Schulich MEDICINE & DENTISTRY

Western Science

Bachelor of Medical Sciences (BMSc) Program

Physiology and Pharmacology

Physiology and Pharmacology Laboratory PP3000E

Course Syllabus for Fall/Winter 2023-2024

THRIVE together

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


Working microphone


Working webcam


Lab book

2. Important Dates:

Classes Begin	Reading Week	Classes End	Study day(s)	Exam Period
September 7	October 30–November 5	December 8	December 9	December 10–22

* November 30, 2022: Last day to drop a first-term full course without penalty

Classes Resume	Reading Week	Classes End	Study day(s)	Exam Period
January 8	February 17-25	April 8	April 9-10	April 11–30

3. Contact Information

Course Coordinator	Contact Information
Dr. Oana Birceanu	obircean@uwo.ca

Instructor(s) or Teaching Assistant(s)	Contact Information
Dr. Christina Vanderboor	cgodin2@uwo.ca
Hailey Hunter	hhunte@uwo.ca
Baurzhan (Baur) Negmetzhanov	bnegmetj@uwo.ca

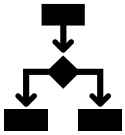
4. Course Description and Design

Delivery Mode: in person

Almost all our knowledge of physiology and pharmacology is based on the results of laboratory experiments. It was through carefully designed experiments that most of the information presented in lecture (Physiology 3120, 3140A and Pharmacology 3620) was obtained. The same experimental approach is being used to solve the many remaining mysteries about how the body works and how diseases are treated with medications. We believe that to thoroughly understand the science of physiology and pharmacology, one must understand the experimental basis. This course is targeted at learning the scientific method along with data analysis, which is applied in both disciplines of physiology and pharmacology. Therefore, the laboratory exercises are a fundamental part of the study of physiology and/or pharmacology.

Overall Objectives: These laboratory exercises will

1. illustrate the use of the scientific method, and the nature, complex and endless variability in scientific research.
2. demonstrate the physiological/pharmacological processes studied in class as they apply to a living organism or cell.
3. emphasize the limitations that exist in the methods used in scientific investigation and appreciate as science students, that one must continue to critically evaluate the material presented in lectures and textbooks.



Prerequisites: Biochemistry 2280A; either Chemistry 2213A or 2273A; one of Physics 1028A/B, 1301A/B or 1501A/B and one of Physics 1029A/B, 1302A/B or 1502A/B; and 1.0 course from: Applied Mathematics 1201A/B, 1413, Calculus 1000A/B or 1500A/B, Calculus 1301A/B or 1501A/B, Mathematics 1600A/B. A minimum average of 75% in the previous year is required. Open only to students who are registered in Years 3 or 4.
Corequisite(s): N/A
Antirequisites: The former Physiology 3130z or Pharmacology 3580z.
Pre-or Corequisite(s): Either Physiology 3120 or Pharmacology 3620.
Extra Information: 3 laboratory hours, 1.0 course.

Timetabled Sessions

Component	Date(s)	Time
In person	Section 1: Tuesday	9:30 a.m. – 12:30 p.m.
	Section 2: Tuesday	1:30 p.m. – 4:30 p.m.
	Section 3: Wednesday	1:30 p.m. – 4:30 p.m.

☑ **Asynchronous pre-work must be completed prior to synchronous and in-person sessions, as required (a schedule on OWL is set up for you by the instructor)**

☑ **Attendance at sessions is required**

☑ **We will use Microsoft Teams for this laboratory, to work together on large data sets and for virtual meetings with the instructor. Download the desktop app rather than using the web app for best performance.**

☑ **WHMIS certification is required from every student attending the laboratory**

☑ **TCPS2: CORE-2022 certification for working with human participants is recommended from every student attending the laboratory. The course can be accessed here: https://tcps2core.ca/welcome**

All course material will be posted to OWL: http://owl.uwo.ca. Recorded lectures can be accessed on Microsoft Teams. 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. Outcomes

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

- familiarize themselves with various experimental techniques (real-time quantitative PCR, enzymatic assays (end point and kinetic), western blots, cell culture, etc.)
- develop a hypothesis and design an experiment with appropriate controls to test the hypothesis
- organize, analyze and interpret scientific data, using appropriate experimental and mathematical tools
- select the correct statistical test and apply it to a given data set
- communicate experimental findings, data and concepts effectively to a diverse audience utilizing a range of formats such as laboratory reports, scientific posters and oral presentations
- work and learn in both individual and collaborative ways, with others of diverse abilities
- demonstrate an ethical approach to physiological and pharmacological research

