



School of Health and Exercise Sciences
HES 351 - Clinical Exercise Physiology | Winter Term 1, September 2024

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

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Faculty: Faculty of Health and Social Development
Department: School of Health and Exercise Sciences

Office Hours:

Tuesdays at 11:00am-12:00pm or by Appointment
Office Hours will be held in-person (ART 163) unless otherwise noted

Academic Calendar Entry

Integrative approach to normal and abnormal responses to exercise as well as the physiological effects of chronic conditions and their clinical management in exercise physiology. [3-0-2]. 3 Credits

Prerequisite: All of HES 250, HES 311. Registration limited to students in the Clinical Exercise Physiology concentration of the B.H.E.S program.

Class Times (*all times in Pacific Standard Time; local time Kelowna, BC*):

- **LECTURE:** Tuesdays & Thursdays: 2:00pm – 3:30pm (*EME 2181*)
- **DISCUSSION/TUTORIAL:** Mondays 2:00pm – 4:00pm (*UCH 109*)

Course Format

The course uses lectures and discussion (tutorials) to achieve the learning objectives. Lectures will focus on identifying and understanding the normal and abnormal responses and adaptations to exercise training and discerning the physiological bases for each of these scenarios. Tutorial sessions will utilize case studies and clinical reviews to highlight key components in the mechanisms, management and influences on health, symptoms and functional capacity for different disorders and chronic conditions.

Course Delivery

This course will be delivered primarily in-person (following University & health unit permissions) for both lectures and tutorials, with some asynchronous learning phases to complement lecture sessions. Any remote lectures or tutorials will be hosted via Zoom (accessed by the link on the Course Canvas site) and will begin at the scheduled class times. Lecture sessions may be recorded and uploaded to the course website, however do not depend solely on these for learning. In the cases of Asynchronous lesson delivery, a pre-recorded lesson or linked video will be posted prior to the scheduled class and students may access that lesson at their preferred time, prior to subsequent lessons. Tutorials will not typically be recorded.

Required Readings and Videos

- Thompson, W.R. & Ozemek, C. (2025) ACSM's Clinical Exercise Physiology: 2nd Ed. Wolters Kluwer, Philadelphia, USA [*This textbook is freely accessible to UBC Okanagan Students via the Library for this term*]
<https://exercisescience.lwwhealthlibrary.com/book.aspx?bookid=3311>
- Other Required Resources will be provided through the term.

Recommended Readings

- Ehrman, J.K., Gordon, P.M., Visich, P.S., & Keteyian, S.J. (2023). *Clinical exercise physiology* (5th ed.). Human Kinetics.

There is a **significant amount of reading and consolidation of material required for this course, please plan your learning time around this. Your Instructor will support you with strategies to support your reading, do not hesitate to ask for help.



Course Overview, Content, and Objectives

The course is designed to advance student understanding of exercise physiology and pathophysiology and provide practical applications of the biological and psychological effects of chronic conditions. Students will be introduced to underlying mechanisms, common signs and symptoms as well as disease management strategies for many key chronic conditions and will integrate this understanding into the applications of exercise and the effects of disease and treatments on exercise capacity. The learning objectives are to:

- Facilitate learning of advanced and integrative approach to exercise physiology, including a framework for understanding how disease pathology may influence health and exercise and assessments thereof.
- Assist students in their understanding of basic pharmacologic principles and common medications for several chronic conditions and how treatments may influence exercise capacity.
- Introduce students to current guidelines and recommendations for physical activity and exercise for several disorders and chronic conditions and critique the evidence for exercise training and prescription in these scenarios.

Learning Outcomes

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

1. Identify pathological adjustments and adaptations to exercise, explain the underlying mechanisms that are involved in these abnormal responses and recommend additional considerations for testing individuals with key chronic conditions.
2. Explain the etiology and mechanisms of disease pathophysiology, signs, symptoms and potential adverse events and how associated treatments, management strategies and/or interventions will affect these characteristics.
3. Describe the principles of pharmacology and the therapeutic and nontherapeutic effects of medication in key chronic conditions, including their effects on physiological responses to exercise, functional capacity and other health components (e.g., recovery, weight management, mental health).
4. Examine and appraise the evidence and current recommendations for physical activity, exercise prescription and training for key chronic conditions and develop strategies for designing a safe and effective exercise prescriptions for individuals with chronic disease.
5. Discuss the clinical exercise physiologist's role in disease management and health promotion, including health and fitness assessments, risk stratification, safety management, exercise compliance and health education.

