

KIN 235: Exercise Physiology (v KIN 275)

Winter Session Term 2, 2020

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (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 in their culture, history, and traditions from one generation to the next on this site.

Course Structure: Fully Online

Your Instructor: Dr. Cameron Mitchell

Your TAs: Shalaya Kipp (shalaya.kipp@ubc.ca) & Mick Leahy (mick.leahy@ubc.ca)

Preferred Contact method: Email if question relates to only to you. Please use the discussion forums for questions about course material. Dr. Mitchell will answer focused questions directly in the discussion forms but will answer broader or more open ended questions during the weekly Q&A session.

Response time: I aim to respond to emails/ discussion posts within 24 hours but will not respond on evenings or weekends. Response times may be slower in the days immediately before quizzes and final exam due to last minute questions so please ask questions early!

Course Description

The course will provide an introduction to how the muscular, ventilatory and cardiovascular systems respond to acute and chronic exercise. A combination of readings, short video lectures, discussion and virtual labs will be used to answer a series of 'BIG Questions'

Prerequisite(s): Bachelor of Kinesiology, second year standing

Corequisite(s): None

Learning Outcomes

The goal of the course will be to link together different learning modules so that you gain an understand of how the human body respond to acute exercise and how we adapt to training. Specific objectives include:

- Understand the three energy systems, their use and limitations
- Describe the process by which chemical energy is transferred from food to mechanical work

- Explain how acute exercise alters gas exchange and ventilation
- Describe cardiovascular changes which occur with increasing exercise intensity
- Explain the factors which determine muscle strength
- Become familiar with basic exercise physiology laboratory equipment
- Learn to analyze laboratory data
- Understand the physiological mechanisms which underpin the adaptations to aerobic and resistance exercise

At the end of this course, you should be able to provide answer to some overarching questions in exercise physiology:

- What physiological mechanisms allow us to transition from rest to maximal exercise?
- What explained differences in exercise performance between individuals?
- Why does training increase our exercise performance?
- Why does exercise performance decrease with increasing exercise duration; Why do we get tired?

Instructor Bio

Dr. Cameron Mitchell Ph.D., School of Kinesiology Dr. Mitchell has been an Assistant Professor in the school of Kinesiology since 2019, his research focuses on how and why we lose muscle mass as we age and what we can do about it. His lab uses techniques which range from resistance exercise and nutrition interventions to molecular biology techniques. He is a former rugby player who enjoys being active in the mountains and cycle commuting to work.

Learning Materials

Course text: McArdle, William D., Frank I. Katch, and Victor L. Katch. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins, 2015. (8th edition). Available from campus bookstore or UBC Library reserves.

Note: The textbook is used to support material delivered in video lectures but material which only appears in the textbook will not be tested.

All journal articles are listed within the [Modules](#) section of the course and are available to access in the **Library Online Course Reserves** item on the left-hand course menu.

Learning Activities

The course will be structured in series of modules which will include short video lectures, readings and recorded laboratory experiments. Each module will include two Big Questions for review which will be answered in podcast format by a group of students in your section. There will also be a quiz at the conclusion of each module. You will also receive participation marks for posting in the discussion form at least once per model and responding to at least two posts per model.

With the exception of Monday January 11th there will be no live lectures, instead the course will be organized into modules. Each **Monday from 11am-12pm PST Dr. Mitchell will hold Q&A session** Using Blackboard Collaborate Ultra.

Your TAs will hold live review sessions weekly each **Wednesday from 11am-12pm PST** on Blackboard Collaborate Ultra. These review sessions will focus on module content, Big Questions, and practice quiz and exam questions.

Blackboard Collaborate

This course will include Blackboard Collaborate Ultra sessions. These web conference sessions will give you opportunities to connect with your instructor, TAs and other students in real-time online meetings. Be sure to use these sessions to ask any content related questions that you may have. If you are new to Collaborate Ultra watch this [short orientation video](#).

