Term Information

Effective Term	Autumn 2026

General Information

Course Bulletin Listing/Subject Area	Microbiology
Fiscal Unit/Academic Org	Microbiology - D0350
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	4891
Course Title	Progress in Biotechnology
Transcript Abbreviation	Progress Biotech
Course Description	Students will gain insight into real-world applied molecular sciences and biotechnology research through seminars presented by industry scientists; bi-weekly discussions will facilitate understanding of core research principles presented in seminars through shared reflection and discussion of research articles relevant to seminars.
Semester Credit Hours/Units	Fixed: 1

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	Seminar
Grade Roster Component	Seminar
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Microbiology 4100; or Biochemistry 4511 or 5613; or Pharmacy 3200
Exclusions	
Electronically Enforced	Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	26.0502
Subsidy Level	Baccalaureate Course
Intended Rank	Junior, Senior

Requirement/Elective Designation

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

- Learn about real-world applied molecular sciences and biotechnology research and careers being conducted at companies
- Understand how biological discoveries can be commercialized
- Critically evaluate research papers
- Understand how to learn from scientific research seminars

Content Topic List

- Biweekly seminars on various topics in biotechnology presented by to-be-determined industry-leading professional scientists
- Bi-weekly discussions of research articles relevant to seminars

Sought Concurrence

Yes

Attachments

- M4891_Cover letter.pdf

  (Cover Letter. Owner: Ruiz,Natividad)
- M4891_Syllabus_2.pdf

  (Syllabus. Owner: Ruiz,Natividad)
- M4891_concurrence_request_form.pdf

  (Concurrence. Owner: Ruiz,Natividad)
- Mapping2LG_4891.pdf: Learning goals map

  (Other Supporting Documentation. Owner: Ruiz,Natividad)
- Biomedical Engineering Concurrence.pdf: Concurrence Biomedical Engineering

  (Concurrence. Owner: Vankeerbergen,Bernadette Chantal)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Ruiz,Natividad	05/19/2025 01:07 PM	Submitted for Approval
Approved	Ruiz,Natividad	05/19/2025 01:20 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	08/11/2025 10:23 AM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hilty,Michael Neff,Jennifer Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	08/11/2025 10:23 AM	ASCCAO Approval

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May 19, 2025

Dear Colleagues,

The Department of Microbiology would like to propose a new course, **MICRBIO 4891: Progress in Biotechnology**. This seminar-style course will provide students with the opportunity to gain insight into real-world applied molecular sciences and biotechnology research. Seminar presentations will be given by industry leading professional scientists. This class will also inform students of career paths and opportunities within industry. Students will attend bi-weekly classroom discussions that will facilitate understanding of core research principles presented in seminars through shared reflection and discussion. We propose offering this course as a 1.0-credit microbiology elective course that undergraduate students can only take once.

We anticipate that this course will be of great interest mainly to students majoring in Microbiology, Biology, and Pharmacy. In addition, the College of Arts & Sciences is developing a Biotechnology major for which MICRBIO 4891 will be a required class. Notably, Central Ohio is becoming a nationally recognized biotechnology center where academic, medical, and governmental institutions, as well as private companies (e.g., Amgen, Andelyn, Forge Biologics, and brewing industry) will be looking to hire well-trained personnel with biotechnology and/or industrial microbiology expertise. Last year, we had a very successful launch of MICRBIO 4145 (Introduction to Industrial Microbiology and Bioprocessing Laboratory), and we believe that MICRBIO 4891 will also interest students and contribute to preparing them for careers in these fields.

I have attached the syllabus and a list of the course learning objectives mapped to the Microbiology BS Program Learning Goals. We propose it to be a Group 1 elective course for our major.

I requested concurrence from CLSE since Biology offers BIOLOGY 3501.04, Integrative Skills in Biology: Biotechnology. I have attached the supportive concurrence form. Please note that at the time of the request, our plan was to submit this course as MICRBIO 5891 so that graduate students could receive credit for attending the seminars. Since then, we were advised by Assistant Dean Vankeerbergen to submit two different courses, MICRBIO 4891 and MICRBIO 6891, because the two courses differ in requirements and grading systems.

Thank you for your consideration.

