

Term Information

Effective Term Spring 2026

General Information

Course Bulletin Listing/Subject Area Biology
Fiscal Unit/Academic Org Introductory Biology - D0326
College/Academic Group Arts and Sciences
Level/Career Undergraduate
Course Number/Catalog 3870
Course Title Evolution of Sex
Transcript Abbreviation Evolution of Sex
Course Description An exploration of biological evolution of sex across species, including mechanisms of reproduction, sexual selection, and reproductive strategies in various environmental conditions.
Semester Credit Hours/Units Fixed: 3

Offering Information

Length Of Course 14 Week, 12 Week, 8 Week, 7 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

Prerequisites and Exclusions

Prerequisites/Corequisites Biology 1101, 1110, or 1112/1113x and 1114x
Exclusions
Electronically Enforced Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 26.1303
Subsidy Level Baccalaureate Course
Intended Rank Sophomore, Junior, Senior

Requirement/Elective Designation

Origins and Evolution

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- 1. Explain the genetic, physiological, and cellular mechanisms of sexual reproduction in eukaryotic organisms, including the processes of meiosis, fertilization, and gametogenesis.
- 2. Identify and describe the evolutionary theories that explain the persistence of sexual reproduction, such as the Red Queen Hypothesis and the benefits of genetic recombination.
- 3. Compare and contrast sexual and asexual reproduction, examining the advantages and disadvantages of each strategy in different ecological contexts.
- 4. Evaluate the role of sexual selection in shaping organismal traits, such as mate choice, sexual dimorphism, and courtship behaviors.
- 5. Analyze the ecological factors influencing reproductive strategies, including resource availability, population density, and environmental stability, and how these affect reproductive success.
- 6. Understand the diversity of reproductive systems across the biological world, including hermaphroditism, parthenogenesis, and external versus internal fertilization.
- 7. Apply knowledge of sexual reproduction to current biological issues, such as conservation biology (e.g., sex ratio imbalances), medical advancements (e.g., fertility treatments), and the study of sex-linked diseases.
- 8. Interpret and critically assess primary research literature on the evolution and biology of sex.

Content Topic List

- Red Queen Hypothesis
 - Asexual reproduction
 - Mechanisms of sexual reproduction
 - Biological sex
 - Sexual selection
 - Mating systems
 - Ecology
- Yes

Sought Concurrence

Attachments

- Biology 3870 Syllabus.pdf
(Syllabus. Owner: Andrews, Adam Lee)
- Biology 3870 submission-origins-evolution.pdf: Theme Cover Sheet
(Other Supporting Documentation. Owner: Andrews, Adam Lee)
- Biology 3870 EEOB Concurrence.pdf: EEOB Concurrence
(Concurrence. Owner: Andrews, Adam Lee)
- Biology BS Curriculum Map.pdf: Biology Major Curriculum Map
(Other Supporting Documentation. Owner: Andrews, Adam Lee)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Andrews,Adam Lee	05/28/2025 01:15 PM	Submitted for Approval
Approved	Kulesza,Amy Elizabeth	05/28/2025 08:00 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	08/11/2025 11:15 AM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hilty,Michael Neff,Jennifer Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	08/11/2025 11:15 AM	ASCCAO Approval

Biology 3870

The Evolution and Biology of Sex

Spring 2026 – 3 Credit Hours

Lecturer:**Email:****Office:****Student Hours:***other times scheduled by appointment***Course Coordinator:***Center for Life Sciences Education***Email:****Office:****Phone:****Class Meeting Schedule:****Lecture:** Twice Weekly for 80 minutes**Prerequisites:**

Biology 1101, 1110, or 1112/1113xx and 1114xx

Required Course Materials:

- *The Evolution of Sex* by Kevin Lee Teather, 2024, Oxford University Press. ISBN: 9780198886730
- Select readings from the scientific literature as noted in the schedule and linked on Carmen.

Credit Hours and Work Expectation:

This is a 3-credit-hour course. According to Ohio State policy, students should expect around 3 hours per week of time spent on direct instruction in addition to 6 hours of homework to receive a grade of C average. [ASC Honors](#) provides an excellent guide to scheduling and study expectations.

Course Description:

An exploration of biological evolution of sex across species, including mechanisms of reproduction, sexual selection, and reproductive strategies in various environmental conditions.

Course Description and Learning Goals

This course fulfills the Goals and Outcomes for the General Education *Origins and Evolution* Theme.

