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/](https://www.uwo.ca/health/) Your course coordinator can also **guide you** to resources and/or services should you need them.

### A Personal Note From Drs. Heit & Zukowski

COVID-19 has created an unprecedented challenge to providing university education. While we are expecting Microlmm 3610 to be entirely in-person this year, we need to be prepared for the potential of a COVID-19 associated campus shutdown, and we need to take precautions in the lectures and labs to ensure our safety. If you haven’t already, we encourage you to get your full course of COVID-19 vaccines as soon as possible. They are safe, effective, and your best protection against infection. We will follow all university guidelines on COVID-19 safety, including social distancing, sanitation, and masking. Should Western drop the mask mandate part-way through the semester, masks remain strongly encouraged in lectures, and will still be required for labs. Course materials and plans are in-place should we have to move to virtual learning. If you have any concerns about working safely in the lectures or labs, please don’t hesitate to contact us, and we will find a way to accommodate your needs.

This course focuses on hands-on experience in microbiology techniques, scientific communication, and developing your data analysis skills. To facilitate this, this course is structured as a flipped classroom. This means that we will spend most of the lecture period working on problems and exercises, both individually and in small groups, with only minimal didactic lecturing provided during the lecture period. While this provides you an opportunity to develop your skillset, it also means that the materials normally taught via lectures need to be acquired through other means. For Microlmm 3610, this is in the form of short pre-recorded mini-lectures. There will be a maximum of 30 minutes of video that you need to watch before each lecture. To be successful you must watch these videos prior to their corresponding lecture. Some lectures and labs may also have optional videos you can watch, for example, videos which guide you through performing basic operations in some software packages.

You will also need a laptop computer or a tablet running Windows, Linux, or macOS for completing assignments during lectures. Please note that a smart phone will not be sufficient for these assignments as you will need to run software that does not work on Android or iOS. This computer or tablet will need a WiFi connection to the campus network and OWL. Free and open-source software will need to be installed prior to some labs or lectures. If access to an appropriate device is an issue, please contact Dr. Heit to make alternative arrangements.

We look forward to working with you, and I hope that we have a fun, educational, engaging, but otherwise completely uneventful course this year!

Course materials cannot be sold/shared.
1. Land Acknowledgment
The University of Western Ontario resides on the traditional lands of Indigenous nations belonging to the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples. During MicroImm 3610 we will explore the microbial community present in these lands. We recognize that there are historical and ongoing injustices that Indigenous Peoples endure in Canada, and we accept responsibility as students, professors and as a public institution to contribute toward renewing respectful relationships with our Indigenous communities through our teaching, research, and community service.

2. Technical Requirements:
- Internet connection
- Laptop or computer
- Lab Coat
- Safety Glasses

3. Important Dates:

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Dates</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Lecture Videos</td>
<td>Up to 5 days before the lecture</td>
<td>Self-Directed</td>
<td>On-Line</td>
</tr>
<tr>
<td>In-Person Lectures</td>
<td>Tuesdays</td>
<td>1:30 PM – 2:20 PM EST</td>
<td>MSB 384</td>
</tr>
<tr>
<td>In-Person Labs</td>
<td>Tuesdays or Wednesdays</td>
<td>2:30 PM – 5:30 PM EST</td>
<td>MSB 120</td>
</tr>
</tbody>
</table>

*Details about design and delivery of the course are listed below in Section 4

<table>
<thead>
<tr>
<th>Classes Begin</th>
<th>Classes End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday, September 8, 2022</td>
<td>Thursday, December 8, 2022</td>
</tr>
</tbody>
</table>

* November 12, 2022: Last day to drop a first-term half course without academic penalty

<table>
<thead>
<tr>
<th>Reading Week</th>
<th>Study day(s)</th>
<th>Exam Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 31–November 6</td>
<td>December 9</td>
<td>December 10–22</td>
</tr>
</tbody>
</table>

4. Contact Information

<table>
<thead>
<tr>
<th>Course Coordinator &amp; Instructor</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Bryan Heit (he/him)</td>
<td>Email: <a href="mailto:bheit@uwo.ca">bheit@uwo.ca</a></td>
</tr>
<tr>
<td></td>
<td>Office: Health Sciences Addition, room H320</td>
</tr>
<tr>
<td></td>
<td>Student Hours: As required, book by email.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Stephanie Zukowski (she/her)</td>
<td>Email: <a href="mailto:szukows@uwo.ca">szukows@uwo.ca</a></td>
</tr>
<tr>
<td></td>
<td>Office: Dental Sciences, room 3024.</td>
</tr>
<tr>
<td></td>
<td>Student Hours: As required, book by email.</td>
</tr>
</tbody>
</table>

Note: masks are required for in-person student meetings, on-line (zoom or teams) meets are also available.

