THE UNIVERSITY OF BRITISH COLUMBIA

# School of Health and Exercise Sciences
# HES 455 – Clinical Exercise Physiology: Applications in Chronic Conditions: Oncology | Winter Term 1, September 2026

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

**Instructor:** Dr. John Sasso *(he/him/his)*
**Office:** ART 163
**Contact:** via Canvas Message
**Office Hours:** *By appointment*

**Department**: School of Health & Exercise Sciences
**Faculty:** Faculty of Health & Social Development
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## Academic Calendar Entry

Clinical considerations of cancer pathology. Safe and effective design and implementation of exercise programs for people living with cancer. Critical review of evidence, standards and recommendations for the use of exercise in the management and prevention of cancer. [3-0-0] *Prerequisite: [this term only]- HES 311. Registration limited to students Clinical Exercise Physiology concentration of the B.H.E.S program, and approved 4th year BHES students.*

## Class Schedule *(all times in Pacific Daylight Time; local time Kelowna, BC)*:

- **LECTURE [FIP 239]**: Tuesdays & Thursdays: 2:00pm – 3:30pm
- The UBC Health IPE Workshop is scheduled *outside the regular class time* on Friday, November 6. Details will be provided on Canvas.

## Course Format

- This course is designed for students in the Clinical Exercise Physiology concentration and is delivered primarily through in-person classes, with a small number of scheduled asynchronous sessions identified in the course schedule
- Students enter HES 455 with foundational preparation in clinical exercise testing, exercise prescription, monitoring and professional practice. The course therefore emphasizes the oncology-specific knowledge, adaptations and clinical reasoning that extend those competencies into cancer care
- Many sessions use a recurring clinical learning structure: an opening patient case, core content, explicit CEP translation (what to know / what to watch for / what to do), evidence review, and return to the case
- The required textbook and selected readings provide foundational preparation. Class time will be used to clarify complex concepts, work through cases, critically examine evidence, and apply content to clinical exercise physiology practice

## Course Delivery

**In-Person Sessions**

- Most scheduled classes will be in-person and may include lecture, case discussion, clinical reasoning activities, evidence appraisal, peer work, and guest speakers.
- Attendance and active participation are expected unless an excused absence or approved academic concession applies

**Asynchronous Sessions**

- A small number of sessions will be completed asynchronously (via Canvas). These sessions will include directed learning materials and may include a brief completion or application activity

**Guest / Interprofessional Sessions:** Selected sessions will include invited clinicians and researchers. These sessions are intended to expose students to current exercise oncology practice, guideline development, research, and interprofessional care.

## Learning Materials

**Required Resource**

- American College of Sports Medicine, Schmitz, K. H., Schwartz, A. L., & Campbell, A. (2024). ACSM's Essentials of Exercise Oncology (1st ed.). Wolters Kluwer. *[Note: Print or digital format of the required text may be used]*
- Specific chapters and reading priorities will be identified on individual Canvas session pages. The textbook is intended to serve both as a course learning resource and a professional reference for exercise oncology practice.

**Other Required / Recommended Resources**

- Selected peer-reviewed articles, professional guidelines, clinical resources and assessment tools will be provided or linked through Canvas and the UBC Library at no additional cost.
- Canadian Society for Exercise Physiology – Physical Activity Training for Health (CSEP-PATH) 2nd or 3rd Edition & resources from previous CEP courses may be used as reference materials

## Course Overview, Content, and Objectives

This course provides an advanced examination of cancer biology, physiology and pathophysiology from the perspective of Clinical Exercise Physiology. Students will examine cancer diagnosis and treatment, the systemic and functional consequences of cancer and cancer therapies, physiological responses to exercise, and the application of exercise assessment, monitoring and prescription across the cancer continuum.

A central emphasis of HES 455 is clinical reasoning: understanding why cancer or treatment changes exercise practice, what a CEP should monitor or clarify, where current guidelines and evidence are sufficient or limited, and when collaboration or referral is appropriate. Major guidelines and research evidence will be treated as tools for informed decision-making rather than as stand-alone rules. The course objectives are to:

- Advance student understanding of cancer pathophysiology, treatment and the influence of exercise on tumour biology and other physiological systems.
- Develop cancer-specific clinical reasoning for screening, assessment, exercise monitoring, risk management and referral.
- Support safe, individualized and evidence-informed exercise prescription across prehabilitation, active treatment, survivorship, advanced disease and supportive/palliative care.
- Examine the role of the Clinical Exercise Physiologist within interprofessional oncology care and strengthen students' ability to communicate and justify clinical decisions.
- Develop the ability to critically interpret exercise oncology guidelines and research, including situations where evidence remains incomplete.

## Learning Outcomes

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

1. Describe key characteristics of cancer, including etiology, prevalence, pathophysiological basis, common symptoms, comorbidities, and disease progression.
2. Demonstrate understanding of common cancer-specific diagnostic tests, treatments and interventions, functional limitations, contraindications to exercise and patient care plans in this population and how each of these affect exercise prescription in this population.
3. Develop safe and effective clinical exercise assessment strategies, and evaluate, analyze and communicate relevant test results for key stakeholders.
4. Design a safe and effective exercise prescription, based on relevant assessments results, and describe an appropriate implementation of this prescription in individuals with, or at risk of cancer, including consideration of risks, equipment, environmental needs, emergency management and effective monitoring strategies.
5. Examine current standards, guidelines and the role of the clinical exercise physiologist within the integrated care team of this patient population and critically appraise health and exercise research in oncology.

