

## **Term Information**

Effective Term Spring 2025

## **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 3501.05  
Course Title Integrative Skills in Biology: Rise of Resistance  
Transcript Abbreviation Skills in Biology  
Course Description An evolution of resistance themed integrative approach to fundamental skills enhancement in the life sciences.  
Semester Credit Hours/Units Fixed: 3

## **Offering Information**

Length Of Course 14 Week, 12 Week, 8 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, Workshop  
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 1113, 1114, and Chem 1220, or permission of instructor.  
Exclusions Not open to students with credit for 3401, 3501.xx.  
Electronically Enforced Yes

## **Cross-Listings**

Cross-Listings

## **Subject/CIP Code**

Subject/CIP Code 26.0101  
Subsidy Level Baccalaureate Course  
Intended Rank Sophomore, Junior

## Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

## Course Details

### **Course goals or learning objectives/outcomes**

- research a topic using a variety of databases and sources of credible and relevant information, including primary literature.
- analyze the validity of the methods and results of a scientific study.
- evaluate alternative viewpoints and assumptions to a scientific study.
- compare and contrast information in primary literature with corresponding information in the secondary literature and popular press.
- apply scientific writing styles in the creation of a written paper.
- apply scientific writing styles and norms in the creation of a scientific poster.
- demonstrate effective communication of scientific principles in an oral presentation.
- reflectively use scientific communication for a specific purpose, context, and audience using an appropriate genre and modality.
- reflect on how to adapt persuasive communication and research strategies to new contexts and evaluate the social and ethical implications of those strategies.
- explain basic concepts of statistics and probability.
- recognize the importance of statistical ideas.
- apply methods needed to analyze and critically evaluate statistical arguments.
- evaluate the social and ethical implications of data collection and analysis, especially in relation to human subjects.
- analyze the relationship of theoretical and applied sciences.
- recognize how technologies emerge and change.
- critically describe the relationships between technology and society in historical and cultural contexts.
- evaluate the social and ethical implications of technological developments.
- demonstrate critical thinking and scientific logic in the analysis of natural phenomena and the ethics behind the human involvement in these phenomena.
- analyze the interconnectedness of the biological sciences through the lens of a single broad topic, the evolution of resistance.
- reflect on the role of Biology in society, business, industry, and health fields.
- become self-directed learners by which they can independently study biological content and procedures.
- develop an awareness of the careers and professions that rely on knowledge of biological sciences.

**Content Topic List**

- Students will identify and evaluate appropriate primary literature in the life sciences and will compare that information with examples in the secondary literature and popular press through the lens of resistance evolution.
- Students will understand and demonstrate scientific communication norms in various modalities through the lens of resistance evolution.
- Students will understand the role of quantitative analysis, statistics, and probability in scientific research through the lens of resistance evolution.
- Students will develop a critical appreciation of the relationship between science and technology and their effect on society through the lens of resistance evolution.
- Students will understand the integration among the biological science subdisciplines and the role of science in their lives and across society through the lens of resistance evolution.

**Sought Concurrence**

No

**Attachments**

- Biology Core Course Proposal 20240321.pdf: Cover letter and full proposal  
*(Other Supporting Documentation. Owner: Andrews, Adam Lee)*
- Biology 3501.05 Syllabus (Updated).pdf: (Updated)  
*(Syllabus. Owner: Andrews, Adam Lee)*
- Biology 3501 Statistics Concurrence.pdf: Concurrence from Statistics  
*(Concurrence. Owner: Andrews, Adam Lee)*

**Comments**

- Please see NMS Subcommittee feedback email sent 4/29/24. *(by Neff, Jennifer on 04/29/2024 09:58 AM)*
- The full proposal including all decimalized versions of the course and the context for the Major and Minor is included for reference. *(by Andrews, Adam Lee on 03/28/2024 05:03 PM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Andrews, Adam Lee	04/01/2024 12:12 PM	Submitted for Approval
Approved	Kulesza, Amy Elizabeth	04/01/2024 12:31 PM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	04/11/2024 05:01 PM	College Approval
Revision Requested	Neff, Jennifer	04/29/2024 09:58 AM	ASCCAO Approval
Submitted	Andrews, Adam Lee	05/28/2024 09:12 AM	Submitted for Approval
Approved	Kulesza, Amy Elizabeth	05/28/2024 09:47 AM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	05/30/2024 04:34 PM	College Approval
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Neff, Jennifer Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	05/30/2024 04:34 PM	ASCCAO Approval

## Appendix E: Biology 3501.05 Syllabus



THE OHIO STATE UNIVERSITY

# Biology 3501.05

## *Integrative Skills in Biology*

### *Rise of Resistance*

## Autumn 2025 – 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 55 minutes

**Workshop:** Once weekly for 80 minutes; *consult your BuckeyeLink schedule for specific time and day*

#### Prerequisites:

Biology 1113, 1114, and Chem 1220, or permission of instructor. Not open to students with credit for 3401, 3501.xx.