Assessment

Assignment	% of Course Grade
Lab assignments	Labs 1-3: 5% X 3 = 15% Lab 4: 10% Total 25%
Module quizzes (Modules 2-5)	10% X 3 = 30% (lowest mark dropped)
Participation (discussion posts)	5%
Review podcast assignment	5%
Final exam	35%

Quizzes

Quizzes will take place at the end of modules 2-5. Each quiz will be worth 10% of your final grade and will contain 10 marks split between multiple choice and short answer questions. Your lowest quiz mark will not be included in your final mark. Quizzes will take place in scheduled class time, Wednesdays at 11am, you will have 25 min to complete each quiz. There will be a non-graded practice quiz for module 1 which you can complete whenever you would like. The material for module 6 will be included on the final exam.

Participation

Each model will include a discussion form with some conversation starter questions. You are also welcome to use this space to ask questions and discuss the material with your classmates and instructor. In order to receive full participation marks (5% of your final grade) you must post at least once per module and respond to at least two posts per module. In order to receive full marks your response posts must **advance the discussion** and not simply restate or agree with a previous post.

Review podcast assignment

Each module will include two 'Big Questions' which will link the topic within the module together and relate them to previous modules and lab activities. Once during the semester you will partner with 1-2 other students in your section to create a podcast or video to answer the 'Big Question'. Your classmates will be able to use these podcasts to study for the quizzes and the final exam.

Lab assignments

Four video labs will introduce you to basics of exercise testing, allowing the application of key physiological concepts to a data collection environment. There will be one assignment for each lab that will consist of short answer questions, the creation of scientific figures and basic calculations.

Course Schedule

Module	Notable Dates
MODULE 1: Big questions and energy transfer <i>January 11-15</i>	<ul style="list-style-type: none"> • January 11th (live lecture)
MODULE 2: Metabolism <i>January 18-29</i>	<ul style="list-style-type: none"> • February 1 podcasts due • February 1 discussion due • Quiz Wednesday February 3rd • February 10 Wingate lab due
MODULE 3: Ventilation <i>February 1-12</i>	<ul style="list-style-type: none"> • February 22 podcasts due • February 22 discussion due • Quiz Wednesday February 24th • March 3 VO₂ lab due
MODULE 4: Cardiovascular regulation <i>February 22- March 5</i>	<ul style="list-style-type: none"> • March 8 podcasts due • March 8 discussion due • Quiz Wednesday March 10
MODULE 5: Muscle Function <i>March 8-19</i>	<ul style="list-style-type: none"> • March 22 podcasts due • March 22 discussion due • Quiz Wednesday March 24th • March 31 Fatigue lab due
MODULE 6: Exercise training <i>March 22- April 14</i>	<ul style="list-style-type: none"> • April 12 podcasts due • April 12 discussion due • April 14 exercise performance lab due • Quiz material include on final exam

Additional Materials

Online Communications

In this course, and throughout your program, you are expected to communicate in a respectful and professional manner. You may find it helpful to review [UBC's Distance Learning Communication Online: Netiquette](#) web page.

Faculty Resources

The Faculty of Education has a number of [resources to support learning](#).

University Policies

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](#).

Course Policies

Please make sure you are familiar with the academic policies and procedures.

Academic Integrity

Students are expected to follow UBC policies for academic integrity and academic misconduct, which includes practices around plagiarism, referencing and citation, and copyright. For more see, UBC's [Learning Commons Academic Integrity resources](#).

Accessibility

If you have any challenges accessing materials that will impact your success in this course, UBC's Centre for Accessibility can support your needs by providing appropriate accommodations to support you.

- Web: [UBC's Centre for Accessibility website](#)
- Email: accessibility@ubc.ca

Learning Analytics

Some of the learning technologies used for this course collect data to support the improvement of teaching and learning. This includes the collection of data related to overall class progress to provide personalized feedback, engagement in discussion forums to support the fostering of community within the course, and how resources are being accessed to support improvements to the course design. To learn more about learning analytics at the Faculty of Education and at UBC, see the [What is Learning Analytics?](#) page.

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>

Version History and Course improvements

1 st edition	Cameron Mitchell	September 2020
2 nd edition	Cameron Mitchell	January 2021

Note: If you would like a printed version of this course syllabus, you can print it from your browser.

Help Resources

- **New to Learning Online?** Review the Faculty of Education's [eLearning Help & Resources](#).
- **Need assistance with research or writing?** The [Education Library Research Help](#) provides useful resources on these topics.
- **Questions about assignments and learning materials?** Ask your instructor.
- **Technical difficulties with this Canvas course?** Use the 'Help' link in the blue left-hand menu.