



School of Health and Exercise Sciences  
HES 305: Exercise Physiology II | Fall Term, 2024

*We respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, unceded territory UBC Okanagan is situated.*

**Department:** Health and Exercise Sciences

**Instructor(s):** Dr. Matteo Ponzano

**Instructor(s) Email:** matteo.ponzano@ubc.ca

**Delivery modality:** In-Person

**Course location:**

**Course days/hours:**

**Lab location:** UCH 110

**Lab days/hours:** see below

**Office hours:**

**Teaching Assistants:**

**Prerequisite:** HMKN 200 (or HES 105)

Course Description

This course combines both lecture and laboratory investigation to achieve the learning objectives. The lectures will focus on the concepts and principles underpinning the study of exercise physiology. Laboratory activities specifically address the methodology of measurement and assessment of physiological systems during exercise and environmental stresses and provide opportunities for applying and integrating course concepts. In addition, laboratory activities focus on clinical standards of measurement. Active participation for course activities including class discussions and contributions to laboratory sessions is encouraged, and will best support student learning.

Course Structure

This course will be conducted in an **in-person** format. It is recommended that students attend all components of the course (and expected that students attend all laboratory sessions) in order to best support learning. Sessions will not be live-streamed. Some course activities will include pre-recorded videos or external resources, but instruction will be primarily in-person, unless extenuating circumstances warrant a modification.

- **Course lectures** will be delivered **in-person** at the locations and times specified for this course. It is recommended to attend lecture to support student learning, unless illness or other extenuating circumstance precludes their attendance. If students are sick, we ask that they not to attend campus, per UBCO policy. Lectures will be recorded and

uploaded to the course Canvas website; students may review sessions as needed. Students are encouraged to attend class whenever reasonably possible, to have questions answered and engage in collaborative, active learning in the in-person lecture format, which will support their understanding of course content. For any asynchronous material (pre-recorded and posted to Canvas the week of the lecture), students are expected to review the material and complete any associated activities (as a check for understanding) prior to participating in any in-person components of the lecture.

- **Laboratory** experiential learning sessions will be conducted **in-person** at the locations and times specified for each student's registered laboratory section. Attendance at students' specific registered lab time is required except in cases of illness or extenuating circumstances. If students are unable to attend their laboratory session, they must contact their course instructor and teaching assistant as soon as possible to either determine a suitable alternative, or be excused from the session (laboratory sessions will not be recorded). Laboratory sessions will involve practical laboratory experiences and experiments (designed to explore course topics using laboratory measurement and activities), as well as tutorial & application sessions (designed to use coordinated activities and student-guided exploration of topics to learn scientific communication and extend student learning).

### Course overview and contents

Through lecture and laboratory experiences the student will gain an understanding of how human body systems are affected by acute and chronic exercise and environmental stresses. Specifically, this course will address gas exchange, transport, and vascular responses during exercise and includes the regulation and adaptation of the cardiovascular and respiratory systems during exercise and environmental stresses. Adaptations of the neuromuscular system will be discussed through special attention to the application of physiological principles of muscular exercise and physical conditioning.

### Learning outcomes or objectives

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

1. Describe how human physiological systems (i.e., metabolic, cardiovascular, respiratory, neuromuscular) are controlled and how they respond to the demands of exercise and environmental stresses (e.g., thermal, diving, altitude).
2. Understand how multiple systems work in an integrative manner to maintain cellular homeostasis under fatiguing conditions, during exercise, and environmental stresses.
3. Demonstrate understanding of physiological measurements during acute exercise and environmental stresses in a laboratory setting.
4. Integrate and apply the cardio-respiratory physiological principles of the "healthy human" to other stresses including disease, travel to high altitude, and diving.
5. Write assignments using communication skills necessary for scientific inquiry.

### Recommended textbook

Stanfield, Cindy L. Principles of human physiology. Pearson Education, Inc. Upper Saddle River,

NJ, USA. 5th ed. Online (e-book) or Hardcopy available.

**Recommended readings**

Other recommended readings and recommended supplementary material will be posted through the term to Canvas according to the class schedule.