#### Required Course Materials:

- Selected readings will be provided on Carmen:
  - Bacteria: A very short introduction* by Sebastian G.B. Aymes, 2013, ISBN: 978-0199578764
  - Antibiotic-Resistant Bacteria (Deadly Diseases & Epidemics)* by Patrick Guilfoile, 2006, ISBN: 978-0791091883
- Writing Science in Plain English* by Anne E. Greene, 2013, ISBN: 978-0-226-02637-4.

#### 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 evolutionary resistance themed integrative approach to fundamental skills enhancement in the life sciences.

#### Course Learning Outcomes:

<b>Biology 3501 – Integrative Skills in Biology</b>	
<b>Goals</b>	<b>Expected Learning Outcomes</b> (highlights align to embedded literacies)
<b>Goal 1: Students will identify and evaluate appropriate primary literature in the life sciences and will compare that information</b>	<b>Successful students are able to ...</b> <b>1.1</b> research a topic using a variety of databases and sources of credible and

<p><b>with examples in the secondary literature and popular press.</b></p>	<p>relevant information, including primary literature.</p> <p><b>1.2</b> analyze the validity of the methods and results of a scientific study.</p> <p><b>1.3</b> evaluate alternative viewpoints and assumptions to a scientific study.</p> <p><b>1.4</b> compare and contrast information in primary literature with corresponding information in the secondary literature and popular press.</p>
<p><b>Goal 2: Students will understand and demonstrate scientific communication norms in various modalities.</b></p>	<p><b>2.1</b> apply scientific writing styles in the creation of a written paper.</p> <p><b>2.2</b> apply scientific writing styles and norms in the creation of a scientific poster.</p> <p><b>2.3</b> demonstrate effective communication of scientific principles in an oral presentation.</p> <p><b>2.4</b> reflectively use scientific communication for a specific purpose, context, and audience using an appropriate genre and modality.</p> <p><b>2.5</b> reflect on how to adapt persuasive communication and research strategies to new contexts and evaluate the social and ethical implications of those strategies.</p>
<p><b>Goal 3: Students will understand the role of quantitative analysis, statistics, and probability in scientific research.</b></p>	<p><b>3.1</b> explain basic concepts of statistics and probability.</p> <p><b>3.2</b> recognize the importance of statistical ideas.</p> <p><b>3.3</b> apply methods needed to analyze and critically evaluate statistical arguments.</p> <p><b>3.4</b> evaluate the social and ethical implications of data collection and analysis, especially in relation to human subjects.</p>
<p><b>Goal 4: Students will develop a critical appreciation of the relationship between science and technology and their effect on society.</b></p>	<p><b>4.1</b> analyze the relationship of theoretical and applied sciences.</p> <p><b>4.2</b> recognize how technologies emerge and change.</p> <p><b>4.3</b> critically describe the relationships between technology and society in historical and cultural contexts.</p> <p><b>4.4</b> evaluate the social and ethical implications of technological developments.</p> <p><b>4.5</b> demonstrate critical thinking and scientific logic in the analysis of natural</p>

	phenomena and the ethics behind the human involvement in these phenomena.
<b>Goal 5: Students will understand the integration among the biological science subdisciplines and the role of science in their lives and across society.</b>	<b>5.1</b> analyze the interconnectedness of the biological sciences through the lens of a single broad topic.
	<b>5.2</b> reflect on the role of Biology in society, business, industry, and health fields.
	<b>5.3</b> become self-directed learners by which they can independently study biological content and procedures.
	<b>5.4</b> develop an awareness of the careers and professions that rely on knowledge of biological sciences.

### 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
3 Exams (100 points each)	300	↑
Research Paper	100	↑
Oral Presentation	50	↑
Oral Presentation Peer Review	20	🗨️
Scientific Poster	50	↑
Poster Peer Review	15	🗨️
Workshop Activities (8 x 20 points)	160	🗨️
Lecture Activities	50	🗨️ 👥
Career Series Reflection	20	↑
SALG	5	↑
<b>Total Points Possible</b>	<b>770</b>	

### Exams (100 points each):

The exams will largely focus on the evolutionary resistance content of the course. While the exams may include some multiple choice or similar question styles, the exams will largely be a short answer in format.

