Term Information

Effective Term	Summer 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

Sought Concurrence

Yes

Attachments

- 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)

- Biology 3870 submission-origins-evolution.pdf

  (Other Supporting Documentation. Owner: Andrews,Adam Lee)

- Article Reflection Example.pdf: Assignment Example

  (Other Supporting Documentation. Owner: Andrews,Adam Lee)

- Bio 3870 MG Concurrence.pdf: MolGen Concurrence

  (Concurrence. Owner: Andrews,Adam Lee)

- Biology 3870 Response to NMS Panel.pdf: Response to NMS Panel

  (Cover Letter. Owner: Andrews,Adam Lee)

- Biology 3870 Syllabus 20260116.pdf: Updated 1/16/2026

  (Syllabus. Owner: Andrews,Adam Lee)

- Biology 3870 Response to Themes Panel.pdf: Response to Themes Panel

  (Other Supporting Documentation. Owner: Andrews,Adam Lee)

Comments

- Please see feedback email sent to department 12-23-2025 RLS *(by Steele,Rachel Lea on 12/23/2025 02:04 PM)*
- Please see Subcommittee feedback email sent 9/8/25. *(by Neff,Jennifer on 09/08/2025 02:04 PM)*

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
Revision Requested	Neff,Jennifer	09/08/2025 02:04 PM	ASCCAO Approval
Submitted	Andrews,Adam Lee	10/13/2025 08:10 AM	Submitted for Approval
Approved	Kulesza,Amy Elizabeth	10/13/2025 08:18 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	10/13/2025 09:55 AM	College Approval
Revision Requested	Steele,Rachel Lea	12/23/2025 02:04 PM	ASCCAO Approval
Submitted	Andrews,Adam Lee	01/16/2026 10:37 AM	Submitted for Approval
Approved	Kulesza,Amy Elizabeth	01/16/2026 10:41 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	01/19/2026 04:42 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Neff,Jennifer Vankeerbergen,Bernadette Chantal Wade,Macy Joy Steele,Rachel Lea	01/19/2026 04:42 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

College of Arts and Sciences

Center for Life Sciences Education

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16 January 2026

Dr. Soland and the Themes II Panel:

The Center for Life Sciences Education would like to thank the ASCC Themes Panel for their recent review and contingent approval of our proposed new course, Biology 3870 – *Evolution of Sex*. In response to the contingencies, I offer the following updates.

> ***Contingency:*** *The Subcommittee asks that the unit provide further information in the syllabus regarding how ELO 3.1 will be met and assessed. They note and appreciate the comments on the GEN Submission form regarding the processes of prokaryotes and eukaryotes, but they are unclear about when these topics will be covered in the course, and how they will be related to the "time depth of the universe, physical systems, life on Earth, humanity, or human culture" (ELO 3.1). The Subcommittee acknowledges that this is likely already a part of the course's first few weeks, but they would like to see this be more apparent and more explicitly stated for students in the syllabus.*
>
> As the Panel suggests, these topics are definitively embedded in the course topics already, so we have added additional weekly outcomes in the course calendar to make more explicit how the origins and co-evolution of pathogens and mammals have driven the evolution of sexual reproduction. This will allow us to focus on the time scale as well given that the origin of the co-evolution pre-dates the human species but has continued throughout our existence. The topic will be assessed both in the first Article Reflection as well as the first exam.

Should the Panel have any additional questions or concerns about the course, I look forward to your feedback.

Sincerely,

Adam L. Andrews

Adam Andrews
Assistant Director for Curriculum & Instruction

THE OHIO STATE UNIVERSITY

Biology 3870
The Evolution 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 meets the Goals and Outcomes for the General Education *Origins and Evolution* Theme.

GE 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 origins and evolution of sexual reproduction, both physiologically and as a co-evolution between pathogens and their eukaryotic hosts; 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.

