

Department of Physiology and Pharmacology
Digestion and Related Metabolism: PhysPhrm 4100A

Course Outline for Fall 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.

With this land acknowledgement, we accept the responsibility as a public institution to correcting miseducation as well as renewing respectful relationships with Indigenous communities through our teaching, research and community service.

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)	Exam Period
September 9	October 10-18	December 9	December 10	December 11–22

September 30, 2026: National Day for Truth and Reconciliation; non-instructional day

September 17, 2026: Last day to add or drop a Fall 12-week course

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

3. Contact Information

Course Coordinator	Contact Information
Dr. Van Lu	Email: vlu24@uwo.ca

Instructor(s) or Teaching Assistant(s)	Contact Information
Dr. Emily Day	Email: eday9@uwo.ca
Jonathan Nguyen (TA)	Email: jnguy253@uwo.ca

4. Course Description and Design

Delivery Mode: in-person

Pre-requisite: Physiology 3120

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
Lectures, Small Group Activities, Quizzes, Debates, Group Presentations [in-class]	Wednesday	2:30 – 4:20 PM

- ☒ Asynchronous pre-work must be completed 1 day prior to sessions
- ☒ Attendance at sessions is required
- ☒ Missed work should be completed within 72 hours of the original deadline

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

This course explores, in depth, concepts of gastrointestinal digestion, absorption and nutrient utilization, including hepatic and pancreatic physiology. Particular attention will be given to current and emerging therapeutic strategies for the treatment of metabolic diseases such as diabetes, obesity and dyslipidemia. The course will be presented as a series of lectures and in-class small group learning activities including debates on current policy, discussions on primary research articles, and evaluation of drug safety. Students will be evaluated through a final group project, mid-term exam, and a final exam.

Specific Course Objectives: After completing this course, students will be able to:

- Detail the functions of the gastrointestinal tract, pancreas and liver and compare the molecular mechanisms utilized in the control of glucose and lipid metabolism.
- Integrate concepts of physiological regulation of glucose and lipid metabolism with those of dysregulation during relevant pathologies and disease states.
- Describe the mechanisms of action of current and emerging therapies for the treatment of metabolic diseases, and propose treatment strategies for metabolic diseases.
- Recognize other factors involved in the delivery of effective health care by understanding the impacts of sex, race, and socioeconomic status on the diagnosis and treatment of metabolic diseases, and share this information with a broad audience.

6. Course Content and Schedule

Week	Dates	Topic	Instructor
1	Sept 9	Course introduction Module 1: A Journey Through the Gastrointestinal Tract	VL
2	Sept 16	Module 2: Physiology of Gut Enteroendocrine Cells Group Exercise: Safety profile GLP-1 mimetics	VL
3	Sept 23	Quiz #1 on Module 1 & 2 Module 3: Pancreatic Exocrine and Endocrine Function	VL
4	Sept 30	National Day for Truth and Reconciliation (non-instructional day)	
5	Oct 7	Module 4: Liver Physiology and Metabolism I Paper discussion	ED
6	Oct 12–18	Reading Week (starts October 10th 12:01 AM)	
7	Oct 21	Quiz #2 on Module 3 & 4 Module 5: Liver Physiology and Metabolism II	ED
8	Oct 28	Midterm Exam (in class)	
9	Nov 4	Module 6: Integrative Regulation of Metabolism Debate #1	VL
10	Nov 11	Module 7: Influence of the Gut Microbiota in Metabolic Health and Disease Debate #2	VL
11	Nov 18	Module 8: Pathophysiology and Pharmacotherapeutic Strategies for Type 1 Diabetes Debate #3	VL
12	Nov 25	Module 9: Pathophysiology and Pharmacotherapeutic Strategies for Type 2 Diabetes and Metabolic Syndrome	VL
13	Dec 2	Group Presentations	VL, ED
14	Dec 9	Group Presentations	VL, ED

7. Participation and Engagement

- ☒ Students are expected to participate and engage with content as much as possible
- ☒ Students are expected to participate during in-class, small group activities
- ☒ Students are expected to work professionally outside of class to deliver their final group project. Students are expected to contribute equally to all aspects of their final deliverables (group presentation, infographic poster).
- ☒ Students can participate during in-class sessions by asking or answering questions
- ☒ Students can participate by interacting in the forums with their peers and instructors

8. Assessment and Evaluation

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

Assessment	Format	Weighting	Due Date	Flexibility
Quizzes (2) [in-class]	Written: Short answer	4% (2% each)	Sept 23, Oct 21	Transfer weight of one missed quiz to the midterm exam If two quizzes are missed, an alternative assessment (Essay assignment), due Oct 24 by 5PM
Midterm Test [in-class]	Written: Short answer and Essay covering Modules 1-5, 1h 40min	30%	Oct 28	Not applicable: designated assessment Make-up exam date: Nov 3 (time & location TBA)
Debates (3) [in-class]	Oral: Small groups, mandatory participation Written: Individual reflections	6% (3% for presentation, 3% for written reflections)	Nov 4, Nov 11, Nov 18	Alternative assessment (Essay assignment), due within 72h of missed debate
Group Project [in-class]	Poster: Infographic poster Oral: Small group oral presentation, mandatory participation	25% (5% for infographic poster, 10% peer assessment, 10% presentation)	Poster: Nov 27 Presentation: Dec 2, Dec 9	Poster: 72h no late penalty Make-up presentation date: Jan 7, 2027 (time & location TBA)
Final Exam [in-person]	Written: Short answer and Essay, Cumulative (Modules 1-9), 3h	35%	December Exam Period	Not applicable

