



# **Microbiology and Immunology for Nursing Students**

## **N3820a**

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## **Microbiology and Immunology for Nursing Students N3820b - Calendar description:**

The host immune response to microorganisms, the biology of microorganisms with disease-causing potential and clinical aspects of infectious diseases will be covered. The role and professional attitude of the nurse in prevention, detection and control of infections will be emphasized.

### **Course Learning Outcomes:**

After completing this course, students will be able to:

1. Describe the key elements of the human immune system
2. Explain when why and how the immunological response to infectious diseases is activated
3. Explain the mechanisms of allergic reactions, autoimmune diseases, and vaccines
4. Identify the basic structural and biological characteristics of four main types of microorganisms: bacteria, viruses, fungi, and protozoa
5. Identify the most common microbial infections in various body systems (ie HEENT, respiratory, gastrointestinal, urinary, skin, reproductive systems) including epidemiology, prevention and control of transmission
6. Describe microbial disease transmission methods and ways in which nurses can prevent transmission of infectious diseases, including infection control procedures in health care settings
7. Identify the principles of specimen collection, detection, and diagnosis of infections
8. Choose the appropriate specimen and the method of collecting

### **Competencies for entry-level Registered Nurse practice (CNO, 2019) addressed in the course:**

- 1.21 Incorporates knowledge from the health sciences, including anatomy, physiology, pathophysiology, psychopathology, pharmacology, microbiology, epidemiology, genetics, immunology, and nutrition.
- 1.22 Incorporates knowledge from nursing science, social sciences, humanities, and health-related research into plans of care.
- 1.27 Implements evidence-informed practices for infection prevention and control.
- 7.4 Advocates for health equity for all, particularly for vulnerable and/or diverse clients and populations.
- 7.5 Supports environmentally responsible practice
- 7.8 Supports healthy Public policy and principles of social justice
- 7.11 Uses knowledge of population health, determinants of health, primary health care, and health promotion to achieve health equity.
- 7.14 Uses knowledge of health disparities and inequities to optimize health outcomes for all clients.
- 9.3 Engages in self-reflection to interact from a place of cultural humility and create culturally safe environments where clients perceive respect for their unique health care practices, preferences, and decisions.
- 9.6 Uses knowledge about current and emerging community and global health care issues and trends to optimize client health outcomes.

**How we will work together:**

A tone of respect and support between and among students and faculty members, diligent preparation, and active participation will be the basis of all classes and professional practice sessions. This will lead to an environment in which student learning can flourish.

Faculty will support students in the development of the knowledge and skills necessary for professional nursing practice by asking questions, providing examples, demonstrating techniques, and leading discussions.

Students will be required to complete all the preparation activities for each class and professional practice session, and to use their knowledge from their preparation to participate fully in class and professional practice activities. All students are expected to share ideas to advance their own and others' learning, ask questions, and listen attentively. Attendance at all classes is necessary and professional practice sessions is mandatory, as are respectful interaction and the avoidance of actions that will interfere with the learning of others.

N3820b Microbiology and Immunology Topic Outline			
Week	Topic		Course Learning Outcomes
September 9 <sup>th</sup>	Orientation to course Introduction to Immune system Host pathogen interaction basics		1 & 2
September 16 <sup>th</sup>	Innate Immunity versus Adaptive Immunity		1
September 23 <sup>rd</sup>	Allergies  Autoimmune diseases		1 & 3
September 30 <sup>th</sup>	Vaccines		1 & 3
October 7 <sup>th</sup>	Basic Taxonomy, structure, and characteristics of Pathogens		1 - 3
October 14 <sup>th</sup> -18 <sup>th</sup>	<b>Reading Week</b>		

October 21 <sup>st</sup>	Vector Borne Diseases		4, 5, 6, 7, 8
<b>October 26<sup>th</sup></b>	<b>MIDTERM IN PERSON</b>	<b>Weeks 1-5 inclusive</b>	
October 28 <sup>th</sup>	Microbial infections of the Upper and Lower Respiratory system		4, 5, 6, 7, 8
November 4 <sup>th</sup>	Microbial infections of the Gastrointestinal system		
November 11 <sup>th</sup>	Microbial infections of the Genitourinary system		4, 5, 6, 7, 8
November 18 <sup>th</sup>	Microbial infections of the Dermatological system		4, 5, 6, 7, 8
November 25 <sup>th</sup>	Nosocomial infections and Antimicrobial Stewardship		4, 5, 6, 7, 8

### **Required Textbooks:**

There are no required textbooks for this course. Any readings related to course content will be posted in OWL in the corresponding week.

Many students have shared that the following YouTube channels have assisted in their learning as well, however the content developed and shared by the course professor is what is considered examinable.