Theme: Origins and Evolution	
Goals	Expected Learning Outcomes
1. Analyze Origins & Evolution at a more advanced and in-depth level than in the Foundations component.	Successful students will be able to ... 1.1 Engage in critical and logical thinking about the topic or idea of origins and evolution.

	1.2 Conduct an advanced, in-depth, scholarly exploration of the topic or idea of origins and evolution.
2. Integrate approaches to understanding the issues involved in origins and evolution by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in the future.	2.1 Identify, describe, and synthesize approaches or experiences as they apply to origins and evolution.
	2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment and creative work, building on prior experiences to respond to new and challenging contexts.
3. Appreciate the time depth of the origins and evolution of natural systems, life, humanity, or human culture, and the factors that have shaped them over time.	3.1 Illustrate their knowledge of the time depth of the universe, physical systems, life on earth, humanity or human culture by providing examples or models.
	3.2 Explain scientific methods used to reconstruct the history of the universe, physical systems, life on earth, humanity or human culture and specify their domains of validity.
	3.3 Engage with current controversies and problems related to origins and evolution questions.
4. Understand the origins and evolution of natural systems, life, humanity, or human culture, and the factors that have shaped them over time.	4.1 Describe their knowledge of how the universe, physical systems, life on Earth, humanity or human culture have evolved over time.
	4.2 Summarize current theories of the origins and evolution of the universe, physical systems, life on earth, humanity or human culture.

Students in Biology 3870 will build on foundational biology content to explore the origin and evolution of sex across a range of species. The course will use a short textbook to ease students into the content before transitioning to more advanced scientific literature, allowing students to engage at a scholarly level by way of scaffolded article reflection assignments aimed at helping students to understand the more difficult literature. The content of the course will be addressed in three modules, all related directly to the theme: the evolution of sexual reproduction; sexual selection as a mechanism of evolution and the origins of various mating systems to maximize reproductive success; and the impact of ecological factors on the evolution of mating strategies. Students will explore the historical context of sexual selection from Darwin through a modern understanding of the field as illustrated by the current literature as it relates to both the theoretical science and the practical aspects of conservation and modern medicine.

Course Goals:

1. Develop a comprehensive understanding of the biological principles underlying sexual reproduction, including its mechanisms, processes, and variations across different species.
2. Investigate the evolutionary significance of sex, examining hypotheses and theories that explain the origins of sexual reproduction and its persistence in many organisms.
3. Explore the intersection of sex and genetics, focusing on how sexual reproduction influences genetic diversity, heredity, and adaptation.
4. Analyze the ecological and behavioral evolutionary aspects of sexual reproduction, including factors like mate choice, sexual selection, and reproductive strategies.
5. Enhance critical thinking and scientific inquiry by engaging with primary literature on the evolution of sex and understanding ongoing debates and research in the field.
6. Foster an appreciation for the diversity of reproductive strategies across the tree of life.

Learning Outcomes:

Successful students will be able to:

1. Explain the genetic, physiological, and cellular mechanisms of sexual reproduction in eukaryotic organisms, including the processes of meiosis, fertilization, and gametogenesis.
2. Identify and describe the evolutionary theories that explain the persistence of sexual reproduction, such as the Red Queen Hypothesis and the benefits of genetic recombination.
3. Compare and contrast sexual and asexual reproduction, examining the advantages and disadvantages of each strategy in different ecological contexts.
4. Evaluate the role of sexual selection in shaping organismal traits, such as mate choice, sexual dimorphism, and courtship behaviors.
5. Analyze the ecological factors influencing reproductive strategies, including resource availability, population density, and environmental stability, and how these affect reproductive success.
6. Understand the diversity of reproductive systems across the biological world, including hermaphroditism, parthenogenesis, and external versus internal fertilization.
7. Apply knowledge of sexual reproduction to current biological issues, such as conservation biology (e.g., sex ratio imbalances), medical advancements (e.g., fertility treatments), and the study of sex-linked diseases.
8. Interpret and critically assess primary research literature on the evolution and biology of sex.

