

Introduction to Microbiology Research

Microbiology 2000, Autumn 2023

Course Information

- **Course times:** Tuesdays 2:20 p.m.- 3:40 p.m.
- **Credit hours:** 1.5
- **Mode of delivery:** In person, Biological Sciences Bldg 609

Instructors

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Office hours:	By appointment	By appointment

Preferred means of communication:

- Our preferred method of communication for questions outside of class is **email**.
- Our class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your [notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Course Prerequisites

Biology 1113 or 1113(H) or equivalent

Course Description

This course introduces undergraduate students to the process of microbiology research and familiarizes students with ongoing Microbiology Research at The Ohio State University.

Learning Outcomes (adapted, in part, from the American Society of Microbiology)

By the end of this course, students should successfully be able to:

- Apply the process of science
 - Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method. [This objective will be achieved when students read/evaluate/critique journal articles.](#)
 - Discuss how to approach the problem of identifying and formulating a viable research project. [This objective will be achieved through discussions about ongoing Microbiology Research.](#)



- Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations. **This objective will be achieved when students talk about research methods used by Department faculty.**
- Communicate and collaborate with others
 - Effectively communicate fundamental concepts of microbiology in written and oral format. **This will be achieved through article annotations, group presentations, and the written research summary.**

Course Requirements and Policies

Pace of activities: This course is divided into **weekly modules** that are released at least one week ahead of time. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a 1.5 credit-hour course. According to [Ohio State bylaws on instruction](http://go.osu.edu/credit%20hours) (go.osu.edu/credit hours), students should expect around 1.5 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 3 hours per week of homework (reading and assignment preparation, for example).

Attendance and participation requirements: Students are expected to attend all meetings of the course. Preparation for class and in-class participation and contributions are important to student learning and are weighed heavily in the final grade. The rubric on preparation, participation, and contribution is listed below. Students can participate in discussions through their own contributions and their questions to peers and instructors. Please ask questions when you do not understand or need more information. To contribute to the success of the class, students should complete the reading assignments before class, come to class, and participate in discussions.

Note that students who are not in class are unable to participate and students with spotty or poor attendance will have lower participation grades. If you must miss class, you are responsible for the contents of the lecture and/or discussion. Students who must miss class for religious observances must notify the instructor of their absence in advance.

Participation Rubric. *Adapted from The Teaching Professor, March 2005.*

	Exceeds Expectations	Meets Expectations	Approaching Expectations	Does NOT Meet Expectations
PREPARATION	Arrives on time fully prepared at every class session	Arrives mostly, if not fully, prepared (ongoing)	Inconsistent preparation	Rarely or never prepared
PARTICIPATION	Plays an active role in discussions (ongoing)	Participates constructively in discussions (ongoing)	When prepared, participates constructively in discussions	Comments vague if given; frequently demonstrates lack of interest
CONTRIBUTIONS TO CLASS	Comments advance level and depth of dialogue (consistently)	Makes relevant comments based on assigned material (ongoing)	When prepared, relevant comments are based on assignments	Demonstrates a noticeable lack of interest

YOU WILL POSITIVELY AFFECT YOUR PARTICIPATION GRADE BY:

1. Becoming more active and/or making more effective comments that raise overall level of discussion.
2. Asking thoughtful questions that will enhance discussion and engage peers.
3. Listening carefully to, supporting, and engaging your peers in discussion.

YOU WILL NEGATIVELY AFFECT YOUR PARTICIPATION GRADE BY:

1. Not attending class (unexcused) or **arriving to class late**.
2. Using electronic devices (e.g. cell phone, iPad, computer, etc.) for **personal, non-class related reasons**.
3. Dominating class discussions, thereby restricting others' participation.
4. Making offensive and/or disrespectful comments during discussions.

Grading

How Your Grade is Calculated

Assignment Category	Points
Participation	70%
Research Summary	30%

See [Course Schedule](#) for due dates.

Grading Scale

This course is graded on the Satisfactory/Unsatisfactory scale. Both grade components listed above are required to obtain a Satisfactory grade.

Descriptions of Major Course Assignments

Participation

Description: See participation rubric above for participation expectations.

Each week students will be required to read a scientific paper. To fulfill class participation expectations, students should prepare comments and questions about the paper that they can use for in-class discussions.

In addition, each student will present with 1 or 2 other students a scientific paper to the class. Each group will be responsible for their presentation and leading the in-class discussion.

On the last class of the semester (December 5th), each student will read their press release to the class.

Research Summary

Description: Students will write a synopsis and a press release about one of the research papers presented in class (papers presented in class from week 10 onward). Students cannot write about the same paper they presented in class.

The assignment should be single spaced, in 11-point Arial font, and it should be approximately 2-pages long.

The **synopsis** should comprehensively and succinctly address each of the following questions:

- What is the title of the paper?
- What is the main question that the paper addresses?
- What is/are the major finding/s of the paper?
- What is the significance of the work?
- Would you have written a different title? Why/why not?
- In your opinion, which figure or table is the most important one and why?

