


**Microbiology and Immunology  
3400A: Bacteriology**

Course Syllabus for Fall 2024

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



Stable internet connection



Laptop or computer

**2. Important Dates:**



Classes Begin	Reading Week	Classes End	Study day(s)	Exam Period
September 5	October 12–20	December 6	December 7–8	December 9–22

September 30, 2024, is National Day for Truth and Reconciliation and is a non-instructional day  
December 2, 2024: Last day to withdraw from a first-term half course without academic penalty

**3. Contact Information**

For any email to any instructor/TA, **include 3400A Student Query in the subject line of your email.** Emails without this subject line will not receive a response.

Course Coordinator	Contact Information

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

#### 4. Course Description and Design

**Delivery Mode:** [in-person]

Bacteriology, essential for understanding diseases, guiding medical interventions, and advancing biotechnology, critically influences human health and environmental sustainability. Lectures will focus on bacterial cell structure and function, bacterial culture, growth, development and division, bacterial genetics and information flow, bacterial metabolism and diversity, and the roles of bacteria in the environment.

**Antirequisite(s):** The former Microbiology and Immunology 3100A.

**Prerequisite(s):** Biochemistry 2280A; Biology 2581A/B; Microbiology and Immunology 2500A/B

**Pre- or Corequisite(s):** It is recommended that Biochemistry 3381A be taken concurrently or previously.

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)	Location	Time
Lectures/student presentations			

**See specific distribution of lectures and student presentations in course schedule section**

- Attendance at all lectures and all student presentation sessions is required and each student needs to complete at least 3 of 4 assignments (half page reports) associated with the presentations.
- Missed work should be completed within 72 hours of the end of any granted accommodation.

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

The primary purpose of this course is for students to gain foundational knowledge of bacteriology, including structure, function and physiology of bacteria and basic bacterial genetics, supporting a better understanding of applications towards biotechnology or health and of discoveries in bacteriology.

Students are expected to view all material posted on the M&I 3400A OWL site, read the supplemental material when applicable, complete all assignments (written reports and oral presentations), and develop a "working knowledge" of bacteriology.

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

- Identify and describe the main constituents of the bacterial envelope and their main functions and know how they differ across different types of bacteria and what components are unique.
- Know about the nature, synthesis and function of key elements such as peptidoglycan, capsules, lipopolysaccharides, pili, flagella and glycosylation motifs
- Understand the basic steps involved in bacterial growth and division and essential parameters that affect the processes
- Understand key principles underlying gene expression and regulation during growth and division
- Understand the fundamental processes that drive gene transfer and bacterial evolution and their applications in bacterial genetics
- Have a solid foundation in bacterial metabolism and its diversity, along with good understanding of methods and significance of metabolomic and transcriptomics studies
- Understand the relationship between bacteria, their environment and potential diseases they cause (as exemplified in odonto-microbiology and gastro-intestinal diseases).
- Understand the molecular basis and extent of antimicrobial resistance
- Have basic knowledge of bacterial identification techniques and principles

## 6. Course Content and Schedule

**Locations:**

**Lectures:**

**Student presentations:**

**Midterm:**

**Dates:**

- Lectures and student presentation as indicated in table below
- Midterm:

