

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Advanced Applications of Exercise Physiology	KIN 335	3

Time:

Mode of Delivery: In-Person

Requires In-Person Attendance: Yes

Land Acknowledgements: We acknowledge that the UBC Vancouver Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy'əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site. We acknowledge the traditional owners and caretakers of this land.

Equity & Diversity: I intend for students from diverse backgrounds and perspectives to be well-served by this course; diversity is viewed as a resource, strength, and benefit of this class. It is my intent to present materials and activities that are respectful of gender identity, gender expression, sex, race, ethnicity, class, sexual orientation, ability, age, etc. Your suggestions are encouraged and appreciated.

CONTACT

Course Instructor(s)	Contact Details	Office Location	Office Hours
Bill Sheel, PhD	bill.sheel@ubc.ca	Chan Gunn Pavilion, 221B	<ul style="list-style-type: none"> • Immediately following class • By appointment • Zoom

Office hours: I am always happy to meet and discuss course content. This can often be done immediately before or after a lecture. In the event that does not agree with your schedule please speak to me to make an appointment for a 'zoom' or in-person meeting. ***Please note:** if you have a question please feel free to ask during class – I will be pleased to answer. It is likely that another student will benefit from hearing your question.

Email: attempting to teach or explain complex material over e-mail can be difficult and is sometimes ineffective. **If you have detailed questions about course material or concepts, those questions should be addressed in class, in person or a scheduled meeting.**

Please seek clarification on course material in class, during breaks, after class, or during office hours with the instructor or teaching assistant. E-mail should be used for: minor items of clarification, scheduling a time to meet during office hours, in cases of emergency that may cause you to miss an exam, or situations otherwise detailed in class. It may take up to 48 hours to respond to your email during the week and **I do not check my email on weekends**, nor will your teaching assistants. Please keep this in mind around exam time. Please include "KIN 335" in the subject line of emails and use your UBC email address.

OTHER INSTRUCTIONAL STAFF

Teaching Assistants: (i) Stephen Busch (ii) Sierra Arn

COURSE DESCRIPTION

This course focuses on the application of our understanding of the regulation and integration of the neural, metabolic, cardiovascular and respiratory systems during exercise. The transport and utilization of O₂ during exercise in humans is a primary focus. Applied examples are presented to better understanding the physiological changes that accompany exercise. Emphasis is placed on understanding foundational physiology knowledge and applying it to conditions of exercise. Third year standing is a prerequisite.

LEARNING OBJECTIVES

- Describe the process of how high-energy phosphates contribute to energizing biologic work.
- Understand oxygen delivery and utilization from mouth to mitochondria during conditions of exercise.
- Apply the fundamental principles of exercise physiology to different environmental conditions and human populations

COURSE STRUCTURE

Canvas: Course information, additional readings, lecture slides, and important reminders will be made available on the course website. This information can be accessed on Canvas, so please check the site regularly. You are responsible for the information posted to Canvas.

Required textbook: McArdle, Katch & Katch. *Exercise Physiology: Nutrition, Energy and Human Performance*. 9th edition

Lectures: Lectures are in-person and are not recorded. Lectures included discussion of course content and interactive activities. It is highly recommended to attend these lectures, otherwise you are responsible for obtaining notes from your peers. You are responsible for all material covered in class and any information given whether in attendance or not.

Labs: You are required to attend all three in-person labs. Attendance will be taken. An unexplained absence will result in a grade of zero for the lab.

Attendance: To avoid any confusion please consult the UBC Academic Calendar to review UBC's policies: *"It is a student's responsibility to arrange their scheduled non-academic activities to the best of their ability in a manner that enables full attendance and participation in their courses and programs, including required practica and internships."*

SCHEDULE OF TOPICS

Date	Topic
Sept 3	Classes begin. "Imagine Day". No class
Sept 5	The course in a nutshell
Sept 10	Exercise metabolism. Text Ch. 6
Sept 12	Exercise metabolism. Text Ch. 6
Sept 17	Energy transfer during activity. Text Ch. 7 & reading " <i>Blood lactate: friend or foe?</i> "
Sept 19	Training to improve O ₂ delivery and utilization. Text Ch. 21
Sept 24	Critical Power. Reading to be distributed
Sept 26	High intensity interval training (HIIT). Readings to be distributed
Oct 1	High intensity interval training (HIIT). Readings to be distributed
Oct 3	Cardiovascular review. Portions of text Ch.'s 15, 16, 17
Oct 8	How does blood know where to go during exercise? Readings to be distributed
Oct 10	Respiratory physiology review. Portions of text Ch.'s 12, 13, 14
Oct 15	Tutorial & midterm review
Oct 17	Midterm exam. In class
Oct 22	High-altitude physiology. Text Ch. 24
Oct 24	In-class debate. Live-high, train-low for sea-level performance. Readings to be distributed
Oct 29	Healthy ageing. Portions of text Ch. 31. Readings to be distributed
Oct 31	Ergogenic aids. Portions of text Ch. 23
Nov 5	Ergogenic aids. Readings to be distributed
Nov 7	Controversy: is maximal O ₂ uptake always "trainable"? Readings to be distributed
Nov 12	Midterm break. No class
Nov 14	Exercise in the intensive care unit. Readings to be distributed
Nov 19	Thermoregulation. Text Ch. 24
Nov 21	Exercise & pregnancy. Readings to be distributed
Nov 26	The highly-trained athlete with spinal cord injury. Readings to be distributed
Nov 28	Too little and too much exercise: cardiac and cardiovascular consequences
Dec 3	No class
Dec 5	Final exam review
Dec 10-21	Final exam period. Inclusive of Sat & Sun. * do not schedule travel during this period *Note that the University sets the date for the Final examination. This course will adhere to the date set by the University. As per University regulations, there will be no exceptions to the date of the Final.

