



HK*2810 Human Physiology I - Concepts and Principles

Winter 2021

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 2.00 - January 11, 2021

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-Requisites: BIOC*2580, BIOL*1080

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, Remote delivery.

This course will be delivered through a combination of asynchronous lecture videos and

synchronous Q&A sessions.

1. **Asynchronous lectures videos ('course content')**

- Course content will be presented through lecture videos recorded by Dr. Ritchie and posted to Courselink weekly. Dr. Ritchie uses hand-written notes added to a basic set of handouts to build core concepts and work through problems at a consistently manageable pace. You may view and progress through these lectures on your own schedule within a given week.

PLUS

2. **Synchronous Q&A periods* (*optional, instructor/TA facilitated, but student-driven)**

- Each week, there will be 2 opportunities for students to connect with a live person for Q&A using ZOOM during our regularly scheduled class time (links posted on courselink). These synchronous sessions are facilitated by Dr Ritchie and/or an Expert TA, but they are **student-driven**. That is, they will not present any new content; rather, they provide students the opportunity to be part of a community to ask questions, share ideas and get feedback in real-time. These sessions will be based on student generated questions, not instructor prepared content.
 - Tuesdays, 1-2:20: Hosted by Dr Ritchie on ZOOM
 - Thursdays 1-2:20: Hosted by TA support team on ZOOM

1.4 Final Exam

Currently scheduled as: **Wednesday April 21st, 11:30-1:30pm**

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

The final exam will be administered using Respondus Lockdown software with the microphone and web cam enabled.

Note:

This course currently plans to use Respondus Lockdown software for some assessments. Your instructors are aware that some students have expressed concerns about the use of this exam invigilation software. The University Administration is currently evaluating the matter of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation. Your instructors are committed to an equitable and accessible assessment experience and will adapt, based on guidance provided.

2 Instructional Support

Dr. Ritchie and 3 Expert Teaching Assistants will be available each week to support students working through course material.

1. Dr. Ritchie will:

- record and post weekly asynchronous lecture videos.
- host live Q&A sessions on Tuesdays 1-2:20 on ZOOM (Links will be provided on courselink)

2. Expert TAs will:

- monitor and respond to student questions on the Courselink discussion board daily.
- host live Q&A sessions on Thursdays 1-2:20 on ZOOM. (Links will be provided on courselink)

2.1 Instructional Support Team

Instructor:	Kerry Ritchie Dr.
Email:	ritchiek@uoguelph.ca
Office:	Remote via ZOOM
Office Hours:	Dr Ritchie will host weekly Q&A periods (i.e. open 'office hours') on <u>Tuesdays 1:00-2:20</u> using ZOOM.

A link for these weekly Q&A periods will be posted to courselink.

For questions requiring a personal response (i.e. not course material related), students can email Dr. Ritchie directly and set up a 1:1 appointment.

2.2 Teaching Assistants

Teaching Assistant: Kyle Medak
Email: kmedak@uoguelph.ca
Office Hours: The TAs will host weekly Q&A periods using ZOOM on **Thursdays from 1-2:20pm.**

A link for these weekly Q&A periods will be posted to courselink.

KYLE is the Expert TA for the 1st third of the course (**i.e. weeks 1-4**)

Teaching Assistant: Hesham Shamshoum
Email: hshamsho@uoguelph.ca
Office Hours: The TAs will host weekly Q&A periods using ZOOM on **Thursdays from 1-2:20pm.**

A link for these weekly Q&A periods will be posted to courselink.

HESHAM is the Expert TA for the 2nd third of the course (**i.e. weeks 5-8**)

Teaching Assistant: Erin Seto
Email: eseto@uoguelph.ca
Office Hours: The TAs will host weekly Q&A periods using ZOOM on **Thursdays from 1-2:20pm.**

A link for these weekly Q&A periods will be posted to courselink.

ERIN is the Expert TA for the last third of the course (**i.e. weeks 9-12**)

3 Learning Resources

3.1 Required Resources

Courselink (Website)

<https://courselink.uoguelph.ca>

The course outline (including a tentative lecture schedule and suggested readings), recorded lecture videos and skeleton lecture note handouts can be found on the Courselink

D2L site for the course.

Links to weekly synchronous Q&A periods will be found here as well.

You can submit questions on the course discussion board where TAs will be monitoring daily. The discussion board will be monitored from Jan. 11th to April. 14th (or TBA based on final exam schedule).

3.2 Recommended Resources

Textbook of Medical Physiology (Textbook)

The recommended (but not required) 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.

