

ANNOUNCEMENT:

TA office hours on Tuesday 7- PM

CALCULATOR FOUND

3 relevant articles in "Health and Science" section of 9/03/2013 Washington Post:

Did India's mammals evolve in India or did they migrate into India once India "crashed" into Asia?

Why do white men suffer from a disease of iron accumulation at a rate of 1/200 ?

What is the role of floral scents?

Good Site for Intelligent Design Essay:

<http://ncse.com/creationism>

Interested in a PhD in biomathematics as applied to evolutionary and biomedical problems?? Then consider the Biomathematics graduate program at UCLA Medical School (<http://www.biomath.ucla.edu/> and <http://www.biomath.ucla.edu/grad/prospective>)

Fun site: <http://rapguideto evolution.co.uk/>

Principles of Evolution (BSCI 370), Fall 2013

Instructor: Dr. Charles B. Fenster (Professor), Biology/Psychology Bldg. Rm. 3233, CFenster@umd.edu

Meeting time: 11-12:15, Tuesday and Thursday, Plant Sciences Bldg., Room 1140

Office Hours: by appointment, and office hour, Wednesday 1-3, Room: Biology/Psychology 3233

Teaching Assistant: Frank Stearns, Biology/Psychology Bldg. Rm 3206, FStearns@umd.edu

Office Hours: by appointment and office hours, Monday 1-2, Room 3206 B/P, Tuesday 7-8 PM, Room 2249, B/P.

Exam Reviews:

Exam 1 Review Session: Wednesday October 2, 4- 6 PM and Monday October 7, 5-7 PM, Room 1208, Biology/Psychology Building

Exam 2 Review Session: Wednesday Nov 13th, 4-6 PM, and Monday Nov 18th, 5-7 PM, Room 1208, Biology/Psychology Building

Final Review Session: Wednesday December 11th 4-6 PM, and Thursday December 12th, 4:30-6:30 PM, Room 1208, Biology/Psychology Building

For course information, including hand-outs etc., go to Charles B. Fenster lab web page:

<http://www.life.umd.edu/biology/fensterlab/>

and click on **Evolution 370** for course information.

Teaching Assistants: Frank Stearns

Textbook: Evolutionary Analysis, 5th Edition, Scott Freeman and Jon Herron, ISBN-13: 978-0321616678 (which should be released in August 2013).

You can get by with the 4th edition: ISBN: 0-13-227584-8, but I would not suggest an edition earlier than the 4th edition.

Supplementary material: On the Origins of Species by Means of Natural Selection, 1st ed. Charles Darwin. You must use this site:

<http://www.literature.org/authors/darwin-charles/the-origin-of-species/>

SYLLABUS (see below)

GRADING

Homework: There will be weekly ungraded homework assignments meant to familiarize you with the material and types of questions that will appear on the exams. The answers to the assignments will be covered during office hours, and the Wednesday evening office hours (7-8 PM) of the TA, Frank Stearns.

Exams: There will be two 1 hr and 15 minute exams during the semester, each worth 100 points, and a final third exam on the last day of class (during the Final Exam Period (200 pts). The Final will consist of 1/2 material not covered in Exams I and II and 1/2 cumulative (material on exams I and II). The lowest exam score of your first two exams will be dropped. **The Final will count towards your grade.** Total Exam Grade: 300 pts (100 pts from either of exam 1 or exam 2, plus 200 pts from the final).

Exams will consist of definitions, problems, short answer questions and multiple-choice questions and will come exclusively from lecture material. Lectures will mostly mirror the textbook. The readings from Darwin will reinforce points made in the text book and in class. **NOTE THAT FOR THE SECOND EXAM THERE WILL BE A TAKE-HOME 15 PT ESSAY: THIS ESSAY will be turned in at the exam, and please limit yourself to 1- 1.5 pages:**

Using chapter 4 from Darwin and material from chapter 11 from Freeman and Herron, discuss how asymmetric limits on reproductive success may lead to sexual selection and discuss the behavioral consequences for the different sexes, USE at LEAST 3 examples from the text.

Examinations are Major Scheduling Events, and thus need written medical verification for excused absence due to illness.