Natividad Ruiz

Professor of Microbiology
Vice Chair for Teaching & Undergraduate Affairs

Microbiology 4891
Progress in Biotechnology

The Ohio State University | [Term YEAR] | 1 Unit | Lecture
[Location] | Wd [11:30-12:25 pm]

Description
The modern biotechnology industry has advances basic discoveries into innovations throughout medicine, agriculture, energy, and consumer products that have improved our lives. These advancements are a continuing source of new solutions to address modern challenges of human health, the environment, and sustainability. In this class, students will gain real-world insight into the applied molecular sciences and biotechnology through seminars given by industry-leading professional scientists. Bi-weekly classroom lectures will facilitate understanding of core research principles shared by presenters through shared reflection and discussion.

Course Director
Kou-San Ju, PhD
Department of Microbiology, College of Arts & Sciences
Division of Medicinal Chemistry & Pharmacognosy, College of Pharmacy
290 Aronoff Laboratory
Email: ju.109 -at- osu.edu
Office hours: TBA

Prerequisites:
This course is open to students that have completed of any one of the following courses with a grade of C- or higher: Microbiology 4100; or Biochemistry 4511 or 5613; or Pharmacy 3200.

Undergraduate students may only enroll in this course only once for credit.

Format
The course is 100% in-person and will take place in the classroom at scheduled times.

Students will enroll in 1 unit (letter graded) and are required to attend all seminars and discussion lectures. Bi-weekly classroom discussion lectures will review past seminars and prepare for the following week's presentation. A primary research article, based on aspect of the research that will be presented by the speaker in their seminar, will be distributed two weeks prior. Students are expected to study the readings in preparation and actively participate in discussion of the paper in lecture.

Readings and Materials
There is no required textbook.

Discussion lectures will be based on primary literature that will be provided as PDF documents through Carmen. You are expected to access this site and review these materials in order to prepare for class.

Assignments and Grading

50%	Attendance at seminars	
30%	Written reports of seminars	Due each Monday following seminar
20%	Participation in discussion lectures	

The OSU standard grading-scale (based on percentage of total points) will be used to determine grades:

A ≥ 93 %	A- 90-92	B+ 87-89	B 83-86	B- 80-82	C+ 77-79
C 73-76	C- 70-72	D+ 67-69	D 60-66	E < 60	

Exams

There are no exams for this class.

Attendance and Participation

This course is based on experiential learning. Students are required to attend all seminars and participate in discussion lectures to achieve the learning objectives of the class. Students will contribute positively to the course through comments that advance the level and depth of dialog. This will include reflection of the previous seminar and participating in the preparation for the following week's presentation topic.

Seminars will be given by industry-leading professional scientists in the applied molecular sciences and biotechnology. All students are expected to attend every seminar, arrive on time and participate in active listening. As presentations from industry professionals are proprietary, you are expected to take your own notes. At the end of every seminar, speakers will welcome questions from the students and general audience.

Written reports of seminars

After each seminar, students will write a two-page written report (double-spaced) of the presentation. The report should summarize 1) the overall objectives of the company, 2) specific research questions they were trying to answer, 3) critical experiments and results, and 4) your personal reflection of the presented research, and 5) a reflection of the overall presentation style and format. A detailed description of this assignment will be provided in a subsequent handout during the first week of class.

Reports should be composed in the form of paper, written individually, and in your own words. All reports will be scanned through Turnitin Feedback Studio to detect academic plagiarism. The use of generative AI is also prohibited. Summaries suspected to violate these polices will be referred to the Committee on Academic Misconduct (see below).

Reports (Word document) will be submitted on Carmen. They will be evaluated based on the analysis of the subject material, thesis presentation, clarity of organization, and the quality of writing. The rubric will be shared in the first week of class. Each report is due the Monday following seminar. Late reports will be penalized 25% each day. Non-submissions will be scored zero points.

Unexcused absences

Unexcused absences at seminar means you will also be unable to complete the written report assignment. Your attendance for that seminar and the following written report will both be scored zero. There are no make-up assignments for missing seminars, written summary assignments, or discussion lectures due to unexcused absences.

Excused absences

Excused absences are allowed for severe illness; quarantine; death of family member; OSU athletic commitment; professional interview than cannot be rescheduled; religious observation; military service commitment. In all cases, documentation is required. Instructor must be notified in writing before class if you will be absent for approval. For scheduled absences, 14 days advance notice is required. Oversleeping, forgetfulness, having exams on the same day for another class, working in a research lab or other job, are not excused absences. Students are allowed to miss a maximum of one seminar and one discussion lecture due to an excused absence.

