

YORK UNIVERSITY
Kinesiology and Health Science
Faculty of Health

EXERCISE PHYSIOLOGY (KINE 4010 3.0)
Fall 2019

INSTRUCTOR:

Dr. David A. Hood, **Course Director**
Rm 302 Farquharson, ext. 66640
E-mail: dhood@yorku.ca (I do *not* use Moodle for correspondence)
Office hours: MW 4:00-5:00

HIGHLY RECOMMENDED TEXTBOOK:

Powers, S.K. and E.T. Howley, Exercise Physiology (10th ed.) Boston: McGraw-Hill, 2018.

COURSE MANUAL and **LAB MANUAL:** On sale in the bookstore.

LECTURES:

Section A:

Accolade West 109
MWF: 10:30-11:20

Section B:

Accolade West 109
MWF: 11:30-12:20

LABORATORIES: **For section A:** labs are held in Lumbers Room 318A (**Laboratory A**);
For section B: labs are held in Lumbers Room 318 (**Laboratory B**).

LAB #1 Electromyography during static and dynamic exercise
LAB #2 Determination of maximal oxygen uptake by direct and indirect methods
LAB #3 Substrate metabolism and energy expenditure during exercise
LAB #4 Cardiovascular changes during exercise
LAB #5 Metabolic changes associated with exercise

STUDENT EVALUATION:

Labs: 10% [up to 2% per lab, 5 labs in total]
Exam I: 25% [**Friday Oct 4**, covers lectures up to Mon Sept 30. 1, inclusive]
Exam II: 25% [**Friday Nov. 8**, covers lectures from Oct. 2-Nov. 4, inclusive]
Exam III: 40% [**CUMULATIVE**: covers labs #1-5 and lectures from Nov. 6 to Dec. 2 (30%, 3/4 of exam)
+ all previous lecture material covered in Exams 1 and 2 (10%, 1/4 of exam)]
TOTAL: 100%

IMPORTANT NOTES:

EXAMS:

- 1) The value of missed exams will be added to the final exam. No explanatory notes are necessary in the case of a missed exam, **except for the final exam**. Only legitimate reasons for a make-up final exam will be considered. A poor grade on the final exam does not count as a reason to write a make-up final exam.
- 2) All exams will consist of multiple choice and true/false questions.

LABORATORIES:

- 1) **Laboratory attendance is mandatory, not optional!** The lab grade of 10% is allocated for **A) being an active participant**, and **B) attending** each of the 5 required labs. **If you miss a lab, you get 0/2 for that lab.** If you are a passive observer and offer only minor help, but attend the entire lab (start to finish, attendance is taken at both times), you get a grade of 1 out of 2. If you are a passive observer, and are only present for half of the lab, you only get 0.5/2. If you volunteer to be a subject for the lab, you automatically get 2/2 for the lab. Being a subject means wearing the appropriate attire, and being ready to participate at the start of the experiment. Four subject volunteers for each lab (one subject per group) will be determined in the prior lab session. If you are not a subject, the TA can still assign you a grade of 1.5/2 or 2/2 if you are actively involved in other activities (eg. data collection, performing calculations, operating equipment, etc...) which make the lab come to a successful and timely completion.
- 2) Any required lab switching must be done prior to the start of labs in week 2. Students looking to switch labs should post a message on Moodle's Lab switching forum to find someone who also wishes to switch. If agreement is reached, both students must contact **Lab Coordinator Marco Colavecchia** via e-mail (colavem@yorku.ca) to officially make the switch. **The deadline for switching labs is Mon, Sept 9th, 3:00PM; after this time, the Lab switching forum will be closed.** Beginning week 2 (start of **Lab #1**), attendance will be taken in all labs. If you attend a lab in which you are not enrolled, you will be asked to leave. Please attend only the lab in which you are enrolled. If you anticipate having to miss a lab, special permission can be obtained from **Marco Colavecchia** to attend an alternate lab on a one-time only basis.

