



HK*2810 Human Physiology I - Concepts and Principles

Winter 2019

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 1.00 - December 20, 2018

1 Course Details

1.1 Calendar Description

This course will introduce the fundamental concepts and principles of communication systems (transport, ion movement, nerve and synapse, muscle) in humans. It will focus on primary physiological communication systems, such as the endocrine and central nervous systems, and integrate basic principles to understand larger systems such as the gastrointestinal tract.

Pre-Requisite(s): BIOC*2580, BIOL*1080

Restriction(s): HK*3940

1.2 Course Description

Physiology has a foundation of concepts and ideas that are used repeatedly to explain a variety of observations. Lectures will focus on these fundamental concepts and principles and use them to explain the **communication** (the physiology of transport phenomena, ion movement, nerve and synapse, muscle). Once the bases for communication are built lectures will focus on communication systems such as the nervous system (**central nervous system**) and the hormonal system (**endocrine system**). Once the primary communication system are understood lectures will focus on integrating the principles of communication, the endocrine and the nervous system in order to get a larger system to work, the **gastrointestinal tract**. The course presents the factual material and theories used to explain the function of the organs or systems so that you are able to utilize this information in explaining life situations. The majority of the material is presented in the context of feedback control systems with emphasis on the function of the normative cell, tissue and body.

1.3 Timetable

Tuesdays and Thursdays 1:00-2:20pm, WMEM

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

There are 3 teaching assistants (TAs) as resources for this course. TA's will be monitoring the D2L bulletin board, be available to e-mail directly with questions, or to set up one on one meetings (~15 minutes). There will be extra question and answer sessions run by the professor prior to the final exam.

2.1 Instructional Support Team

Instructor:	Kerry Ritchie Dr.
Email:	ritchiek@uoguelph.ca
Office:	ANNU ANNEX, Rm 265
Office Hours:	Wednesdays 9am-11:30am

2.2 Teaching Assistant(s)

Teaching Assistant:	Justine Hobbins
Email:	jhobbins@uoguelph.ca
Office Hours:	By appointment.

Teaching Assistant:	Hesham Shamshoum
Email:	hshamsho@uoguelph.ca
Office Hours:	By appointment.

Teaching Assistant:	Jessie Burns
Email:	jmacki06@uoguelph.ca
Office Hours:	By appointment.

3 Learning Resources

3.1 Required Resource(s)

Courselink (Website)

<https://courselink.uoguelph.ca>

The course outline, a tentative lecture schedule, readings and handouts for specific lectures can be found at the Courselink D2L site for the course. In D2L you can submit questions on the course discussion board where TAs will be monitoring daily. The discussion board will be monitored from Jan. 7th to April. 7th, and will not be monitored after April 7th.

3.2 Recommended Resource(s)

Textbook of Medical Physiology (Textbook)

The recommended textbook for the course is **Textbook of Medical Physiology, 13th** edition by Hall and is available at the University bookstore. The 11th and 12th edition are also an acceptable textbook for the course. Copies of the textbook are on reserve at the library.

4 Learning Outcomes

Course philosophy: The philosophy of this course will be to show students that physiology is built on fundamental principles that are used to build the foundations of communication, which are in turn used and integrated to build systems within the body with higher order functions, such as digestion. This course will take an integrated approach to building physiological systems. The course will also take a problem-solving, critical thinking approach to understanding the material and building physiological systems. Following this pedagogical style, the testing style will be short and long answer where students must work through problems and show their work. Practice questions and posted answers will be available to help students with the short and long answer testing style.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Students will learn the principle of communication in physiology and apply them to describe physiological phenomena.
 2. Students will be able to demonstrate knowledge of the mechanistic explanations for physiological events at the cellular and tissue level.
 3. Students will be able to integrate the principles of communication into problems related to human physiology.
 4. Students will have further developed problem solving and critical thinking skills.
 5. Students will be able to effectively communicate ideas and arguments in graphic and written form.
 6. Students will be able to interpret data.
 7. Students will be able to apply core concepts of physics and chemistry to the field of physiology.
 8. Students will be able to identify gaps in knowledge in the area of physiology.
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5 Teaching and Learning Activities