The essay exams will be the centerpiece of the assessment plan for this course and its alignment to the GE Theme expected learning outcomes. The questions posed on these essay exams will not only require students to demonstrate understanding of the content related to the origins and evolution of sexual reproduction and the scale and scope of evolution's timeframe but will require students to engage in an advanced scholarly approach to the content by requiring students to research topics beyond the scope of the lectures. Students will draw in evidence from the primary literature, aided in this pursuit by a series of *Article Reflections* and class discussions of literature aimed at teaching students how to interact and understand scholarly products. A series of three metacognitive reflections will ask students to reflect on themselves as a learner and their growth at three points throughout the semester.

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	
Metacognitive Reflections	30	
Essay Exams (3 x 75)	225	
SALG	5	
Total Points Possible	**415**	

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.

Metacognitive Reflections (30 points)

Students will complete three reflections of themselves as learners, with specific prompts at the beginning, midpoint, and end of the semester so that both the instructor and students themselves can reflect on the student's growth as a self-motivated learner. Each reflection will be worth 10 points.

- Reflection 1 – What learning skills do you bring into the course?
- Reflection 2 – How are your learning skills supporting you through the first exam?
- Reflection 3 – How have your learning skills changed over the course?

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 415 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 students anticipate or experience academic barriers based on a disability (including mental health and medical conditions, whether chronic or temporary), they should let their instructor know immediately so that they can privately discuss options. Students do not need to disclose specific information about a disability to faculty. To establish reasonable accommodations, students may be asked to register with Student Life Disability Services (see below for campus-specific contact information). After registration, students should make arrangements with their instructors as soon as possible to discuss your accommodations so that accommodations may be implemented in a timely fashion.

If students are ill and need to miss class, including if they are staying home and away from others while experiencing symptoms of viral infection or fever, they should let their 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

Intellectual Diversity:

Ohio State is committed to fostering a culture of open inquiry and intellectual diversity within the classroom. This course will cover a range of information and may include discussions or debates about controversial issues, beliefs, or policies. Any such discussions and debates are intended to support understanding of the approved curriculum and relevant course objectives rather than promote any specific point of view. Students will be assessed on principles applicable to the field of study and the content covered in the course. Preparing students for citizenship includes helping them develop critical thinking skills that will allow them to reach their own conclusions regarding complex or controversial matters.

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 (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. 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.

Grievances and Solving Problems:

According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-8-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department.

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.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct:

The Ohio State University is committed to building and maintaining a welcoming community. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Civil Rights Compliance Office (CRCO):

Online reporting form: http://civilrights.osu.edu/

Call 614-247-5838 or TTY 614-688-8605

civilrights@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Civil Rights Compliance Office to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Academic Misconduct:

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute Academic Misconduct.

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so please review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.
If an instructor suspects that a student has committed academic misconduct in this course, the instructor is obligated by University Rules to report those suspicions to the Committee on Academic Misconduct. If COAM determines that a student violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University.
If students have questions about the above policy or what constitutes academic misconduct in this course, they should contact the instructor.
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.

Artificial Intelligence and Academic Integrity:

There has been a significant increase in the popularity and availability of a variety of generative artificial intelligence (AI) tools, including ChatGPT, Sudowrite, and others. These tools will help shape the future of work, research and technology, but when used in the wrong way, they can stand in conflict with academic integrity at Ohio State.
All students have important obligations under the Code of Student Conduct to complete all academic and scholarly activities with fairness and honesty. Our professional students also have the responsibility to uphold the professional and ethical standards found in their respective academic honor codes. Specifically, students are not to use unauthorized assistance in the laboratory, on field work, in scholarship, or on a course assignment unless such assistance has been authorized specifically by the course instructor. In addition, students are not to submit their work without acknowledging any word-for-word use and/or paraphrasing of writing, ideas or other work that is not your own. These requirements apply to all students undergraduate, graduate, and professional.
To maintain a culture of integrity and respect, these generative AI tools should not be used in the completion of course assignments unless an instructor for a given course specifically authorizes their use. Some instructors may approve of using generative AI tools in the academic setting for specific goals. However, these tools should be used only with the explicit and clear permission of each individual instructor, and then only in the ways allowed by the instructor.

