

## **1. Course Information**

### **Physiology & Pharmacology 4100b – *Digestion, Metabolism and Metabolic Disease* Winter Term 2017**

This course will explore, in depth, concepts of gastrointestinal digestion and absorption, and post-absorptive metabolism, including hepatic and pancreatic physiology. Specific areas covered will include: gut-brain-liver axis and nutrient metabolism, pancreatic exocrine and endocrine physiology, and intestinal and hepatic glucose and lipid metabolism. All areas will be discussed with particular attention to relevant pathologies and disease states, including obesity, diabetes, and metabolic syndrome. Current and emerging therapeutic strategies for the treatment of these metabolic diseases will also be presented. The course will be presented as a series of lectures on selected topics by two faculty members, with two scheduled in class debates regarding current policy, treatment(s) and/or guidelines for the management of metabolic disease. Students will be expected to recall facts, recognize general concepts, understand and explain fundamental concepts, and synthesize information presented in lectures to solve problems. Students will be evaluated through written journal article reviews, a mid-term exam and a final exam.

#### **Lectures:**

Monday; 11:30 – 1:30

Spencer Engineering Building, room 2100

#### **Laboratories and/or Tutorials:**

Tutorial in class in week 6

#### **Requisites:**

Prerequisite(s): [Physiology 3120](#)

Corequisite(s): [N/A](#)

Antirequisite(s): [N/A](#)

#### **Senate regulation regarding the student's responsibility regarding requisites:**

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.

#### ***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 Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation***

## 2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Rennian Wang (Course Coordinator)	<a href="mailto:rwang@uwo.ca">rwang@uwo.ca</a>	VRL A5-140	55098	9:30 – 16:00
Dr. Nica Borradaile	<a href="mailto:Nica.Borradaile@schulich.uwo.ca">Nica.Borradaile@schulich.uwo.ca</a>	DSB 2011	82107	9:30 – 16:00
Miss. Kia Peters (TA)	<a href="mailto:kpeter44@uwo.ca">kpeter44@uwo.ca</a>	DSB 2011		

### OWL:

Students with OWL issues should see: <https://owl.uwo.ca/portal/site/owldocs>

## 3. Course Syllabus

- Objectives: To understand advanced concepts in gastrointestinal physiology and endocrine regulation of metabolism, especially as they relate to obesity, diabetes, and disorders of lipid metabolism.
- Learning outcomes: By the end of the course, successful students will be able to (1) explain the inter-related functions of the gut-brain-liver axis and the pancreas in the control of glucose and lipid metabolism, (2) integrate concepts of physiological regulation of glucose and lipid metabolism with those of dysregulation during relevant pathologies and disease states, and (3) identify and explain the mechanisms of action of current and emerging therapies for the treatment of metabolic diseases.
- Course topics & Schedule (2017):

Date	Lecturer	Topic
Jan. 8	Wang	Review of digestive system & common disorders
Jan. 15	Wang	Pancreatic exocrine function and diseases
Jan. 22	Wang	Gastroenteroendocrine & islet hormones in glucose homeostasis
Jan. 29	Borradaile	Physiology of the liver and intestine
Feb. 5	Borradaile	Glucose and lipid transport and metabolism I
Feb. 12	Borradaile	Glucose and lipid transport and metabolism II; <a href="#">Tutorial on essay questions and written review assignments</a> (20 min)

<b>Feb. 19-23</b>	<b>READING WEEK</b>	
<b>Feb. 26</b>	<b>Midterm Exam (2h, 30%), in class.</b>	
Mar. 5	Wang	Gut-brain-liver axis in energy & glucose homeostasis and obesity (Assignment of journal articles for written critique)
Mar. 12	Wang	Diabetes pathophysiology & therapeutic strategies
Mar. 19	Wang	In class Debates of selected topics & <b>Midterm Exam review</b> (Written review assignment 1 due)
Mar. 26	Borradaile	Pathophysiology of type 2 diabetes and lipid metabolic diseases (Assignment of journal articles for written critique)
Apr. 2	Borradaile	Therapeutic strategies for type 2 diabetes and lipid metabolic diseases
Apr. 9	Borradaile	In class Debates of selected topics & <b>Course review and Question breakdown for Final Exam</b> (Written review assignment 2 due)
<b>April 13, classes end</b>	<b>Final Examination (3h, 45%) date: TBA</b>	

## 4. Course Materials

**Textbook:** N/A

**Supplemental Information:** Selected scientific reviews and original work publications

**Laboratory Manual:** N/A

**Laboratory Materials:** N/A

**Safety Materials:** N/A

**Electronic Devices:** N/A

## 5. Evaluation:

<b>Component</b>	<b>Date</b>	<b>% of Final mark</b>
Midterm examination (in class, 2h)	In class	30%
Debates (in class, marks for participation)	Mar. 19 & April 9	5%
Journal article critiques (writing assignments) submission	Mar. 19 & April 9	20%
Final examination (3h)	TBA (April. 14-30)	45%

### Midterm exam [30%]

The midterm exam will take place in class time. The format will be essays (2) and short-answer questions (4). You will have 2 hours to complete the midterm exam.

