

**YORK UNIVERSITY**  
**Kinesiology and Health Science**  
**Faculty of Health**

**EXERCISE PHYSIOLOGY (KINE 4010 3.0)**  
**Fall 2016**

**INSTRUCTOR:**

Dr. David A. Hood, **Course Director**  
Rm 302 Farquharson, ext. 66640  
E-mail: [dhood@yorku.ca](mailto: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 (9<sup>th</sup> ed.) Boston: McGraw-Hill, 2015.

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

**LECTURES:**

**Section A:**

CLH-I  
MWF: 10:30-11:20

**Section B:**

CLH-I  
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 7**, covers lectures up to Mon Oct. 3, inclusive]  
Exam II: 25% [**Friday Nov. 11**, covers lectures from Oct. 5-Nov. 4, inclusive]  
Exam III: 40% [**CUMULATIVE**: covers labs #1-5 and lectures from Nov. 7 to Dec. 5 (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. **The deadline for switching labs is Mon, Sept 12<sup>th</sup> 3:00PM.** Students who wish to switch labs should post a message on Moodle's Lab 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](mailto:colavem@yorku.ca)) to officially make the switch. 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 session on a one-time only basis.

## OVERVIEW of the COURSE

This is a Physiology course which specifically deals with how acute and chronic exercise 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 2016)**

<b>WEEK #</b>	<b><u>Mon</u></b>	<b><u>Tues</u></b>	<b><u>Wed</u></b>	<b><u>Thurs</u></b>	<b><u>Fri</u></b>	<b><u>NOTES</u></b>
<b>1</b>					<b>Sept. 9 Introduction</b>	<b>NO LABS</b>
<b>2</b>	12		14		16	Lab #1 (odd labs)
<b>3</b>	19		21		23	Lab #1 (even labs)
<b>4</b>	26		28		30	Lab #2 (odd labs)
<b>5</b>	<b>Oct. 3</b>		<b>5 last day to enrol with permission</b>		<b>7 EXAM #1</b>	Lab #2 (even labs)
<b>6</b>	<b>10 Thanksgiving</b>		12		14	Lab #3 (odd labs)
<b>7</b>	17		19		21	Lab #3 (even labs)
<b>8</b>	24		26		<b>28 Fall Reading Days, Oct 27<sup>th</sup> - 30<sup>th</sup></b>	<b>NO LABS <u>ALL WEEK</u></b>
<b>9</b>	31		<b>Nov. 2</b>		4	Lab #4 (odd labs)
<b>10</b>	7		9		<b>11 EXAM #2 last day to drop without a grade</b>	Lab #4 (even labs)
<b>11</b>	14		16		18	Lab #5 (odd labs)
<b>12</b>	21		23		25	Lab #5 (even labs)
<b>13</b>	28		30		<b>Dec. 2</b>	<b>NO LABS</b>
<b>14</b>	5	<b>Study Day</b>				<b>NO LABS</b>

## **KINE 4010 Lab Schedule: Fall 2016**

### **Section A: 318A Lumbers (Laboratory A)**

Odd-numbered labs (weeks 2,4,6,9,11)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		A1		A13	
10:30 - 12:30		A3		A15	
12:30 - 2:30		A5	A9	A17	
2:30 - 4:30		A7	A11	A19	
Even-numbered labs (weeks 3,5,7,10,12)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		A2			
10:30 - 12:30		A4		A16	
12:30 - 2:30		A6	A10	A18	
2:30 - 4:30		A8	A12	A20	

### **Section B: 318 Lumbers (Laboratory B)**

Odd-numbered labs (weeks 2,4,6,9,11)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		B1		B13	
10:30 - 12:30		B3		B15	
12:30 - 2:30		B5	B9	B17	
2:30 - 4:30		B7	B11	B19	
Even-numbered labs (weeks 3,5,7,10,12)	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 10:30		B2			
10:30 - 12:30		B4		B16	
12:30 - 2:30		B6	B10	B18	
2:30 - 4:30		B8	B12		