

Pathology and Laboratory Medicine
Pathology 4400B – Environmental Pathology

Course Outline for Winter 2026

This course takes place at Western University, which is located on the traditional territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak, and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.

Students who are in emotional and/or mental distress should refer to <https://www.uwo.ca/health/> for a complete list of options about how to obtain help.

1. Technical Requirements:



Stable internet connection



Laptop or computer

2. Important Dates:

Classes Begin	Reading Week	Classes End	Study day(s)	Midterm Exam	Final Exam Period
January 5, 2026	February 14–22, 2026	April 9, 2026	April 10 & 11, 2026	Wednesday, February 25, 2026	April 12–30, 2026 (exact date TBD)

January 13, 2026: Last day to add or drop a Winter 12-week course

March 30, 2026: Last day to withdraw from a Winter 12-week course without academic penalty

3. Contact Information

Course Coordinators	Contact Information
Dr. Ivan Stevic	
Dr. Matthew Nichols	

Instructor(s)	Contact Information

4. Course Description and Design

Delivery Mode: The class will be delivered synchronously, in person. Lecture material will be posted to OWL.

This course will discuss important factors surrounding the pathology of occupational and environmental diseases, including information on recent developments and basic mechanisms involved in these diseases and how toxins may affect human physiology. Recognition of occupational and environmental diseases, early diagnosis, mechanisms of cell injury and regeneration, and the effects of a wide variety of toxins, toxic drugs, chemicals and UV and ionizing radiation are included.

Prerequisite(s): Pathology 3500 with a mark of at least 70% or the former Pathology 3240A and 3245B with a minimum mark of 70% in each.

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

Timetabled Sessions

Component	Date(s)	Time
Lecture:	Mondays	11:30 AM to 1:20 PM

- In-person attendance in lectures is required/mandatory
- Recordings of lectures will not be provided
- Missed/late work will be subject to late penalties

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

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

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

5. Learning Outcomes

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

- Overall knowledge of ecosystem health and disease caused by agents that include chemical and physical factors, viruses and bacteria.
- Overall mechanism of cellular injury by environmental factors.
- Gene and environment interactions causing diseases.
- Some methodological aspects for the determination of xenobiotics in the body.

- Pathogenesis of xenobiotic-induced diseases of the liver, the kidneys, the lungs, the nervous and the endocrine systems.
- Mechanisms of injuries by ionizing and non-ionizing radiation.
- Emerging and re-emerging viral diseases.
- Zoonotic bacterial diseases.

6. Course Content and Schedule

DATE	TIME	TOPIC	LECTURER
Monday, January 5, 2026	11:30am-1:30pm	Course Introduction. An Overview on the Mechanism of Cellular Injury by Environmental Factors	Dr. M. Nichols
Monday, January 12, 2026	11:30am-1:30pm	Environment and kidney diseases	Dr. I. Stevic
Monday, January 19, 2026	11:30am-1:30pm	Heavy metals poisoning: clinical and analytical aspects	Dr. M. Nichols
Monday, January 26, 2026	11:30am-1:30pm	Environment and liver diseases	Dr. C. Tran
Monday, February 2, 2026	11:30am-1:30pm	Diagnostic aspect of poisoning by chemicals	Dr. M. Nichols
Monday, February 9, 2026	11:30am-1:30pm	The Battle Against Emerging & Re-Emerging Viral Diseases	Dr. M. Quinones-Mateu
Friday, February 13, 2026		Assignment Questions Posted in OWL	
FEBRUARY 14-22, 2026		READING WEEK	
Monday, February 23, 2026	11:30am-1:30pm	Environmental Pathology of Allergy	W. Al Jawhri
Wednesday February 25, 2026	7:00-9:00pm	MIDTERM EXAM (3M Centre 3250)	
Monday, March 2, 2026	11:30am-1:30pm	Environment and Gut Microbiome	Dr. K. Al
Monday, March 9, 2026	11:30am-1:30pm	Environmental Effects on the respiratory system	Dr. M. Cecchini
Friday, March 13, 2026		Assignments due in OWL	
Monday, March 16, 2026	11:30am-1:30pm	Biological Effects of Environmental Exposure to Ionizing Radiation	Dr. M. Fox
Monday, March 23, 2026	11:30am-1:30pm	Environmental Effects on the Nervous System	Dr. Q. Zhang
Monday, March 30, 2026	11:30am-1:30pm	Environmental Pathology of the Endocrine Systems	Dr. A. Rutledge
Monday, April 6, 2026	11:30am-1:30pm	Zoonotic Bacterial Diseases	Dr. F. Olea Popelka
April 12-30, 2026 (exact date TBD and location TBD by University)		FINAL EXAM PERIOD	