LABORATORIES

Lab 1. Week of Sept 23th. High-intensity interval training (HIIT)

Lab 2. Week of Oct 21th. Physiological effects of hypoxia

Lab 3. Week of Nov 25th. Thermoregulation

Lab manuals and evaluation criteria will be posted on Canvas.

Labs will be held in Gym G (room 125G3) of the Kinesiology Learning Centre (Osborne Unit 2). Each laboratory group will be divided into smaller groups to complete the lab tasks (these groups will remain the same for the duration of the course).

Lab Sections

L1A – Mon 4-6 PM

L1B – Tue 11 AM-1 PM

L1C – Wed 12-2 PM

L1D – Wed 4-6 PM

L1E – Thu 4-6 PM

L1F – Fri 4-6 PM

Student responsibilities

1. **Arrive** at your specified lab on time, ideally a couple of minutes early.
2. **Read** the lab manual. **Complete** all pre-reading before arriving at the laboratory. The lab sessions are intense and require significant focus from testers and participants. If you come unprepared and not familiar with the methods, you will compromise your group's ability to complete the protocols.
3. **Every student is expected to attend every laboratory** and be appropriately dressed for exercise if able. **Every lab involves some practical component that will require at least one group member to undergo assessment.**
4. Every student is expected to participate fully as either a tester or a participant.
5. Work out a schedule of who is doing what tests in advance. When you arrive if there are things you can be doing (i.e. getting weight, height, etc.), start performing these and the TA will give specific instructions if necessary.
6. Do not bring food or drinks into the lab area. If you are going to move equipment around please ask the TA first (some equipment is sensitive to being moved).
7. When you are done with equipment please return to the original location, wipe the equipment down with disinfectant (as necessary), place anything that has come into contact with blood into the red sharps container (as necessary), and place used equipment (e.g., breathing masks, heart rate monitors) in washbasin as directed.

ASSESSMENTS OF LEARNING

Laboratory	30% (10% for each of 3 labs)
Midterm Examination	30%
Final Examination	40%

- The midterm will not be rescheduled for any reason. Midterm test values can be re-weighted to the Final exam only if written documentation is provided for a University-approved reason for your absence, such as a medical issue or family emergency. If you do not contact your instructor and provide written documentation for an absence from a Midterm, you will be given a score of zero on the assessment.

NOTE: Occasionally students will have questions or disagree with the grade they received on an assignment. Students should contact the TA's no sooner than 48 hours, and no later than one week after the assignment is returned. If students still have a question about how their assignment was evaluated, they are welcome to submit a re-grade request to the instructor within one week of meeting with their TA. Please note that when a grade is reviewed, the final re-graded assignment may receive a higher, lower, or the same mark from the originally assigned grade.

University Policies

Resources to Support Student Success: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available from the UBC Senate Website.

Academic Accommodation for Students with Disabilities: The University's goal is to ensure fair and consistent treatment of all students, including students with a disability, in accordance with their distinct needs and in a manner consistent with academic principles. Students with a disability who wish to have an academic accommodation should contact Centre for Accessibility without delay.

Academic Integrity: All UBC students are expected to behave as honest and responsible members of an academic community of higher learning and research. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action. It is your responsibility, as the student, to become familiar with and understand the consequences of violating the University of British Columbia's:

- Academic Honesty and Plagiarism Policies
- Student Declaration
- Student Conduct during Examinations
- Any special rules for conduct set out by the course instructor or teaching assistants.

Online Communications: You are expected to communicate in a respectful and professional manner with your fellow students, teaching assistants, and instructors. Please ensure you review and are familiar with the Student Guidelines for Respectful Online Conduct from the UBC Equity & Inclusion Office.

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IN-TERM CONCESSION

If you need to apply for academic concession for in-term work, apply online through the KIN Advising Office.