A student who missed a seminar due to an approved excused absence will be assigned a research paper based on the topic of the talk. The student will individually research the most current and significant developments on the subject and examples of its commercialization. They will write a 1-2-page research paper (double spaced) on one of these examples. The paper should be conceived and written individually, in your own words. Figures and references do not count towards the page limit. The research paper is due within two

weeks of the missed seminar and will be evaluated based on the analysis of the subject material (both depth and completeness of cited sources), thesis presentation, clarity of organization, and the quality of writing. The student will also share their findings by giving an 8-minute presentation (using PowerPoint slides) in the following discussion lecture. The research paper will count towards the attendance and research summary grade for the missed seminar (13.3% of the course grade). Students are encouraged to meet with the instructor during office hours if there are questions regarding the requirements of this make-up assignment.

A student who missed a discussion lecture due to an approved excused absence will still be required to read the primary research article assigned for the week. They will be provided a make-up assignment containing questions about the article. The student will work individually to complete the assignment. This will be due to the instructor no later than Friday of the missed discussion lecture class, or two days after a scheduled approved absence.

Late submissions will not be accepted for the make-up assignments and will be scored zero.

Attendance and participation are critical components of this course. An unexcused absence at seminar means you will also be unable to complete the written summary assignment. Both will be scored zero. There are no additional make-up assignments or extra credit for missing seminars, written summary assignments, or discussion lectures due to unexcused absences.

Proper citations are expected to prevent plagiarism (academic misconduct) -- examples will be provided in the rubric. Students are encouraged to speak with the instructor if there are questions regarding the use of citations. Reports will be scanned through Turnitin Feedback Studio to detect academic plagiarism. The use of generative AI is also prohibited.

Any documentation suspected to be fraudulent, suspected abuse of these polices, suspected plagiarism or use of generative AI, will be reported to the Committee on Academic Misconduct (see below).

Classroom Etiquette

Electronic devices should be silenced during lectures and seminars. Computers and tablets can be used during lectures as long as they do not distract other students. Cellular phones should be stored away at all times. Recording lectures (audio and/or video) is prohibited without the express consent of the instructor or seminar speaker.

Course Communications and Email Policy

Students are responsible for all announcements made in class, posted on the course website (Carmen), or communicated by email. Questions about class material should not be submitted by e-mail and they will not be answered. Instead, please ask questions during class or come to office hours -- I will be happy to answer them!

Credit Hours and Course Expectations

This is a 1-credit hour course. According to Ohio State Policy, undergraduate students should expect around 1 hour per week spent on direct instruction (lectures) in addition to 2 hours on homework (reading and reviewing material, assignment preparation) to receive a grade of (C) average.

Learning Outcomes

Students that successfully complete this course will:

- Gain insight into real-world applied molecular sciences and biotechnology research being conducted at companies
- Be exposed to career paths and opportunities in the applied molecular sciences and biotechnology
- Understand how fundamental biological discoveries can be commercialized
- Understand how to learn from scientific research seminars
- Critically evaluate research papers, accurately interpret raw and processed data sets
- Identify key findings of research papers and explain them clearly to an audience of peers

- Identify strong arguments supported by conclusive data; identify weak arguments supported by inconclusive data
- Argue the merits and/or weaknesses of published work from a knowledgeable perspective

LECTURE SCHEDULE

This is a tentative schedule and is subject to change.

Date	Day	Week	Class
1/14	Wd	1	Introduction and Organization
1/21	Wd	2	Discussion
1/28	Wd	3	Seminar 1 TBA
2/4	Wd	4	Discussion
2/11	Wd	5	Seminar 2 TBA
2/18	Wd	6	Discussion
2/25	Wd	7	Seminar 3 TBA
3/4	Wd	8	Discussion
3/11	Wd	9	Seminar 4 TBA
3/18	Wd	10	Spring Break – No Class
3/25	Wd	11	Discussion
4/1	Wd	12	Seminar 5 TBA
4/8	Wd	13	Discussion
4/15	Wd	14	Seminar 6 TBA
4/22	Wd	15	Summary Discussion

ADDITIONAL INFORMATION

Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Email:** I will generally respond to emails within 48 hours on days when class is in session at the University. Emails are reserved for general questions regarding logistical aspects of the class. Questions on course content and grading should be asked in-person before, during, or after class, or during office hours. All emails should have an accurate and descriptive subject line ("Question about M4891 schedule"), begin with a salutation ("e.g., "Prof. Ju"), and conform to standard English with proper punctuation and capitalization.