Grading and Evaluation:

Graded assignments may come in three forms, and students should note the expectations for each in the descriptions of our class assignments below:

- **Independent Work (👤):** Strictly non-collaborative, original-individual work. You may discuss this assignment only with your instructor. Discussions with other individuals, either in person or electronically, are strictly prohibited and constitute academic misconduct.
- **Required Collaboration (👥):** An explicit expectation for collaboration among students either in-class or outside (i.e., group work).
- **Optional Collaboration (💬):** Students are permitted, but not required, to discuss the assignment or ideas with each other. However, all submitted work must be one's original and individual creation.

Assignment	Points	Assignment Type
Article Reflections (4x20 points each)	80	↑
In-Class Activities	75	↑ ↑↑ ↑↑↑
Essay Exams (3 x 75)	225	↑
SALG	5	↑
Total Points Possible	385	

Article Reflections (80 points)

For each of four assignments, students will read an article chosen from the primary literature, which will be linked on Carmen. From that article, students will answer directed questions intended to guide students in an understanding of the paper.

In-Class Activities (75 points)

Throughout the lectures, participation will be encouraged and assessed through a range of active learning activities, which may include TopHat questions, case-studies, worksheets, etc. Some will be completed individually while others will require discussion and engagement with other students in the class. More than 75 points will be available in order to accommodate absences.

Essay Exams (225 points)

One week prior to the scheduled exam, students will be provided with three essay prompts that they may prepare answers to. On the day of the exam, the instructors will choose one of the prompts for which students will provide a written response in class. The essay topics will draw in the lecture presentations and reading assignments.

Student Assessment of Learning Gains (5 points)

This survey will be administered at the end of the course to gather information from students about the gains made throughout the course and how various aspects of the course contributed to those gains. Full credit will be awarded for completion.

Your Final Grade:

Your final grade will be based on the percentage of the 385 points that you earn during the course of the semester as described above. Please note that we do not grade the course on a curve and Carmen does not round averages up to the next nearest percentage point, so 92.11% and 92.97% both earn the grade of A-. Final letter grades will be determined by the grade scale below:

Grade Scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	E
100 – 93.0%	92.9 – 90.0%	89.9 – 87.0%	86.9 – 83.0%	82.9 – 80.0%	79.9 – 77.0%	76.9 – 73.0%	72.9 – 70.0%	69.9 – 67.0%	66.9 – 60.0%	59.9 – 0%

Posting of Grades:

All grades will be posted on Carmen. After grades are posted you have 10 working days to challenge any grade or inquire regarding an unposted or missing grade. **After that time, grades are final.** To challenge or inquire about a missing grade, contact your laboratory instructor.

****IMPORTANT****

Make sure that all of your grades are properly posted on Carmen as you receive them. Challenges about grades, particularly after the end of the semester, will not be entertained after the 10-day grace period.

Late Assignments:

All assignments are due on the date and time prescribed in the course schedule. Late work will not be accepted except in rare (and documentable) circumstances.

Absences:

Exams:

If you are too ill to take an exam or must miss for another legitimate unscheduled reason, you must contact the Course Coordinator within 24 hours of the exam. Make up exams will be given only to students who produce, at the make up or before, documentation of a legitimate reason (at the time of the absence) for missing the exam. Valid excuses are limited to problems that are beyond the student's control, such as military duty, intercollegiate athletic or academic activities, funerals, etc. Medical excuses will be considered only if you have been treated by a medical professional on the day of the exam (excuses from the student health center website will not be accepted). Lack of transportation, loss of electricity, travel plans, etc. are not considered valid excuses. If you anticipate having to miss an exam due to attendance at a university sanctioned event or other qualifying conflict, you must contact the Course Coordinator at least one week in advance of the exam.

If you have no documentation to support your absence, or your absence from the exam is not for an excused reason, you will still be offered the opportunity for a makeup exam, with a 25% overall deduction on your exam score if arrangements are made within 24 hours of the original exam. The format of makeup exams is at the discretion of the instructors.

Note: Check the date and time of the final examination now and make sure that this time does not conflict with your future plans. No early final exams will be given. The only makeup exam will be held on [TBD] at 9:00 a.m. and is available only in emergency situations and with prior approval of the Course Coordinator.

Disability Services:

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let the Course Coordinator know immediately so that we can privately discuss options. To establish reasonable accommodations, we may request that you register with Student Life Disability Services. After registration, make arrangements

with the Course Coordinator as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. Only the course coordinator is authorized to complete SLDS accommodations. This will help us ensure that your individual needs will be met appropriately and fairly.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of a viral infection or fever, please let your instructor know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Religious Accommodations:

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to

report discrimination or harassment based on religion, individuals should contact the **Civil Rights Compliance Office**. (Policy: **Religious Holidays, Holy Days and Observances**)

Weather or Other Short-Term Closing:

Should in-person classes be canceled, students will be notified as to which alternative methods of teaching will be offered to ensure continuity of instruction for this class. Communication will be via Carmen announcements and course-wide email.