Estimated Coursework Time:

Quality of learning is more important than quantity; every student learns differently and requires different time to learn and complete tasks, but these estimates highlight some expectations of time required to support your learning.

- *Lecture:* 160mins / week
- *Tutorial:* 110mins / week
- *Reading:* 120mins / week
- *Assignments:* 30mins / week

TOTAL COURSE TIME: ~7-9 hrs / week (4.3 independent, 4.6 scheduled time)

Evaluation Criteria and Grading

• Assignment (1 x 15%)	15%	[LO1, LO2, LO3, LO5]
• Tests (3 x 15%)	45%	[LO1, LO2, LO3, LO4, LO5]
• Case Study	40%	[LO1, LO2, LO3, LO4, LO5]



Course Schedule (subject to modification of topics & timelines)

Week # <i>(Tues-Mon)</i>	Day	Date	Lesson Topic	Reading	Learning Outcome	Assessments
1	Tuesday (Lecture)	03-Sep-24	Orientation + Ex Phys Review	Chapter 4 & 9	LO5, LO3	
	Thursday (Lecture)	05-Sep-24	Ex Phys Review	Additional		
	Monday (Discussion/ Tutorial)	09-Sep-24	Across the Lifespan (<i>Asynchronous</i>)	Chapter 2 (~50pgs)	LO1, LO5, LO4	
Tuesday (LEC)	10-Sep-24	Across the Lifespan				
2	Thursday (LEC)	12-Sep-24	Pharmacology	Chapter 7 (~60pgs)	LO1, LO2, LO4	
	Monday (TUT)	16-Sep-24	Pharmacology			
	Tuesday (LEC)	17-Sep-24	Pharmacology			
3	Thursday (LEC)	19-Sep-24	Case Study Previews + REVIEW			
	Monday (TUT)	23-Sep-24	Test #1			Test 1
	Tuesday (LEC)	24-Sep-24	Cardiovascular Disease	Chapter 5 (~80pgs)	LO1, LO2, LO4	
Thursday (LEC)	26-Sep-24	Cardiovascular Disease				
Monday (TUT)	30-Sep-24	NO TUTORIAL				
5	Tuesday (LEC)	01-Oct-24	Cardiovascular Disease	Chapter 11 (~50pgs)	LO1, LO2, LO4	
	Thursday (LEC)	03-Oct-24	Musculoskeletal			
	Monday (TUT)	07-Oct-24	CVD Case			
6	Tuesday (LEC)	08-Oct-24	Musculoskeletal	Chapter 13- 14 (~40pgs)	LO1, LO2, LO4	
	Thursday (LEC)	10-Oct-24	Cancer + Immune			
	Monday (TUT)	14-Oct-24	NO TUTORIAL			
7	Tuesday (LEC)	15-Oct-24	Cancer	Chapter 10 (~30pgs)	LO1, LO2, LO4	
	Thursday (LEC)	17-Oct-24	Cancer			
	Monday (TUT)	21-Oct-24	Cancer Case			
8	Tuesday (LEC)	22-Oct-24	Endocrine & Metabolic	Chapter 8 (~60pgs)	LO1 – LO5	
	Thursday (LEC)	24-Oct-24	REVIEW			
	Monday (TUT)	28-Oct-24	Test #2			
9	Tuesday (LEC)	29-Oct-24	Endocrine & Metabolic	Chapter 12 (~40pgs)	LO1, LO2, LO4	
	Thursday (LEC)	31-Oct-24	Endocrine & Metabolic			
	Monday (TUT)	04-Nov-24	Endocrine & Metabolic Case			
10	Tuesday (LEC)	05-Nov-24	Respiratory Disease	Chapter 8		
	Thursday (LEC)	07-Nov-24	Respiratory Disease			
	Monday (TUT)	11-Nov-24	Reading Break			
11	Tuesday (LEC)	12-Nov-24	Reading Break	Chapter 15 (~20pgs)	LO1 – LO5	
	Thursday (LEC)	14-Nov-24	Reading Break			
	Monday (TUT)	18-Nov-24	Respiratory Disease Case			
12	Tuesday (LEC)	19-Nov-24	Physical & Sensory	Chapter 16 (~20pgs)	LO1 – LO5	
	Thursday (LEC)	21-Nov-24	Physical & Sensory			
	Monday (TUT)	25-Nov-24	Physical & Sensory Case			
13	Tuesday (LEC)	26-Nov-24	Behavioural & Mental Health			
	Thursday (LEC)	28-Nov-24	REVIEW			
	Monday (TUT)	02-Dec-24	Test #3			Test 3
14	Tuesday (LEC)	03-Dec-24	Comorbidities	Chapter 16 (~20pgs)		
	Thursday (LEC)	05-Dec-24	Comorbidities			
			END OF CLASSES			
FINAL EXAM PERIOD		December 9-20		Final Project Due (during Exam period)		

