THE BIOLOGY OF SEX

Bio 307: Fall 2004: Monday, Wednesday and Friday from 2:00-3:00, room PS 130

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Course summary and statement of course policies:

This course examines the biology of sex with an emphasis on humans in comparison to other species. Using an evolutionary-based approach to understand the advantages of sexual reproduction, we can look at other species as well as other cultures and see how much of our own sexuality has a biological basis and how much (or how little) is truly unique to humans. We will be using a broad-based definition of "sex" as it relates to biological areas that can encompass subjects ranging from behavior, physiology, anatomy, and evolution. While much of the course will focus upon humans and other mammals, we will also take time to explore the complexities of sex in other species to appreciate the diversity of methods, approaches, and tactics created by sexual reproduction.

This is an upper division science course and I will assume you have some fundamental understanding of basic biological processes involving DNA, cell division, genes, and heredity. I will be quickly covering these areas in the beginning of the course to establish common ground of basic cellular reproduction so we can move into the exploration of how organisms pass their genetic material to subsequent generations: the biology of sex. At the end of this course you should be able to evaluate the basis for sex on multiple levels and appreciate the power of sexual reproduction as a driving force of evolution.

The course is broadly divided into sections:

- Section 1 runs from the start of the course to the first midterm and will be cover the molecular, cellular, and organism biology of human sexual reproduction. This section will be based heavily upon the required textbook for the course (Mader) and I will be covering selected highlights in class.
- Section 2 begins after the first midterm and runs to the second midterm examination. This section will cover the biology of sex from an evolutionary perspective involving sperm competition, promiscuity, and Darwinian ideas of genetic fitness. Much of the material in this section will concentrate on non-human species, setting the stage for the understanding of human sexual biology. Material will come predominantly from lectures and a video.
- Section 3 begins after the second midterm and goes to the end of class. This section will cover human sociobiology and evolution of sex with an emphasis upon comparing cultures around the world as well as humans with other species. Material will combine videos with classroom discussion.

Specific goals: My goal in this course is to teach you the basics of human sexual biology as well as understand and critically evaluate arguments proposed for the evolution of sexual behavior. As part of this course we will be watching a series of videos by Dr. Desmond Morris that present one view on why humans behave sexually in the ways that they do. My hope is that you will not just sit back and enjoy these videos, but instead critically evaluate the presentation of evolutionary theory and its application to the information at hand. Classes based upon these videos will include a lecture on the hypotheses presented in the video and an examination of whether these hypotheses were addressed. By the end of this class, I think you will look at your own behavior and the behavior of those around you in a very different light.

Grading: Your grade will be based upon: 2 midterm exams, a final exam, and participation in extra credit exercises (see below). All exams will cover material from the textbook, lectures, extra-credit presentations of students, and in-class video presentations.

Examinations: During this class there will be a total of two in-class midterm exams and one final exam. The two in-class midterm exams will take place during regularly scheduled class times and will be based upon the textbook, lectures, in-class presentations, and videos. Each test will account for one-third of your cumulative grade in the course and each test is worth 100 points. Exam scores will not be curved. Instead I will use the following guide in assigning letter grades: A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, and F = <60%, unless this scale does not yield reasonable results. I reserve the right to increase or decrease the stringency of the grading scale based upon class performance. There will be no trick questions on exams but typographic and editing errors do occur and you may ask questions if you do not understand the wording of an exam question. All questions are multiple choice, computer graded, and require you to purchase a Scantron form #882 from the bookstore as well as a #2 pencil.

Extra credit: An opportunity exists for anyone in the class to earn up to (but not necessarily all) 50 extra credit points. Extra credit points will be based upon presentation of material from a book entitled "Dr. Tatiana's Sex Advice to All Creation – the Definitive Guide to the Evolutionary Biology of Sex" by Olivia Judson. A website for the book can be viewed at http://www.drtatiana.com/ and students should examine the concept of the book before committing to earning extra credit. To quote from the website: "Dr Tatiana's Sex Advice to All Creation is a unique guide to the evolutionary biology of sex. It is narrated through an advice column in which Dr Tatiana, the racy new agony aunt, replies to letters from organisms worried about the peculiar things their lovers do. Manatees, honeybees, spiders, black vultures, green spoon worms, hyenas, slime molds: these are just a few of the troubled creatures Dr Tatiana advises. Their problems? These run the gamut from giant sperm to dwarf males, from homosexuality to infidelity, from sexual cannibalism to incest. Rich in natural history, this fascinating, accessible, hilarious book is a must-have for anyone interested in sex and why it so often seems to be such a bother."

Students have the option to present from the book a letter and response from Dr. Tatiana in class either individually (for all 50 points) or in a team (to split up the 50 points among the group). I have the book on hand for students to peruse and find appropriate material for their classroom presentations. Presentations should last between 5-10 minutes. All manner of creativity and ingenuity in making the presentation lively and interesting for the class (and me) will be rewarded with maximum credit. Minimal effort or marginal presentations will receive less than 50 points and I reserve the right to arbitrarily reward

presenters with points as I deem appropriate. Signups will begin the first week of class and continue throughout the semester as time permits, but time for presentations may be limited at the end of the semester. Thus, I encourage all interested students to volunteer as early as possible before available times are filled up.