Instructor Feedback and Response Expectations:

- **Email response:** The CLSE's expectation of instructors is that emails will be responded to within one business day. If your email is sent during the evening or over the weekend, you may not receive a response until the next business day.
- **Class announcements:** I will send important class-wide messages through the Announcements tool in Carmen. Please check [your notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Graded assignments:** Assignments will be graded and returned to you within one week after they were due. All scores are posted on Carmen no later than the day the graded assignment is returned.

Course Technology:

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Carmen

- Carmen, Ohio State's Learning Management System, will be used to host materials and activities throughout this course. To access Carmen, visit [Carmen.osu.edu](https://carmen.osu.edu). Log in to Carmen using your name.# and password. If you have not setup a name.# and password, visit my.osu.edu.
- Help guides on the use of Carmen can be found at <https://resourcecenter.odee.osu.edu/carmen>
- **This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.**
- [Carmen accessibility](#)

CarmenZoom

- Office hours will be held through Ohio State's conferencing platform, CarmenZoom. A separate guide to accessing CarmenZoom and our office hours is posted on the course Carmen page under Files.
- Students may use the audio and video functions if a webcam and microphone are available. If not, there is still a chat function within CarmenZoom for the student to live chat with the professor or TA in the virtual office hours room.
- [Carmen Zoom](#) help guide

TurnItIn

- Students at The Ohio State University are accountable for the integrity of the work they submit. Therefore, you should be familiar with the guidelines provided by the [Committee on Academic Misconduct \(COAM\)](#) and [Section A of OSU's Code of Student Conduct](#) in order to meet the academic expectations concerning appropriate documentation of sources. In addition, OSU has made TurnItIn, a learning tool and plagiarism prevention system, available to instructors. For this class, you will submit your papers to TurnItIn from Carmen. When grading your work, I will interpret the originality report, following [Section A of OSU's Code of Student Conduct](#) as appropriate. For more information about TurnItIn, please see [the vendor's guide for students](#). Note that submitted final papers become part of the OSU database.
- Please know that I view TurnItIn first and foremost as a teaching tool to make you a better writer. You will see in your individual originality reports exactly what the instructors see. We WANT you to look at this report as soon as you submit your assignments. If you see an issue, please correct it right away, before we start grading the assignment. You can resubmit without penalty as many times as you want prior to the established due date for any assignment. After the due date, the late policy is in effect.

TopHat

- TopHat is a web-based response system that allows students to use their own devices provide responses in the classroom. This course uses Top Hat to promote active engagement, allow for synchronous feedback, and monitor attendance.
- [TopHat](#) help guide

Discussion and Communication Guidelines:

The following are expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online and is not always appreciated in-person. The instructional team work very hard to provide a positive learning experience. Please keep this in mind and remain civilized and respectful in your class communications.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say.

Issue Resolution:

The CLSE believes that student concerns are usually most effectively addressed by the staff closest to the situation. Therefore, students are ordinarily expected to address issues or concerns first with their instructors. If the issue cannot be resolved by your instructor, or for some reason you feel that you absolutely cannot address your concern with your instructor, please feel free to contact the Course Coordinator or Assistant Director Adam Andrews (andrews.171@osu.edu).

Building Emergency Action Plan:

Each building on campus has a Building Emergency Action Plan (BEAP) outlining that specific building's specific procedures to be followed in the event of a range of emergency situations, including fire, weather, terrorism, chemical spills, etc. It is the role of every Buckeye to help keep each other safe and to be aware of these procedures. You can find all of the campus BEAPs at <https://dps.osu.edu/beap>.

Lyft Ride Smart:

Lyft Ride Smart at Ohio State offers eligible students discounted rides, inside the university-designated [service area](#), from 7 p.m. to 7 a.m. Prices may be impacted by distance, traffic, time of day, special events and prime time surcharges. To qualify for program discounts, users must select “shared ride” when booking in the Lyft app. For more information, visit: <https://ttm.osu.edu/ride-smart>.

Mental Health:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life’s Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Title IX:

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu.