Designated Assessment: Instructors are permitted to designate one assessment per course per term as requiring supporting documentation to receive academic consideration. See below for information on academic consideration policy and missed course work the following assessment has been designated as requiring supporting documentation:

- **Midterm Test**, Oct 28, 2:30 – 4:10 PM

Information about flexibility in assessment

- ☒ Flexibility in assessment has been applied to this course; therefore, academic consideration requests may be denied on the assessments where flexibility is included

General information about assessments

- ☒ Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0
- ☒ Rubrics will be used to evaluate assessments and will be posted with the instructions
- ☒ A student might not receive the same grade as their group members if it is determined that the distribution of work was not equal
- ☒ After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days
- ☒ Assessment re-grading could result in the mark increasing, decreasing, or remaining the same. Re-grade requests for Midterm or Final exams will include a re-grading of the entire exam. Any additional over-compensation marks applied will be removed before re-grading and not re-applied.
- ☒ 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 Undergraduate 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:

- ☒ This course employs an alternative assessment for missed in-class quizzes or debates. The dates of the in-class assessments can be found above in Section 8 (Assessments). For quizzes and debates, students are expected to attend class and complete the assessment during the class session. In the case of approved academic consideration, students are permitted to transfer the weight of one quiz to the midterm exam. If two quizzes are missed, students must complete an alternative assessment, an essay assignment due 72h after the missed second quiz (deadline: Oct 24, before 5PM). If a student misses a debate, the student must complete an alternative assessment, an essay assignment due 72h after the missed debate. Should students submit their alternative assessment past the deadline, a late penalty of 20% 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.
- ☒ Alternative essay assignments will be released on OWL Brightspace at the end of class and students will have 72h to submit assignments through OWL Brightspace.
- ☒ Late assessments without academic consideration will be subject to a late penalty of 20%/day

- ☒ An assessment cannot be submitted after it has been returned to the class; a mark of 0 will be applied
- ☒ One make-up Midterm test will be offered on November 3, time and location TBD. If the make-up Midterm is missed with approved academic consideration, the weight of the Midterm exam will be transferred to the Final exam
- ☒ Make-up assessments may be a different format than the original assessment. This could include a strictly essay based exam, in contrast to a standard mixed short answer and essay format
- ☒ One make-up Group Presentation time will be offered on January 7, 2027, time and location TBD. An incomplete (INC) will be assigned until the assessment is completed. If the make-up Group Presentation is missed with approved academic consideration, the weight of the presentation will be transferred to the final exam
- ☒ The Final exam must be passed to pass the course.
- ☒ Only one special examination (see below) will be offered in January: One make-up Final exam will be offered (date, time and location TBD). If the make-up final exam is missed with approved academic consideration, the student will be withdrawn (see SPC below)

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. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Definitions of Types of Examinations](#) policy. If a student misses an SPC exam and is approved for academic consideration, they will be withdrawn from the course without academic penalty. If a student misses an SPC exam and is not approved for academic consideration, they will receive a grade of zero on the exam.

9. Communication

- ☒ Students should check the OWL Brightspace site every 24–48 hours
- ☒ Students should email their instructor(s) and teaching assistant
- ☒ Emails will be monitored daily; students will receive a response in 24–48 hours
- ☒ This course will use discussions forums on Brightspace
- ☒ Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

10. Office Hours

- ☒ Office hours will be held in-person or remotely using MS Teams, by appointment
- ☒ Office hours will be requested by email
- ☒ Office hours will be individual

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. 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.
4. Review notes and start studying course materials right away. This provides plenty of time to seek clarification from instructors, readily recall details on written assessments and integrate connections between lectures.
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 [Student Absence Portal](#). Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations

scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes) or there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the Student Medical Certificate or, where that is not possible, equivalent documentation by a health care practitioner.

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 Offenses

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.

Policy: [Course Numbering Policy, Essay Courses, and Hours of Instruction](#)

E. Statement on the Use of Electronic Devices

See Section 15A.

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

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

G. Turnitin and other similarity review software

All required 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 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](#).

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.

H. 15% Rule

At least three days prior to the deadline for withdrawal from a 1000- or 2000-level course without academic penalty, students will receive assessment of work accounting for at least 15% of their final grade. Generally, students can expect some form of feedback on their performance in a course before the drop date. In rare instances, at the Dean's discretion, an exemption can be issued, which also must be noted in the course syllabus. Deans should review exemptions on a course-by-course basis each time an exempted course is offered.

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 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 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