Copyrighted Class Materials:

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 • Red Queen Hypothesis • Co-evolution of prokaryotes and eukaryotes across taxa and time	Teather Ch 1,3	
2	Reproduction across taxa. • Sex is costly, so why do it? • Mechanisms of asexual reproduction	Teather Ch 2, 5	Reflection 1 Due
3	Mechanisms of reproduction • Origins and evolution of sexual reproduction • Meiosis, fertilization, gametogenesis	Teather Ch 4	
4	How many sexes are there? • Exploration of the sexes across species • Dimorphism, Polymorphism • Genetic vs Environmental determination	Teather Ch 6, 7	Article Reflection 1 Due: Meston CM, Buss DM. 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 • 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 • 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	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.
8	Evolution of polymorphism • Maximizing reproductive fitness		Reflection 2 Due
9	Conflict between sexes • Maximizing reproductive success by competition • Evolution of multiple insemination systems	Teather Ch 8	Article Reflection 3: 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.
10	Cooperation between the sexes • Evolution of parental strategies	Teather Ch 9	
11	On the descent of man: Mate choice in humans Essay Exam 2		
12	Ecological impacts on reproductive strategies • resource availability • population density	Thompson ME. Reproductive ecology of female chimpanzees. Am J Primatol. 2013 Mar;75(3):222-37. doi: 10.1002/ajp.22084. Epub 2012 Sep 26. PMID: 23015287.	
13	Ecological impacts on reproductive strategies • 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	The implications of sex in medicine • 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.	Reflection 3 Due
Finals	Essay Exam 3		

Article Reflection

The purpose of this assignment is guide you through a research article and help you to learn how to read, understand and communicate **primary** sources. Primary literature is a report of research personally carried out by the authors of the paper that is published in a peer-reviewed scientific journal. This source display the data and results of various experiments. I am hoping that you will gain some confidence in recognizing critical information and develop appreciation for figures and graphs of primary sources.

Please read the attached article ***"Antibiotic susceptibility testing in less than 30 min using direct single-cell imaging"*** and answer the following questions (10 questions). Please note, you are not expected to understand everything in this article, but the particular arrangement and focus of these questions should help you extract and summarize main ideas of each section of this article. **Put this in your own words. Make sure to include in-text citations where appropriate (even answering questions). Cite the article in the end your summary using the format described in Poster Project Guidelines posted on Carmen.** Questions should be answered briefly, in no more than 50 words.

Abstract:

An abstract is very condensed short summary of the entire article. It includes major findings of the study, but you won't be able to write your reflection based of the abstract alone. An abstract is very helpful tool when you are skimming for articles related to your topic, but for your reflection, skip the abstract first and then go back and check it after you are done.

Short summary and Introduction:

In the introduction authors discus or analyze, why the research or the topic matters. This paragraph also gives a very general overview of related research already done.

1. *What is the main question the authors are asking? (You will notice that there are no question marks but they did have a question in mind that they were trying to answer).*
2. *In your own words what is the difference between phenotypic and genotypic ASTs (antibiotic susceptibility tests)?*

Materials and Methods:

In some journals, such as this one, the Materials and Methods/Supplements section comes at the very end of the paper. In others, it comes right after the Introduction. This

section is often very technical and full of specific information that is important to a very small group of individuals. You do not have to read this section word-for-word. Instead, see if you can identify some key words that are familiar to you.

3. *Based on the information you gathered from skimming through the Materials and Methods section, what are some of the methods used that might be related to our project (PARE)? (briefly explain 1 method)*
4. *Why is it important to have a detailed Materials and Methods section in a journal article?*

Results:

Results sections are often divided up into several subsections. Each subsection generally corresponds to a table and/or 1-2 figures in the paper. The Results section also often begins with the introduction of a question the researchers had or the general experiment.

5. *Examine Fig.1. Provide a brief description of microfluidic chip design.*
6. *Examine Fig.2.*
   a. *How do the authors measure the growth rate of their bacterial cultures?*
   b. *In Fig. 2F and Fig.2G the growth rates for the individual cell traps are averaged and normalized. Compare the reference and treatment populations. In your own wordswhat conclusion you can draw from these graphs?*
7. *Examine Fig.3. In your opinion what antibiotic should be used for treatment of coli (MG1655) infection? Explain why would you pick this particular antibiotic (note that there aren't any wrong answers for this question– you will only be graded on completeness and thoughtfulness).*
8. *Examine Fig.4.*
   a. *What is the purpose of using the genetically engineered ciprofloxacin resistant strain in the author's experiments?*
   b. *Summarize the results of testing with **fASTest**on 49 clinical E.coli isolates.*

Discussion

In the Discussion section the authors take results from their study and do a comparison with other studies to show why their experiments were important and of interest to the scientific community. The authors can also describe alternative explanations for their data or discuss problems they encountered while performing their experiments.