Course materials cannot be sold/shared.
5. Course Description and Design

Laboratory techniques used in the broad discipline of microbiology, including bacteriology and virology. Laboratory exercises include the staining, biochemical characteristics and identification of live bacteria, plus genetic techniques used to study microorganisms. This course runs parallel to, and applies basic principles acquired in, Microbiology and Immunology 3100A.

**Prerequisites:** Biology 2581B; Microbiology and Immunology 2500A/B.
**Pre- or Co-requisites:** Biochemistry 3381A; Microbiology and Immunology 3100A

<table>
<thead>
<tr>
<th>Mode</th>
<th>Dates</th>
<th>Time</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Person Lecture/Lab</td>
<td>T/W</td>
<td>3-4 hours</td>
<td>weekly</td>
</tr>
<tr>
<td>Virtual asynchronous</td>
<td>N/A</td>
<td>20 minutes</td>
<td>weekly</td>
</tr>
</tbody>
</table>

- ✔ Asynchronous pre-work must be completed prior to sessions
- ✔ Attendance at sessions is required
- ✔ Missed work should be completed within 24 hours
- ✔ Closed captioning will be provided on video recordings

All course material will be posted to OWL: [http://owl.uwo.ca](http://owl.uwo.ca). 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 Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](http://owl.uwo.ca) or [Mozilla Firefox](http://owl.uwo.ca) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click here.

6. Learning Outcomes

The primary purpose of this course is to familiarize students with basic scientific communication skills, and with the proper design, data collection, analysis, and presentation of data produced by scientific experiments. Students will also become familiar with common laboratory methods used for microbiology research, clinical testing, and for industrial use.

- Students are expected to attend all lectures and labs.
- Students will need to view on-line videos prior to each lecture and lab.
- Prior to each lab, student must read the corresponding section of the lab manual.
- Over the course, students will develop a working knowledge of the microbiological techniques taught in lab, an ability to properly prepare a written scientific document, and learn the proper methods for data collection, analysis and presentation.
7. Course Content and Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Lecture</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Sept 8–11</td>
<td>No lecture or lab</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sept 12–18</td>
<td>Course Intro, Communication, Biosafety &amp; Ethics.</td>
<td>Virtual/independent lab: Biosafety, ethics and laboratory math modules.</td>
</tr>
<tr>
<td>2</td>
<td>Sept 19–25</td>
<td>What is science, Structuring Hypotheses, Experiments and Studies</td>
<td>Introduction to laboratory techniques.</td>
</tr>
<tr>
<td>3</td>
<td>Sept 26–Oct 2</td>
<td>Data Presentation</td>
<td>Microscopy</td>
</tr>
<tr>
<td>4</td>
<td>Oct 3–9</td>
<td>Basis Statistics</td>
<td>Midterm (ID) Lab Part I</td>
</tr>
<tr>
<td>5</td>
<td>Oct 10–16</td>
<td>Advanced Statistics and Figures</td>
<td>Commercial fermentation and lactic acid bacteria.</td>
</tr>
<tr>
<td>6</td>
<td>Oct 17–23</td>
<td>Gene Design</td>
<td>Midterm (ID) Lab Part II</td>
</tr>
<tr>
<td>7</td>
<td>Oct 24–Oct 30</td>
<td>Engineering Genes – Primer Design and Cloning</td>
<td>Environmental &amp; clinical microbiology</td>
</tr>
<tr>
<td>8</td>
<td>Oct 31–Nov 6</td>
<td>Reading Week</td>
<td>N/A</td>
</tr>
<tr>
<td>9</td>
<td>Nov 7–13</td>
<td>Study Design Part I</td>
<td>Final (Biotechnology) Lab Part I</td>
</tr>
<tr>
<td>10</td>
<td>Nov 14–20</td>
<td>Preparing Elevator Pitches</td>
<td>Final (Biotechnology) Lab Part II</td>
</tr>
<tr>
<td>11</td>
<td>Nov 21–27</td>
<td>Writing Lay Reports</td>
<td>Final (Biotechnology) Lab Part III</td>
</tr>
<tr>
<td>12</td>
<td>Nov 28–Dec 4</td>
<td>Writing Technical Reports</td>
<td>Final (Biotechnology) Lab Part IV</td>
</tr>
<tr>
<td>13</td>
<td>Dec 5–8</td>
<td>Study Design Part II</td>
<td>Elevator Pitch</td>
</tr>
</tbody>
</table>

8. Participation and Engagement

- Students are expected to work in small groups in the lecture and lab sessions.
- Students will be expected to lead a small group in-lecture at least once during the course.
- Students can also participate by interacting with their peers and instructors.