### Final exam [45%]

The final exam (to be scheduled during the final exams period) will cover material presented throughout the entire course, with emphasis on material from the second half of the course (i.e. after the midterm exam), including all journal articles associated with written review assignments. The format will be essays (2) and short-answer questions (8). You will have 3 hours to complete the final exam.

### **Debates [5% for participation]:**

For in class debates, students will be assigned to groups (5-6 students each). Immediately prior to their debate, each group will be given a controversial statement regarding current policy, treatment(s) and/or guidelines for the management of metabolic disease. Five-six students in each group will argue for the statement, and against the statement. A total of six short (20 min), formal debates will be directed in front of the class, during two separate class times. Each student will participate in only one debate, but all students are required to attend all debates.

### **Journal article reviews (writing assignments) [20%]**

The purpose of the journal article review, in addition to its role as an evaluative tool, is to give you the opportunity to explore an emerging research area in gastrointestinal physiology and endocrine regulation of metabolism. All students will be assigned **TWO** papers for written review – one paper will be assigned by Dr. Wang, and one by Dr. Borradaile. Papers will be posted on OWL **TWO** weeks prior to the assignment due date, as noted in the course schedule.

#### ***Instructions for written reviews:***

**Format:** Maximum of **3 pages** [double-spaced, font size 12 pt, Times New Roman font, border of 2 cm around document]. Any text beyond 3 pages will be removed. Student name and ID# must be indicated in the header, and page numbers must be included in the footer.

**Review is to be organized as follows:** (1) Journal reference in corresponding journal format at top of page with single spacing [**0.5** mark]; (2) Rationale [**1** mark]; (3) Hypothesis [**1** mark]; (4) Major findings [**1.5** marks]; (5) One scientific research strength [**1.5** mark]; (6) One scientific research weakness [**1.5** mark] and (7) Potential relevance to medicine [**3** marks]. Each of the two written assignments will count for 10% of the final course mark (for a total of 20%).

**Deadline:** The written review **MUST** be submitted in hard copy at the beginning of class on the date indicated in the course schedule.

## **6. Additional Information/Statements**

### **Statement on Use of Electronic Devices**

Any electronic devices will not be allowed during tests and examinations.

### **Statement on Use of Personal Response Systems (“Clickers”):**

N/A

### **Statement on Academic Offences**

“Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website: [http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf) .”

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 The University of Western Ontario and Turnitin.com (<http://www.turnitin.com> ).

## **Absence from course commitments**

### **A. Absence for medical illness:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness for Undergraduate Students, located at:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

The policy is also accessible from the Medical Accommodation Policy link at

<https://studentservices.uwo.ca/secure/index.cfm>

### **Statement from the Academic Counselling Office, Faculty of Science (for Science and BMSc students)**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counselling Office 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 by the Academic Counselling Office and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Academic Counselling Office immediately. For further information please see:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

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:

<https://studentservices.uwo.ca/secure/index.cfm>

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

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

### **C. Special Examinations**

A Special Examination is any examination other than the regular final examination, and it may be offered only with the permission of the Dean/Academic Counselling Office 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.

A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean/Academic Counselling Office of the Faculty. The Dean/Academic Counselling Office will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to the Office of the Registrar.

If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with the permission of the Dean/Academic Counselling Office in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered.

When a grade of Special (SPC) or Incomplete (INC) appears on a student's record, the notations will be removed and replaced by a substantive grade as soon as the grade is available.

**Support Services:**

Registrarial Services: <http://www.registrar.uwo.ca>

Academic Counselling (Science and Basic Medical Sciences):

[http://www.uwo.ca/sci/undergrad/academic\\_counselling/index.html](http://www.uwo.ca/sci/undergrad/academic_counselling/index.html)

USC Student Support Services: <http://westernusc.ca/services/>

Student Development Services: <http://www.sdc.uwo.ca>

Student Health Services: <http://www.shs.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.