Diversity:

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

Academic Misconduct:

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed, illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>. We will adhere to this policy.

- Unless otherwise specified for a particular assignment, all submitted work should be a student’s own unique effort. Collaborative efforts are not permitted unless expressly sanctioned for a particular assignment.
- Unless otherwise specified for a particular assignment, use of AI-generated materials for course submissions is not permitted.
- Reusing past work: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you’ve explored in previous courses, please discuss the situation with me.
- Using others’ verbatim words without the use of quotation marks and citation is plagiarism. Paraphrased work requires citation to denote the use of others’ ideas. Copying other’s words without quotation while using citations is still considered plagiarism.
- Use of any technology during a quiz or exam (including but not limited to cell phones, smart watches, headphones, electronic dictionaries, etc.) is strictly prohibited.

Copyrighted Class Materials:

© The Instructor’s lectures and all course materials, including power point presentations, tests, outlines, assignments, and similar materials, are protected by copyright. You may take notes and make copies of course materials for your own use. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly whether or not a fee is charged without the express written consent of the course instructor or course coordinator.

Course Schedule: Spring 2026

Schedule and assignments subject to change with as much advance notice as possible

Week	Lecture Topic	Readings	Assignments Due Sunday at 11:59 p.m.
1	The Origins and Evolution of Sexual Reproduction <ul style="list-style-type: none">• Red Queen Hypothesis	Teather Ch 1,3	
2	Reproduction across taxa. <ul style="list-style-type: none">• Sex is costly, so why do it?• Mechanisms of asexual reproduction	Teather Ch 2, 5	
3	Mechanisms of reproduction <ul style="list-style-type: none">• meiosis, fertilization, gametogenesis	Teather Ch 4	
4	How many sexes are there? <ul style="list-style-type: none">• Exploration of the sexes across	Teather Ch 6, 7	Article Reflection 1 Due: Meston CM, Buss DM.

	species <ul style="list-style-type: none"> • Dimorphism, Polymorphism • Genetic vs Environmental determination 		Why humans have sex. Arch Sex Behav. 2007 Aug;36(4):477-507. doi: 10.1007/s10508-007-9175-2. Epub 2007 Jul 3. PMID: 17610060.
5	The psychology and physiology of sex <ul style="list-style-type: none"> • Sex for pleasure vs instinct • How evolution drives the need for sex in different mating systems 	Teather Ch 11	
6	Essay Exam 1 On the descent of man, in relation to sex <ul style="list-style-type: none"> • Introduction to the evolution of sexual selection • Antagonism between natural and sexual selection 	Teather Ch 10	
7	The role of mate choice in sexual dimorphism	Teather Ch 12	
8	Evolution of polymorphism <ul style="list-style-type: none"> • Maximizing reproductive fitness 		Article Reflection 2: Munday PL, Wilson White J, Warner RR. A social basis for the development of primary males in a sex-changing fish. Proc Biol Sci. 2006 Nov 22;273(1603):2845-51. doi: 10.1098/rspb.2006.3666. PMID: 17015358; PMCID: PMC1664627.
9	Conflict between sexes <ul style="list-style-type: none"> • Maximizing reproductive success by competition • Evolution of multiple insemination systems 	Teather Ch 8	
10	Cooperation between the sexes <ul style="list-style-type: none"> • Evolution of parental strategies 	Teather Ch 9	
11	On the descent of man: Mate choice in humans Essay Exam 2	Buss DM, Schmitt DP. Mate Preferences and Their Behavioral Manifestations. Annu Rev Psychol. 2019 Jan 4;70:77-110. doi: 10.1146/annurev-psych-010418-103408. Epub 2018 Sep 19. PMID: 30230999.	
12	Ecological impacts on reproductive strategies		Thompson ME. Reproductive ecology of