7. Participation and Engagement

- Students are expected to participate and engage with content as much as possible
- Students can participate during live synchronous sessions
- Students can also participate by interacting in the forums with their peers and instructor

8. Assessment and Evaluation

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

Assessment	Format	Weighting	Due Date	Flexibility
Quizzes	Multiple Choice	20%	Respective Fridays after each lecture	2 worse quizzes will be dropped from final calculation of quiz grade
Midterm Exam	Multiple Choice and/or Short Answer	30%	Wednesday, February 25, 2026	Not applicable
Final Exam	Multiple Choice and/or Short/Long Answer	30%	April 12–30, 2026 (exact date TBD)	Not applicable
Assignments	Short/Long answer	20%	Friday, March 13, 2026	72 hours, see below flexibility statement

- Quizzes will be published on Tuesdays of the respective week and are due on the Friday at 11:55 pm EST of the same week unless otherwise specified.
- Quizzes are linear, time limited. Once the quizzes are opened there will be 30 minutes to complete the quiz. The quiz is one attempt only, they cannot be reopened. Quizzes will be marked automatically.
- Students must work independently on quizzes, assignments and exams to avoid academic dishonesty.
- All assignments are due at 11:55 pm EST unless otherwise specified.
- Written assignments will be submitted to Turnitin (statement in policies below).
- Students will have unlimited submissions to Turnitin.
- 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.

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:

- Midterm Exam
 - There is no make-up midterm exam for this course. If a midterm exam is missed, students must seek academic consideration through academic counselling.
 - If academic consideration is documented, the weight of the midterm exam will be shifted to the final exam.

Information about flexibility in assessment

- Flexibility in assessment has been applied to this course (**quizzes and assignment**); therefore, academic consideration requests may be denied on the assessments where flexibility is included
- This course has up to 12 quizzes. For flexibility in assessment of students by **quizzes**, we will drop the 2 worse quizzes when calculating the final quiz grade. Academic consideration will not be granted for missed quizzes. Students will receive a grade of zero for any missed quizzes.
- This course employs flexible deadlines for **assignments**. The assignment deadlines can be found above in the course outline. Students are expected to submit the assignment by the deadline listed. Should illness or extenuating circumstances arise, students are permitted to submit their assignment up to 72 hours past the deadline without a late penalty. Should students submit their assessment beyond 72 hours past the deadline, a late penalty of 10% per day will be subtracted from the assessed grade. Requests for academic consideration supported by documentation must be submitted within 48 hours of the original deadline. The instructor reserves the right to deny such academic considerations, given the deadline flexibility provided. If you have a long- term academic consideration or an accommodation for disability that allows greater flexibility than provided here, please reach out to your instructor at least one week prior to the posted deadline.

General information about assessments

- All assignments are due at 11:59PM 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
- Rubrics will be used to evaluate assessments
- 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
- Assessment re-grading could result in the mark, increasing, decreasing, or remaining the same
- Prior to the filing of a written request for relief, students must attempt to resolve the concern regarding a mark or grade through informal consultation with the instructor. If the student is dissatisfied with the decision of the instructor or does not receive a decision from the instructor, a written request for relief must be submitted to the Department Chair within three (3) weeks from the date that the mark was issued.

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 accommodation will be subject to a late penalty of 10%/day.
- Late assessments with accommodation should be submitted within 24 hours of the accommodated date (e.g., originally due on Monday at 11:59 pm; 72 hours accommodation was approved; new deadline is Thursday by 11:59 pm).
- The weight of a missed assessment will be transferred to the final exam.
- The course does not provide make-up assessments. Make-up assessments are at the discretion of the course coordinator(s). A student may receive an INC or SPC in the course for missed assessments/exams.
- A grade of 50% or higher must be achieved to pass the course.

INC (Incomplete Standing): If a student has been approved by the Academic Advising Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned, which could impact program progression. 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 for the final exam or the student misses the makeup for the final exam for reasons approved by the Academic Advising Office, the student will write the exam the next time the course is offered, which could impact program progression. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Definitions of 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) using [email, MS Teams, etc.]
- Emails will be monitored [daily]; students will receive a response in 24–48 hours
- This course will use [e.g., discussions on Brightspace, MS Teams, etc.]
- 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 will be held by TA's, the hours will be determined by the TA(s) and posted on the course forum
- Office hours by lecturers will not occur. Students may meet with the individual lecturer by phone, zoom/Microsoft teams, or in person by scheduling an appointment

11. Course Materials

- All resources will be posted on OWL Brightspace

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/upload (e.g., Must Knows Facebook group, Course Hero, Chegg, ChatGPT, etc.)
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments

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

xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

13. How to Be Successful in this Class

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

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

14. Western Academic Policies/Procedures and Statements

A. Absence from Course Commitments

Medical, Compassionate, or Extenuating Circumstances

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). See above.

