

Perhaps no subject in biology is as troublesome (or as fraught with contradictions) as sex. Why should organisms devote so much of their time and energy to attracting mates, when they can reproduce much more efficiently by cloning themselves? Similarly, why not pass on all your genes, rather than just half? Sex is an exceedingly powerful ecological and evolutionary force, responsible for generating a tremendous diversity of morphologies and behaviors. In this course, we will draw upon examples from microbes to mosses to mammals in order to address these most basic biological questions: Why did sex evolve and what are its consequences?

Please note that this course is not for biology majors and will not count towards the biology major. As such, there are no specific pre-requisites except your willingness to participate.

PROFESSOR

Jill S. Miller McGuire Life Sciences Building 224, x2168, jsmiller@amherst.edu
Office hours: Tuesdays 11am-12pm, Thursdays 2-3pm, and by appointment

COURSE MEETINGS

Lecture: MWF 10-10:50am, McGuire Life Sciences building 230

READINGS

Judson, O (2002) *Dr. Tatiana's Sex Advice to All Creation*. New York: Henry Holt and Company.
Ridley, M (2003) *The Red Queen: Sex and the Evolution of Human Nature*. New York: Harper Collins.

Additional readings (see schedule) will be made available through E-reserves from the course website, or will be distributed in class.

COURSE STRUCTURE AND GRADING

In general, the course structure will be informal lectures on Mondays and Wednesdays followed by discussions of reading materials on Fridays.

You are expected to attend every class, complete all readings and actively participate in class discussions (15% of your final grade). In addition, you are required to submit (via the course website) three questions (15%) regarding each week's readings by 5pm on the Thursday before class. These should be thoughtful questions that can provoke discussion; you should also read through all the questions prepared by fellow students in preparation for each Friday's discussion.

Your grade will also be based on a brief Powerpoint presentation (5%) in which you highlight an interesting case study in sexual (or asexual) reproduction, an assignment on sexual selection and the analysis of human personal ads (5%), and two written assignments: the first a short critique (10%) and the second a more in depth paper on a topic of your choice (20%). Finally, two quizzes (each 15%) will cover lecture materials and readings.

INTELLECTUAL RESPONSIBILITY

Academic dishonesty will not be tolerated and will be reported to the Dean of Students. It is equally dishonest (not to mention unfair) to allow someone to copy your work as it is to plagiarize the work of another. If you are not already, make yourself aware of the College's Statement of Intellectual Responsibility (<http://www.amherst.edu/~dos/conduct/rightsrespon.html>). Penalties for cheating may include a failing grade in the course.

Wk	Date		Topic	Readings
1	8 Sep	T	Introductions, Structure & scope of course	Darwin 1859; Freeman & Herron 2007; Olshansky et al. 2001; Zimmer 2009
	9 Sep	W	Variation & natural selection	
	11 Sep	F	Variation & natural selection (cont'd); Discussion	
2	14 Sep	M	Biodiversity: Organizing the natural world	Milius 2009; Gwynne 1998; Zuk 2003; Palmer 2006
	16 Sep	W	Distribution of sexuality	
	18 Sep	F	PowerPoint presentations	
3	21 Sep	M	What is sex?	Freeman 2008; Low 2001; Ridley, pp. 91-110
	33 Sep	W	How does it happen?	
	25 Sep	F	Discussion	
4	28 Sep	M	Why two sexes?	Judson, pp. 187-95; Ridley, pp. 110-14; Majerus 2003; Jegalian & Lahn 2001
	30 Sep	W	Sex determination	
	2 Oct	F	Discussion; Critique instructions	
5	5 Oct	M	Costs of sex	Ridley, Chs 2-3; Judson, Ch 13
	7 Oct	W	Explanations for sex	
	9 Oct	F	Discussion	
6	12 Oct	M	Mid-semester break • No class	<i>No reading: Catch up or get a jump start...</i>
	14 Oct	W	Finish-up / Review for quiz #1	
	16 Oct	F	Quiz #1	
7	19 Oct	M	Hermaphrodites: simultaneous or sequential	Michiels & Newman 1998; Judson, Ch 11
	21 Oct	W	Playing both sides: Sex changers	
	23 Oct	F	Discussion; Critique due (in class)	
8	26 Oct	M	Plant sexuality; Personal ads, data collection	Silvertown 2009, Chs 3-4; Pollan 2009
	28 Oct	W	Floral diversity	
	30 Oct	F	Video: Floral encounters of a sexual kind	
9	2 Nov	M	Sexual selection; Paper prospectus due (in class)	Bateman 1948; Darwin 1871; Judson, Ch1; Knight 2002; Bower 2009
	4 Nov	W	Bateman's principle	
	6 Nov	F	Discussion; Personal ads, data analysis	
10	9 Nov	M	Sexual dimorphism	Hedrick and Temeles 1989; Judson, Chs 2,4; Birkhead 2000
	11 Nov	W	Intrasexual selection	
	13 Nov	F	Discussion	
11	16 Nov	M	Intersexual selection	Judson, Ch 5; Ridley, Ch 5
	18 Nov	W	Good genes & runaway selection	
	20 Nov	F	Discussion; Personal ads wrap-up	
23–27 Nov • Thanksgiving break • No class				
13	30 Nov	M	Sex ratios	Majerus 2003; Birkhead 2000; Judson, Chs 3, 6-9
	2 Dec	W	Why can't we get along? Sexual conflicts	
	4 Dec	F	Discussion	
14	7 Dec	M	Humans: Sex versus gender; Paper due (in class)	Allchin 2006; Angier 1999; Lehrman 2007; Roughgarden 2004
	9 Dec	W	Humans: sexuality, intersexes	
	11 Dec	F	Discussion	
15	14 Dec	M	Review & instructions for quiz #2 (Quiz #2 , take home)	