Date	Theme #	Lect #	Topic	Instructor
Friday Sept 6	Organization Introduction lecture	1	Course organization plus start first lecture: Relevance of microbes to health, industry and the environment	
Monday Sept 9		2	Relevance of microbes to health, industry and the environment (Continued)	
Wedn. Sept 11	Bacterial cell Structures and function	3	Bacterial cell structures and function	
Friday Sept 13		4	Bacterial growth and division	
Monday Sept 16		5	Lipopolysaccharide and capsule: synthesis and function	
Wedn. Sept 18		6	Bacterial protein glycosylation	
Friday Sept 20		7	Bacterial protein secretion	
Monday Sept 23		8	Pilin synthesis and function	
Wedn. Sept 25		9	<i>Helicobacter pylori</i> : how surface structures and protein secretion contribute to pathogenicity.	
Friday Sept 27	Student presentation		Groups A1, A2 and A3 Groups B1, B2 and B3	
Monday Sept 30			No Class Truth and reconciliation national day	
Wedn. Oct 2	Metabolism and diversity	10	Bacterial metabolism and metabolic diversity	
Friday Oct 4		11	Phylogeny, taxonomy	
Monday Oct 7	Student presentations		Groups A4, A5 and A6 Groups B4, B5 and B6	
Wedn. Oct 9		12	Microbiome, transcriptome, metabolome 1/2	
Friday Oct 11		13	Microbiome, transcriptome, metabolome 2/2	
Monday Oct 14			No classes, Thanksgiving	
Wedn. Oct 16			No classes, fall reading week	
Friday Oct 18			No classes, fall reading week	
Monday Oct 21	Student presentations		Groups A7, A8 and A9 Groups B7, B8 and B9	
Wedn. Oct 23	Mid-term		No class. Instead, mid-term from 7 to 9 pm On all lectures before reading week	
Friday Oct 25	Horizontal gene transfer and	14	Bacterial genetics 1 Transformation / mutations	

	bacterial evolution			
Monday Oct 28		15	Bacterial genetics 2 Plasmids / conjugation	
Wedn. Oct 30		16	Bacterial genetics 3 Transduction/Transposition	
Friday Nov 1	Student presentations		Groups A10, A11 and A12 Groups B10, B11 and B12	
Monday Nov 4	Bacterial gene expression and regulation	17	Bacterial Genes and Genomes	
Wedn. Nov 6		18	Bacterial transcription, translation, and protein synthesis	
Friday Nov 8		19	Bacterial Molecular Regulation I. DNA binding proteins and transcriptional regulation	
Monday Nov 11		20	Bacterial Molecular Regulation II. Sensing and Signal Transduction	
Wedn. Nov 13		21	Bacterial Molecular Regulation III. Global Regulation	
Friday Nov 15	Student presentations		Groups A13, A14 and A15 Groups B13, B14 and B15	
Monday Nov 18	Clinical aspects and applications	22	Microbial communities: Odonto-Microbiology	
Wedn. Nov 20		23	Antimicrobials I	
Friday Nov 22		24	Antimicrobials II	
Monday Nov 25		25	Clinical Microbiology: classical pathogen identification, culture & phenotype	
Wedn. Nov 27		26	Clinical microbiology: New methods of diagnostics for infectious diseases	
Friday Nov 29		27	1 Epidemiology of waterborne and foodborne bacterial diseases	
Monday Dec 2		28	2 Etiology and mechanisms of waterborne and foodborne bacterial diseases	
Wedn. Dec 4		29	3 Etiology and mechanisms of waterborne and foodborne bacterial diseases	
Friday Dec 6			Lecture TBA if slot is needed for any instructor	
Final exam			Exam anytime between Dec 9 <sup>th</sup> and 22 <sup>nd</sup> as scheduled by the Office of the Registrar	

## 7. Participation and Engagement

- Students are expected to participate and engage with content as much as possible.
- Students can interact with their peers and instructors by using the discussion boxes that have been set up for topics related to each instructor's lecture material. Each Professor will monitor his/her box. No questions about lecture material are to be e-mailed to the Professors.
- A discussion box has also been set up for questions to TAs about student presentations and reports.

## 8. Assessment and Evaluation

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

Assessment	Format	Weighting	Due Date	Flexibility
Student presentation	Oral	10%	As per syllabus and group signed up for	Designated
Midterm Test 1	Mixed	30%	October 23, 2024, 7 – 9 p.m. ET	Not applicable
Written Assessment #1	Written 2-page group report	10%	As per syllabus, at noon 3 days ahead of presentation	72-hour no late penalty
Written Assessment #2	Written half-page individual report	12%	As per syllabus, at noon, 1 week after assigned presentation	72-hour no late penalty Complete <b>only</b> 3 of the 4 reports assigned.
Final Exam	Mixed	38%		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:

- Group oral student presentation: Should a student miss their designated oral presentation slot, 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. Depending on instructors/TAs/room availability, this may involve submitting a video or delivering an in-person presentation.

