was anything surprising?
  o Future: Think about how you would choose to follow up this research. What would be the best next study to test this phenomenon?

Article Discussion Participation: All students will earn points by participating in article discussions that they are not facilitating. Each student should come to class prepared and able to contribute. Participation is graded for EACH article in the following manner:
- o 0 – absent or did not pay attention during discussion
- o 0.5pt - listened and followed along, but did not participate in discussion
- o 1pt – prepared for discussion, and asked or answered a thoughtful question
- o 2pts – contributed in multiple ways to the discussion

Attendance
- Students must attend class.
  - o Students can have 2 unexcused absences without penalty.
- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Research Project: Students will work in small groups of 2-3 individuals. Each group will choose a disease from a guided list to thoroughly investigate in terms of evolution, previous and current treatments, genetic impacts/coevolution, and possible future implications. Groups will present their findings in class. Elements include:
- **Mandatory topic approval** (5pts) – students will pick their groups and topics from a guided list of diseases.
- **Mandatory check-in with Professor** (10pts)
  - o This is an opportunity to get input on finalizing your presentation (you should have half of it done).
- **Disease Fact Sheet** (35pts)
  - o Your group will provide to the instructor and class an overview fact sheet on your disease with citations and references. This fact sheet should cover the basic background on the disease with the main genetics and/or physiologic aspects known about the disease. The following are example points:
    - ▪ Description of disease and symptoms
    - ▪ How it is transmitted
    - ▪ Genetic impact or coevolution if known
    - ▪ Previous treatments
- **Presentation slides and detailed notes** (5pts) must be turned in before the date of the presentation.
- **Group presentation** (40pts) – 10-15 minutes, all group members should have a presenting role.
  - o Origins of the disease if known.
  - o Evolutionary hypothesis: what are the evolutionary forces that lead to the development of this disease? How come natural selection has not eradicated the disease? How can we use evolution to develop more effective treatment strategies?
  - o Current treatments and possible future treatments based on your evolutionary hypothesis
  - o Limitations to the current body of knowledge about the disease and how these could be resolved in the future
  - o Allow a few minutes for questions/discussion

- **Self and peer evaluations** (10pts): all members of the group will fill out a survey on their own efforts and the efforts of their group mates. This will be done twice to provide constructive feedback during process and a final assessment. FeedbackFruits will be used on Canvas

COURSE POLICIES

Accommodation and Extensions Policy

Requirements for make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

- Extensions on assignments, quizzes, and exams will not be scheduled unless demonstrated illness, health, emergency, or major scheduling conflict with proof provided to the instructor. An email/canvas conversation, following university procedures, is expected so that arrangements can be made with all parties (instructor and student) in agreement. It is the student's responsibility to contact the instructor and inform them of an emergency or circumstance.
- **Late assignments/quizzes/exams without an excuse will be reduced 5% per day late.**
- **All unexcused late work will not be accepted a week after the due date without agreement with the instructor.**
- **Religious Holidays:** A student should inform the faculty member of the religious observances of their faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity.

Students requiring accommodation

Students who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Student Conduct and Academic Honesty and Integrity

University of Florida students are bound by the Honor Pledge. On all work submitted for credit by a student, the following pledge is required or implied: "*On my honor, I have neither given nor received unauthorized aid in doing this assignment.*" The Student Honor Code and Conduct Code (Regulation 4.040) specifies a number of behaviors that are in violation of this code, as well as the process for reported allegations and sanctions that may be implemented. All potential violations of the code will be reported to Student Conduct and Conflict Resolution. If a student is found responsible for an Honor Code violation in this course, the instructor will enter a Grade Adjustment sanction which may be up to or including failure of the course. For additional information, see https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Writing assignments will be subject to and in accordance with the student conduct code and academic honesty. Assignments will us the tool Turnitin to assess plagiarism and are subject to ChatGPT/AI detection. If there is any evidence of violation of the Student Honor Code, the student will receive a grade of zero for the assignment and be reported to Student Conduct and Conflict Resolution Office.

