Evolutionary and Physiological Basis of Health (Biol 3380-1)
Fall Semester 2019

GENERAL INFORMATION

Instructor: David H. Temme
Office: Bldg. 44 Room 217 - Phone 581-8897
E-mail address: temme@biology.utah.edu
Office hours: While I happy to meet with any student, I have found that regularly scheduled office hours are not the best way to facilitate such interactions. So instead, we will always try to be available right after each class for brief discussions. Alternatively if more time is needed, please contact one me to set up another time.
Teaching Assistants: Joey Cauceglia, David Golub
Prerequisites: Human Physiology (Biol 2420) and/or Cell Biology (Biol 2020)
Helpful courses: Any courses in cell biology, genetics, biochemistry, ecology, and evolution.

General Course Goals (Expected Learning Outcomes): We live in a world where advice about how to develop and maintain a functional, healthy body abounds. Most comes in two basic forms: (1) what we either should or should not put into our bodies, and (2) and what types of patterns of activity and rest we should attempt to incorporate into our daily life. Most likely this advice ranges from excellent to fraudulent. Yet currently we are not providing students with the opportunity to investigate these issues as well as we could. For instance, in more basic physiology courses we discuss topics like how we digest and absorb nutrients from our food, or how our nervous system and skeletal muscles work together in ways that make it possible for us to run, but we never have the time to explore, in any detail, how our bodies actually responds to different dietary choices or different patterns of running and resting. Our goal is thus to create a class that first and foremost explores the biology that underlies these issues. Specifically we will focus on the metabolic and physiological basis of human form and function from an evolutionary perspective. Our evolutionary history has created the two sides of the health issue: (1) what we rely on (in terms of nutritional inputs, physical activity, sleep, etc.) to develop in normal, functional ways; and (2) to what types of internal and environmental alterations does healthy development remain vulnerable. We believe that such exploration would interest all biological science students because of its integrative nature (it requires understanding at many levels of biological organization), and its pertinence to personal life choices. It may be of particular interest to students interested in health care because of its relevance in expanding their intellectual framework in ways that will help them best serve future clients.

University Policies:

• The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

• University Safety Statement. The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus
police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

• **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677 (COPS).

• **Campus Safety.** The University of Utah values the safety of all campus community members. To report suspicious activity, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

• **Wellness.** Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student’s ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

• **Diversity / Inclusivity.** It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

• **Veterans Center.** If you are a student veteran, the U of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: http://veteranscenter.utah.edu/. Please also let me know if you need any additional support in this class for any reason.

• **English Language Learners.** If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (http://writingcenter.utah.edu/); the Writing Program (http://writingprogram.utah.edu/); the English Language Institute (http://continue.utah.edu/eli/). Please let me know if there is any additional support you would like to discuss for this.
ASSIGNMENTS, TESTS, GRADING, ETC.

Three basic questions underlie any course: (1) what to teach? (2) how to generate effective communication, which includes not only how teachers couch their explanations, but how do teachers help motivate students to invest in and engage in the material? and (3) how to evaluate each students’ performance in the class?

Common answers to these three questions: (1) what is in the book, (2) give exams, and (3) grade, calculate percentages, and draw lines.

Problem 1: For this class, there is no book. In fact, the genesis of this class revolved much more around a thematic idea than a clear understanding of how to accomplish it. And to be honest, even after teaching this course for a few years our major focus is still on developing the material (what should be discussed, how to organize it, etc.). It is daunting, but extremely exciting and worthwhile challenge. One in which we see each of you, at least in part, as partners. Through avenues (e.g., in class feedback and discussion, researching further topics introduced in class, etc.) we look to you to help us better figure out how to teach this class in the future. In the process, we also hope to provide enough guidance to open new doors of thinking and understanding.

Problem 2: We do not want to use the standard format of giving 3 or 4 midterm exams. But there is a risk in that, because exams help teachers compete for a student’s time; the time needed for the study and contemplation necessary for any education experience. So, we are going to try to compete for your time in other ways:

1) To encourage you to come to class, and keep up and master basic information, we are going to give around 12 “information” quizzes. Most will be given the last 15 minutes of the Friday class period, although that schedule will be adjusted as needed. Each will be worth 10 points, and in total will make up 60 to 70% of your grade. We will drop the two lowest scores in figuring your quiz percentage. The grading scale is not set in advance, but will not go above the standard 90-80-70-60% breakdown. For example, if your quiz final score is 85%, then you will receive no lower than a B on that portion of your grade.

2) To promote further exploration (self-study), we are asking you to do three/four more tasks throughout the semester:

   (a) Spend, at least, the next two weeks keeping track of your life style. That is, keep a log of what you do and when. And be somewhat specific. For instance, if you are eating, list what you ate; or if you are hanging out, studying, working, or in someway being active, provide more detailed information. This log will never be turned in (it is personal), but hopefully will provide some personal context as issues connecting health and lifestyle come up throughout this course. As far as class credit goes, we will ask you to at some point report your own grade based on how diligently you completed this assignment. More specifically, on a 10 point scale, you will be asked to provide a grade. It will be count towards 5% of the class grade.

   (b) Three times throughout the semester I want you to identify a topic/idea/concept that for some reason you feel compelled to remember, and furthermore, you feel the need to tell people that you love. For each of these topics, your assignment is to round out your understanding by researching it further, and then generate a “lesson plan” that outlines how you would attempt to explain this to those you care about. Specifically, I want you to focus
on what they would need to understand first (the relevant background) before building the focal story. Each outline should not exceed 2 to 3 pages. Each will be graded on a 10-point scale, and together will make up 30% of your final grade. All three should be typed and turned in via a word document attachment to J.Causeglaia@utah.edu, with the identifying file name “Biol 3380 - *your name* - *title*”. The first is due by midnight Friday September 20th, the second by midnight Friday November 1st, and the last is due by midnight Friday December 6th.

c) Finally, we always reserve the option to add other assignments to the mix, such as take-home questions, or topics to research and summarize (either individually or as a group).

Problem 3: While scores on weekly quizzes are readily quantified, it is much harder to quantify performance on your three “lesson plan” outlines. So one of our challenges will be to figure out how to evaluate your work in a reasonable and fair manner. We will explore how to best do so throughout the semester. We will also be open to figuring out ways to address grading concerns that might arise.

The bottom line is that we are hoping to create an open, honest (and even joyful) learning environment.

BRIEF COURSE OUTLINE (Note: All the health topics discussed will be introduced wherever the relevant

I. First day class introduction

II. Starting to get to know who we are: single cells

III. Multicellularity (societies of cells): multicellular animals focus

III. Following the phylogenetic branch points:
   A. Bilateria: (basic design, mostly worms)
   B. Chordates: muscle and nervous systems (Could you have been dumber?)
   C. Vertebrates: bones, brains, and muscles (probably bones first)
   D. What is weird about mammals?
   E. What is weird about primates?

IV. The bipedal apes:
   A. The early bipeds (the walkers):
   B. Longer legs (the runners):
   C. Bigger brains:

V. What is “weird” Homo sapiens:

VI. Other relevant topics (yet to be covered)