Discussion and Communication Guidelines

The following are my 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**: We will maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm does not always come across online.
- **Citations**: 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.

Plagiarism and 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 (http://studentaffairs.osu.edu/csc/), 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."

It is the responsibility of the Committee on Academic Misconduct (COAM) 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. Plagiarism is presenting another person's words, ideas, or sequence of arguments as your own without attribution. We will discuss what constitutes plagiarism and how to cite sources properly in this course. If at any point, however, you have a question about this, please ask. If you are tempted to plagiarize or find yourself using material from the Internet or any other source and trying to pass it off as your own, stop working on the assignment and contact the instructors. It is better to submit work late than to violate the Code of Student Conduct. It is the instructors' responsibility to report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487), and the professor and discussion section leaders take this responsibility seriously. For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/csc/).

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 I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.* For more information see: http://studentlife.osu.edu/csc/.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report 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.

Generative Artificial Intelligence (GenAI)

Revisions to the Code of Student Conduct went into effect on Jan, 1, 2024, after a review by the Council on Student Affairs. Among the revisions is an updated definition of academic misconduct that clarifies that the unauthorized use of generative artificial intelligence (AI) systems or similar technologies to complete academic activities is prohibited conduct. Commonly used GenAI tools include including ChatGPT, Sudowrite and others. **For this course, the use of GenAI tools on submitted and graded material is prohibited.** With this, we understand that GenAI tools have a future in education and the workplace. Because of this I want to suggest places where GenAI may be of use in the course, and the known limitations of using GenAI. GenAI can be useful to students to help summarize and clarify long and difficult texts or topics, especially topics that have been well studied and written about extensively. Please be aware or the many known limitations of GenAI: it can generate incomplete, inaccurate, or false information, GenAI is prone to hallucination where it connects things that have not real connection, citations generated by GenAI might be inaccurate or completely made-up, GenAI will plagiarize text without proper attribution as required by the Code of Student Conduct, answers are prone to biases. When using GenAI, it is important to recognize these known limitations and intervene with your own reading and interpretation.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

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, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

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. 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 through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org.

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. **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 https://civilrights.osu.edu/title-ix or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu.

Weather or Other Short-Term Closing

Should in-person classes be cancelled, I will notify you as to which alternative methods of teaching will be offered to ensure continuity of instruction for this class. Communication will be email, CarmenCanvas, or other mode of communication.

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. 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).

Copyright Protection

The materials used in connection with this course are 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.

Required Prerequisites for the Major

Semester Course Number		Course Title	Semester hrs	Learning Goals 1	2	3	4	5
BIOL 1113		Biological Sciences: Energy Transfer and Development	4	B			B	
BIOL 1114		Biological Sciences: Form, Function, Diversity, and Ecology	4	B			B	
MATH Req. #1	MATH 1151	Calculus 1 (5 Hrs)	5	B				
	or							
	MATH 1156	Calculus for Biol. Sciences (5 Hrs)						
MATH Req. #2	MATH 1152	Calculus 2 (5 Hrs)	3 - 5	B				
	or							
	MATH 1157	Math. Modeling for Biol. Sciences (5 Hrs)						
	or							
	STATS 1450	Intro. to the Practice of Statistics (3 Hrs)						
	or							
	STATS 2480	Statistics for the Life Sciences (3 Hrs)						
CHEM 1210		General Chemistry 1	5	B				
CHEM 1220		General Chemistry 2	5	B				
CHEM 2510		Organic Chemistry 1	4	B	B			
CHEM 2520		Organic Chemistry 2	4	B	B			
CHEM 2540		Organic Chemistry Lab 1	2	B	B		B	
PHYS 1200		Mechanics, Thermal Physics, Waves	5	B			B	
		Total Hrs.	**41 - 43**					

