

Department of Physiology and Pharmacology
Fetal Physiology 4700B

Course outline for Winter 2022



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

1. Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone



Working webcam

2. Important Dates:



Classes Resume	Reading Week	Classes End	Study day(s)	Exam Period
January 10th	February 19–27	April 8th	April 9th	April 10 –30

* March 14, 2022: Last day to drop a second-term half course or a second-term full course without penalty

3. Contact Information

Course Coordinator	Contact Information
Dr. Timothy Regnault	tim.regnault@uwo.ca



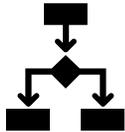
Instructors	Contact Information
Dr. Stephen Renaud	Stephen.Renaud@schulich.uwo.ca
Dr. Emma Duerden	eduerden@uwo.ca
Dr. Daniel Hardy	Daniel.Hardy@schulich.uwo.ca
Dr. David Hill	david.hill@lawsonresearch.com
Teaching Assistants	
Sebastian Vanin Moreno	svanim@uwo.ca
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4. Course Description and Design: Blended

Fetal development and growth, from blastocyst implantation including the establishment of the placenta, maternal adaptations and regulation of fetal development and growth through to parturition are covered. 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 concept of fetal programming, that being that in utero insults (eg. hypoxia, malnutrition, excess nutrition) can alter fetal development in such a way that offspring are predisposed to a range of adult diseases including insulin resistance, cardiovascular disease, type II diabetes, obesity and altered neurobehavioral patterns. By the end of the course the student will have a solid foundation in the basic concepts of fetal physiology as it relates specifically to the in-utero growth and development of all major organ systems and the postnatal implications of those early months of life. The interaction between basic and applied physiology are stressed.

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 in-person - 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 in person - synchronous time slot will be made up of several 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 or new additional material. The full one and half hour time period for in person - synchronous teaching may not always be used.

The course will also include a Midterm open book examination (2 hours - 30%) and a three-minute, one slide, elevator pitch rapid audiovisual presentation (15%). There will be a Final Examination (3 hours - 35%)

Timetabled Sessions

Mode	Dates	Time	Frequency
Virtual asynchronous	N/A	1 – 2 hours	weekly
Weekly online OWL quiz	Thursday	2:30 – 2:45	weekly
In person sessions	Thursday	3:00 - 4:30	weekly

- Asynchronous pre-work must be completed prior to sessions
- Missed work should be completed within 24 hours

NOTE: Course delivery with respect to the COVID-19 pandemic

Although the intent is for this course to be delivered as blended (with both in-person and online components), the changing COVID-19 landscape may necessitate some or all of the course to be delivered online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

When deemed necessary, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

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

By the end of the course the student will have a solid foundation in the basic concepts of fetal physiology as it relates specifically to the in-utero growth and development of all major organ systems and the postnatal implications of these interactions.

The course also aims to improve the students' ability to read and understand primary scientific literature, to write about science effectively to a lay audience and to provide students with an opportunity to conceptually translate their knowledge through presentation formats.



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.
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. Course Content and Schedule

Week	Dates	Topic	Instructor
1	Jan 10-14	Immunity and implantation and placental hormones	Renaud
2	Jan 17-21	Placental development and substrate transport and utilization	Regnault
3	Jan 24-28	Adaptations to pregnancy and fetal circulatory development	Regnault/Renaud
4	Jan 31-Feb 4	Fetal neurophysiology	Duerden
5	Feb 7-11	Fetal metabolic axis (muscle, fat, liver and pancreas) I	Hill
6	Feb 14-18	Fetal metabolic axis (muscle, fat, liver and pancreas) II	Hill
7	Feb 21-25	Reading Week	N/A
8	Feb 28-Mar 4	Fetal lung development	Hardy
9	Mar 7-11	Molecular mechanisms of parturition	Hardy
10	Mar 14-18	Fetoplacental development and metabolic outcomes of placental insufficiency	Regnault
11	Mar 21-25	Fetoplacental development and metabolic outcomes for excessive maternal nutrition	Regnault
12	Mar 28-Apr 1	Altered fetal brain development: association with outcomes	Duerden
13	Apr 4-Apr 8	The impact of DOHaD and indicators for the future	Hill (* this lecture will be a zoom lecture at 7:30 pm)



7. Participation and Engagement



- Students are expected to participate and engage with content as much as possible during synchronous sessions
- Students will also participate by interacting in the forums with their peers and instructors eg Scientific/briefing note writing exercise and three-minute, one slide, elevator pitch rapid audiovisual presentation

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 - Online open book exam	26%	March 5 th - Tentative
1 x Three-minute (3M), one slide, elevator pitch audiovisual presentation	Written/spoken submission	15%	In class session - April 7th
Final Examination	3 hours – In person exam	35%	Examination period

- All assignments are due at 11:55 pm EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- 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.

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 evaluations:

- Late assessments without self-reported absences or accommodation will be subject to a late penalty 5%/day
- Late assessments with self-reported absences or accommodation should be submitted within 24 hours of the end of the self-report or accommodation (e.g., due Fri 11:55 pm; self-report covers Fri/Sat; new deadline is Sun by 11:55 pm OR 24 hours after the end of the accommodation period)
- An assessment cannot be submitted after it has been returned to the class; the weight will be transferred to the final grade.
- Make-ups will not be offered for the weekly quizzes. One make-up will be offered for the midterm and final exam
- If a make-up assessment is missed with documentation, the student will receive an INC and complete the task the next time the course is offered

9. Communication:



- Students should check the OWL site every 24 – 48 hours
- A weekly update will be provided on the OWL announcements
- Emails will be monitored daily; students will receive a response in 24 – 48 hours
- This course will use the OWL forum for discussions
- Students should post all course-related content on the discussion forum so that everyone can access answers to questions
- The discussion forums will be monitored regularly by instructors or teaching assistants

10. Office Hours:



- Lecturer specific office hours may be offered and held remotely using Zoom.
- Students will be able to sign up for an appointments using “Office Hours” Sign Up on OWL

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
- 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
- All recorded sessions will remain within the course site or unlisted if streamed

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 time at the start of each week to get organized and manage your time.
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. Treat this course as you would a face-to-face course. 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

[Policy on Academic Consideration for Student Absences](#)

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a **self-reported absence** or via the **Academic Counselling** unit. Students have two self-reports to use throughout the academic year; absence from course commitments including tests, quizzes, presentations, labs, and assignments that are worth 30% or less can be self-reported. Self-reported absences cover a student for 48 hours (yesterday + today or today + tomorrow). Your instructor will receive notification of your consideration; however, you should contact your instructor immediately regarding your absence. Students are expected to submit missed work within 24 hours of the end of the 48-hour period. Please review details of the [university's policy on academic consideration for student absences](#).

If you have used both their self-reported absences or will miss more than 48 hours of course requirements, a Student Medical Certificate (SMC) should be signed by a licensed medical or mental health practitioner and you should contact academic counselling. Academic Counselling will be operating virtually this year and can be contacted at scibmsac@uwo.ca.

Accommodation for Religious Holidays

The policy on Accommodation for Religious Holidays can be viewed [here](#).

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 Offences

“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. 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.

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

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)