Make-up exams There will be no makeup exams except in the event of a serious illness, injury, family emergency, or scheduled university events. If you have one of these valid reasons for missing an exam, you must notify me prior to the scheduled time for the exam. Notification may be in e-mail, in writing, by phone, or in person. A valid reason must include a signed statement from a physician of the equivalent written evidence of an emergency, crisis, or university event. If you have a legitimate reason for missing an exam, you will be assigned a make-up essay to be completed before the final exam period. I reserve the right to have multiple different copies of exams to avoid the temptation to cheat and inadvertent copying. Exams may be color coded. You will be responsible for ensuring that your answer sheet includes the appropriate and correct color code for the version of the exam you are answering.

Attendance: In order to get the most out of this class, it is vital that you attend the lectures. It has been shown many times that class attendance is the single most important factor in improving a student's academic performance. Attendance will not be recorded for lectures. If you miss a lecture you will need to obtain the notes for that class from a classmate. I will not be providing copies of my slide presentations to the class. You do not need to inform me if you are going to miss a class. Any and all material presented during class, whether presented by myself, a video, a guest lecturer, or fellow classmates can be used as an examination question.

Videos We will watch a series of videos as an integral part of this class. You will be expected to take notes and retain information from videos as much as from lectures. Exam questions will cover material presented in videos. Videos will be discussed in class and you will have opportunities to clarify your understanding in review sessions held prior to each examination.

Cheating and Academic Honesty: Anyone caught cheating or engaged in any form of academic dishonesty will fail the course. Please help me in exams by avoiding behaviors that have been associated with cheating including talking or interacting with friends, wearing of hats or concealing clothing, using cell phones or Palm pilots, or bringing class materials to exams.

Bloopers and Gaffs: I hasten to point out that this is not an easy subject to lecture on and I will be the first to admit I am not an expert in the subject of sex, but rather an interested philosopher. There may be some among you who (right or wrong) feel that you know far more about sex than I do. I will try to present the material in a fair and balanced way, but everyone makes mistakes – especially when I am standing up here talking about a loaded subject such as sex for an entire semester. Although I will obviously do my best to avoid saying anything stupid, I apologize in advance for anything I say that you might find offensive. Please let me know if you are upset by any of the content in the course and help me to refine the material with each passing year to make the course better than the year before.

Biol 307 Course plan for Spring 2009

Week	Session	Date	Topic	Pages	Notes
	1	1/22	Introduction to the class		Background
1	2	1/27	Why is sex important?		Various
	3	1/29	Biological basis of sex appeal		Taflinger
2	4	2/3	Chromosomes and chromosomal inherit. (Ch 1)	4-21	Mader
	5	2/5	Nature Video: "The Mating Game"		PBS
3	6	2/10	Genes and medical genetics (Ch 2)	22-39	Mader
	7	2/12	DNA and molecular genetics (Ch 3)	40-57	Mader
4	8	2/17	Genetic counseling (Ch 4)	58-69	Mader
	9	2/19	Repro. hormones and sex maturation (Ch 5)	70-87	Mader
5	10	2/24	Review for midterm #1 / Extra Credit Presentations #1		
	11	2/26	Midterm #1		
6	12	3/3	Human reproductive systems (Ch 6)	88-103	Mader
	13	3/5	NOVA video: "The Miracle of Life"		PBS
7	14	3/10	Human sexual response (Ch 7)	104-125	Mader
	15	3/12	Fertilization, development, and birth (Ch 8)	126-141	Mader
8	16	3/17	Birth control and infertility (Ch 9)	142-155	Mader
	17	3/19	Sexually transmitted diseases (Ch 10)	156-177	Mader
9	18	3/24	Review for midterm #2 / Extra Credit Presentations #2		
	19	3/26	Midterm #2		
10	20	4/7	Genitalia (Part 1)	58-105	Birkhead
	21	4/9	Genitalia (Part 2)	58-105	Birkhead
11	22	4/14	Viewing of "The Human Sexes" Vol 1		Morris
	23	4/16	Viewing of "The Human Sexes" Vol 2		Morris
12	24	4/21	Viewing of "The Human Sexes" Vol 3		Morris
	25	4/23	Viewing of "The Human Sexes" Vol 4		Morris
13	26	4/28	Viewing of "The Human Sexes" Vol 5		Morris
	27	4/30	Viewing of "The Human Sexes" Vol 6		Morris
14	28	5/5	Copulation, insemination, and fertilization	136-163	Birkhead
	29	5/7	Sperm, ejaculates, and ova	106-135	Birkhead
15	30	5/12	Review for final /Extra Credit Presentations #4		
	finals	5/19	Final exam: 1-3 pm		