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Blues



Grays



Night

## Evolution and Biology of Sex

BIOL 115 2024 This course is featured as a general education course within the Department of Biological Sciences.

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Sex is often defined according to reproduction, whereby two individuals that are male and female, mate and have offspring. However, sex is achieved in a multitude of ways, many appearing rather bizarre to us humans. This course addresses many levels of organization of sex, including genetics, meiosis, different types of sex determination, and sexual behavior, as well as asexual reproduction, mating strategies, sexual organ morphologies, and differences in the male and female nervous systems. Sex is clearly a complex phenomenon that requires an evolutionary perspective to truly understand what it is and does.

Some of the questions we will address are:

- What is sex? Who has sex? Why is it so pervasive?
- What are the original and current functions of sex?
- Why does sex still persist after roughly 1-2 billion years?
- What determines sex? Who can change sex?
- Are there differences between females and males?
- How is sex related to chromosomes or hormones?
- What is sexual selection?
- Why are sex organs so diverse?
- What's the difference between sex and gender? How is it possible to be transgendered?

This course will supply you with a basic evolutionary biological understanding of sex. We will try to answer the above questions, as well as understand what are the current open problems in the

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During the first part of the course, we will tackle the cellular and subcellular aspects of sex. We will begin with a refresher of the biological concepts you need to know and remember in order to appreciate the current knowledge. We will then follow by looking at the evolutionary history of possible early forms of sex. This will lead to a discussion of what exactly is sex, what are the functions of sex, and why is sex maintained and so pervasive.

During the second part of the semester, we will enter organismal Biology by asking how the differences between females and males evolved. We will start by asking whether or why there are more than two sexes. Next, we will discuss the development of sexual characteristics and mating systems, and why sexual organs evolve so fast and sometimes seem so unusual.

At the end of this course, we will cover topics that do not necessarily fit anywhere else but are nonetheless interesting active areas of research, for example, orgasms, transgender issues, and the non-reproductive roles of sex.

While the first and second portions of the course may seem more in keeping with a traditional introductory Biology course, the last third will undoubtedly be more controversial, where we will discuss neurobiology, psychology, and others. We will be open to all types of discussion.

Sex can be taboo, and it plays unique roles in our society. I expect that you will come with an open mind and always be polite. If we ever talk about a subject that makes you uncomfortable, please let me know. We can talk about it separately or not, as you wish.

We will rely heavily on popular media. Much of the reading material, podcasts, videos, etc., are not up on the Canvas list because they have not happened yet! Every Tuesday, I will add to the outside materials source for the next Tuesday. If you come across anything interesting and want to discuss it in class, please let me know!

#### Grading strategy:

Exams	100 each	300
Group project	100	100
Random unannounced quizzes	10 each	100

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Points possible	600
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This is a self-driven endeavor, and I am not here to make you do or learn anything. This is your **own** journey; you are in charge, and you will get out of it what you put into it. Participation is very important though, but it does not mean just attending classes, it means asking questions, giving your opinions, and discussing ideas. I understand that some people are shy in a class setting (nothing wrong with that). If you do not want to speak up, though, I fully expect you to email me or talk to me in private.

### Structure of Classes

Each week will begin with a short conversation about the topic of the day or previous written assignment. I will then go over the new material, and we will split into groups and start a discussion of the new material.

### Written work

**NO FUNNY AI STUFF;** we will use AI but under MY guidance.

Writing is the currency of communication, and intellectual credit is very important in our society. The Department of Biological Sciences affirms that acts of cheating, fabrication, and plagiarism by students constitute a subversion of the goals of the University and are serious offenses to academic goals and objectives, as well as to the rights of fellow students. This policy intends to provide appropriate sanctions, fair and realistic procedures for imposing those sanctions, and safeguards for any student suspected of cheating or plagiarism. I will enforce the University's Code of Student Conduct. **All** instances of cheating, fabrication, and plagiarism will be reported to the Office of the Dean of Students.

This rule provides the following academic sanctions for offenses of cheating, fabrication, or plagiarism. In case of misconduct, I will assign a grade of "F" or zero for the assignment, project, test, paper, examination, or other work in which the cheating or plagiarism took place. **Upon a second offense, I will assign a grade of "F" or "XF" for the entire course. I have ZERO tolerance for cheating, zilch, nada! Just don't do it! Ask for more time or whatever - DON'T cheat!**

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On a personal note, I have a horrible memory. PLEASE, if we decide something in person, say after class, send me an email to confirm it. If it is not on my schedule, it just doesn't exist. I would hate to commit to something with you and then not do it, leaving you feeling rejected and unloved. I don't mind getting bugged regularly at all. Remember: by the time I walk out that classroom door, I will have forgotten everything I said to you - this is your responsibility - YOU HAVE BEEN WARNED!

Jan	Introduction, review of biological concepts, what is sex anyway.	
Jan 27 monday	DROP/ADD DEADLINE	
Feb 11	Exam 1 on Biology	
Feb 13 – Mar 4	Organismal biology of sex, sex organ diversity, and evolution.	
Mar 13	Exam 2	
Mar 16-22	SPRING BREAK	
Mar 25 – April 10	Mating system strategies.	
Apr 17 – May 6	Orgasms, transgender issues, and the non-reproductive roles of sex.	
May 1	Exam 3	



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May 16	Final projects due	