**Methods of assessment**

**Lab Assignments (2 x 10%)** 20%

*Using data from the Lab Experiment sessions, as well as the frameworks from the Scientific Reporting sessions, students will be asked to complete individual assessments. Each assignment will explore elements of scientific reporting. These assignments will include creating appropriate research questions and ethical study conduct, analyzing study results and discussing experimental findings and critiquing research.*

**Midterm exam** 20%

An individually-written assessments based on lecture and laboratory information, assessed via multiple choice, matching, true-false, fill-in-the-blank, short answer and long answer questions, designed to support learning and understanding of lesson material throughout the course. The midterm must be completed individually, without discussion, collaboration or use of unauthorized resources/materials (more information will be available through the term).

**Final lab report** 20%

*As a culminating assessment for the Laboratory Component, students will investigate a laboratory experiment performed through the term. Students develop a study question, create a hypothesis and rationale, describe the study methodology, collect and analyze experimental results and discuss the findings. Students will submit a complete scientific Lab Report. More details will be available regarding this project during the term.*

**Final exam** 40%

*This assessment will consist of multiple choice, true/false, matching, fill-in-the-blank, short answer and long answer questions. It will cover all topics from the course (cumulative), including material not yet evaluated in other assessments, and will be delivered during the assigned Final Exam time period. The Final Exam must be completed individually, without discussion, collaboration or use of unauthorized resources (more information will be available during term).*

**Course Schedule (dates and topics subject to change)**

Wk.	Day	Date	Topic	Lab
1	Tue	Sept 3	Course intro + Respiratory Physiology	<b>NO LAB</b>
	Thu	Sept 5	Respiratory Physiology	

2	Tue	Sept 10	Respiratory Physiology	1	Pre-Screening Scientific Reporting (1)
	Thu	Sept 12	Respiratory Physiology		
3	Tue	Sept 17	Cardiovascular Physiology	2	RMR & Incremental
	Thu	Sept 19	Cardiovascular Physiology		
4	Tue	Sept 24	<b>NO CLASS</b>	3	Thresholds (Vent + BLA)
	Thu	Sept 26	Cardiovascular Physiology		
5	Tue	Oct 1	Cardiovascular Physiology	<b>NO LAB</b>	
	Thu	Oct 3	Metabolic Physiology		
6	Tue	Oct 8	Metabolic Physiology	4	Scientific Reporting (2)
	Thu	Oct 10	Metabolic Physiology		
7	Tue	Oct 15	Metabolic Physiology	<b>NO LAB</b>	
	Thu	Oct 17	Neuromuscular Physiology		
8	Tue	Oct 22	Neuromuscular Physiology	5	Exercise recovery
	Thu	Oct 24	Neuromuscular Physiology		
9	Tue	Oct 29	Neuromuscular Physiology	6	EMG and fatigue
	Thu	Oct 31	Bone and Joint Physiology		
10	Tue	Nov 5	Bone and Joint Physiology	7	Scientific Reporting (3)
	Thu	Nov 7	Bone and Joint Physiology		
11	Tue	Nov 12	<b>NO CLASS</b>	<b>NO LAB</b>	
	Thu	Nov 14	<b>NO CLASS</b>		
12	Tue	Nov 19	Endocrine Physiology	8	Hypoxia
	Thu	Nov 21	Endocrine Physiology		
13	Tue	Nov 26	Environmental Physiology	9	REVIEW

	Thu	Nov 28	Environmental Physiology		
14	Tue	Dec 3	Review	<b>NO LAB</b>	
	Thu	Dec 5	Review		

**Lab: UCH 110** (all times in Pacific Daylight/Standard Time; local time Kelowna, BC)

L01 Monday 8 AM to 10 AM	L06 Tuesday 1 PM to 3 PM
L02 Monday 10 AM to 12 PM	L07 Thursday 11 AM to 1 PM
L03 Monday 2 PM to 4 PM	L08 Thursday 1 PM to 3 PM
L04 Monday 4 PM to 6 PM	L09 Friday 11 AM to 1 PM
L05 Tuesday 11 AM to 1 PM	L10 Friday 1 PM to 3 PM

**Learning Materials**

All required readings for this course will be available via Canvas. Under the weekly module within Canvas, you will see a "weekly prep" section. In this section you will find links to all of the required readings and assigned videos that are freely available.

