

Department of Microbiology & Immunology  
3620G: Immunology Laboratory

Course Syllabus for Winter 2024



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   | Classes End           |             |
|---|-----------------------|-------------|
| Monday, January 8, 2024   | Monday, April 8, 2024 |             |
| * March 7, 2024: Last day to drop a second-term half course without penalty |                       |             |
| Reading Week  | Study day(s)          | Exam Period |
| February 17–25  | April 9-10            | April 11-30 |

3. Contact Information



| Instructors | Contact Information |
|-------------|---------------------|
|             |                     |
|             |                     |

| Laboratory Manager |
|--------------------|
|                    |

| Graduate Teaching Assistant(s) |
|--------------------------------|
|                                |
|                                |
|                                |
|                                |

## 4. Course Description and Design

### Delivery Mode: in-person

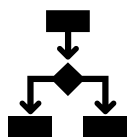
This course will familiarize students with a variety of practical techniques used in immunology research and diagnostic laboratories. The course applies basic principles acquired in Microbiology and Immunology 3300B.

Prerequisite(s): Biochemistry 2280A with a mark of at least 65%; Biology 2581A/B; Chemistry 2213A/B and Chemistry 2223B with marks of at least 60% in both courses; Microbiology and Immunology 2500A/B. Pre-or Corequisite(s): Microbiology and Immunology 3300B.

Extra Information: 1 lecture/tutorial hour, 3 laboratory hours.

Course Weight: 0.50

### Timetabled Sessions



| Section | Component | Days | Time | Location |
|---------|-----------|------|------|----------|
| 001     | Lecture   |      |      |          |
| 002     | Lab       |      |      |          |
| 003     | Lab       |      |      |          |

- Attendance at lectures and laboratories is mandatory
- Students may be asked to attend follow-up laboratory sessions to process samples or collect data

All course material will be posted to OWL: <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](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

## 5. Learning Outcomes



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

- Gain an understanding and practical experience performing common methodologies in immunology;
- Understand the structure of primary scientific articles;
- Develop advanced scientific writing skills; and
- Give, receive, and integrate peer feedback to improve scientific writing.

## 6. Course Content and Schedule



| Week | Dates          | Lecture   | Lab  | Follow up Lab | Instructor |  |
|------|----------------|---|--|---------------|------------|--|
| 1    | Jan 8 - 14     | Course Introduction & Expectations                            | Technical Skills & Scientific Writing                        | –             |            |  |
| 2    | Jan 15 - 21    | TLR Activation and Signaling                                  | Activation of Macrophages by LPS                             | –             |            |  |
| 3    | Jan 22 - 28    | Western Blot (Part 1) & qPCR Primer Design                    | SDS-PAGE & Primer Design                                     |               |            |  |
| 4    | Jan 29 - Feb 4 | Western Blot (Part 2) & TNF Bioassay                          | Immunoblotting & TNF Bioassay                                | –             |            |  |
| 5    | Feb 5 - 11     | RT-qPCR (Part 1)  | Preparation of mRNA & Primer Efficiency Test                 | –             |            |  |
| 6    | Feb 12 - 16    | RT-qPCR (Part 2) & Agarose Gel Electrophoresis + Densitometry | Agarose Gel Electrophoresis, qPCR Analyses, & Densitometry   | –             |            |  |
| –    | Feb 17 - 25    | SPRING READING WEEK   |  |               |            |  |
| 7    | Feb 26 - Mar 3 | Animal Ethics & Regulations                                   | Animal Training & Primary Immunization                       | –             |            |  |
| 8    | Mar 4 - 10     | Antibody Generation & Purification                            | Ammonium Sulfate Precipitation & Ion Exchange Chromatography | –             |            |  |
| 9    | Mar 11 - 17    | Serological Tests: Part 1                                     | Immunoelectrophoresis<br>Prepare OVA/alum + Booster shot     |               |            |  |
| 10   | Mar 18 - 24    | Serological Tests: Part 2                                     | Blood Collection & ELISA                                     |               |            |  |
| 11   | Mar 25 - 31    | T Cell Proliferation Assays                                   | Isolate splenocytes & MTT assay                              |               |            |  |
| 12   | Apr 1 - 7      | Reflection & Wrap-up  | Writing & Study Retreat                                      | –             |            |  |

No lecture on April 8th, 2024.

## 7. Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can participate during lecture and laboratory sessions
- Students can also participate by interacting with their peers and instructors on MS Teams

## 8. Evaluation

Below is the evaluation breakdown for the course; all times are listed in Eastern Time and any deviations will be communicated.

| Assessment   | Format   | Weight                       | Due Date/Time |
|--|--|------------------------------|---------------|
| Preparation<br>Participation<br>Professionalism<br>Performance | Various  | 10%                          | Ongoing       |
| Safety, Conduct,<br>Ethics, and Lab Math                       | Online Module                                      | Pass/Fail                    |               |
| Animal Training<br>Modules                                     | Online Module                                      | Pass/Fail                    |               |
| Writing Workshops  | Introduction<br>Abstract<br>Figures<br>Lay Summary | 2.5%<br>2.5%<br>2.5%<br>2.5% |               |
| Assignment 1   | Written  | 10%                          |               |
| Assignment 2   | Written  | 10%                          |               |
| Lab Report 1   | Written  | 20%                          |               |
| Lab Report 2   | Written  | 20%                          |               |
| Final Exam   | Written  | 20%                          |               |

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- All assignments are due at 11:55 p.m. 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
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have unlimited submissions to Turnitin
- 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 assessments or quizzes 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.

|          |   |
|----------|---|
| 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%/day)
- 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 at the discretion of the Course Coordinator
- Late assessments with accommodation should be submitted within 24 hours after the end of the accommodation period
- All Lab Reports must be completed to pass the course—if work is incomplete and accommodation is approved by Academic Counselling, the student may receive INC standing

**INC (Incomplete Standing):** 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.

**SPC (Special examination):** If a student has been approved by the Academic Counselling 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 Counselling 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 site and MS Teams every 24–48 hours
- Students should contact their instructor(s) using OWL Messages
- Students should contact their Teaching Assistant using MS Teams
- Communication channels will be monitored daily; students will receive a response in 24–48 hours
- This course will use MS Teams for group discussions
- Students should post all course-related queries in MS Teams so that everyone can access the questions and responses

## 10. Office Hours:



- Office hours will be held in-person or remotely using Zoom
- Office hours can be booked by contacting instructors via OWL Messages
- Office hours will be individual

## 11. Resources



- All lecture slides, videos, and other course materials will be posted on OWL
- All lab videos, lab manual chapters, data sets, and assessment instructions/rubrics will be posted on OWL or MS Teams

## 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

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 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.

## 14. Western Academic Policies and Statements

### Absence from Course Commitments

A. Absence for medical illness:

Students must familiarize themselves with the [Accommodation for Illness Policy](#).

A student seeking academic accommodation for any **work worth less than 10%** must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline. Instructors will use good judgment and ensure fair treatment for all students when considering these requests. You are not required to disclose details about your situation to your instructor; documentation is not required in this situation, and you should not send any pictures to your instructor.

If you are unable to meet a course requirement for any **work worth 10% or greater** 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](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](http://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

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

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)