THE UNIVERSITY OF BRITISH COLUMBIA

School of Health and Exercise Sciences
HES 351 - Clinical Exercise Physiology | Winter Term 1, September 2023

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

Teaching Assistant
- Jonathan Low jonathan.low@ubc.ca

Office Hours:
Tuesdays at 11:00am-12:00pm
Office Hours will be held in-person (ART 163) and on Zoom *(weekly link will be on Canvas)*

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*: Wednesdays & Fridays: 3:30pm – 5:00pm (*ART 219*)
- *DISCUSSION/TUTORIAL*: **T01**- Fridays 11am-1pm; **T02**- Fridays 1-3pm (*UCH 110*)

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 will also be recorded and uploaded to the course website for students who cannot attend. In the cases of Asynchronous lesson delivery, a pre-recorded lesson or linked video will be posted 2-7 days prior to the scheduled class and students may access that lesson at their preferred time, prior to subsequent lessons.

Required Readings and Videos

- Thompson, W.R. (2019) ACSM's Clinical Exercise Physiology: 1st Ed. Wolters Kluwer, Philadelphia, USA ***[This textbook is freely accessible to UBC Okanagan Students via the Library for this term]***
  https://exercisescience-lwwhealthlibrary-com.ezproxy.library.ubc.ca/book.aspx?bookid=2604
- Other Required Resources will be provided through the term.

Recommended Readings

- Ehrman, J.K., Gordon, P.M., Visich, P.S., & Keteyian, S.J. (2019). *Clinical exercise physiology* (4th ed.). Human Kinetics.
- Students are encouraged to consistently participate in and review the **Course Canvas Discussion Board** to assist in their learning of course material. Questions posted to the Canvas Discussion

Board may be answered by classmates, TAs or the course instructor and supplementary topics and resources may be posted to the Discussion Board.

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.

Evaluation Criteria and Grading

- Assignments *(2 x 10%)* ..... 20% *[LO1, LO2, LO3, LO5]*
- Reflection / Engagement ..... 5% *[LO4, LO5]*
- Tests *(3 x 15%)* ..... 45% *[LO1, LO2, LO3, LO4, LO5]*
- Case Study ..... 30% *[LO1, LO2, LO3, LO4, LO5]*

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Course Schedule *(subject to modification of topics & timelines)*

Week #	Day	Date	Lecture Topic	Reading	TUTORIAL TOPIC (FRIDAY)	Learning Outcome	Assessments
1	Wednesday	06-Sep-23	Course Introduction & CEP		Exercise Physiology Review	LO5, LO3	
	Friday	08-Sep-23	Exercise Physiology Review				
2	Wednesday	13-Sep-23	Across the Lifespan	Chapter 2	Case Study Overview	LO1, LO5, LO4	
	Friday	15-Sep-23	Across the Lifespan				
3	Wednesday	20-Sep-23	Cardiovascular Disease	Chapter 5	Case Study	LO1, LO2, LO4	
	Friday	22-Sep-23	Cardiovascular Disease				
4	Wednesday	27-Sep-23	Cardiovascular Disease	Chapter 6	Cardiovascular Disease	LO1, LO2, LO4	
	Friday	29-Sep-23	Review				
5	Wednesday	04-Oct-23	*Test #1*	Chapter 9	Respiratory Disease	LO1 – LO5	**Test 1**
	Friday	06-Oct-23	Respiratory Disease				
6	Wednesday	11-Oct-23	Respiratory Disease	Chapter 9	No Tutorial	LO1, LO2, LO4	
	Friday	13-Oct-23	Cancer and Immune System	Chapter 13, 14			
7	Wednesday	18-Oct-23	Cancer	Chapter 13	Cancer Case	LO1, LO2, LO4	**Assignment 1**
	Friday	20-Oct-23	Endocrine & Metabolism	Chapter 10			
8	Wednesday	25-Oct-23	Endocrine & Metabolism	Chapter 10	Review	LO1, LO2, LO4	
	Friday	27-Oct-23	Endocrine & Metabolism				
9	Wednesday	01-Nov-23	*Test #2*	Chapter 11	Musculoskeletal Disorders	LO1, LO2, LO4	**Test 2**
	Friday	03-Nov-23	Musculoskeletal Concerns				
10	Wednesday	08-Nov-23	Musculoskeletal Concerns	Chapter 11	Physical & Sensory Conditions	LO1 – LO5	
	Friday	10-Nov-23	Physical, Sensory, Intellectual Impairments	Chapter 12			**Assignment 2**
11	Wednesday	15-Nov-23	Midterm Break - No Class		No Tutorial	LO1, LO2, LO4	
	Friday	17-Nov-23	Midterm Break - No Class				
12	Wednesday	22-Nov-23	Physical, Sensory, Intellectual Impairments	Chapter 12	Mental Health & Pathology	LO1, LO2, LO4	
	Friday	24-Nov-23	Behaviour and Mental Health	Chapter 15			
13	Wednesday	29-Nov-23	Persons with Comorbidities	Chapter 16	Persons with Comorbidities	LO1 – LO5	
	Friday	01-Dec-23	Review				
14	Wednesday	06-Dec-23	*Test #3*		No Tutorial		**Test 3**
	Friday	08-Dec-23	End of Term - No Class				
FINAL EXAM PERIOD		**December 10-21**			**Final Project Due *(during Exam period)***		

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.

Reflections & Engagement
Throughout the term, students will be required to participate as a community of learners, contributing to the ongoing evolution of course material, of peer learning, of interpersonal discourse and peer feedback. This will be assessed via attendance and evidence of significant impact or contribution (e.g., active participation in group activities)
Course Weight: 5%
Due Dates: Ongoing

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: October 4, November 1, December 6, 2023

Assignments
Two assignments 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 descriptions will be provided 10-14 days in advance of the due date and students will be asked to provide an appropriate analysis of the cases presented. It is estimated that each assignment will require approximately 3-5 hours of work to complete.
Course Weight: 20% (2 x 10%)
Due Dates: October 18 & November 10, 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: 30%
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 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 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 grade 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

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, may be found in the Academic Calendar at: http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,0

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

UBC Okanagan Disability Resource Centre

The DRC facilitates disability-related accommodations and programming initiatives to remove barriers for students with disabilities and ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course, please contact the DRC at:

UNC 215 250.807.8053
email: drc.questions@ubc.ca
Web: www.students.ok.ubc.ca/drc

UBC Okanagan Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

UNC 325H 250.807.9291
email: equity.ubco@ubc.ca
Web: www.equity.ok.ubc.ca

Student Wellness

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

UNC 337 250.807.9270
email: healthwellness.okanagan@ubc.ca
Web: www.students.ok.ubc.ca/health-wellness

Office of the Ombudperson

The Office of the Ombudsperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem

solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.

UNC 328 250.807.9818
email: ombuds.office.ok@ubc.ca
Web: www.ombudsoffice.ubc.ca

Student Learning Hub
The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies**. Students are encouraged to visit often and early to build the skills, strategies and behaviors that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

LIB 237 250.807.8491
email: learning.hub@ubc.ca
Web: www.students.ok.ubc.ca/slh

The Global Engagement Office
The Global Engagement Office provides advising and resources to assist International students in navigating immigration, health insurance, and settlement matters, as well as opportunities for intercultural learning, and resources for Go Global experiences available to all UBC Okanagan students, and more.

UNC 227
email: ubco.global@ubc.ca
Web: www.students.ok.ubc.ca/global-engagement-office/

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Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at ***250-807-8076.***
For more information, see: www.security.ok.ubc.ca