	<ul style="list-style-type: none"> • resource availability • population density 		female chimpanzees. Am J Primatol. 2013 Mar;75(3):222-37. doi: 10.1002/ajp.22084. Epub 2012 Sep 26. PMID: 23015287.
13	<p>Ecological impacts on reproductive strategies</p> <ul style="list-style-type: none"> • environmental stability • role in conservation biology (e.g. salmon fisheries effect) 		Article Reflection 4: Auld HL, Jacobson DP, Rhodes AC, Banks MA. Differences in Mate Pairings of Hatchery- and Natural-Origin Coho Salmon Inferred from Offspring Genotypes. Integr Org Biol. 2021 Aug 14;3(1):obab020. doi: 10.1093/iob/obab020. PMID: 34409260; PMCID: PMC8363981.
14	<p>The implications of sex in medicine</p> <ul style="list-style-type: none"> • treatment of sex-linked disease • fertility treatments 	Rubin JB. Sexual selection and cancer biology. Oncotarget. 2015 Jun 30;6(18):15714-5. doi: 10.18632/oncotarget.4592. PMID: 26158217; PMCID: PMC4599216.	
Finals	Essay Exam 3		

GE Theme course submission worksheet: Origins & Evolution

Overview

Courses in the GE Themes aim to provide students with opportunities to explore big picture ideas and problems within the specific practice and expertise of a discipline or department. Although many Theme courses serve within disciplinary majors or minors, by requesting inclusion in the General Education, programs are committing to the incorporation of the goals of the focal theme and the success and participation of students from outside of their program.

Each category of the GE has specific learning goals and Expected Learning Outcomes (ELOs) that connect to the big picture goals of the program. ELOs describe the knowledge or skills students should have by the end of the course. Courses in the GE Themes must meet the ELOs common for **all** GE Themes and those specific to the Theme, in addition to any ELOs the instructor has developed specific to that course. All courses in the GE must indicate that they are part of the GE and include the Goals and ELOs of their GE category on their syllabus.

The prompts in this form elicit information about how this course meets the expectations of the GE Themes. The form will be reviewed by a group of content experts (the Theme Advisory) and by a group of curriculum experts (the Theme Panel), with the latter having responsibility for the ELOs and Goals common to all themes (those things that make a course appropriate for the GE Themes) and the former having responsibility for the ELOs and Goals specific to the topic of **this** Theme.

Briefly describe how this course connects to or exemplifies the concept of this Theme (Origins & Evolution)

In a sentence or two, explain how this class “fits” within the focal Theme. This will help reviewers understand the intended frame of reference for the course-specific activities described below.

(enter text here)

Connect this course to the Goals and ELOs shared by *all* Themes

Below are the Goals and ELOs common to all Themes. In the accompanying table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The specifics of the activities matter—listing “readings” without a reference to the topic of those readings will not allow the reviewers to understand how the ELO will be met. However, the panel evaluating the fit of the course to the Theme will review this form in conjunction with the syllabus, so if readings, lecture/discussion topics, or other specifics are provided on the syllabus, it is not necessary to reiterate them within this form. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations. In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

	Course activities and assignments to meet these ELOs
ELO 1.1 Engage in critical and logical thinking.	
ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme	
ELO 2.1 Identify, describe, and synthesize approaches or experiences.	
ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.	

Example responses for proposals within “Citizenship” (from Sociology 3200, Comm 2850, French 2803):

ELO 1.1 Engage in critical and logical thinking.	<i>This course will build skills needed to engage in critical and logical thinking about immigration and immigration related policy through: Weekly reading response papers which require the students to synthesize and critically evaluate cutting-edge scholarship on immigration; Engagement in class-based discussion and debates on immigration-related topics using evidence-based logical reasoning to evaluate policy positions; Completion of an assignment which build skills in analyzing empirical data on immigration (Assignment #1)</i>
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	<p>Completion 3 assignments which build skills in connecting individual experiences with broader population-based patterns (Assignments #1, #2, #3)</p> <p>Completion of 3 quizzes in which students demonstrate comprehension of the course readings and materials.</p>
<p>ELO 2.1 Identify, describe, and synthesize approaches or experiences.</p>	<p>Students engage in advanced exploration of each module topic through a combination of lectures, readings, and discussions.</p> <p><u>Lecture</u> Course materials come from a variety of sources to help students engage in the relationship between media and citizenship at an advanced level. Each of the 12 modules has 3-4 lectures that contain information from both peer-reviewed and popular sources. Additionally, each module has at least one guest lecture from an expert in that topic to increase students' access to people with expertise in a variety of areas.</p> <p><u>Reading</u> The textbook for this course provides background information on each topic and corresponds to the lectures. Students also take some control over their own learning by choosing at least one peer-reviewed article and at least one newspaper article from outside the class materials to read and include in their weekly discussion posts.</p> <p><u>Discussions</u> Students do weekly discussions and are given flexibility in their topic choices in order to allow them to take some control over their education. They are also asked to provide information from sources they've found outside the lecture materials. In this way, they are able to explore areas of particular interest to them and practice the skills they will need to gather information about current events, analyze this information, and communicate it with others.</p> <p>Activity Example: Civility impacts citizenship behaviors in many ways. Students are asked to choose a TED talk from a provided list (or choose another speech of their interest) and summarize and evaluate what it says about the relationship between civility and citizenship. Examples of Ted Talks on the list include Steven Petrow on the difference between being polite and being civil, Chimamanda Ngozi Adichie's talk on how a single story can perpetuate stereotypes, and Claire Wardle's talk on how diversity can enhance citizenship.</p>
<p>ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.</p>	<p>Students will conduct research on a specific event or site in Paris not already discussed in depth in class. Students will submit a 300-word abstract of their topic and a bibliography of at least five reputable academic and mainstream sources. At the end of the semester they will submit a 5-page research paper and present their findings in a 10-minute oral and visual presentation in a small-group setting in Zoom.</p> <p>Some examples of events and sites: The Paris Commune, an 1871 socialist uprising violently squelched by conservative forces</p>