In addition there will be unscheduled quizzes, totalling 60 points of your final grade. We will drop your lowest quiz grade from your final grade. Quizzes can be given at any time during the class period. **The quizzes will test your cursory understanding of the material covered in class on that day as well as from a previous lecture. This quizzes are to motivate you to read through the chapters AHEAD of class and to review material that you do not understand.** The quiz will be written on the board and you will write down your answer on [THIS SHEET \(HAVE THIS SHEET HANDY PRIOR TO EVERY CLASS\)](#). Total quiz component of your grade = 60 pts. **Written medical verification for excused absence due to illness is required if you miss a quiz.**

Reports: 20, 20, and 100 points (Total = 140 pts). There will be THREE reports (total = 140 points), in the form of lists of questions, the first two ≤ 2 pages, and the third will be ≤ 5 pages) (typed, Font = 12, double space, one inch margins for all essays). The first two reports focus on Darwin 's thoughts and modern evidence from the textbook to support or confute his conclusions or those of his critics. **Please be sure to use the current edition of your textbook and ONLY the online edition (link below) of Darwin's *On the Origin of Species*.** Your first report will be worth 20 pts, the second 20 pts, and the final report will be worth 100 points. Reports are to be turned in at the beginning of class the day they are due.

Reports should have your name and topic listed at the top. **Quotations must be limited to 2 lines per page.**

Report 1 (20 pts): Compare Darwin chapters 10 and 12 with what we have learned and summarized in chapter 2, "The Pattern of Evolution," **and answer the below (typed, double space, etc.):**

Report # 1 (total 20 pts)

1. According to Darwin, is the rate of evolution uniform across species? (1pt)
2. How does the above speak to special creation? (2 pts)
3. According to Darwin, did the fossil evidence support gradual or abrupt evolution (1 pts)
4. List 2 examples from the textbook that supports your answer for question 3. (2pts)
5. Provide 3 examples of extinction from the textbook (3 pts)
6. What component of Darwin's theory does the Law of Succession support? (3 pts)
7. List 3 examples of the Law of Succession from the text book. (3 pts)
8. Using the Law of Succession what would one hypothesize to be the location of human origins? (1 pt) Provide support. (2 pts)
9. According to Darwin, what 2 attributes distinguish oceanic island biodiversity versus continental areas? (2 pts)

Report 2 (30 pts): Compare Darwin chapters 1-4 with what we learned and summarized in chapters 3, 5 and 6 in Freeman and Herron, **and answer the below (typed, double space, etc.):**

Report # 2 (total 20 pts)

1. State Mendel's Laws (2 pts).
2. What is the importance of Mendel's Laws with regards to Darwin's theory of evolution through natural selection? (3 pts)
3. Why does Darwin spend so much space discussing domestication? (3 pts)
4. List 3 modern examples of domestication from the textbook. (3 pts)
5. List 3 modern examples of natural selection from the textbook. (3 pts)
6. What are the consequences that populations have natural limits to growth? (3 pts)
7. List 3 modern examples of recent divergence among species. (3 pts)

Report 3 (100 pts): Parents and Teachers against the Dover area school board.

In the case of parents and teachers against the Dover area school board, a case decided in federal court regarding the teaching of intelligent design in our nation's public schools, you will be asked to comment on Judge Jones's decision bearing on intelligent design and evolution in terms of religious doctrine versus science. An introduction can be found at Wikipedia http://en.wikipedia.org/wiki/Kitzmiller_v._Dover_Area_School_District

[Get the Court case in this link](#)

Note that the case is 138 pages long, but is double spaced with wide margins. It should take about 2 hours to read the case carefully. We will try to discuss the decision in class if time allows.

Please address the following points in essay three using information from the end of chapters 2 and 3 to support or refute claims in addition to Judge Jones decision. **Please breakdown your essay into the following 7 questions and discussion points using subheadings:**

1. What is science and why is intelligent design not science?
2. What is the problem of irreducible complexity and use examples to refute this claim?
3. What is the establishment clause and how does it support the teaching of evolution versus religious interpretations of the origin of biological diversity?
4. What is the Lemon Test, and how was it applied to this case?
5. What is the wedge theory and what are the merits or liabilities of teaching scientific and theistic approaches side by side?
6. Discuss the notion of "contrived dualism."
7. Discuss the implications from an individual and community perspective of allowing specific religious messages to be considered as universal truths when taught in US public schools.

Essays are Major Scheduling Events, and thus need written medical verification for excused lateness, if due to illness.