**Course Assessments** [% of course grade]

| Course Assessment | Weight | Primary Learning Outcomes |
|---|---|---|
| Participation / Engagement | 5% | All |
| Canvas Discussion Posts (3) | 10% | LO5 |
| Interprofessional Education (IPE) Project: Pre-Brief (5%) + Post-IPE Reflection (10%) | 15% | LO5 |
| Clinical Reasoning Checkpoint | 5% | LO1, LO2, LO4 |
| Case Study / Prescription Project: Planning Checkpoint (5%) + Final Submission (20%) | 25% | LO2, LO3, LO4 |
| Midterm Examination | 15% | LO1, LO2 |
| Final Examination | 25% | LO1-LO5 |

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

| # | Day | Date | Course Topic | Activity / Assessment |
|---|---|---|---|---|
| 1 | Tue | 08-Sep-26 | Course Introduction: The CEP in Oncology | *In person* |
| 2 | Thu | 10-Sep-26 | Cancer Epidemiology and Burden | *Asynchronous* |
| 3 | Tue | 15-Sep-26 | Tumour Biology I: Oncogenesis & the Hallmarks of Cancer | *In person* |
| 4 | Thu | 17-Sep-26 | Tumour Biology II: Classification, Staging and Metastasis | *Asynchronous* |
| 5 | Tue | 22-Sep-26 | Systemic Effects of Malignancy | *In person* |
| 6 | Thu | 24-Sep-26 | Hematologic Cancers and Blood Count Considerations | Canvas Post 1 |
| 7 | Tue | 29-Sep-26 | Surgery and Radiation Therapy | *In person* |
| **—** | **Wed** | **30-Sep-26** | **No Class: National Day for Truth and Reconciliation** | |
| 8 | Thu | 01-Oct-26 | Systemic Therapies: Chemotherapy and Targeted Agents | *Asynchronous* |
| 9 | Tue | 06-Oct-26 | Hormone Therapy, Combination Treatment and Exercise Windows | *In person* |
| 10 | Thu | 08-Oct-26 | Exercise and Tumour Biology: Mechanistic Evidence | *In person* |
| 11 | Tue | 13-Oct-26 | Systemic Exercise Responses in the Cancer Context | *In person* |
| 12 | Thu | 15-Oct-26 | Cancer-Related Fatigue and Cachexia | *Asynchronous* |
| 13 | Tue | 20-Oct-26 | Lymphedema, CIPN and Cognitive Changes | *In person* |
| 14 | Thu | 22-Oct-26 | Cardiotoxicity, Bone Metastases and Immunosuppression | *In person* |
| 15 | Tue | 27-Oct-26 | Risk Stratification and Oncology-Specific Screening | Clinical Reasoning Checkpoint |
| **16** | **Thu** | **29-Oct-26** | **MIDTERM EXAM** | *In person* |
| 17 | Tue | 03-Nov-26 | CEP Scope and Role in the Oncology Care Team | *Guest / In person* |
| — | Thu | 05-Nov-26 | *No regular class \| replaced by IPE Workshop* | IPE Pre-Brief |
| — | ***Fri*** | 06-Nov-26 | UBC Health Interprofessional Education Workshop | *2:00-4:00 pm* |
| **—** | **M-F** | **09-13 Nov** | **Midterm Break: No Classes** | |
| 18 | Tue | 17-Nov-26 | IPE Debrief + Major Exercise Oncology Guidelines | Canvas Post 2 + Post-IPE Reflection |
| 19 | Thu | 19-Nov-26 | Guidelines, Evidence & the Evolving Field of Exercise Oncology | *Guest / In person* |
| 20 | Tue | 24-Nov-26 | Prescription I: Active Treatment and Prehabilitation | *In person* |
| 21 | Thu | 26-Nov-26 | Prescription II: Survivorship and Cancer-Specific Considerations | *In person* |
| 22 | Tue | 01-Dec-26 | Prescription III: Advanced Disease & Palliative Care | Canvas Post 3 |
| 23 | Thu | 03-Dec-26 | Psychosocial Considerations and Behaviour Change in Oncology | *In person* |
| 24 | Tue | 08-Dec-26 | Course Synthesis: Special Populations, Evidence Gaps & CEP Identity | *In person* |

**Final Examination:** formal UBC examination period (Dec. 12-22, 2026).
**Case Study / Prescription Project** due during the examination period; final date posted on Canvas.

## 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). Dates may be adjusted based on course progression to support appropriate sequencing of learning. Detailed instructions, rubrics and final due dates will be provided through Canvas.*

**Participation (5%)**
This small but important portion of the course grade reflects professional engagement with the learning community. Participation may include attendance and active contribution during in-person classes, case discussions, peer activities, guest sessions, and other designated learning activities. Required completion of the assigned UBC Health Integrated Curriculum module and active participation in the scheduled IPE workshop also contribute to this category. These participation requirements are separate from the two written IPE submissions. The emphasis is on meaningful engagement rather than simple presence.