5.1 Tentative Course Structure and Content

Date	Section	Lecture Topic	11th Edition Readings (pages)	12th Edition Readings (pages)	13th Edition Readings (pages)
Jan 8	Communication: Principles	Intro & Transport	19-20,45-56	18-19,45-56	19-20, 47-58
Jan 10	Communication: Principles	Membrane portential Action potential	57-61,61-70	57-60,60-69	61-64,65-73
Jan 15	Communication: Principles	Synapse	85-89, 559-564	83-86, 546-557	89-92, 580-592
Jan 17	Communication: Principles	Regulation	910-915	887-891	931-935
Jan 22	Communication: Principles	Contractile cells	72-78, 89-91	71-89	75-95
Jan 24	Communication: Principles	Contractile cells	80-83, 92-99, 572-576	91-104, 560- 563	97-112, 596-599
Jan 29	Communication: Principles	Monosynaptic reflex			
Jan 31	Communication: CNS	Nervous system concepts	577-584	559, 564-570	595, 600-606
Feb 5	Communication: CNS	MIDTERM 1			
Feb 7	Communication: CNS	Vision	626-645	609-627	647-665
Feb 12	Communication: CNS	Motor	673-697	655-665	695-706
Feb 14	Communication: CNS	Motor	698-713	667-678	707-719
Feb 26	Communication: Hormonal	Concepts	905-916	881-892	925-935
Feb 28	Communication: Hormonal	Ca ⁺⁺ and PO ₄ ³⁻	978-990	955-967	1001-1014
Mar 5	Communication: Hormonal	Pancreas	961-972	939-950	983-994
Mar 7	Communication: Hormonal	Hypothalamus	918-926,931- 939	895-902, 907- 915	939-946, 951-959
Mar 12	Communication:	MIDTERM 2			

	Hormonal				
Mar 14	Communication: Stimuli and function	944-957	921-934	965-978	
	Hormonal				
Mar 19	Communication: Male Female	996-999,1003-	973-976, 978-	1021-1024, 1026-	
	Hormonal	1008,1011-	984,987-	1033, 1037-1050,	
		1022,1031-	999,1003-	1055-1061, 1064-	
		1033,1036-	1009, 1011-	1068	
		1041	1015		
Mar 21	Integration: GIT Structure, motility	771-790	753-772	797-816	
Mar 26	Integration: GIT Secretion	791-806	773-787	817-832	
Mar 28	Integration: GIT Digestion/absorption	808-817	789-798	833-842	
Apr 2	Integration: GIT Regulation	785-786	767-768	811-812	
Apr 4	Integration: GIT Regulation	795-799,800-	777-780,782-	821-824, 826-	
		801,804-805	783, 785-786	827, 829-831	

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Practice Questions 1	5
Midterm 1	25
Practice Questions 2	5
Midterm 2	25
Final Exam	40
Total	100

6.2 Assessment Details

Practice Questions 1 (5%)

Date: Submit: Jan 30 Review: Jan 31/Feb1

Learning Outcome(s): 1,2,3,4,5,6,7,8

- Course Content:
 - Communication - Principles

Midterm 1 (25%)

Date: Tue, Feb 5

Learning Outcome(s): 1,2,3,4,5,6,7,8

- Course Content:
 - Communication -Principles

Practice Questions 2 (5%)

Date: Submit: March 6 Review: March 7/8

Learning Outcome(s): 1,2,3,4,5,6,7,8

- Course Content:
 - Communication - CNS
 - Communication - Hormones (half)

Midterm 2 (25%)

Date: Tue, Mar 12

Learning Outcome(s): 1,2,3,4,5,6,7,8

- Course Content:
 - Communication -CNS
 - Communication - Hormones (half)

Final Exam (40%)

Date: TBA

Learning Outcome(s): 1,2,3,4,5,6,7,8

- Course Content:
 - Communication - Principles
 - Communication - CNS
 - Communication - Hormones*
 - Integration - GIT*

*emphasis on material not yet tested

6.3 Midterms

All midterms will use a short and long answer format. As midterms will be written in class time, there will be no alternate times to write a midterm. If you are unable to write a midterm due to illness or compassionate reasons, your other midterm/exam will be reweighted to 35%/55% (midterm/final).

6.4 Practice Questions

In order to prepare students for the written format that we will use for the midterms and exam, a practice question will be posted prior to each midterm for students to complete on the day specified (see table above). You are expected to answer your question

individually (although you can use your notes), and submit your answer electronically using the PEAR system (**more information will be given during lecture**). The day after the practice questions are completed, an answer key will be posted by the instructor, and students will use it to review 2 of their peers' answers as well as their own. You will have 2 days to complete the reviews. Your grade on the practice question (worth 5%) will be equally divided as 2.5% based on your performance on the question and 2.5% for completing the reviews. No late submissions will be accepted. Failure to complete the practice question by the deadline will result in your midterm being re-weighted to 30%.

7 Course Statements

7.1 Grading

- As midterms will be written in class time, there will be no alternate times to write a midterm. If you are unable to write a midterm due to illness or compassionate reasons, your other midterm and final exam will be re-weighted to 35%/55% (midterm/final).
- Practice Questions: No late submissions will be accepted. Failure to complete the practice question by the deadline will result in the corresponding midterm being re-weighted to 30%.

7.2 Technology in the Classroom

Feel free to bring your laptop to lectures, but only use it in a manner that will not disturb those around you. Please do not use your laptop for anything other than activities related to this physiology course. Turn your cell phones off, or put them on silent, and do not text-message during class.

8 Department of Human Health and Nutritional Sciences Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.uoguelph.ca/~ksomers/>

9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

9.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

More information can be found on the SAS website

<https://www.uoguelph.ca/sas>

9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an

environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>