**Late policy**

Assignment deadlines are established to support your continued sequential and progressive learning. At the same time, we acknowledge that there are sometimes unforeseen circumstances that preclude our ability to meet those deadlines. Please inform your instructor of any late submissions, or to seek approval for an extension if needed; refer to the policies for the School of Health & Exercise Sciences (including Self-Declaration policy). With respect to these principles, the following policies apply to these evaluations:

- Assignments (Projects) will be subject to a late penalty of 5% for the first 24 hours and 10% per day up to 7 days. Assignments submitted after 7 days will be given a grade of zero.
- Regrading of marked assignments will only be performed up to 10 days after an assessment has been marked, and after a reasonable course of action has been taken (e.g., reviewed the assignment rubric, discussed with the instructor, reflected on the answers, support for alternative marking) at which point another teaching member or third party will mark the assignment.

**Missed exam policy**

If students anticipate the need for rescheduling of a midterm ahead of time (for a reason outlined in the SHES polices), they must make a request to their instructor as early as possible (at least 2 weeks prior). If a midterm is missed for medical or other reasons outlined in the SHES policies, students must inform their instructor and request a new date for writing as soon as reasonably possible. The instructor will work with you to determine the best course of action. If you have missed an assessment, it is important that you do not discuss the missed exam with students who have written the exam, as this constitutes a form of Academic Misconduct. Please

note, no re-writes (writing an assessment more than once) will be permitted and requests for moving of a midterm date may or may not be approved. Final exam is addressed below.

### Missed Activity Policy:

Throughout the term, students will be asked to participate as a community of learners, contributing to the ongoing evolution of course material, of peer learning, of interpersonal discourse and peer feedback. Class participation is especially valuable during practical laboratory sessions, where students will work together to conduct activities and experiments to promote learning. Therefore, full attendance and active participation in laboratory activities is required for course completion (exceptions may be granted for students with excused absences). A grade of Pass / Fail will be given for attendance and active participation (e.g., volunteering as a participant, leading measurements, contributing to group discussions, completion of lab activities, safe and professional conduct) in labs through the term. *There is a 10% deduction from the total lab mark for every unexcused absence to laboratory sessions.* If you are sick or have another unforeseen issue arise, please

### UBC Values

UBC creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada, and the world. UBC's core values are excellence, integrity, respect, academic freedom, and accountability.

Policies and Regulations

Visit [UBC Okanagan's Academic Calendar](#) for a list of campus-wide regulations and policies, as well as [term dates and deadlines](#).

### Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course. Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the [Academic Calendar](#).

### Academic Misconduct

The academic enterprise is founded on honesty, civility, and integrity. Violations of academic integrity (i.e., [academic misconduct](#)) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences

of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred for consideration for academic discipline. Careful records are kept to monitor and prevent recurrences. Any instance of cheating or taking credit for someone else's work, whether intentionally or unintentionally, can and often will result in at minimum a grade of zero for the assignment, and these cases will be reported to the Head of the Department and Associate Dean Academic of the Faculty.

### *Student Service Resources:*

#### Walk-In Well-Being Clinic

The Walk-In Well-Being clinic offers no-fee, brief, single-session psychological services. Sessions are led by a doctoral student in clinical psychology and supervised by a registered psychologist (UBCO Faculty member). Clinicians can provide support with stress management, sleep, self-care, depression, anxiety, interpersonal issues, substance misuse, coping with academic demands/stressors, and provide options for connecting to additional resources. Virtual or in-person sessions are available at the UBCO Psychology Clinic, located in ASC 167 with or without an appointment, on Tuesdays and Thursdays between 10 am and 3 pm from September to June, excluding campus closures.

**UNC 337**      250.807.8421 (ext. 1)

Email: [ipc.ok@ubc.ca](mailto:ipc.ok@ubc.ca)

Web: <https://psych.ok.ubc.ca/psychology-clinic/walk-in-wellness/>

#### Student Supports, Resources & Campus Services

Visit the [Student Support and Resources page](#) to find one-on-one help or explore resources to support your experience at UBC Okanagan, as well as many other campus services available to all students.

#### Advising Options

Visit the [Advising Options page](#) to find out about the variety of advising options available to students including but not limited to academic, career and accessibility.

#### Safewalk

Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at **250-807-8076**.

Web: [www.security.ok.ubc.ca](http://www.security.ok.ubc.ca)