*Note: the week schedule is displayed from Tuesday to Monday to reflect the lesson module learning sequence/organization



Course Assessment Details:

Below are brief descriptions of the assessments involved in this course, including course weighting, assessment topics and estimates of time required to complete the assessment (these are estimates to help guide work requirements, however individual students may require more or less time). Due dates of assignments below are approximate and are subject to change based on course progression to permit students appropriate time for completion. Further information for each assessment will be provided during the course.

Tests

Students will complete tests related to the topics covered during both lecture and tutorials (and their supplementary resources) and will assess student understanding & integration of course knowledge as well as challenge students to provide a critical analysis of a component of a case study or topic in clinical exercise physiology. Tests will consist of multiple choice, true/false (and explanations), short answer and long answer questions. They will be non-cumulative. Tests will be completed in-person, closed book at the specified date.

Course Weight: 45% (3 x 15%)

Due Dates: September 23, October 28, December 2, 2024

Assignment

One assignment will be completed that will challenge students to provide a critical analysis of a component of a case study or topic in clinical exercise physiology. Specific assignment description will be provided 10-14 days in advance of the due date and students will be asked to provide an appropriate analysis of the case presented. It is estimated that the assignment will require approximately 3-5 hours of work to complete.

Course Weight: 15% (1 x 15%)

Due Dates: October 21, 2023

Case Study

Students will work individually to critically evaluate a clinical case study and create a report related to the client history and condition and determine appropriate targets for an evidence-based application of exercise training to safely and effectively progress this individual towards the health or fitness goal. The Case Study will involve submission of a written report (analysis and prescription). The Case Study will be assigned during the term. Further descriptions of the assessment, cases and project grading will be provided during the course.

Course Weight: 40%

Due Date: TBD (during Final Examination Period)

Final Exam - There is no final exam for this class.

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 10 days. Assignments submitted after 10 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 policies), 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 tutorial sessions, where students will work together to conduct activities that promote learning. Therefore, **full attendance and active participation in tutorial/discussion activities is required for course completion** (exceptions may be granted for students with excused absences). A mark of Pass / Fail will be given for attendance and active participation (e.g., contributing to group discussions, safe and professional conduct) in tutorials through the term. *There is a 10% deduction from the total course mark for every unexcused absence to tutorial sessions.* If you are sick or have another unforeseen issue arise, please contact your Instructor as soon as possible so that other accommodations may be made.

Generative Artificial Intelligence Use in this Course:

The use of generative AI tools, including ChatGPT and other similar tools, to complete or support the completion of any form of assignment or assessment in this course is not allowed and would be considered academic misconduct.

Passing/Grading Criteria

You must achieve an overall grade of at least 50% to pass this course. Individual assessments will have their own grading rubrics and criteria, please ensure you understand their policies through the term.

Additional UBC-Okanagan Policies

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](#).

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.

Final Examinations

You can find the [Senate-approved term and examination dates here](#). Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 27-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>



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, 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.

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014>

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 **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