<https://www.youtube.com/@Medinaz>

<https://www.youtube.com/@ATPPP>

<https://www.youtube.com/@ProfessorDaveExplains>

<https://www.youtube.com/@osmosis>

### **Opportunities to Demonstrate Learning**

#### **Mid-term Exam**

**October 26<sup>th</sup> – IN PERSON (time and place to be approved by Exam Central)**

**Value 35% of the course grade**

The purpose of this exam is to provide an opportunity for the student to apply knowledge of all concepts discussed in the course to date for week 1-5 inclusive. This examination will consist of multiple choice questions only.

#### **End of Course Exam**

**December Exam Period – IN PERSON**

**Value 40% of final course grade**

The purpose of this exam is to provide an opportunity for the student to apply knowledge of concepts discussed in the course AFTER the midterm content (ie Vector borne disease module to nosocomial infection module inclusive) This examination will consist of multiple choice questions and will be held IN PERSON.

#### **Public Health Ontario Infection Prevention and Control Modules 1-7**

**Due October 11<sup>th</sup> 6 pm**

**Value 15% of Final Grade (3% for module 1, 2% each module 2-7)**

**Description: Students are to enroll and complete the Infection Prevention and Control modules FOR HEALTH CARE WORKERS 1-7 found at the following website:**

**<https://www.publichealthontario.ca/en/Education-and-Events/Online-Learning/IPAC-Courses>**

Create and account (for free) and enrol in modules 1-7. For the 7<sup>th</sup> module you can decide what setting you would like to complete (ie. LTC, Acute care, or Primary care), only one settings for module 7 needs to be completed.

Upon completing each e-learning modules, download the certificates of completion , take a screen shot of each one individually and submit each of them to the Assignments tab in Brightspace. Please save each document with the appropriate title of the module completed (ie "Module 1 Chain of Transmission and Risk Assessment." All 7 certificates can be uploaded under the same assignment tab and **MUST** be uploaded by 6 pm. Late submissions will not be accepted.

**\*\*Completion of these modules may be something you would like to put on your resume for the future, so I would save the certificates\*\***

### **Peer-Wise Multiple choice generation and participation**

**Due by end of term (December 4th at 2355)**

**Value 10% of Final course grade (5% for question creation, 5% for question response)**

**Due: Throughout term, closes Dec 4<sup>th</sup> at 2355**

**We will be using PeerWise as a place for you to create, share and evaluate assessment questions with your classmates. *Your grade will be based on the number of questions you create – as well as your review of questions created by your peers.***

For full instructions on accessing our course in Peerwise, please navigate to the **Peerwise** tab on OWL.

To access our course, "Microbiology 2024 Fall CTF", you will need to enter two pieces of information:

- 1) Course ID = **27449**
- 2) Identifier = **Please enter your identifier for this course (Your identifier is your UWO student number)**

**\*\*Students in this course must achieve a minimum of 65% average between the midterm and final exam (excluding all other course evaluations) to be successful in this course\*\***

***Summary of Opportunities to Demonstrate Learning in N3820a***

<b>OPPORTUNITIES TO DEMONSTRATE LEARNING</b>	<b>COURSE LEARNING OUTCOMES ADDRESSED</b>	<b>VALUE</b>	<b>DUE DATE</b>
1. Mid-term Exam	1-3	35%	October 26 <sup>th</sup> Place and time to be determined <b>IN PERSON</b>
2. Public Health Ontario: Infection Prevention and Control Online Learning Modules 1-7	1, 2 & 6	15% (3% for module 1, 2% each for modules 2-7)	<u>All</u> Module certificates to be submitted by <b>Friday October 11<sup>th</sup> at 6 pm</b>
3. Peer Wise MC question participation	1-8	10%	By last day of term (Dec 4 <sup>th</sup> at 2355)
4. Final Written Exam	1-8	40%	December Exam Period as determined by the registrar <b>IN PERSON</b>

### **OWL Forum and Course Zoom Drop-Ins**

Each week you are invited to post any questions you have about the weekly lecture content by the end of the week. Everyone is invited to participate in answering questions, I will moderate and provide clarification where needed. Otherwise individual office hours can be requested via OWL.

### **Policies**

All policies related to assignments are in the Undergraduate BScN Programs Manual on the [Undergraduate Student Information site](#) .

