

Microbiology and Immunology
Microbial Applications 4400B

Course Syllabus for Winter 2025



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

1. Technical Requirements:



Stable internet connection



Laptop or computer

2. Important Dates:



Classes Begin	Reading Week	Classes End	Study day(s)	Exam Period
January 6	February 15–23	April 4	April 5–6	April 7–30

March 31, 2025: Last day to withdraw from second-term half course without academic penalty

3. Contact Information

Course Coordinator	Contact Information

Instructor(s) or Teaching Assistant(s)	Contact Information

4. Course Description and Design

Delivery Mode: in-person

Course description: From probiotics to therapeutics, this course explores how humans harness microbes and their products to advance medicine, enhance food systems, address sustainability challenges, and drive innovation in biotechnology.

Prerequisite(s): one of Microbiology and Immunology 3400A or the former Microbiology and Immunology 3100A, and Microbiology and Immunology 3610F, with marks of at least 70% in each.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Timetabled Sessions

Component	Date(s)	Time
Lectures/Labs		
Lectures/Discussion		

☒ Attendance at sessions is required

All course material will be posted to OWL: <https://westernu.brightspace.com/d2l/login>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Brightspace Help](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

Current versions of all popular browsers (e.g., Safari, Chrome, Edge, Firefox) are supported with OWL Brightspace; what is most important is that you update your browser frequently to ensure it is current. All JavaScript and cookies should be enabled.

5. Learning Outcomes

Upon successful completion of this course, students will be able to:

- Provide examples of how microbes are used in our every-day lives.
- Explain the importance of microbial fermentation products to food/beverage production (e.g., bread, cheese, yogurt, wine, beer, etc.)
- Describe and contrast the difference between the processes of yeast and mixed fermentation.
- Determine the relevant conditions or measures needed to promote safety, fermentation, while reducing spoilage of food products.
- Provide examples of how microbes can be used to solve energy problems.
- Evaluate the benefits microbes can have in human health
- Discuss the scientific advances that have involve specific tools of modern biotechnology that are derived from naturally occurring microbes
- Develop ability to critically analyze and discuss scientific papers
- Present orally to class peers and teaching team about a selected scientific paper while fostering and promoting a class discussion

6. Course Content and Schedule

MICROIMM 4400 "Microbial Applications" W2025

WEEKS	Date		Lecture Title	Instructor
week 1		Lec 1	INTRO to course/The Microbial World	
		Lec 2	Food microbes: The good, the bad, and the ugly	
week 2		Lab 1	Lab 1. Pickling and canning	
		Lec 3	Lactic Acid bacteria and their fermentation products	
week 3		Lab 2	Lab 2. Veggie Fermentations	
		Lec 4	Yeast and Mixed fermentation. Part I	
week 4		Lab 3	Lab 3. Dairy Fermentations I	
		Lec 5	Yeast and Mixed fermentation. Part II	
week 5		Lab 4	Lab 3. Dairy Fermentations II	
		Lec 6	Food Waste and Sustainability	
week 6		Lab 5	Labs Follow Ups	
			MIDTERM 1	
week 7			No Class - Reading Week	
			No Class - Reading Week	
week 8		Lec 7	Molecular Microbiology Intro	
		Disc	Discussion Paper Example	
week 9		Lec 8	Microbial OMICS Applications	
		Disc	Discussion Paper TBD	
week 10		Lec 9	Current and Emerging Biotechnology Approaches	
		Disc	Discussion Paper TBD/or Labatt visit	
week 11		Lec 10	Microbial Therapeutics	
		Disc	Discussion Paper TBD/or Labatt visit	
week 12		Lec 11	Pre/Pro-biotics	
		Disc	Discussion Paper TBD	
week 13		Lec 12	Antibiotics and Antimicrobials	
		Disc	Discussion Paper TBD	

Lectures
Labs
Lectures
Discussions

7. Participation and Engagement

- ☒ Students are expected to keep up with course content.
- ☒ Students are expected to participate and engage with content as much as possible, including asking questions during class.
- ☒ Students can also participate by interacting in the forums with their peers and instructors.

8. Assessment and Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date	Flexibility
Fermented Foods Assignment	Written (Group)	15%		72-hour no late penalty
Midterm 1	Written (Individual)	30%		Not applicable
Paper Discussion	Oral Presentation (Group)	15%		Designated
Reflections/Discussion Participation	Written/Oral (Individual)	10%		72-hour no late penalty
Final Exam	Written (Individual)	30%		Not applicable

Designated Assessment: Instructors are permitted to designate one assessment per course per term as requiring supporting documentation to receive academic consideration. See below for information on academic consideration policy and missed course work. For this course, the following assessment has been designated as requiring supporting documentation:

- *Paper Discussion/Group Presentation:* Once a date of presentation has been assigned, it is the students' responsibility to communicate with TAs should any illness or extenuating circumstances arise. Should a student miss their designated oral presentation date/time, the student has to obtain documented academic consideration. The group is expected to proceed on time and deliver the entire presentation without the absent group member. The missing student will deliver the entire presentation on their own to the instructors and TAs no more than 72 hours after the end of the accommodation. It is the student's responsibility to arrange the date/time for the make-up presentation with course instructors. If a make-up presentation is not completed within the specified time period, a grade of zero will be assigned.