UF course evaluation process
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at http://gatorevals.aa.ufl.edu/students. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via http://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at http://gatorevals.aa.ufl.edu/public-results/.

Online Materials and Communication:
- **You are responsible for materials posted on E-Learning (Canvas)** for this class at https://elearning.ufl.edu/, including required readings, announcements, details on assignments, and other supplementary material.
    - Canvas technical support available at https://elearning.ufl.edu/student-help-faqs/.
- The instructor uses email to make general class announcements or to contact you directly about your work. **You are responsible for checking your official UF email regularly**. There are no allowances for students who fail to read their email announcements or whose inboxes are full at the time an announcement is sent.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Procedure for conflict resolution
Any classroom issues, disagreements or grade disputes should be discussed first between the instructor and the student. If the problem cannot be resolved, please contact John Krigbaum (krigbaum@ufl.edu, (352) 294-7540), Chair of Anthropology. Be prepared to provide documentation of the problem, as well as all graded materials for the semester. Issues that cannot be resolved departmentally will be referred to the University Ombuds Office (http://www.ombuds.ufl.edu; 352-392-1308) or the Dean of Students Office (http://www.dso.ufl.edu; 352-392-1261).

Critical Thinking Objective
Students are encouraged to employ critical thinking and to rely on data and verifiable sources to interrogate all assigned readings and subject matter in this course as a way of determining whether they agree with their classmates and/or their instructor. No lesson is intended to espouse, promote, advance, inculcate, or compel a particular feeling, perception, viewpoint or belief.

Harassment and Discrimination
"Harassment" is defined as conduct that (1) is of any type (written, oral, graphic, or physical), (2) is directed towards or against a person because of their personal status (i.e., race, religion, sex, sexual orientation, political affiliation, national origin, age, disability, marital status, pregnancy or others), and that (3) unreasonably interferes with the individual's work, education, or participation in activities or programs at UF or creates a working or learning environment that a reasonable person would find threatening. "Discrimination" is defined as a conduct that (1) adversely affects any aspect of an individual's employment, education, or participation in activities or programs at UF, and (2) is based on one or more personal characteristics listed above. Any student who feels that his/her rights have been violated

"The University of Florida has zero tolerance for sexual discrimination, sexual harassment, sexual assault, dating violence, domestic abuse or stalking." https://titleix.ufl.edu/

may speak to the instructor who will direct the complaint through the proper university channels, or the student may directly file a complaint with UF Department of Human Resources.

Library Resources
The UF Libraries provide access to numerous resources and services that will help you succeed in this course. Access thousands of online databases, books, and articles or visit one of the branch locations for additional resources, services, and study spaces. Further, as this class requires students to complete a bibliography and research paper, both the Anthropology Library Guide and the Anthropology Assignment Guide may be of assistance. You can also contact the Anthropology Librarian directly for help with developing your research topic/question, searching for sources, and evaluating information. And you can also Ask A Librarian for help by email, chat, text, or phone.

Campus Resources
Students experiencing personal problems that are interfering with their academic performance are encouraged to contact Student Affairs, DRC, and/or the Counseling and Wellness Center
- UF Student Affairs: https://ufsa.ufl.edu/ or https://care.dso.ufl.edu/
- Disability Resource Center (DRC): https://disability.ufl.edu/
- Counseling and Wellness Center: https://counseling.ufl.edu/, 392-1575
- Health and Wellness U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or (352) 392-1575 so that a team member can reach out to the student.
- Sexual Assault Recovery Services (SARS): Student Health Care Center; 352-392-1161.
- University Police Department: http://www.police.ufl.edu/; 352-392-1111 (911 for emergencies).

Academic Resources
- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu. https://lss.at.ufl.edu/help.shtml
- Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.
  - ANTHROPOLOGY'S Library Page: http://guides.uflib.ufl.edu/c.php?g=963561&p=6959964%5C
  - **Ginessa Maha**r (anthropology Librarian): gjmahar@ufl.edu, office: Library West rm.500

- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers or presentations. http://writing.ufl.edu/writing-studio/
- Career Connections Center: Reitz Union; http://www.career.ufl.edu/; 352-392-1601.