Course materials cannot be sold/shared.
9. Evaluation

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

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Format</th>
<th>Weighting</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4: Preparedness, Professionalism, Participation &amp; Performance</td>
<td>Various</td>
<td>10%</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
| Biosafety, Ethics, and Lab Math Modules | On-line modules | Pass/Fail | Tuesday Labs: Sept 13, 5:30 PM  
Wednesday Labs: Sept 14, 5:30 PM |
| Short Lab reports | Worksheets | 40% | Lab 2: Oct 4/5  
Lab 3: Oct 1/12  
Lab 5: Oct 25/26  
Lab 7: Nov 15/16 |
| Mid-Term Report | Short scientific paper | 20% | Nov 8/9 |
| Final Report | 1 - “Elevator Pitch”  
2 - Technical Report  
3 - Lay Report | 30% | 1 – Dec 6/7  
2 - Dec 13/14  
3 - Dec 13/14 |

- All assignments are due at 11:55 PM EST 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
- Written assignments will be submitted to Turnitin and to Gradescope (statement in policies below)
- Students will have unlimited submissions to Turnitin
- Rubrics will be used to evaluate assessments
- 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 must be received within 3 weeks of the grade being posted.
- Teaching assistants will not regrade assignments but can correct calculation errors.
- Your instructors will only regrade assignment blind – e.g. without discussing the assignment with you, and without viewing the teaching assistants comments. This will be the final grade on the assignment and additional regrading requests will not be entertained.

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.

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

Information about late or missed evaluations:

- Late assessments without accommodation will be subject to a late penalty 25% if >24 hours late, 50% if 24-48 hours late, and 100% of more than 48 hours late.
No assignments are worth less than 10%, so all accommodations must be sought from the academic councilors.

The biosafety, ethics, and lab math modules, as well as the mid-term and final reports must be completed to pass the course. Students will not be allowed to advance in the course if the biosafety, ethics and lab math modules are not completed on-time. If you do not complete the midterm and final report, you cannot pass the course.

If a student has been approved by the Academic Counselling 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 Counselling to carry a full course load for the term the incomplete course work is scheduled.

10. Communication:

- Students should check the OWL site every 24–48 hours
- Students should email their instructor(s) and teaching assistant(s) using email.
- Emails will be monitored daily; students will receive a response within 96 hours

11. Office Hours:

- Student hours will be held in-person or via Zoom, with these meetings booked via email.
- We may transition to in-person meetings if this can be safely implemented. Dr. Heit’s office is located in room H320, 3rd floor of the Health Sciences Addition. Dr. Zukowski’s office is located in room 3024, 3rd floor of the Dental Sciences Building.

12. Resources

- All resources will be posted in OWL
- Required textbook: A Brief Manual of Microbiological Techniques, 4th Edition. This will be available in the University Bookstore.
- You will be required to maintain a lab notebook, which you must provide.

13. 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.

Course materials cannot be sold/shared.
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).

14. 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 to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL 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.

15. Western Academic Policies and Statements

Absence from Course Commitments

A. Absence for medical illness:

Students must familiarize themselves with the Accommodation for Illness Policy.

There are no assignments worth less than 10%. Therefore, if you are unable to meet a course requirement for any work due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on Accommodation for Religious Holidays. All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

C. 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.

**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.

**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.

**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.

**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.

**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.

**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. Students will be able to view their results before the final submission. 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.

Course materials cannot be sold/shared.
16. 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, i.e., cell phones, tablets, cameras, 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., 74.4 becomes 74, and 74.5 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.

17. Support Services

The following links provide information about support services at Western University.

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


To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Academic Counselling (Science and Basic Medical Sciences)

Appeal Procedures

Registrarial Services

Student Development Services

Student Health Services

Course materials cannot be sold/shared.