6. Course Content and Schedule

Week	Dates	Topic	Instructors/Term test dates
1	Sept 4–8	Rotation 1-Week 1: No class	
2	Sept 11–15	R1-W2: Welcome and intro lecture; Q&A; Lab book activity; Microscopy techniques	Dr. Birceanu Hailey Hunter
3	Sept 18-22	R1-W3: Journal club; stats intro + mini-intro to RStudio; lay summary how-to	"
4	Sept 25–29	R1-W4: Pipetting exercise; making worm water	"
5	Oct 2-6	R1-W5: Intro to experiment on toxicity tests on planaria: building the standard curve for TFM	"
6	Oct 9–13	R1-W6: Toxicity testing on planaria	"
7	Oct 16–20	R1-W7: Data analysis in lab – R workshop on your data	"
8	Oct 23–Oct 27	R1-W8: Writing time in lab	"
9	**Oct 30–Nov 3**	**Fall Reading Week**	
10	Nov 6–10	R2-W1: Experiment background & hypothesis generation	Various instructors
11	Nov 13–17	R2-W2: Experiments	"
12	Nov 20–24	R2-W3: Experiments	"
13	Nov 27–Dec 1	R2-W4: Data analysis	"
14	Dec 4–8	R2-W5 poster presentation	

Week	Dates	Topic	Instructors/Term test dates
15	Jan 8–12	R3-W1: Experiment background and hypothesis generation	Various instructors
16	Jan 15-19	R3-W2: Experimental data collection	"
17	Jan 22-26	R3-W3: Experimental data collection	"
18	Jan 29–Feb 2	R3-W4: Experiments/Data analysis	"
19	Feb 5-9	R3-W5: Data analysis, Long-report guidelines	"
20	Feb 12–16	R3-W6: Writing time in lab	"
21	**Feb 19-23**	**Reading Week**	
22	Feb 26-Mar 1	R4-W1: Experiment background and hypothesis generation	Various instructors
23	Mar 4-8	R4-W2: Experimental data collection	"
24	Mar 11–15	R4-W3: Experimental data collection	"
25	Mar 18–22	R4-W4: Data analysis	"
26	Mar 25–29	R4-W4: Oral presentation preparation	"
27	Apr 1-5	R4-W5: Oral presentations	"
28	Apr 10	No class	

7. Participation and Engagement

- ☑ Students are expected to participate and engage with content as much as possible
- ☑ Students are expected to participate during laboratory sessions, during meetings with their group members and on Microsoft Teams, as we will be working with data sets synchronously
- ☑ Students are expected to have their laboratory book with them for every laboratory session and to make notes on experiments and data collections

8. Evaluation

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

Assessment	Format	Weighting	Due Date
Toolbox 1: Proteins	Online quiz	2.5%	Sept 15th at 6:00 p.m.
Toolbox 2: RNAs	Online quiz	2.5%	Sept 22nd at 6:00 p.m.
Toolbox 3: Cells	Online quiz	2.5%	Sept 29th at 6:00 p.m.
Serial dilution activity	Online assignment	2.5%	Oct 6th at 6:00 p.m.
Statistics module	Online assignment	2.5%	Oct 13th at 6:00 p.m.
Short report intro and methods	Written assignment	Completion#	Oct 17/18th at 6:00 p.m. (day of your lab section)
Rotation 1: short report	Written assignment	10%	Oct 27th at 6:00 p.m.
Lab book*	Written	Completion#	Oct 27th 6:00 p.m.
#Completion (total; all must be submitted for full marks)	Written	1.25%	
Total Rotation 1		**23.75%**	
Rotation 2 lay summary of project	Written assignment	5%	Nov 24th at 6:00 p.m.
Poster presentations	In person group presentation	10%	Dec 5th/6th in lab
Lab book*	Written	Completion#	Dec 8th at 6:00 p.m.
Completion#	Written	1.25%	
ASSIGNMENT 1	**Written**	**10%**	**Opens Nov 24th at 8:00 a.m. Due Dec 1st at 6:00 p.m.**
Total Rotation 2		**26.25%**	
Long report intro	Written	Completion#	End of lab session on R3-W3
Long report methods	Written	Completion#	End of lab session on R3-W4
Long report results	Written	Completion#	End of lab session on R3-W5
Lab book*	Written	Completion#	Feb 16th at 6:00 p.m.
Rotation 3 long report	Written report	20%	Feb 16th at 6:00 p.m.
#Completion (total; all must be submitted for full marks)	Written	1.25%	
Total Rotation 3		**21.25%**	
ASSIGNMENT 2	**Written**	**10%**	**Opens Mar 15th at 8:00 a.m. Due Mar 22nd at 6:00 p.m.**
Rotation 4 Oral presentations	In person group presentation	17.5%	April 2nd/3rd in lab
Lab book*	Written	Completion#	April 5th at 6:00 p.m.
Completion# (total; all must be submitted for full marks)	Written	1.25%	
Total Rotation 4		**28.75%**	
COURSE TOTAL		**100%**	

- ☑ **#All work marked "Completion" needs to be completed to get the full 1.25% completion mark. There will be no exceptions.**
- ☑ ***Students are responsible for buying their own lab books and bringing them to the laboratory for note taking and evaluations.**
- ☑ All assignments are due at **6:00 p.m**. EST on Friday evenings, 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 zero