Information about flexibility in assessment

- ☒ Flexibility in assessment has been applied to this course; therefore, academic consideration requests may be denied on the assessments where flexibility is included.
- ☒ This course employs flexible deadlines for the written assignments: Fermented Food Infographic and the Lab Attendance Reflections. The assignment deadlines can be found above in the course outline. For each assignment, students are expected to submit the assignment by the deadline listed. Should illness or extenuating circumstances arise, students are permitted to submit their assignment up to 72 hours past the deadline without a late penalty. Should students submit their assessment beyond 72 hours past the deadline, a late penalty of 20% per day will be subtracted from the assessed grade.

General information about assessments

- ☒ Specific instructions for the Fermented Foods Infographic and the Paper Discussion will be posted on OWL site.
- ☒ Rubrics will be used to evaluate assessments and will be posted with the instructions

- ☒ Paper Discussion Presentation team is responsible sending ppt (or PDF) file to TAs by 9:00 AM on the day of their presentation; see instructions on OWL site.
- ☒ Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0.
- ☒ Written assignments will be submitted to Turnitin (statement in policies below)
- ☒ A student might not receive the same grade as their group members if it is determined that the distribution of work was not equal.
- ☒ After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days
- ☒ Any grade appeals on assignments or midterms must be received within 3 weeks of the grade being posted.
- ☒ Attendance and in-class participation during discussions as well as reflections submitted after lab observations will account for 10% of your mark.

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Information about late or missed assessments:

- ☒ Late assessments without academic consideration will be subject to a late penalty 20%/day
- ☒ There will be no make-up exam for the midterm. If you miss Midterm 1, with appropriate accommodation from academic counselling, your final exam will be cumulative and be worth 60% of your mark.
- ☒ If you miss the final exam (or cumulative final exam), with proper accommodation, a make-up final exam will be scheduled (Date and Room TBD).
- ☒ The midterm exam and final exam (or cumulative exam) must be completed to pass the course.

INC (Incomplete Standing): If a student has been approved by the Academic Advising Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Advising to carry a full course load for the term the incomplete course work is scheduled.

SPC (Special examination): If a student has been approved by the Academic Advising Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. If the class has a makeup exam, the student is expected to write the makeup exam. If the class doesn't have a makeup exam or the student misses the makeup exam for reasons approved by the Academic Advising Office, the student will write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Types of Examinations](#) policy.

9. Communication

- ☒ Students should check the OWL Brightspace site every 24–48 hours
- ☒ This course will use the OWL forum for student questions and discussions.
- ☒ Students should post all content questions on the discussion forum so that everyone can access answers to questions. No questions about lecture material are to be e-mailed to the instructors.

- ☒ The discussion forums will be monitored daily by the teaching assistants.
- ☒ For questions regarding the Written Assignment or Group Presentation, students should email the TAs. All other course-related questions should be emailed to the course coordinator with a subject line that begins with "4400B Student Query". E-mails will be monitored daily, and students should receive a response in 24–48 hours. However, e-mails must contain the subject line explained above, otherwise, no response will be given.

10. Office Hours

- ☒ Office hours are available only upon request.

11. Resources

- ☒ All resources will be posted in OWL Brightspace
- ☒ Required textbook: None
- ☒ Required study guide: None

12. Professionalism & Privacy

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- ☒ All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- ☒ Recordings are not permitted (audio or video) without explicit permission
- ☒ Permitted recordings are not to be distributed
- ☒ Students will be expected to take an academic integrity pledge before some assessments

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [Non-Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35). Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

13. How to Be Successful in this Class

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule your time throughout the course.
2. Make it a daily habit to log onto OWL Brightspace to ensure you have seen everything posted to help you succeed in this class.
3. Follow checklists created on OWL Brightspace or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion

- boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

14. Western Academic Policies and Statements

A. Absence from Course Commitments

Students must familiarize themselves with the Policy on [Academic Consideration – Undergraduate Students in First Entry Programs](#)

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request at the central academic consideration portal. Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes) or there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the [Student Medical Certificate](#) or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays

Students should review the policy for [Accommodation for Religious Holidays](#). Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

B. Academic Offenses

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

C. Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

D. Correspondence Statement

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

E. Discovery Credit Statement

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

F. Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and [Turnitin.com](#).

15. BMSUE Academic Policies and Statements

Cell Phone and Electronic Device Policy (for in-person tests and exams)

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, e.g., cell phones, tablets, cameras, smart glasses, smart watch or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.45 becomes 74, and 74.50 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

16. Support Services

- Students who are in emotional/mental distress should refer to Mental Health @Western Health <https://www.uwo.ca/health/> for a complete list of options about how to obtain help.
- To connect with a case manager or set up an appointment, please contact support@uwo.ca.
- Other important links:
 - [Academic Advising \(Science and Basic Medical Sciences\)](#)
 - [Appeal Procedures](#)
 - [Registrarial Services](#)
 - [Student Development Services](#)
 - [Student Health Services](#)

Statement on Gender-Based and Sexual Violence

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.