OVERVIEW of the COURSE

This is a Physiology course which specifically deals with how acute (1-bout) and chronic exercise (repeated acute bouts, i.e. training) affect the major systems of the body (energy metabolism, cardiovascular, respiratory, muscular). The course relies heavily on its prerequisites (Human Physiology I (2011) and II (3012)). It is assumed that **you have a familiarity with basic cell and organ physiology**.

LEARNING EXPECTATIONS:

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

- Understand the differences between acute exercise effects, and chronic exercise adaptations;
- Converse in an educated manner about muscle, muscle metabolism, the cardiovascular and respiratory systems, and how they function during exercise;
- Demonstrate knowledge of physiological concepts related to exercise and training;
- Recognize certain myths associated with exercise;
- Understand the difficulties, limitations and benefits associated with collecting data from human subjects in an exercise physiology laboratory;
- Appreciate the benefits of exercise and regular physical activity from a whole body, health perspective.

SPECIFIC TOPICS COVERED IN THIS COURSE INCLUDE:

1. Energy sources for exercise and during recovery; 2. Neuroendocrine control of energy metabolism during exercise; 3. Muscle fiber types, the effects of training and fatigue; 4. Principles of aerobic exercise training and its effects; 5. Effects of interval and resistance training; 6. Physical activity and health issues: diabetes; 7. Ergogenic aids; 8. Regulation of ventilation and oxygen transport; 9. Effect of training on the respiratory system; 10. Pulmonary disease and altitude effects; 11. Central and peripheral cardiovascular function; 12. Regulation of heart rate during exercise; 13. Regulation of mean arterial blood pressure and blood flow during exercise; 14. Effect of training on the heart and vascular system.

Lecture, Lab and Exam Schedule: KINE 4010 3.0 (Fall 2019)

WEEK #	<u>Mon</u>	<u>Tues</u>	<u>Wed</u>	<u>Thurs</u>	<u>Fri</u>	<u>NOTES</u>
1			Sept. 4 Introduction		6	NO LABS
2	9		11		13	Lab #1 (lab sections #1-10)
3	16		18		20	Lab #1 (lab sections #11-19)
4	23		25		27	Lab #2 (lab sections #1-10)
5	30	last day to enrol with permission	Oct. 2		4 EXAM #1	Lab #2 (lab sections #11-19)
6	7		9		11	Lab #3 (lab sections #1-10)
7	FALL READING WEEK					NO LABS <u>ALL WEEK</u>
8	21		23		25	Lab #3 (lab sections #11-19)
9	28		30		Nov. 1	Lab #4 (lab sections #1-10)
10	4		6		8 EXAM #2 last day to drop without a grade	Lab #4 (lab sections #11-19)
11	11		13		15	Lab #5 (lab sections #1-10)
12	18		20		22	Lab #5 (lab sections #11-19)
13	25		27		29	NO LABS
14	Dec. 2	last day to withdraw and receive a 'W' on transcript	4 Study Day			NO LABS

KINE 4010 Lab Schedule: Fall 2019

Section A: 318A Lumbers (Laboratory A)

Lab sections #1-10 (weeks 2,4,6,9,11)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		A1		A7	
10:30 - 12:30		A2		A8	
12:30 - 2:30		A3	A5	A9	
2:30 - 4:30		A4	A6	A10	
Lab sections #11-19 (weeks 3,5,8,10,12)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		A11		A17	
10:30 - 12:30		A12		A18	
12:30 - 2:30		A13	A15	A19	
2:30 - 4:30		A14	A16		

Section B: 318 Lumbers (Laboratory B)

Lab sections #1-10 (weeks 2,4,6,9,11)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		B1		B7	
10:30 - 12:30		B2		B8	
12:30 - 2:30		B3	B5	B9	
2:30 - 4:30		B4	B6	B10	
Lab sections #11-19 (weeks 3,5,8,10,12)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		B11		B17	
10:30 - 12:30		B12		B18	
12:30 - 2:30		B13	B15	B19	
2:30 - 4:30		B14	B16		