- ☑ Written assignments will be submitted to Turnitin (statement in policies below)
- ☑ Students will have unlimited submissions to Turnitin, but only one submission for every deliverable link
- ☑ 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 (TA or course manager, whichever may be the case); to ensure a timely response, reach out within 7 day.
- ☑ Any regrade requests on assignments, quizzes, or midterms must be received within 3 weeks of the grade being posted. For **quizzes, reports and lay summary regrades**, email your TA who marked the assignment and copy Dr. Birceanu on the email requesting the regrade. Dr. Birceanu will consult with the TA and determine the outcome of the appeal. Please note that a grade may go either way (up, down or stay the same) when a regrade request is received. When a regrade request is received for a report or a lay summary, the entire document will be regraded. **Section-based appeal requests can only be done for quizzes, Assignment 1 and Assignment 2** (for the Assignments, the regrade requests will go through Gradescope).

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

- ☑ **documentation is not to be submitted to academic counselling if you miss any assignment worth less than 10%. Instead, these will be handled as follows:**
  - **If any evaluation worth less than 10% is missed, the weight will automatically be shifted to one of the ASSIGNMENTS, depending on whether the missed evaluation occurs in the fall or the winter term.**
- ☑ Documentation must be submitted to academic counselling for any missed evaluations worth 10% or more.
- ☑ An assessment cannot be submitted after it has been returned to the class; the weight will be transferred to an equivalent assignment, as determined by the instructor.
- ☑ Late assessments will be subject to a late penalty of 10%/day.
- ☑ All term tests are take-home. You will have 7 days to complete the test. If you miss the test, an in-person written test will be used as the make-up test. All students must write at least one test to get credit for the course.
- ☑ All components of the course must be completed for the students to receive a passing grade. Attendance to the laboratory is mandatory. If a laboratory day is missed, alternate arrangements MUST be made with the course coordinator (Dr. Birceanu).
- ☑ **No arrangements for missed or late assignments can be made with the Teaching Assistants**. These missed evaluations must be discussed with Dr. Birceanu.

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 every 24–48 hours
- ☑ Students should email their instructor(s) and teaching assistant(s) using email or MS Teams. Note that TAs and instructors are not expected to answer emails on weekends.
- ☑ Emails will be monitored daily; students will receive a response in 24–48 hours
- ☑ This course will use MS Teams for discussions
- ☑ Students should post all course-related queries on the General section of the course Teams.

10. Office Hours:

- ☑ Individual office hours with Dr. Birceanu will be held on Teams. Registration for individual office hours will occur through OWL.
- ☑ Group office hours with Dr. Birceanu will be held on Teams. There is no registration for group office hours. Just join the meeting on Teams.

11. Resources

- ☑ All resources will be posted in OWL
- ☑ Lab books are needed for this laboratory course. Students are responsible for purchasing their own laboratory books.

Statement on the use of ChatGPT and other Artificial Intelligence (AI) Platforms

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. By adhering to these guidelines, students contribute to a responsible and ethical learning environment that promotes critical thinking and independent inquiry.

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:

- ☑ This course relies on group work. Therefore, your group members will depend on your work ethics for the success of their experiments. Work as a team, support each other when needed and make contributions to your group.
- ☑ All course materials created by the instructor(s) are copyrighted and cannot be

sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)

- ☑ Recordings are not permitted (audio or video) without explicit permission
- ☑ Permitted recordings are not to be distributed
- ☑ Students will be expected to take an academic integrity pledge before some assessments

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's Non-Discrimination/Harassment Policy (M.A.P.P. 1.35) and Non-Discrimination/Harassment Policy – Administrative Procedures (M.A.P.P. 1.35).
Any **student,** staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's Human Rights Office. 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. Keep up with the assignment deadlines. The syllabus and the assignment deadlines have been designed to keep you on track.
3. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
4. Follow weekly checklists created on OWL and in this course syllabus or create your own to help you stay on track.
5. Fill out your lab book during lab time. You are not being marked on neatness. Keeping a lab book for rough notes and one for "good" notes is a waste of your time. Lab books MUST BE filled out during lab time.
6. Connect with others for support. These are members of your group, your TAs and your course coordinator (Dr. Birceanu). We are using Microsoft Teams for the laboratory, to share large data sets. Take advantage of it to meet virtually with your group members, as needed.
7. Do not be afraid to ask questions. If you are struggling with a topic, contact your instructor(s) and/or teaching assistant(s).
8. 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 course coordinator (Dr. Birceanu). Dr. B., in consultation with you, 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 Dr. B.; 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

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.

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, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices MUST be left either at home or with the student's bag/jacket at the front of the room and MUST NOT be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. ***Final grades*** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or

GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

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.

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

Academic Counselling (Science and Basic Medical Sciences)
Appeal Procedures
Registrarial Services
Student Development Services
Student Health Services