	<i>Jazz-Age Montmartre, where a small community of African-Americans—including actress and singer Josephine Baker, who was just inducted into the French Pantheon—settled and worked after World War I.</i> <i>The Vélodrome d’hiver Roundup, 16-17 July 1942, when 13,000 Jews were rounded up by Paris police before being sent to concentration camps</i> <i>The Marais, a vibrant Paris neighborhood inhabited over the centuries by aristocrats, then Jews, then the LGBTQ+ community, among other groups.</i>
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Goals and ELOs unique to Origins & Evolution

Below are the Goals and ELOs specific to this Theme. As above, in the accompanying Table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

GOAL 3: Successful students will appreciate the time depth of the origins and evolution of natural systems, life, humanity, or human culture, and the factors that have shaped them over time.

GOAL 4: Successful students will understand the origins and evolution of natural systems, life, humanity, or human culture, and the factors that have shaped them over time.

	Course activities and assignments to meet these ELOs
ELO 3.1 Illustrate their knowledge of the time depth of the universe, physical systems, life on earth, humanity or human culture by providing examples or models.	
ELO 3.2 Explain scientific methods used to reconstruct the history of the universe, physical systems, life on earth, humanity or human culture and specify their domains of validity.	
ELO 3.3 Engage with current controversies and problems related to origins and evolution questions.	
ELO 4.1 Describe their knowledge of how the universe, physical systems, life on Earth, humanity or human culture have evolved over time.	
ELO 4.2 Summarize current theories of the origins and evolution of the universe, physical systems, life on earth, humanity or human culture.	

Subject: RE: Concurrence Request
Date: Wednesday, May 28, 2025 at 11:17:43 AM Eastern Daylight Time
From: Freudenstein, John
To: Andrews, Adam
CC: Sabel, Jaime
Attachments: image001.png

Adam:

Things move a little more slowly during summer, but I have discussed BIOL 3870 with our Curriculum Committee and we give concurrence, although people noted it comes quite close to our area. Questions were raised about the proliferation of new BIOL courses and what is guiding this – because I really do not know myself, I was not able to answer those questions. It might be good to know if it is just the sense of needing to generate more credits or if there is a larger strategy here.

John

From: Andrews, Adam <andrews.171@osu.edu>
Sent: Monday, May 12, 2025 8:38 AM
To: Freudenstein, John <freudenstein.1@osu.edu>
Cc: Sabel, Jaime <sabel.12@osu.edu>
Subject: Concurrence Request

Good morning, John,

I'm following up on the CLSE CC meeting from Friday to formally request EEOB's concurrence for our proposed Biology 3870 – *The Evolution of Sex*.

I would ask for review by Wednesday, May 28. We'll assume concurrence after that date, but please do let me know if you need additional time.