### Research Paper (100 points total):

The research paper will focus on current literature in evolutionary resistance research and be submitted individually in four parts and will address skills in researching literature, evaluating sources, and writing

scientifically. Students will receive feedback on each portion and be expected to incorporate that feedback into a final paper.

- Annotated Bibliography (15 points)
- Introduction (15 points)
- Rough Draft (40 points)
- Final Draft (30 points)

**Oral Presentation and Peer Review (70 points):**

Oral presentations are a hallmark of life in the scientific community. Students will present a small portion (~5-7 minutes) of the research comprising their ongoing research paper to their Workshop group (40 points) and provide feedback in the form of peer review to other students (30 points total – 3x10 points).

**Scientific Poster and Peer Review (65 points):**

Students will present a summary of their research paper in the form of a Scientific Poster, which will be presented to the class during the last lectures in a traditional scientific poster session style event (50 points). Students will be expected to visit multiple posters and provide written feedback in the form of a peer review (15 points).

**Workshop Activities (160 points):**

During eight of the weekly workshops, students will work both individually and as groups (as designated) to complete active learning activities related to the course content.

**Lecture Activities (50 points):**

Periodically during select lectures, students will be asked to complete case studies, worksheets, or other engagement both individually and in collaboration with other students. These activities are meant to reinforce lecture content.

**Career Series Reflection (20 points):**

Students will be expected to minimally attend one meeting of the *CLSE Career Series* outside of class time and provide a reflection on the speaker's presentation. The *Series* focuses on the range of skills and careers appropriate for life science majors.

**SALG (5 points):**

At the end of the course, 5 points will be assigned based on participation in a survey, the Student Assessment of Learning Gains (SALG). Grades on the SALG will be based solely on completion.

**Your Final Grade:**

Your final grade will be based on the percentage of the 770 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 (COVID-19):**

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. All makeup exams must be made up within one week of when the original exam was given.

**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 Wednesday, December xx at 9:00 a.m. and is available only in emergency situations and with prior approval of the Course Coordinator.**

Make-Up Workshops and Lecture Activities: Both the lecture and workshop are integral parts of this course. If you miss a class, you must contact your instructor (lecture or workshop, as appropriate) within 48 hours of their missed class in order to be eligible to complete a make-up assignment. All make-up work requires a valid written excuse from a doctor, therapist, athletic coach, or other person involved with the absence (preferably *before* the event occurs, if it's a planned absence). We will consider one absence for every student to be excused without documentation, however students must contact their instructor within 48 hours of their missed workshop to receive the make-up exercise. Therefore, it is essential that you contact your instructor immediately if you miss a workshop, or if you know in advance that you cannot attend class on a specific date. Make-up work must be completed and received within one week of the original assignment date (unless very unusual circumstances apply), or else you forfeit all points for that workshop.

Excused absences include, but are not limited to:

1. Illness and injury
2. Mental health
3. Disability-related concerns
4. Military service
5. Death in the immediate family
6. Religious observance
7. Academic field trips
8. Participation in university sanctioned concert or athletic event
9. Participation in university disciplinary hearings

If you have a reason to miss class that is not listed above, please reach out to the instructor to discuss your options. It is the intention of the Center for Life Sciences Education to remain supportive of the needs of each



of our students. Students who do not contact their instructor within 48 hours of the missed class will not be eligible for make-up work.

### **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 us 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. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

If you are isolating while waiting for a COVID-19 test result, please let me know immediately. Those testing positive for COVID-19 should refer to the [Safe and Healthy Buckeyes site](#) for resources. Beyond five days of the required COVID-19 isolation period, I may rely on Student Life Disability Services to establish further reasonable accommodations. You can connect with them at [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; or [slds.osu.edu](http://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 [Office of Institutional Equity](#).

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.

#### **Section Changes:**

All section changes and adds are completed by the course coordinator. Due to the need to keep up-to-minute availability of seats in each workshop, the lecturer and workshop instructors are unable to sign any permission forms.

#### **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](mailto: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](https://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](mailto: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](https://ccs.osu.edu) or calling 614-292-5766. CCS is located on the 4th Floor of the Younk 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](mailto:titleix@osu.edu).