Goal: B: Beginning; I, Intermediate; A, Advanced

Required Core for the Major

Semester Course Number		Course Title	Semester hrs	Learning Goals 1	2	3	4	5
MICRBIO 4100		General Microbiology	5	I	I	I	I	I
MICRBIO 4110		Pathogenesis and Immunobiology	3	A	A	A		
MICRBIO 4120		Microbial Physiology and Diversity	3	A	A	A		
MICRBIO 4130		Microbial Genetics	3	A	A	I		
MICRBIO 4140		Molecular Microbiology Laboratory	3	I	I	I	A	A
BIOCHEM 4511		Biochemistry	4	I	A			I
		Total Hrs.	**21**					

Goal: B: Beginning; I, Intermediate; A, Advanced

Electives: Total Required 9 hrs
Group 1: 3-9 hrs

Semester Course Number		Course Title	Semester hrs	Learning Goals 1	2	3	4	5
MICRBIO 2000		Introduction to MicrOHbIOlogy Research	1.5				B	B
MICRBIO 2100		Wild Yeast: Isolation to Fermentation	3		B	B	B	B
MICRBIO 3704		HIV: From Microbiology to Macrohistory	4			I	I	I
MICRBIO 4145		Introduction to Industrial Microbiology and Bioprocessing Laboratory	3	I	I	I	A	A
MICRBIO 4150		Immunobiology Laboratory	3	I	I	A	A	A
MICRBIO 4193		Individual Studies	1-3					
MICRBIO 4194		Group Studies	1-3					
MICRBIO 4591S		DNA Finger Printing Workshops in Columbus PS	1				A	A
MICRBIO 4797		Study at a Foreign Institution	1-19					
MICRBIO 4798		Study Tour Domestic	1-19					
MICRBIO 4891		Progress in Biotechnology	1		A	A	A	A
MICRBIO 4998		Undergrad Research in Microbiology	1-5				A	A
MICRBIO 4998H		Honors Research	1-5				A	A

MICRBIO 4999		Undergrad Research in Microbiology-Thesis	1-5				A	A
MICRBIO 4999H		Honors Research-Thesis	1-5				A	A
MICRBIO 5122		Immunology	3			A		
MICRBIO 5129		Cellular and Molecular Biology of Pathogenic Eukaryotes	3		A	A		
MICRBIO 5130		Biology by Numbers	3	A			A	A
MICRBIO 5147		Eukaryotic Pathogens	3		A	A	A	
MICRBIO 5149		Introductory Virology	3		A	A		
MICRBIO 5155		Environmental Microbiology	3	A	A	A		
MICRBIO 5161		Bioinformatics and Molecular Microbiology	3	A	A	A		A
MICRBIO 5270		Antibiotics and Microbial Natural Products	3		A	A	A	A
MICRBIO 5536		Food Microbiology Lecture	3		A	I		A
MICRBIO 5546		Food Microbiology Laboratory	3		A	I	A	A
MICRBIO 6020*		Microbial Physiology and Biochemistry	3	A	A	A	A	
MICRBIO 6080*		Advanced Microbial Genetics	3		A		A	
MICRBIO 6155*		Microbial Ecology & Evolution	3			A	A	A
MICRBIO 7010*		Cellular and Molecular Immunology	3			A	A	
MICRBIO 7023*		Molecular Immunology: Lecture	3			A	A	
MICRBIO 7050*		Fermentation Biotechnology	3	A			A	A
MICRBIO 7060*		Advanced Topics in Molecular Microbiology	2		A		A	
MICRBIO 7536*		Advanced Food Microbiology	3		A	I	A	A
MICRBIO 7724*		Molecular Pathogenesis	3		A	A	A	
MICRBIO 7889*		Host-Pathogen Interactions: Research Seminar	1			A	A	
MICRBIO 7899*		Microbiology Colloquium	1					
MICRBIO 8149*		Microbiome Informatics	3	A*	A*	A*		
		Total Hrs.	**3-9**					

Goal: B: Beginning; I, Intermediate; A, Advanced

*Indicated graduate-level course. Requires special permission to enroll.