**Canvas Discussion Posts (10%)**
Three short Canvas discussion activities will extend critical engagement with course topics. Posts will typically be approximately 150-200 words with a brief peer reply. Prompts will focus on clinical reasoning, evidence interpretation, guideline limitations, or emerging areas of exercise oncology. These activities are intended to help students practice concise, evidence-informed professional thinking.

**Interprofessional Education (IPE) Project (15%):** *Pre-Brief 5% + Post-IPE Reflection 10%*
Students will complete two individual, separately submitted assignments connected to the UBC Health IPE (Integrated Curriculum) workshop. The pre-brief prepares students to contribute an informed CEP perspective to the workshop cases and identify priorities, scope boundaries, information gaps, and questions for other professions. The post-IPE reflection analyzes role clarity, reciprocal learning, team communication, and changes in clinical reasoning. Completion of the assigned UBC Health module and participation in the workshop contribute to the separate Participation category.

**Clinical Reasoning Checkpoint (5%)**
The Clinical Reasoning Checkpoint is a short, low-stakes Canvas quiz completed before the midterm. The assessment involves a 30-minute, one-attempt quiz and includes MC/TF and 1-2 clinical vignette short answer questions. It provides an early opportunity to apply exercise-oncology concepts, practice the course's main examination question formats, and identify areas to strengthen before the midterm. The exact availability window and content scope will be posted in Canvas.

**Case Study / Exercise Prescription Project (25%)**: *Planning Checkpoint 5% + Final Submission 20%*
This major applied assignment asks students to work in the role of a CEP responding to a complex oncology referral. It has two stages: (1) students will submit a concise planning checkpoint that identifies case priorities, proposed assessments, preliminary goals and program direction, monitoring and safety considerations, and initial evidence sources; developmental feedback will inform the final project; (2) the final submission will be a structured professional clinical deliverable (rather than a traditional essay) and will include a clinical reasoning summary, patient-specific assessment plan, exercise prescription and progression, monitoring and safety plan, evidence justification, behaviour-change strategy, and interprofessional communication. The assignment will be released in the term with rubric and case profile.

**Midterm Exam (15%)**
The in-class midterm examination will primarily assess Units 1-4 and will include a combination of multiple-choice questions, short-answer questions, and a clinical vignette. Questions will assess both foundational cancer/treatment knowledge and the ability to interpret its significance for exercise practice.

**Final Exam (25%)**
The final examination will be scheduled during the formal UBC examination period and will be cumulative, with greater emphasis on post-midterm content and integrated clinical reasoning. The format will include multiple-choice questions, short-answer questions, and clinical vignette/application questions. The standard UBC final examination duration is 2.5 hours.

## Use of Generative Artificial Intelligence (AI) Tools

**Do NOT use generative artificial intelligence (AI)**: 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 unless an individual assessment explicitly states otherwise. Unauthorized use would be considered academic misconduct. If you are unsure whether a tool or use is permitted, ask the instructor before using it. Learn more through the Generative AI website

## 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 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.

## Passing/Grading Criteria

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

### 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 completed 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 evolution of course material, peer learning, interpersonal discourse and feedback. Class participation is especially valuable during **in-person sessions and shared activities** (i.e. discussion boards), where students will work together to conduct activities that promote learning. Therefore, **full attendance and active participation in these activities is required for course completion** (exceptions may be granted for students with excused absences).

### Learning Environment Expectations:

UBC and the School of Health and Exercise Sciences is committed to equity, human rights and respect for diversity. All members of the learning environment should strive to create an atmosphere of mutual respect and inclusion where all members of our community can express themselves, engage with each other, and respect one another's differences. We do not condone discrimination or harassment against any persons or communities. If students encounter any problems, these should be discussed with your instructors and/or teaching assistants. If problems persist or your concerns involve the instructor or TA, please reach out to the Associate Director of the School (greg.dumanoir@ubc.ca) or the campus Ombudsperson (ombuds.office.ok@ubc.ca).

## Additional UBC-Okanagan Policies & Resources

**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.

**About the Academic Integrity Matters (AIM) Program**
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 and the Academic Integrity Matters Program website.

**Statement on 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.

**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.

**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. Further information on Grading Practices can be found in the Okanagan Academic Calendar.

## Resources to Support Student Success:

**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:
*Email*: drc.questions@ubc.ca *Web*: https://students.ok.ubc.ca/academic-success/disability-resources/

**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.
*Email*: equity.ubco@ubc.ca *Web*: 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.
*Email*: healthwellness.okanagan@ubc.ca *Web*: https://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. *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. *Email*: learning.hub@ubc.ca *Web*: https://students.ok.ubc.ca/academic-success/learning-hub/

**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.
*Email*: ubco.global@ubc.ca
*Web*: https://students.ok.ubc.ca/about-the-avp-students-portfolio/directory/global-engagement-office/

**Safewalk**

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