### **Assignments and Exams**

Please refer to the Undergraduate BScN Programs Manual for UWO academic guidelines for penalties for late assignments, re-grading of assignments, and the protocol for missed mid-term



or final exams. The Undergraduate BScN Programs Manual is found at [School of Nursing Policies](#)

### *Support Services*

There are various support services around campus and these include, but are not limited to:

1. Academic Support and Engagement - <http://academicsupport.uwo.ca>
2. Wellness and Well-being - <https://www.uwo.ca/health/>
3. Registrar's Office -- <http://www.registrar.uwo.ca/>
4. Ombuds Office -- <http://www.uwo.ca/ombuds/>

The websites for Registrarial Services (<http://www.registrar.uwo.ca>), and the same for affiliated university colleges when appropriate, and any appropriate Student Support Services (including the services provided by the USC listed here: <http://westernusc.ca/services/>) and the Student Development Services, should be provided for easy access.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://www.uwo.ca/health/>) for a complete list of options about how to obtain help.

### **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).

### **Student Code of Conduct**

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed and set out the disciplinary procedures that the University will follow. For more information, visit <https://www.uwo.ca/univsec/pdf/board/code.pdf>

### **Attendance**

Students are expected to demonstrate professional responsibility through regular attendance at, and participation in, all course learning activities. Much of the learning that takes place is a result of preparation and engagement with the material, as well as active dialogue with colleagues and faculty. Students are expected to organize their schedules such that weekly preparation for class is completed, and classes are attended, with consistency.

**Attendance for clinical learning experiences is mandatory.** Students missing more than 2 labs, **regardless of the reason**, will be given an unsuccessful course outcome. Students **will not** receive a written warning of their absences. The student will be notified of an unsuccessful course outcome by the course coordinator following the third absence from lab. Please visit the SON SharePoint site for further information about this and other school policies:

[Undergraduate Program Site](#)

### *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), when there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period), or when timed assessments (e.g., quizzes) are available over an extended period of time (e.g., when you are given a 72 hour time period to start – and finish – the assessment).

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 Examination dates. The Faculty of Health Sciences has set School-specific dates for these Special Examinations. Please speak with your instructor about the date on which the Special Examination for this course will be held.

### *Academic Offences*

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following

website: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

### *Plagiarism*

Student work is expected to be original. Plagiarism is a serious academic offence and could lead to a zero on the assignment in question, a zero in this course, or your expulsion from the university. You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging that the work belongs to him/her. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. All papers may 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 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 ([www.turnitin.com](http://www.turnitin.com)).

### *Use of Artificial Intelligence for the Completion of Course Work*

Within this course, you may only use artificial intelligence tools (e.g., "ChatGPT") in ways that are specifically authorized by the course instructor. All submitted work must reflect your own thoughts and independent written work.

### *Re-submission of Previously Graded Material*

Without the explicit written permission of the instructor, you may not submit any academic work for which credit has been obtained previously, or for which credit is being sought, in another course or program of study in the University or elsewhere.

### *Use of Statistical Pattern Recognition on Multiple Choice Exams*

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.

## **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 their official university address is attended to in a timely manner. Students are further expected to attend to announcements presented through Brightspace, and to read emails generated in this way.

## **Use of Electronic Devices**

### *During Exams*

Unless you have medical accommodations that require you to do so, or explicit permission from

the instructor of the course, you may not use any electronic devices (e.g., cell phones, tablets, cameras, smart glass, smart watches, or iPods) during ANY tests, quizzes, midterms, examinations, or other in-class evaluations. **These devices MUST either be left at home or with your belongings at the front of the room. They MUST NOT be at your test/exam desk or in your pocket. Any student found with a prohibited device will receive an automatic grade of zero on the test or exam.**

### *During Lectures and Tutorials*

Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class.

### **Brightspace**

All course material will be posted to OWL Brightspace: <https://westernu.brightspace.com/>. If students need assistance with OWL Brightspace, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the [Western Technology Services Helpdesk](#) online or by phone at 519-661-3800 or ext. 83800 for technical support. 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.

### **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. Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.

### **Contingency Plan for an In-Person Class Pivoting to 100% Online Learning**

In the event of a situation that requires this course to pivot to online content delivery, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on Brightspace for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

### **Online Proctoring**

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring

website at: <https://remoteproctoring.uwo.ca>.

### **Social Media**

Students who post information on social media related to their clients and/or laboratory experiences will be reported to the Associate Dean of Health Sciences as this demonstrates a breach of client privacy and confidentiality and violates the Student Code of Conduct. Such behavior may compromise a student's standing in the program.

### **Land Acknowledgement**

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. With this, we respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers. We acknowledge historical and ongoing injustices that Indigenous Peoples (e.g. First Nations, Métis and Inuit) endure in Canada. We accept that as Registered Nurses and an employees of a public institution, we have the responsibility to contribute toward revealing and correcting miseducation as well as renewing respectful relationships with Indigenous communities through our teaching, research and community service.