**Diversity:**

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

**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: Autumn 2025**

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

Week	Lecture Topic	Workshop	Assignments Due
1	Introduction/ Defining the topic: Biological Resistance	Welcome to Workshops and Avoiding Plagiarism Activity	
2	Identifying Scientific Information: Fact from Fiction, From Databases to Google Scholar	Activity: Science vs. Pseudoscience	
3	Form and Function: Understanding Primary Literature	The Norms of scientific writing	Research Paper Annotated Bibliography
4	Pathogenesis and Antibiotics	Writing Peer Review Activity	
5	Primary Literature: A case study in mechanisms of antibiotic resistance	Journal Article Discussion	<b>Exam 1</b>
6	Major diseases and factors impacting antibiotic resistance	Activity: Biocides	Research Paper Introduction
7	Statistics in Scientific Endeavors	Autumn Break – No Workshops	
8	Statistical ethics and selective data	Statistics practice activity	Research Paper Rough Draft
9	Statistical ethics and selective data (cont'd)	Presentation Development	<b>Exam 2</b>
10	Employing Statistics: A case study	Oral Presentations and Peer Review	Oral Presentation Due during assigned Week
11	Generating and comparing genomic data	Oral Presentations and Peer Review	Peer Reviews due at the end of respective Workshops (x3)
12	Resistance today: where we are and where we are headed	Oral Presentations and Peer Review	
13	Technological adaptations and ethics	Activity: Approaches to manipulating gene expression in emerging model organisms	Research Paper Final Draft

14	Technological adaptations and ethics (cont'd)	Thanksgiving Break – No Workshops	Poster Due
15	Poster Presentations	Exam Review	SALG Due
Finals	Final Exam		

**Subject:** Re: Concurrence Request  
**Date:** Friday, May 24, 2024 at 12:57:18 PM Eastern Daylight Time  
**From:** Zhang, Yuan  
**To:** Kaizar, Elly, Andrews, Adam  
**CC:** Vankeerbergen, Bernadette, Lee, Yoonkyung  
**Attachments:** image001.png

Dear Adam,

Thank you for the request.

We appreciate the meeting and discussion with you earlier this week.

We give our concurrence with the following remarks:

1. We believe that students will benefit much from ideas in STAT 1450/2450/2480 for deeper understanding of the topics covered in weeks 7 through 10 in the tentative schedule of the proposed course. But we now understand that this course is designed to cover broad statistical ideas relevant to data literacy in biological research without any statistics prerequisites.
2. Prior to this email, we had a productive Zoom discussion with you. We appreciate your willingness and commitment to collaborate with us. We both agreed that a faculty member from the Department of Statistics will work with the course instructor, to develop the statistical content for the aforementioned range of weeks in the course. We will be in further contact with you on this matter.

Thank you once again, and we look forward to the follow-up collaboration with you.

Warm regards,  
Yoonkyung Lee and Yuan Zhang  
Curriculum Committee, Department of Statistics

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**From:** Kaizar, Elly <[kaizar.1@osu.edu](mailto:kaizar.1@osu.edu)>  
**Sent:** Tuesday, April 30, 2024 00:30  
**To:** Andrews, Adam <[andrews.171@osu.edu](mailto:andrews.171@osu.edu)>  
**Cc:** Vankeerbergen, Bernadette <[vankeerbergen.1@osu.edu](mailto:vankeerbergen.1@osu.edu)>; Zhang, Yuan <[yzhanghf@stat.osu.edu](mailto:yzhanghf@stat.osu.edu)>;  
Lee, Yoonkyung <[yklee@stat.osu.edu](mailto:yklee@stat.osu.edu)>  
**Subject:** Re: Concurrence Request

Dear Adam,

Thank you for sharing these syllabi. I am ccing our curriculum committee chairs (Yuan Zhang and Yoon Lee), who will get back to you directly.

Warm regards,  
Elly

**From:** Andrews, Adam <[andrews.171@osu.edu](mailto:andrews.171@osu.edu)>  
**Sent:** Monday, April 29, 2024 1:40 PM  
**To:** Kaizar, Elly <[kaizar.1@osu.edu](mailto:kaizar.1@osu.edu)>  
**Cc:** Vankeerbergen, Bernadette <[vankeerbergen.1@osu.edu](mailto:vankeerbergen.1@osu.edu)>  
**Subject:** Concurrence Request

Dr. Kaizar,

The Center for Life Sciences Education is requesting concurrence for our new course series, Biology 3501.xx. We've designed the seven courses around the new embedded literacies, including Data Analysis. All versions of the course share identical expected learning outcomes and course format, differing only in the topical theme overlaying the course.

Our intent in the course is to address statistics for approximately four weeks, focusing primarily on the *role and importance* of stats in the life sciences rather than teaching specific tests.

I welcome any questions or concerns you may have. I respectfully ask for your response to the concurrence request by May 14.

Thank you,  
Adam



**Adam L. Andrews**

Assistant Director for Curriculum & Instruction  
College of Arts and Sciences | Center for Life Sciences Education

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