Electives: Total Required 9 hrs
Group 2: 0-6 hrs

Learning Goals

Semester Course Number		Course Title	Semester Hrs.	1	2	3	4	5
MICRBIO 3798.05		Impact of HIV: Tanzania (study abroad)	4			I	B	I
BIOCHEM 5621		Intro Biological Chemistry Laboratory	4	I			I	
MOLGEN 4500		General Genetics	3		I			
MOLGEN 4606		Molecular Genetics I	4		I			
MVIMG 5000		Evolution of Emerging Viruses	2			A		
PLPATH 5010		Phytobacteriology	2		I	A		
PLPATH 5020		Introduction to Plant Virology	2		I	A		
PLPATH 5040		Science of Fungi: Mycology Lecture	3	I	I	A		
ANSCI 6090*		Anaerobic Microbiology	3		A			
ENR 5263		Biology of Soil Ecosystems	3	I	A			
ENR 5266		Field Soil Investigations	3	I			A	
		Total Hrs.	**0-6**					
		Total Hrs. for the Major	**30**					

Goal: B: Beginning; I, Intermediate; A, Advanced

*Indicated graduate-level course. Requires special permission to enroll.

Program Learning Goals (B, beginning; I, Intermediate; A, Advanced)

1. Students acquire the ability to interrelate and apply the fundamental concepts of chemistry, physics and mathematics to the functions of living cells.

2. Students understand the chemical properties of biological molecules and how these molecules function in the molecular mechanisms underlying physiological processes in microbial cells.

3. Students understand evolutionary processes, the diversity of microorganisms, and how microorganisms impact their environment, including their roles in human health and disease.

4. Students acquire the ability to design experiments to test hypotheses, perform analyses, interpret and analyze data, and present scientific information in written and oral formats.

5. Students acquire the ability to appraise scientific data presented in the popular press for accuracy and scientific merit and understand issues and ethical conflicts associated with applications of biotechnology.

Microbiology 4891 Learning Goals (Mapped to Program Learning Goals)

1. Gain insight into real-world applied molecular sciences and biotechnology research being conducted at companies **(PLG 2 & 3 Advanced)**

2. Be exposed to career paths and opportunities in the applied molecular sciences and biotechnology **(PLG 3 & 5 Advanced)**

3. Understand how fundamental biological discoveries can be commercialized **(PLG 3 & 5 Advanced)**

4. Understand how to learn from scientific research seminars **(PLG 4 Advanced)**

5. Critically evaluate research papers, accurately interpret raw and processed data sets (**PLG 4 Advanced)**

6. Identify key findings of research papers and explain them clearly to an audience of peers **(PLG 4 Advanced)**

7. Identify strong arguments supported by conclusive data; identify weak arguments supported by inconclusive data **(PLG 4 Advanced)**

8. Argue the merits and/or weaknesses of published work from a knowledgeable perspective **(PLG 4 Advanced)**

Concurrence Form

The Ohio State University
College of Arts and Sciences Concurrence Form

The purpose of this form is to provide a simple system of obtaining departmental reactions to course requests. **An e-mail may be substituted for this form.**

An academic unit initiating a request should complete Section A of this form and send a copy of the form, course request, and syllabus to each of the academic units that might have related interests in the course. Units should be allowed two weeks to respond to requests for concurrence.

Academic units receiving this form should respond to Section B and return the form to the initiating unit. Overlap of course content and other problems should be resolved by the academic units before this form and all other accompanying documentation may be forwarded to the College of Arts and Sciences and the Office of Academic Affairs.

A. Proposal to review

Microbiology	5891	Progress in Biotechnology
Initiating Academic Unit	Course Number	Course Title

New	05/01/2025
Type of Proposal (New, Change, Withdrawal, or other)	Date request sent

CLSE	05/15/2025
Academic Unit Asked to Review	Date response needed

B. Response from the Academic Unit reviewing
Response: include a reaction to the proposal, including a statement of support or non-support (continued on the back of this form or a separate sheet, if necessary).

The CLSE does not currently nor do we have plans to offer comparable coursework in Biology, so we happily grant concurrence.

Signatures

	Name	Position	Unit	Date
1.	Adam Andrews	Assistant Director	CLSE	5/1/2025
2.				
3.				

Revised 5/27/14

From: Childers, Rachel
To: Ruiz, Natividad
Subject: FW: Concurrence request
Date: Friday, June 13, 2025 12:28:18 PM
Attachments: image001.png
image002.png
image003.png

We are all good from BME for concurrence! Let me know if there is anything else you need from us.