X-TRA CREDIT

You can earn **X-tra credit** by turning in questions you have regarding the material on the exam and these questions will be discussed during the exam review sessions (1-2 pts/exam). These should not be questions that you would **like to see** on the exam, rather questions or confusions you have on the material itself. Questions for the review must be turned in one day before the last lecture prior to the exam, by noon. For example, if the exam is on a Tuesday, then your review questions must be placed in my mail box by

noon on the previous Wednesday. Questions must be typed, but must be turned in via hard copy, and **only** placed in my mailbox in Rm: 1210 Biology/Psychology Bldg. Total opportunity for X-tra credit = 6 points. Also, rarely, if a question arises in class you can turn in a report addressing that question (with my permission) for approximately 5 pts.

You can also earn X-tra credit (5-10 pts) if you write a brief!! 1-2 page double space essay on what you learned by attending the Smithsonian's exhibit on human origins: <http://humanorigins.si.edu/> YOU MUST PROVIDE EVIDENCE THAT YOU WENT TO THE MUSEUM. ASSIGNMENT IS DUE THURSDAY DECEMBER 4th.

Grade Assignment:

Total: 500 points

A+	476-500
A	460-475
A-	448-459
B+	435-447
B	410-434
B-	397-409
C+	385-396
C	360-384
C-	347-359
D+	310-346
D	295-309
D-	280-294
Failure	< 280

I almost never curve, but reserve the right to do so. I also reserve the right to bump a student's grade up a notch if they have shown improvement or have impressed me with their participation, etc.

Oxbridge in College Park (not during Winter or Summer Term)

After the first exam I will meet with students in groups no larger than three to read primary literature on a "as need" basis. This will be for **NO** extra credit, but if you want to learn more about evolution, this opportunity will serve to introduce you to more topics or the same topics but in greater depth. Come to me after class and we can arrange readings and meeting time.

SOME IMPORTANT POINTS:

Lectures start promptly at 11:00 and continue until 12:15. You should arrive early and stay for the full duration of the lecture. When it is necessary for you to leave early please sit at the end of a row near a door and leave quietly. Please be considerate when leaving.

Examinations: If you feel we have made a grading error you must submit a written request to the TA or Instructor within 24 hrs that the test is returned to you in class. In your request explain why you believe you should receive additional points. Examinations must be taken at the scheduled time. If you miss an exam you need to submit to Dr. Fenster **As Soon As Possible** a makeup exam request form with documentation of a **valid excuse**, e. g., religious holiday, illness, death in the family, etc. All medically related excuses must be documented by the campus health center and reflect a **serious or extended health problem**. Simply being ill the night before the test is generally not a sufficient condition. Please refer to your course catalogue or the current schedule of classes for a description of the University's policies on excused absences and makeup examinations (also known as assessments). If you will miss an exam because of an official University event you must provide appropriate documentation prior to the examination date. It is always better to be proactive and notify us if you cannot take a scheduled exam for valid reasons. We will attempt to provide exams in advance to those students who cannot attend exams because of official University events.

HELP: (The teaching assistant and) I will try to help you in any way possible. You can meet with Dr. Fenster by scheduling an appointment by emailing (c Fenster@umd.edu). A good time to have questions addressed is immediately after lecture. **REGULAR TERM:** Dr. Fenster will also have office hours from 1-3 PM on Wednesdays in his office at 3233 in Biology/Psychology Bldg. Your discussion section TA will also have office hours, see above. If you do have questions, it is best to write them down in advance. **ALSO**, there will be extra sessions scheduled above.

Tips for Success: Do as many problems as possible. Concentrate your efforts on understanding the Key points/concepts that will be stressed. Study groups are a great way to efficiently learn evolution. Evolution is problem and fact oriented. There is no substitute to studying with pencil and paper and attempting to answer the questions on your own. If you have any problems, don't hesitate to ask for help!! Evolution requires much more study time than most biology courses. Memorization will only take you so far. Evolution as a course and discipline is very synthetic and quantitative. Plan to study at least 3-4 hours for every hour of lecture and be sure to be familiar with the material to be covered in lecture prior to that lecture! You will perform well on the quizzes if you simply read the chapters ahead of class. Attend all lectures and ask questions in class if you have them. Scientists ask questions and so should you.