9. *In conclusion what are the advantages of **fASTest**? What are some remaining challenges of implementing this method for different types of infections and in the healthcare setting in general?*

10. *Using an electronic database, locate a recent **PRIMARY** journal article dealing with your selected bacteria. (NOTE: In primary source you can clearly recognize all the parts of the article described above in the questions 1-9). Write short summary of your new article, briefly explain how this article relates and what results and conclusions can be presented as part of your final Project Presentation. (no more than 200 words). Cite the article in your summary using the format described in Poster Project Guidelines posted on Carmen.*

*****Failure to use in-text citations *or* a references cited will result in a 50% deduction. *****

***** Failure to use any citations (in text or references cited) will result in a zero for the reflection. *****

***** Use of another's word verbatim without quotation marks will result in your assignment being forwarded to the Committee on Academic Misconduct. *****

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)

In Biology 3870, students will explore the origins of sexual reproduction and the evolution of sex through sexual selection and various mating systems.

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.	Students will build on foundational knowledge of evolution to explore the sub-discipline of sexual selection in detail through classroom discussion/lecture, in-class case studies and other activities, and article reflections tied to the primary literature.
ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme	Through scaffolded article reflections, students will engage with primary literature in order to delve deeper into the topic of the origins and evolution of sexual mating systems. Additionally, the essay exam topics will be developed in a way that requires students to research answers from a range of scholarly sources.
ELO 2.1 Identify, describe, and synthesize approaches or experiences.	The course will address three main areas: the origins of sexual reproduction, the evolution of sexual selection, and ecological impacts on the evolution of mating systems. The content of the course will scaffold through a series of in-class activities, discussions, and article reflections, and will be summatively assessed through the essay exams requiring students to synthesize answers from across a range of content and sources throughout the course.
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.	The nature of the essay exams, in which students are given ~6 prompts to explore and develop answers to, are intended to allow students to research challenging questions, experience new contexts, and self-reflect on their learning of the content in the course. Additionally, a series of three self-reflections will allow students to engage in a metacognitive practice about themselves as learners.

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

***ELO 1.1** Engage in critical and logical thinking.*	*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)*

	Completion 3 assignments which build skills in connecting individual experiences with broader population-based patterns (Assignments #1, #2, #3) *Completion of 3 quizzes in which students demonstrate comprehension of the course readings and materials.*
***ELO 2.1** Identify, describe, and synthesize approaches or experiences.*	*Students engage in advanced exploration of each module topic through a combination of lectures, readings, and discussions.* *<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.* *<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.* *<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.* *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.*
***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.*	*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.* *Some examples of events and sites:* *The Paris Commune, an 1871 socialist uprising violently squelched by conservative forces*

	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. *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* *The Marais, a vibrant Paris neighborhood inhabited over the centuries by aristocrats, then Jews, then the LGBTQ+ community, among other groups.*

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.	During lecture discussions and in-class activities, students will explore the origin of sexual reproduction across evolutionary time scales, contrasting the processes of prokaryotes to those of eukaryotes. Topics on the essay exams will require students to make connections of processes and their time scale.
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.	Scaffolded article reflections will expose students to the primary literature associated, allowing students to explore the research methodologies within the field. The scaffolded nature of these assignments will direct students to particular aspects of the studies while making the literature more manageable and / or understandable for the level of the course and students.
ELO 3.3 Engage with current controversies and problems related to origins and evolution questions.	Students will explore the question of the nature and evolution of biological sex and various reproductive strategies associated with mating systems across taxa. Through class discussions and in-class activities, students will be asked to reflect on the nature of biological sex in humans.
ELO 4.1 Describe their knowledge of how the universe, physical systems, life on Earth, humanity or human culture have evolved over time.	Through both formative assessments in the in-class activities and summative assessment in the essay exams, students will be asked to explain at varying depths how sexual reproduction evolved over time and the role of sexual selection in the evolution of mating systems.
ELO 4.2 Summarize current theories of the origins and evolution of the universe, physical systems, life on earth, humanity or human culture.	Beginning with a discussion of Darwin's 'On the Descent of Man', students will be engaged with the theories both historical and current as they progress into the current literature through scaffolded article reflection assignments.

