

Department of Physiology and Pharmacology  
Fetal Physiology 4700B

Course Syllabus for Winter 2024



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

1. Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone



Working webcam

2. Important Dates:



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

3. Contact Information



Course Coordinator	Contact Information
Dr. Tim Regnault	tim.regnault@uwo.ca
Instructor(s) or Teaching Assistant(s)	Contact Information
Dr. Stephen Renaud	Stephen.Renaud@schulich.uwo.ca
Dr. Emma Duerden	eduerden@uwo.ca
Dr. Daniel Hardy	Daniel.Hardy@schulich.uwo.ca
Dr. David Hill	david.hill@lawsonresearch.com
Sebastian Vanin Moreno	svaninmo@uwo.ca
Tim Nunes	tnunes2@uwo.ca

## 4. Course Description and Design

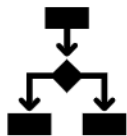
The early life cycle, focusing on fetal development and growth, from blastocyst implantation including the establishment of the placenta, maternal adaptations to pregnancy and regulation of fetal development and growth through to parturition are covered. Other areas detailed as it relates to fetal physiology, include discussion of the periconceptional and postnatal exposomes and their impacts upon fetal development as well as offspring development. All these areas are critically important in determining later life health and wellness. Specific areas of study include placental development, endocrine and nutrient and drug transport properties over gestation, fetal cardiovascular and CNS development and function, fetal metabolism as it relates to pancreatic muscle, adipose and liver development and function as well as fetal respiratory development. The role of the placenta and the fetus in parturition and other fetomaternal relationships are also described. All these areas are discussed with particular attention to the preconception and early life cycle periods being critically important in setting one's later life health, wellness and disease risk. Adverse environments (eg. hypoxia, mental stress, malnutrition, excess nutrition and maternal infection) during these periods, can alter fetal development in such a way that offspring are predisposed to increased susceptibility to communicable disease, a range of non-communicable diseases (eg: asthma, insulin resistance, cardiovascular disease, type II diabetes, obesity and altered neurobehavioral patterns) and altered capacity (eg; reproductive capacity) outcomes. Understanding these environments, their impacts and interventions to modulate their impacts will help ensure local, nation and global achievements in alignment with specifically Goal 3 of the UN's Sustainable Development Goals (SDGs) - Ensuring healthy life and promoting well-being for all at all ages, but also the interrelationships with other SDGs such as SDGs 1 (End poverty in all its forms everywhere), 2 (Zero hunger) and 10 (Reduce inequality within and among countries). The interactions between basic and applied physiology are stressed as well as the critical importance the early life cycle, with a fetal focus, plays in promoting healthy life and well-being for all at all ages from a national and also global perspective.

### Delivery Mode: blended

The design of the course uses both asynchronous and face to face lecture (synchronous) modes.

The asynchronous component is of pre lecture readings and prerecorded lecture material that will be posted for viewing a week prior to the lecture session. It is expected that students will have watched over the prerecorded lecture material and completed assigned readings in the week prior to the lecture session. It is expected this work will take between 1-2 hours.

The lecture course will commence with a weekly 15-minute online OWL quiz (each worth 2% of the final grade) of the posted material starting at 2:30 pm. There will be a total of 12 lectures each with an OWL pre synchronous lecture quiz giving a possible total of 24% of the total grade.



Beginning at 3 pm, the remainder of the one and half-hour synchronous time slot will be made up of activities including reviewing the answers to the online quiz, reinforcing key points from the associated sessions posted readings and pre-recorded lecture material with case studies and presentation of new additional supporting material. The full time period for synchronous teaching may not always be used.

The course will also include a Midterm open book online examination (2 hours - 26%) and a three-minute, one slide, elevator pitch online submitted audiovisual presentation (15%). There will be a Final Examination (3 hours - 35%).

## Timetabled Sessions

Component	Date(s)	Time
Face to face or virtual synchronous	Thursday	3:00 - 4:30
Weekly online OWL quiz	Thursday	2:30 – 2:45
Virtual asynchronous	N/A	1 – 2 hours

- Asynchronous pre-work should be completed prior to sessions
- Attendance at sessions is strongly encouraged
- Missed work should be completed within 24 hours

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

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

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

## 5. Learning Outcomes

Learners will have a solid foundation in the basic concepts of early life cycle physiology as it relates specifically to the preconception period, in-utero growth and development of all major organ systems and the postnatal implications of these early periods on life health and wellness trajectories. Additionally, learners will be able to communicate issues of health and well-being, including sexual and reproductive health, and preventative strategies to disease and poor mental health as newborns move through the life cycle.