The **press release** should be a short summary (150-250 words) of the paper written in press-release style. This summary should be understood by a non-scientist (the general public). See [here](#) for guidance about writing a press release. This component of the assignment will be read by students during the last class period (December 5th).

All direct quotes and any outside material used as a source should be cited using Chicago-style formatting. Written assignments must be submitted through Carmen (not via email), and they will be scanned through Turnitin Feedback Studio to assess plagiarism and group work. Prior to document submission, we encourage you to scan your work with [iThenticate](#) in order to identify and correct any citation omissions.

This Research Summary assignment must be turned in through Carmen by December 5th, 5:00 p.m. However, note that the press release component should be completed by class time since every student will read theirs to the class.

Academic integrity and collaboration: Your written assignments should be your own original work (see Academic Integrity Policy below). For your research summary, you should follow Chicago-style formatting to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else should revise or rewrite your work.

Late Assignments

Students are responsible for knowing and adhering to the deadlines for course assignments. Late work will be penalized. The only exception to this will be when you have explicit, advance permission from the one of the professors. If you anticipate a problem in completing your work on time, you must contact the instructors. If you do not hear back, you should assume that your work is due on the original date. Please refer to Carmen for due dates.

Other Course Policies

Discussion and Communication Guidelines

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

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **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.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.
- **Preparation:** Come to the session having completed any readings or pre-work and be ready to have open, civil, and supportive discussions in video and chat spaces.

Extra Credit: You can receive a bump in extra credit for the course by sending a picture or gif of an otter to henkin.3@osu.edu by September 5, 2023 at 5:00 PM. Include "otter" in the subject line.

Academic Integrity Policy

See [Descriptions of Major Course Assignments](#) for specific guidelines about collaboration and academic integrity in the context of this online class.

Ohio State's Academic Integrity Policy

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](http://studentconduct.osu.edu) (studentconduct.osu.edu), 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 we recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by university rules to report our suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- [Committee on Academic Misconduct](http://go.osu.edu/coam) (go.osu.edu/coam)
- [Ten Suggestions for Preserving Academic Integrity](http://go.osu.edu/ten-suggestions) (go.osu.edu/ten-suggestions)
- [Eight Cardinal Rules of Academic Integrity](http://go.osu.edu/cardinal-rules) (go.osu.edu/cardinal-rules)

Copyright for Instructional Materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options on [Ohio State's Title IX website](http://titleix.osu.edu) (titleix.osu.edu) or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information, visit the [OIE website](http://equity.osu.edu) (equity.osu.edu) or email equity@osu.edu. Commitment to a Diverse and Inclusive Learning Environment

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. There is no tolerance for hateful speech or actions. All violations of this policy should be reported to the OSU Bias Assessment and Response Team (BART, <http://studentaffairs.osu.edu/bias/>).

Your 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. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, [on-demand mental health resources](http://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614-292-5766](tel:614-292-5766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](http://suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:1-800-273-8255). [The Ohio State Wellness app](http://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.

Accessibility Accommodations for Students with Disabilities

Requesting Accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, we may request that you register with [Student Life Disability Services \(SLDS\)](#). After registration, make arrangements with us as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307) Website: slds.osu.edu Email: slds@osu.edu

Course Schedule

Refer to the CarmenCanvas course for up-to-date due dates. Content subject to change at the discretion of the instructors.

Week	Date	Discussion leader	Topic	Reading
1	22-Aug-23	TH, IA	What is microbiology?	Syllabus
2	29-Aug-23	TH	Why do research?	Flexner; Nature editorial
3	5-Sep-23	TH	Hypothesis formulation and testing	Koch; Platt; Platt + 50
4	12-Sep-23	IA	From bench to print	Garfoot <i>et al.</i> , 2014 (Rappleeye) (PMID:24191299)
5	19-Sep-23	IA	How to read a scientific paper (1)	
6	26-Sep-23	IA	How to read a scientific paper (2)	Lonhienne <i>et al.</i> , 2010 (PMID:20566852)
7	3-Oct-23	TH	How to give a scientific presentation	
8	10-Oct-23	TH	Dr. Tina Henkin	Grundy & Henkin, 1993 (PMID:8348614)
9	17-Oct-23	IA	Dr. Irina Artsimovitch	Hu & Artsimovitch, 2017 (PMID: 28559482)
10	24-Oct-23	Group 1	Dr. Raj Deora	Fullen <i>et al.</i> , 2022 (PMID: 35969621)
11	31-Oct-23	Group 2	Dr. Natacha Ruiz	Ruiz, 2008 (PMID:18832143)
12	7-Nov-23	Group 3	Dr. Justin North	North <i>et al.</i> , 2020 (PMID: 32855335)
13	14-Nov-23	Group 4	Dr. Kou-San Ju	Wilson <i>et al.</i> , 2023
14	21-Nov-23	Group 5	Darryl Wesener	Wolf <i>et al.</i> , 2019 (PMID: 31585844)
15	28-Nov-23	Group 6	Dr. Venkat Gopalan	Cho <i>et al.</i> 2010 (PMID: 20675586)
16	5-Dec-23	TH	Press releases	