Biology BS Curriculum Map

B = beginning, I = intermediate, A = advanced

Required Prerequisites for the Biology Major				Biology BS Learning Outcomes															
Semester 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 Req. #1	BIOL 1113xx	*Biological Sciences: Energy Transfer and Development*	4-7	B	B	B	B	B				B		B	B	B	B	B	B
	or																		
	Bio 1111 + 1112	*Foundations of Biology 1 & 2* (3 + 4 hours)																	
BIOL 1114xx		*Biological Sciences: Form, Function, Diversity, and Ecology*	4-5		B		B	B	B	B				B	B	B	B	B	I
MATH Req. #1	MATH 1151	*Calculus 1* (5 Hrs.)	5-8																
	or																		
	Math 1140 + 1141	*Calculus with Review 1 & 2* (4 hours each)					B		B		B							B	
	or																		
	MATH 1156	*Calculus for Biol. Sciences* (5 Hrs.)																	
MATH Req. #2	MATH 1152	*Calculus 2* (5 Hrs.)	3 - 5																
	or																		
	MATH 1157	*Math. Modeling for Biol. Sciences* (5 Hrs.)																	
	or																		
	STATS 1450	*Intro. to the Practice of Statistics* (3 Hrs.)					B	B	B	B	B	B	B	B	B	B	B	B	B
	or																		
	STATS 2450	*Intro. to Statistical Analysis* (3 Hrs.)																	
	or																		
	STATS 2480	*Statistics for the Life Sciences* (3 Hrs.)																	
CHEM Req. #1	Chem 1210	*General Chemistry 1*	5-7	B		B						B		B	B		B		
	or																		
	Chem 1206 + 1208	*Foundations of Chemistry 1 & 2* (3 + 4 Hrs.)																	
CHEM 1220		*General Chemistry 2*	5	B		B						B		B	B		B		
CHEM 2510		*Organic Chemistry 1*	4	B		B						B							
CHEM 2520		*Organic Chemistry 2*	4	B		I						I							
CHEM 2540		*Organic Chemistry Lab 1*	2	B		B						I		B	B		B		
CHEM 2550		*Organic Chemistry Lab 2*	2	B		B						I		B	B		B		
PHYS Req. #1	Phys 1200	*Mechanics, Thermal Physics, Waves*	5-7	B		B							B	B	B		B		
	or																		
	Phys 1248 + 1249	*Mechanics, Work and Energy* (4 Hrs) + *Rotational Dynamics, Thermal Physics, and Vibrational Motion* (3 Hrs.)																	
	or																		

	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	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.

Wednesday, May 28, 2025 at 12:57:29 PM Eastern Daylight Time

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

THE OHIO STATE UNIVERSITY
CENTER FOR LIFE SCIENCES EDUCATION

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

Subject: Re: Concurrence Request
Date: Monday, October 6, 2025 at 11:46:26 AM Eastern Daylight Time
From: Dobritsa, Anna
To: Andrews, Adam
CC: Cole, Susan, McWhorter, Michelle, Hollick, Jay
Attachments: image001.png

Hi Adam,

MolGen is OK with CLSE teaching this course.

Thanks,
Anna

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Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197

From: Andrews, Adam <andrews.171@osu.edu>
Sent: Monday, September 29, 2025 11:14 AM
To: Dobritsa, Anna <dobritsa.1@osu.edu>
Subject: Concurrence Request

Anna,

I am attaching the syllabus for a new course the CLSE Curriculum Committee approved last spring, Biology 3870 - *Evolution of Sex*, and am requesting concurrence from the Department of Molecular Genetics.

Please let me know if you or your faculty have any questions or concerns.

Thank you,
Adam

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