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



1. discuss and interpret primary research in fetal physiology
2. evaluate the critical role of the placenta for the proper fetal development
3. appreciate the complex interactions in fetal organ development and establishment of function for later life health
4. delineate the maternal and fetal signals involved in the onset of parturition
5. make predications of how an adverse in utero environment leads to short-term pregnancy complications and long-term negative metabolic and neurodevelopmental impacts in the offspring.
6. have a base knowledge of the UN SDGs and the impact reproductive health and well-being play in obtainment of the SDGs.

## 6. Course Content and Schedule



Week	Dates	Topic	Instructor
1	Jan 11th	Adaptations to pregnancy and fetal circulatory development	Regnault/Renaud
2	Jan 18th	Immunity and implantation and placental hormones	Renaud
3	Jan 25th	Placental development and substrate transport and utilization	Regnault
4	Feb 1st	Fetal neurophysiology	Duerden
5	Feb 8th	Fetal lung development	Hardy
6	Feb 15th	Fetal metabolic axis (muscle, fat, liver and pancreas) I	Hill
7	Feb 17-25	Reading Week	N/A
8	Feb 29th	Fetal metabolic axis (muscle, fat, liver and pancreas) II	Hill
9	Mar 7th	Molecular mechanisms of parturition	Hardy
10	Mar 14th	The impact of DOHaD and indicators for the future	Hill
11	Mar 21st	Fetoplacental development and metabolic outcomes of placental insufficiency	Regnault
12	Mar 28th	Altered fetal brain development: association with outcomes	Duerden
13	Apr 4th	Fetoplacental development and metabolic outcomes for excessive maternal nutrition	Regnault
	Apr 11-30 <sup>th</sup>	Final Exam	TBD

## 7. Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can also participate by interacting in the forums with their peers and instructors

## 8. Evaluation

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



Assessment	Format	Weighting	Due Date
12 x weekly online OWL quizzes	MCQ/short answer online quiz through OWL "tests & quizzes" tab	Each 2%, Total 24%	Thursdays 2:30-2:45
Midterm Examination	2 hour - Open book online submission posted to OWL	26%	2 <sup>nd</sup> March, time TBA

1 x Three-minute (3M), one slide, elevator pitch audiovisual presentation	Written/spoken submission posted to OWL	15%	TBD
Final Examination	3 hours – In examination setting	35%	Examination period

- All assignments are due at 8:00 am EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- 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
- 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

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

90-100	One could scarcely expect better from a student at this level
80-89	Superior work which is clearly above average
70-79	Good work, meeting all requirements, and eminently satisfactory
60-69	Competent work, meeting requirements
50-59	Fair work, minimally acceptable
below 50	Fail

#### Information about late or missed evaluations:

- Late assessments without accommodation will be subject to a late penalty 5%/day
- There will be no make-up quizzes
- If a quiz is missed, it will be reweighed with the average of the other quizzes
- You must write 9 quizzes. If you miss more than 3 quizzes, instead the missed quiz values will be reweighed to the final exam (ie. missed 4 quizzes, then  $2\% \times 4 = 8\%$  reweighed to the final exam and the final exam is now worth 43% instead of 35%)
- One make-up test will be offered for the midterm. Its format may vary from the original midterm and its format is at the discretion of the course manager
- The weight of a missed midterm and the one scheduled makeup with accommodation, will be transferred to the final examination
- You need to obtain 50% from each exam to pass the course

**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
- Students are strongly encouraged to 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 upon email request with individual lecturers

## 11. Resources



- All resources will be posted in OWL
- Your inquisitive mind

## 12. Professionalism & Privacy:



Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [Non-Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35).

Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

## 13. How to Be Successful in this Class:



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

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule your time throughout the course.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading

- or watching the videos.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
  6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
  7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

## 14. Western Academic Policies and Statements

### Absence from Course Commitments

#### A. Absence for medical illness:

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

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

If you are unable to meet a course requirement for any **work worth 10% or greater** due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found at: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

#### B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on [Accommodation for Religious Holidays](#). All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

#### C. Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

## **Academic Offenses**

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

## **Accessibility Statement**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

## **Correspondence Statement**

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

## **Discovery Credit Statement**

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

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

### **Copyright and Audio/Video Recording Statement**

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



### **Rounding of Marks Statement**

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.45 becomes 74, and 74.50 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

### **Use of ChatGPT and other Artificial Intelligence (AI) Platforms Statement**

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 and/or lab reports 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.

## **16. Support Services**

The following links provide information about support services at Western University.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

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

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

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

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)