Course Syllabus

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KIN 235: Exercise Physiology

School of Kinesiology

Spring Session Term, 2023

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: Lectures Mon/Wed/Fri: 11:00 AM to 12:00 PM Friedman Building 153. Labs at assigned times OSB2-125G3, only on weeks indicated below

Your Instructor: Dr. Cameron Mitchell (**cameron.mitchell@ubc.ca (mailto:cameron.mitchell@ubc.ca)**)

Your TAs: Matthew Fliss **matthew.fliss@ubc.ca (mailto:matthew.fliss@ubc.ca)** & Steven Busch **buschs@student.ubc.ca (mailto:buschs@student.ubc.ca)**

Previous course code: Kin 275

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 in class or during office hours.
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!

Office hours: via Zoom by appointment

Course Description

The course will provide an introduction to how the muscular, ventilatory and cardiovascular systems respond to acute and chronic exercise.

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:

- Identify the energy demands of simple tasks
- Explain the physiological mechanism allow for the **transition** between rest and maximal exercise
- Explain performance differences between individuals of different body sizes and training status in simple exercise tasks
- Understand the mechanisms by which aerobic and resistance training increase performance
- Collect basic exercise physiology laboratory data and use it to make predictions about task performance

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.

Assessment

Assignment	% of Course Grade
Lab assignments	Labs 1-3: 5% X 3 = 15%

4 Module quizzes (Modules 2-5)	10% X 3= 30% (lowest mark dropped)
Midterm	12.5%
Big questions assignment	5%
Final exam	37.5%

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 10-15 questions multiple choice questions. Your lowest quiz mark will not be included in your final mark Quizzes will take place in scheduled class time, Wednesdays at 10am, you will have 25 min to complete each quiz. There will be an non-graded practice quiz for module 1 on Canvas which you can complete whenever you would like. The material for module 6 will be included on the final exam. If you are unable to attend one quiz for any reason (legitimate or not), the above policy will be applied and the zero mark will be dropped, in this case no additional low quiz marks will be dropped. If you miss more than one quiz for legitimate reasons please follow the Kinesiology in-term academic concession policy: **https://kin.educ.ubc.ca/undergraduate/bkin/academic-concession/ (https://kin.educ.ubc.ca/undergraduate/bkin/academic-concession/)**

Midterm

The Midterm will be written at the same time as quiz number 3 and will consist of short answer and long answer questions which link modules 1-4. The total time allocated for the Midterm/ quiz 3 will be 50 min. If you are unable to attend the midterm for a legitimate reason please follow the the Kinesiology in-term academic concession policy: **https://kin.educ.ubc.ca/undergraduate/bkin/academic-concession/ (https://kin.educ.ubc.ca/undergraduate/bkin/academic-concession/)** . If your absence is deemed legitimate the weight from the midterm will be added to the final exam.

Big questions assignment

During the second week of the term (week of January 16th) you will attend your assigned laboratory time and choose a group of 5-6 students who you will work with for the remainder this semester and labs 1-3. These questions describe real world exercise situations that require the interaction of multiple body systems. Each question requires you to understand the demands of a specific situation, the physiological mechanisms involved, why individuals perform differently, and how training might alter task performance. There is no single right answer to any of these questions, your goal throughout the semester will be to improve your answers to these questions by integrating and applying course material. Hopefully you will find your understanding of the situations improves over the course of the semester.

Lab assignments

There will be three group lab assignments for the course, please see the schedule for the weeks where labs will occur. Please note that data collection for lab #3 will be spread across 2 weeks. Groups of students will gain experience in conducting common exercise physiology tests, analyzing data and interpreting results. Student volunteers will act as subjects for the tests. Labs are due one week after the in class lab on Sunday at 11:59 pm. Each section will be split into A and B groups who will have labs on alternate weeks.

	dates
Big questions pre task	Week of January 16 (ALL)
Lab 1 - Wingate	Week of January 23 (A), January 23 (B)
Lab 2 - VO_{2max}	Week of February 6 (A), February 13 (B)
Lab 3 - Exercise mode (two part)	Week of February 27 AND week of March 6 (A), March 13 and March 20 (B)
Big questions presentations	Week of March 27 (All)

Course Schedule

Module	Notable Dates	Reading
MODULE 1: Introduction and energy transfer *January 9-13*	• Jan 9, first day of class! • Week of Jan 16, Pre assessment	Ch 5

	tutorials	
MODULE 2: Metabolism *January 16-27*	• Feb 1, quiz #1	Ch 6,7,8
MODULE 3: Ventilation *January 30-Febuary 10*	• Feb 15, quiz #2	Ch 13, 14
MODULE 4: Cardiovascular regulation *February 13- March 3* *Reading week (February 20-24)*	• March 8 quiz #3/ mid-term	Ch 16, 17
MODULE 5: Muscle Function *March 6- 17*	• March 22, quiz #4	Ch 18, 19
MODULE 6: Exercise training *March 20- April 12*		Ch 21

Note: topics and dates are subject to change as needed.

Additional Materials

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. (https://senate.ubc.ca/policies-resources-support-student-success)**

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 (https://learningcommons.ubc.ca/academic-integrity/)** .

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 (https://students.ubc.ca/about-student-services/centre-for-accessibility)**
- Email: **accessibility@ubc.ca (mailto: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? (https://ets.educ.ubc.ca/learning-analytics/students/)** page.

Version History and Course improvements

1st edition	Cameron Mitchell	September 2020
2nd edition	Cameron Mitchell	January 2021
3rd edition	Cameron Mitchell	September 2021

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

The **Course Summary** section below lists important quiz and assignment due dates. Please note that this Course Summary will be updated automatically during the semester as information is added or changed.

Course Summary:

Date	Details	Due
	Big Questions pre-assessment (https://canvas.ubc.ca/courses/108783/assignments/1426984)	

Date	Details	Due
	Course Big questions assignment (https://canvas.ubc.ca/courses/108783/assignments/1426985)	
	Lab 1: The Wingate test and anaerobic performance (https://canvas.ubc.ca/courses/108783/assignments/1426986)	
	Lab 1: Wingate (https://canvas.ubc.ca/courses/108783/assignments/1426988)	
	Lab 2: VO2 Max and Aerobic Performance (https://canvas.ubc.ca/courses/108783/assignments/1426989)	
	Lab 3: Efficiency and Aerobic/ Resistance Exercise (https://canvas.ubc.ca/courses/108783/assignments/1426990)	
	Midterm (https://canvas.ubc.ca/courses/108783/assignments/1426991)	
	Quiz 1: Metabolism (https://canvas.ubc.ca/courses/108783/assignments/1426983)	
	Quiz 1: Metabolism (https://canvas.ubc.ca/courses/108783/assignments/1426992)	
	Quiz 2: ventilation (https://canvas.ubc.ca/courses/108783/assignments/1426993)	
	Quiz 3: Cardiovascular Regulation (https://canvas.ubc.ca/courses/108783/assignments/1426994)	
	Quiz 4: muscle function (https://canvas.ubc.ca/courses/108783/assignments/1426995)	
	Strength, Fatigue, and Performance Bonus Content (https://canvas.ubc.ca/courses/108783/assignments/1426996)	