### Information about flexibility in assessment

- ☑ Flexibility in assessment has been applied to this course for the 2 written assessments; therefore, academic consideration requests may be denied on these assessments where flexibility is included.
- ☑ For the group 2-page report: it is due at noon 3 days ahead of the oral presentation, and is to be submitted in the assessment feature of the group, **as well as** in the assigned room discussion tool. However, a 72h no late penalty flexibility measure will apply.
- ☑ For the individual half-page report, each student is assigned 4 presentations onto which they have to write a report, but flexibility is built in by allowing students to miss writing 1 of the 4 reports without penalty. Thus **only** 3 submissions are expected. These reports are due at noon 1 week after the presentation they pertain to, and a 72h-no late penalty flexibility measure is also offered. These are to be submitted in the assessment feature by each student.

### General information about assessments

- ☑ All assignments are due at noon ET unless otherwise specified
- ☑ 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
- ☑ Rubrics will be used to evaluate assessments and will be posted with the instructions
- ☑ 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.

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 assigned a grade of zero
- ☑ An assessment cannot be submitted after it has been returned to the class; an alternate assessment will be assigned OR the weight will be transferred to another assessment at the discretion of the Course Coordinator
- ☑ One make-up exam will be offered for the Midterm Exam. Make-up for midterm Oct 27<sup>th</sup>, 2024, tentatively from 10 am to 12 noon. Academic consideration needs to be obtained to write the make-up.

- All course components must be completed to pass the course. If course components are not completed, an INC will be assigned at the discretion of the Course Coordinator, and the student may complete the task the next time course is offered.

**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
- Students should email their instructor(s) and teaching assistant(s) only for questions not related to lecture material, with header as indicated above. No e-mail will be answered relative to questions on lecture material. These questions are to be posted in the relevant discussion box in Brightspace.
- Emails will be monitored daily; students will receive a response in 24–48 hours. However, e-mails must have a subject line that begins with 3400A Student Query to be identified. If you do not use this subject line, you will not receive a response.
- This course will use discussions on Brightspace.
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

## 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. Create your own checklists 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. Essay Course Guidelines**

The guidelines for the minimum written assignments refer to the cumulative amount of written work in a course but excludes written work in examinations. You can read about essay course guidelines [here](#).

An essay course must normally involve total written assignments (essays or other appropriate prose composition, excluding examinations) as follows:

- Full course (1000 to 1999): at least 3000 words
- Half course (1000 to 1999): at least 1500 words
- Full course (2000 and above): at least 5000 words
- Half course (2000 and above): at least 2500 words

The structure of the essay course must be such that in order to pass the course, the student must exhibit some minimal level of competence in essay writing and the appropriate level of knowledge of the content of the course.

#### **G. 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](https://www.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.

### **Statement on the use of Generative Artificial Intelligence (AI) Platforms**

Within this course, students are permitted to use AI tools exclusively for information gathering and preliminary research purposes. These tools are intended to enhance the learning experience by providing access to diverse information sources. However, it is essential that students critically evaluate the obtained information, exercise independent thinking, and engage in original research to synthesize and develop their own ideas, arguments, and perspectives. The use of AI tools can serve as a starting point for exploration, with students expected to uphold academic integrity by appropriately attributing all sources and avoiding plagiarism. Assignments should reflect the students' own thoughts and independent written work. By adhering to these guidelines, students contribute to a responsible and ethical learning environment that promotes critical thinking, independent inquiry and allows them to produce original written contributions.

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## 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](mailto: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](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).