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.

Policy: [Academic Consideration – Undergraduate Students in First Entry Programs](#)

Procedures: [Student Medical Certificate](#)

Religious Holidays

Students should review the policy for Accommodation for Religious Holidays (Appendix 1). 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.

Policy: [Accommodation for Religious Holidays](#)

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.

Policy: [Definitions of Types of Examinations](#)

B. Academic Appeals and Scholastic Offences

Students can file a **request for relief from academic decisions** if the request is based on one or more grounds listed in the policy. Requests for relief generally fall into three categories, which are also listed in the policy. All requests for relief must be supported by evidence. A request for relief from academic decisions process was formally referred to as an appeal. Refer to the policy and procedures about further details and timelines.

Policy: [Requests for Relief from Academic Decisions](#)

Procedures: [Undergraduate Student Academic Requests for Relief](#)

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a scholastic offence.

Policy: [Scholastic Offences](#)

Procedures: [Undergraduate Scholastic Offences](#)

Students may **appeal** some academic and scholastic disciplinary decisions by a Dean or their designate, to the Senate Review Board Academic (SRBA).

Policy: [Senate Review Board Academic Appeals](#)

Procedures: [Senate Review Board Academic Appeals](#)

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.

Policy: [Academic 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.

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.

Policy: [Undergraduate Course Credit](#)

Procedures: [Discovery Credits](#)

F. Statement on the Use of Electronic Devices

Electronic devices (cell phones, tablets, cameras, smart glasses, smart watch, iPod, ear buds, etc.) will not be allowed during tests and examinations (see section 15. BMSIE Academic Policies and Statements).

G. Statement on the Use of Generative Artificial Intelligence (AI)

Use of Artificial Intelligence (AI) Text Generators and Platforms is not permitted in this course. If a student is found to be using AI platforms for their assessments, a grade of zero will be given on the assessment.

H. Turnitin and other similarity review software

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.

Policy: [Evaluation of Academic Performance](#)

15. BMSUE Academic Policies and Statements

A. 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, iPod, ear buds, etc. 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 and this will be documented as a Scholastic Offence. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

B. Copyright and Audio/Video Recording Statement

Course materials produced by faculty are 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.

C. 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** in this course are rounded to the nearest whole number based on the first decimal place. For example, a grade of 74.49 or lower will be rounded to 74, whereas 74.50 or higher will be rounded to 75.

Marks WILL NOT be arbitrarily increased to the next grade or GPA, e.g., a 79 will NOT be increased to an 80, and 84 WILL NOT be increased to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for arbitrary mark increasing will be denied. Marks will be assigned based on assessments in the syllabus and no extra work or tasks will be assigned to increase a mark.

Course grade rounding provisions, as described above, differ from cumulative and term averages. Cumulative and term averages will be calculated to two decimal places and rounded to the nearest whole number with .45 rounded up, for the purposes of admission to and progression in modules, scholarship retention, and Dean's Honour List.

Policy: [Marks/Grades; Definitions of Grades; Grading Scale for Undergraduate Students](#)

16. Support Services

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 the following website:

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.

Other important links:

- [Academic Advising \(Science and Basic Medical Sciences\)](#)
- [Learning Development and Success](#)
- [Office of the Registrar](#)
- [Wellness & Wellbeing](#)
- [Western USC Services](#)

Appendix 1: Western University Academic Policies and Procedures

The policies and procedures listed in this syllabus are outlined in the table below. In some cases, a policy does not include an accompanied procedures document.

Academic Policy	Name of Policy/Procedure	Links
General Policy	Marks/Grades; Definitions of Grades; Grading Scale for Undergraduate Students	Policy
General Policy	Structure of the Academic Year	Policy
Registration, Progression, Graduation	Course Numbering Policy, Essay Courses, and Hours of Instruction	Policy
Registration, Progression, Graduation	Undergraduate Course Credit	Policy • Procedures
Examinations	Definitions of Types of Examinations	Policy
Examinations	Evaluation of Academic Performance	Policy
Examinations	Examination Conflicts	Policy
Rights and Responsibilities	Academic Accommodation for Students with Disabilities	Policy
Rights and Responsibilities	Accommodation for Religious Holidays	Policy

Rights and Responsibilities	Policy on Academic Consideration – Undergraduate Students in First Entry Programs	Policy • Procedures
Rights and Responsibilities	Requests for Relief from Academic Decisions (Undergraduate)	Policy • Procedures
Rights and Responsibilities	Requests for Relief from Academic Decisions (Graduate)	Policy • Procedures
Rights and Responsibilities	Scholastic Offences (Undergraduate)	Policy • Procedures
Rights and Responsibilities	Senate Review Board Academic Appeals	Policy • Procedures