Thank you,
Adam



Adam L. Andrews
Assistant Director for Curriculum & Instruction
College of Arts and Sciences | Center for Life Sciences Education

240D Jennings Hall, 1735 Neil Avenue, Columbus, OH 43210
(614) 247-6345 Office / (614) 292-4390 Fax
andrews.171@osu.edu clse.osu.edu

Biology BS Curriculum Map

B = beginning, I = intermediate, A = advanced

[illegible]

	Phys 1250	Mechanics, Work and Energy, Thermal Physics (5 Hrs.)																		
PHYS Req. #2	Phys 1201	E&M, Optics, Modern Physics	5	B	B									B	B	B	B			
	or																			
	Phys 1251	E&M, Waves, Optics, Modern Physics																		
Total Hrs.			48-61																	
Core Electives for the Major						Biology BS Learning Outcomes														
Sem. Course Number	Course Title		Sem. hrs.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4	
MICRBIOL 4000 or 4100	General Microbiology		4/5	A	I	I	I	I	I	I				A	A	I	A	I	I	
BIOCHEM 4511 or 5613 AND 5614	Biochemistry		4/6	A	I	A		I								I		I	I	
MOLGEN 3300	General Plant Biology		4	A	I	I	I	I	I	I				A	A	I	A	I	I	
MOLGEN 4500 or 4606	General Genetics		3 / 4	A	I	A	A	I	I							I		I	I	
EEOB 2510 or 2511	Human Anatomy		3 / 4	I														I	B	
EEOB 2520	Human Physiology		3	I														I	B	
EEOB 3510 or MOLGEN 4700	Cell Biology		3	A	A	I	I	I						I					I	
EEOB 3310	Evolution		4	A	I		I	A	I	I						I		I	I	
EEOB 3410	Ecology		4	I	I			I		A				A	I	I	I	I	I	
EEOB 3520	Microscopic Anatomy		3	I	I	I												I	I	
EEOB 4510	Comparative vertebrate anatomy		3	I	I														I	
ANTHRO 2200	Physical Anthropology (Additional Prereq)		4				B	B	B	B				B	B		B	B	B	
BIO 3401 or 3501	Integrated Biology or Integrative Skills in Biology		4/3	I	I	I	I	I	I	I				I	B	I	I	I	I	
BIO 4901	Biological Capstone		2	A	A	A	A	A	A	A	A	A	A	A	B	A	I	I	A	
Additional Biology Electives						Biology BS Learning Outcomes														
Sem. Course Number	Course Title		Sem. hrs.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4	
BIO 2200	Genome Biology		1		I		I							I	I	I	I	I	B	
BIO 2750	Scientific Thought in an Anecdotal World		3													B		I	I	
BIO 3050	Current Events in Biology		1													I	I	I	I	
BIO 3730	Humans vs Germs		3	I			I	I		I						I	I	I	I	
BIO 3870	Evolution of Sex		3	I	I		I	A		I						I	I	I	I	
BIO 4210	Undergraduate Research in Biology Education		4											A	A	A	A	A	A	
BIO 4798	Scientific Roots in England		3	I					I										I	
BIO 5001	Topics in Biology Teaching		1															A	A	

BS outcomes

1. Explain major biological concepts and discuss how these are connected with various areas of the biological and physical sciences.

1.1. Describe the hierarchical relationship between structure and function at all levels: molecular, cellular, and organismic.

1.2. Diagram, explain, and contrast the major cellular processes in Archaea, bacteria, and eukaryotes.

1.3. Differentiate types of biological macromolecules and compare their contributions to cellular structure and function.

1.4. Apply the principles of genetics and describe the flow of genetic information.

- 1.5. Explain changes in organisms through time by applying the principles of evolutionary biology.
- 1.6. Demonstrate how relationships among living things are understood through taxonomy and phylogenetic analysis.
- 1.7. Describe ecological relationships between organisms and their environment.
2. Apply concepts from mathematics and other science disciplines for the analysis of processes in living organisms.
 - 2.1. Apply quantitative skills in the analysis of biological processes.
 - 2.2. Apply concepts from chemistry in the analysis of biological processes.
 - 2.3. Apply concepts from physics in the analysis of biological processes.
3. Demonstrate problem solving, analytical, and communication skills that will provide the foundation for lifelong learning and career development.
 - 3.1. Apply the scientific process, including designing and conducting experiments and testing hypotheses.
 - 3.2. Use laboratory equipment, employ safe laboratory practices, and adapt tools such as laboratory notebooks and spreadsheets to organize and analyze data associated with scientific processes.
 - 3.3. Retrieve information from the life sciences literature; read, understand, and critically review scientific papers.
 - 3.4. Prepare oral and written reports following a recognized scientific format.
 - 3.5. Develop an awareness of the careers and professions that rely on knowledge of biological sciences.
4. Value biology as an integral part of society and everyday life.