Thanks,
Rachel

Rachel Childers, Ph.D.

Professional Practice Associate Professor & Director of Undergraduate Education

Department of Biomedical Engineering

Fontana Labs 4100B, 140 W 19th Ave., Columbus, Ohio 43210

Childers.73@osu.edu | 614.247.6681

(She/Her) | Student Hours Link

THE OHIO STATE UNIVERSITY

From: Senitko, Melanie <senitko.1@osu.edu>
Sent: Friday, June 13, 2025 9:54 AM
To: Devina Purmessur Walter <Devina.Purmessur@osumc.edu>; Childers, Rachel <childers.73@osu.edu>
Cc: Matyas, Cory <matyas.3@osu.edu>
Subject: RE: Concurrence request

Looks good to me as well.
Thanks!
Mel

THE OHIO STATE UNIVERSITY

Melanie A. Senitko, MA
Graduate Program Coordinator

The Ohio State University
College of Engineering
Department of Biomedical Engineering
2124K Fontana Labs
140 W 19th Ave, Columbus, OH 43210
614.292.7152 Office
senitko.1@osu.edu / bme.osu.edu

Pronouns: she/her

Shared Values in Action: At Ohio State, we demonstrate our Shared Values through our actions.

From: Purmessur, Devina <Devina.Purmessur@osumc.edu>
Sent: Friday, June 13, 2025 9:30 AM
To: Childers, Rachel <childers.73@osu.edu>
Cc: Senitko, Melanie <senitko.1@osu.edu>; Matyas, Cory <matyas.3@osu.edu>
Subject: RE: Concurrence request

Hi Rachel,

Thanks so much for sharing. I don't see any issues from my end – Mel do you have any addition thoughts or comments?

Thanks again,

Devina

Devina Purmessur (Walter), PhD
Associate Professor and Director of Graduate studies
College of Engineering Innovation Scholar
Department of Biomedical Engineering
Department of Orthopaedics
The Ohio State University
Mars G. Fontana, Room 3016
140 W. 19th Ave, Columbus, OH 43210
(office 3016) | (lab 3155)
Email: purmessurwalter.1@osu.edu and devina.purmessur@osumc.edu
https://stl.engineering.osu.edu/
Note: You may be receiving this email outside of normal working hours. While it suits me to email now, I do not expect a response or action from you outside of your own working hours.

From: Childers, Rachel <childers.73@osu.edu>
Sent: Wednesday, June 11, 2025 1:24 PM
To: Purmessur, Devina <Devina.Purmessur@osumc.edu>
Cc: Senitko, Melanie (OSU) <senitko.1@osu.edu>; Matyas, Cory (OSU) <matyas.3@osu.edu>
Subject: FW: Concurrence request

Hi Devina,

Looping you in for the grad studies side. I don't see any concurrence issues for the Microbio/Biotechnology course from the undergrad side. I assume the same for grad side, but wanted to check with you first.

Best,
Rachel

Rachel Childers, Ph.D.

Professional Practice Associate Professor & Director of Undergraduate Education

Department of Biomedical Engineering

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THE OHIO STATE UNIVERSITY

From: Ruiz, Natividad <ruiz.82@osu.edu>
Sent: Monday, June 9, 2025 8:00 AM
To: Childers, Rachel <childers.73@osu.edu>
Subject: Concurrence request

Dear Dr. Childers,

The Department of Microbiology has developed three new courses focused on biotechnology. We are seeking concurrence from your department, and I hope you can assist us.

As you can see from the attached syllabi, MICRBIO 4800 is a lecture course, while MICRBIO 4891/6891 are seminar courses. Please note that 4891/6891 will share the seminar series presented by external speakers. The graduate version will only require students to attend seminars, while the undergraduate course will demand more work and additional meetings. This is why we had to split the offering into two courses.

I have attached the concurrence request forms for each course. I kindly request a response by June 27. No response will be interpreted as concurrence.

Please let me know if you have any questions. Thank you for your time.

Natacha

THE OHIO STATE UNIVERSITY

Natividad Ruiz, PhD
Professor
Vice Chair for Teaching and Undergraduate Affairs
Department of Microbiology
264 Aronoff Lab Bldg
318 W 12th Ave., Columbus OH 43210
614-292-3426 Office | 614-292-4129 Lab | 614-292-8120 Fax