Other Essential Information:

- Academic Accommodations: If you have a documented disability, you should contact Disability Support Services 0126 Shoemaker Hall. Each semester students with documented disabilities should apply to DSS for accommodation request forms which you can provide to your professors as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at http://www.counseling.umd.edu/DSS/receiving_serv.html.
- Religious Observances: The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs, students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences for religious observances in advance. Notice should be provided as soon as possible but no later than the end of the schedule adjustment period. Faculty should further remind students that prior notification is especially important in connection with final exams, since failure to reschedule a final exam before the conclusion of the final examination period may result in loss of credits during the semester. The problem is especially likely to arise when final exams are scheduled on Saturdays.
- Academic integrity: The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>

The University of Maryland is one of a small number of universities with a student-administered Honors Code and an Honors Pledge, available on the web at <http://www.jpo.umd.edu/aca/honorpledge.html>. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University Senate encourages instructors to ask students to write the following signed statement on each examination or assignment: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)."

Note: Darwin assignments serve as important background material in addition to serving as the source for your essay assignments. The essays will help you study for the exams.

Date	Topic	Reading
Sept. 3	Introduction, Sources of Variation	Chapter 1
Sept. 5	HIV	Chapter 1 HW 1
Sept. 10	Pattern of Evolution	Chapter 2
Sept. 12	Darwinian Natural Selection Evolution of Human Blood Clotting as an example of the evolution of a complex process: http://www.millerandlevine.com/km/evol/DI/clot/Clotting.html On the power of evolutionary theory	Chapter 3 HW 2 HW1 key
Sept 17	Estimating Phylogeny	Chapter 4 Report 1 due (9/17)
Sept. 19	Mutation & Genetic Variation	Chapter 5 HW 3 HW 2 key
Sept. 24	Mendelian Genetics & Selection	Chapter 6
Sept. 26	Mendelian Genetics & Selection continued	Chapter 6

		HW 4 HW 3 key
Oct. 1	Mendelian Genetics & Selection Continued	Chapter 6
Oct. 3	Migration, Drift, Nonrandom Mating	Chapter 7 HW 5 HW 4 key Report 2 (due Oct. 3)
Oct. 8	Exam One Study aid 1 , Study aid 2 , Study aid 3	Chapter 1-6
Oct. 10	Migration, Drift, Nonrandom Mating Continued	Chapter 7
Oct. 15	Migration, Drift, Nonrandom Mating Continued Interesting article regarding inbreeding in the European royalty: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664480/pdf/pone.0005174.pdf?tool=pmcentrez	Chapter 7
Oct. 17	Evolution of Sex	Chapter 8 HW 6 HW 5 key
Oct. 22	Evolution of Sex Continued	Chapter 8
Oct. 24	Quantitative Genetics	Chapter 9 HW 7 HW 6 key: http://wps.prenhall.com/esm_freeman_evol_4/76/19556/5006440.cw/index.html
Oct. 29	Quantitative Genetics Continued	Chapter 9
Oct. 31	Quantitative Genetics Continued	Chapter 9 HW 8 HW 7 key
Nov. 5	Form and Function	Chapter 10
Nov. 7	Form and Function Continued	Chapter 10 Darwin 4 HW 8 key
Nov. 12	Sexual Selection A dramatic example (courtesy of a student in the class): http://news.bbc.co.uk/earth/hi/earth_news/newsid_8354000/8354788.stm	Chapters 11 Darwin 4
Nov. 14	Sexual Selection Continued	Chapter 11 HW 9 (kin selection, speciation, aging)
Nov. 19	Exam II Exam 2 practice Exam 2 questions	Chapters 7-11 TAKE HOME SHORT ESSAY TO BE BROUGHT TO EXAM
Nov. 21	Kin Selection Are you your grandmother's favorite: a case for kin selection?	Chapter 12
Nov. 26	Speciation	Chapter 16
Dec. 3	Speciation continued	Chapter 16 Smithsonian xtra credit due
Dec. 5	Aging	Chapter 13 (pages 491-520)

		HW 9 key HW 10
		Report 3 (7 QUESTIONS ON DOVER DECISION)
Dec. 10	Human Health	Chapter 14
Dec. 12	Human Evolution	Chapter 20 HW 10 key
Monday	Final Exam (NOTE 8-10 AM)	50%: Chapters 12,13, 14, 16 & 20 50%: Previous material
Dec. 16 8- 10 AM	Final exam practice questions (covers chap 12-14, 16 & 20) See above for practice questions for previous material	