*** The newer 14th edition is also fine!

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 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.
-

5 Teaching and Learning Activities

5.1 Tentative Course Structure and Content

Date	Section	Lecture Topic	11th ed. Readings (pgs)	12th ed. Readings (pgs)	13th ed. Readings (pgs)
week 1	Communication: Intro & Transport Principles		19-20,45-56	18-19,45-56	19-20, 47-58
week 1	Communication: Membrane potential Principles	Action potential	57-61,61-70	57-60,60-69	61-64,65-73
week 2	Communication: Synapse Principles		85-89, 559-564	83-86, 546-557	89-92, 580-592
week 2	Communication: Regulation Principles		910-915	887-891	931-935
week 3	Communication: Contractile cells Principles		72-78, 89-91	71-89	75-95
week 3	Communication: Contractile cells Principles		80-83, 92-99, 572-576	91-104, 560-563	97-112, 596-599
week 4	Communication: Monosynaptic reflex Principles				
Feb 9		MIDTERM 1			
week 5	Communication: Nervous system CNS	concepts	577-584	559, 564-570	595, 600-606
week 6	Communication: Vision CNS		626-645	609-627	647-665
week 7	Communication: Motor CNS		673-697	655-665	695-706
week 7	Communication: Motor CNS		698-713	667-678	707-719

week 8	Communication: Concepts Hormonal	905-916	881-892	925-935
week 8	Communication: Ca ⁺⁺ and PO ₄ ³⁻ Hormonal	978-990	955-967	1001-1014
Mar 16	MIDTERM 2			
week 9	Communication: Pancreas Hormonal	961-972	939-950	983-994
week 10	Communication: Stimuli and function Hormonal	944-957	921-934	965-978
week 10	Communication: Male & Female Hormonal	996-999,1003- 1008,1011- 1022,1031- 1033,1036- 1041	973-976, 978- 984,987- 999,1003- 1009, 1011- 1015	1021-1024, 1026- 1033, 1037-1050, 1055-1061, 1064- 1068
week 11	Integration: GIT Structure, motility	771-790	753-772	797-816
week 11	Integration: GIT Secretion	791-806	773-787	817-832
week 11	Integration: GIT Digestion/absorption	808-817	789-798	833-842
week 12	Integration: GIT Regulation	785-786	767-768	811-812
week 12	Integration: GIT Regulation	795-799,800- 801,804-805	777-780,782- 783, 785-786	821-824, 826-827, 829-831

6 Assessments

6.1 Marking Schemes & Distributions

Practice questions are designed to help students prepare for the midterm in a low stakes/low pressure environment. However, they are technically optional. If you don't complete the practice question, it's 5% weighting will automatically be re-distributed to the corresponding midterm. See all possible schemes below.

Name	Scheme A (%)	Scheme B (%)	Scheme C (%)	Scheme D (%)
Practice Questions 1	5	0	5	0
Midterm 1	25	30	25	30
Practice Questions 2	5	0	0	5
Midterm 2	25	30	30	25

Name	Scheme A (%)	Scheme B (%)	Scheme C (%)	Scheme D (%)
Final Exam	40	40	40	40
Total	100	100	100	100

6.2 Assessment Details

Practice Questions 1 (5%)

Date: Submit: Feb 3, Review: Feb 4/5, completed through PEAR
(<https://peartool.opened.uoguelph.ca/user/signon.cfm>)

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

- Course Content:
 - Communication - Principles

Midterm 1 (25%)

Date: Tuesday February 9, 1:00-2:20, Online using Respondus Lockdown Browser

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

- Course Content:
 - Communication -Principles

Practice Questions 2 (5%)

Date: Submit: March 10, Review: March 11/12, completed through PEAR
(<https://peartool.opened.uoguelph.ca/user/signon.cfm>)

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

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

Midterm 2 (25%)

Date: Tuesday March 16, 1:00-2:20, Online using Respondus Lockdown Browser

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

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

Final Exam (40%)

Date: Wednesday April 21, 11:30am-1:30pm, Online using Respondus Lockdown Browser

Learning Outcome: 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 TESTS

Both midterms will be administered during the protected timetable class time (i.e. Tuesdays 1:00-2:20) online using Respondus lockdown browser *software with the microphone and web cam enabled*.

The final exam will be administered during the final exam period. online using Respondus lockdown browser with the microphone and web cam enabled. Our final exam is currently scheduled for Wednesday April 21st, 11:30-1:30.

All tests (midterms and finals) will be comprised of short and long answer written style questions.

Note:

This course currently plans to use Respondus Lockdown software for some assessments. Your instructors are aware that some students have expressed concerns about the use of this exam invigilation software. The University Administration is currently evaluating the matter of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation. Your instructors are committed to an equitable and accessible assessment experience and will adapt, based on guidance provided

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

- 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

All instruction and assessments will be completed remotely, through courselink, ZOOM, and PEAR.

Note:

This course currently plans to use Respondus Lockdown software for some assessments. Your instructors are aware that some students have expressed concerns about the use of this exam invigilation software. The University Administration is currently evaluating the matter of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation. Your instructors are committed to an equitable and accessible assessment experience and will adapt, based on guidance provided.

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.selfregulationskills.ca/>

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

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>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

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

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic 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>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.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.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

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>

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

9.10 Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.
