

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

**EXERCISE PHYSIOLOGY (KINE 4010 3.0)**  
**Fall 2022**

**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 eClass for correspondence)  
Virtual Office hours: Mon and Wed: 12:40-1:10 via Zoom link provided on eClass

**REQUIRED LECTURE AND LAB MANUAL:**

Hard copy Course Kits are on sale at the bookstore. Online orders are subject to shipping or in-store pickup fees. Please visit the [York University Bookstore website](#) for shipping information.

**HIGHLY RECOMMENDED TEXTBOOK:**

Powers, S.K. et al., Exercise Physiology (11<sup>th</sup> ed.) Boston: McGraw-Hill, 2021.

Limited numbers of textbooks will be available for purchase at the bookstore. However, you may rent or purchase a hard copy or e-book version of the textbook directly from the publisher. Please visit the [McGraw Hill website](#) for purchasing options. If you do not wish to purchase the textbook, a copy of the current edition will be available on reserve in the [York University Libraries](#).

**LECTURES:**

**Section A**

Curtis Lecture Hall L  
MWF: 10:30-11:20

**Section B**

Virtual lecture via Zoom  
MWF: 11:30-12:20

**LABORATORIES:**

**Section A:** all labs will be held in room 318A Lumbers

**Section B:** all labs will be held in room 318B Lumbers

**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:**

Laboratories: 10% [up to 2% per lab, 5 labs in total]  
Midterm #1: 25% [**Friday Oct 7**, covers lectures up to Oct. 3, inclusive]  
Midterm #2: 25% [**Friday Nov. 11**, covers lectures from Oct. 5 to Nov. 7, inclusive]  
Final Exam: 40% [**CUMULATIVE**: covers labs #1-5 and lectures from Nov. 9 to Dec. 5 (30%, 3/4 of exam)  
+ all previous lecture material covered in Midterms #1 and 2 (10%, 1/4 of exam)]

**TOTAL: 100%**

## 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.
- 3) Midterm exams **will be conducted on eClass** during the normal class time, while the Final exam will take place in-person during the December exam period. Start and end times for the midterms will be announced in advance, and time allotted will be carefully calculated based on the number and type of questions asked (**T/F, MC, or MC with calculations**). Students are required to share accommodation needs with the instructor as soon as possible. You are responsible for the quality of the internet service that you use. Poor internet quality, or loss of individual internet service during an exam, will not be accepted as an excuse for poor performance. Please ensure that you take care of the location and internet service prior to starting any exam.

## LABORATORIES:

- 1) Each lab is worth 2% of your final grade, for a total of 10% (5 labs x 2% each). The 2% grade is divided evenly between **attendance** (1%) and **participation** (1%). Students who volunteer to be subjects will be automatically awarded 2/2 for that lab, provided they are on time and come prepared with appropriate exercise attire. Non-subjects can still earn a grade of 2/2 if they are present for the full duration of the lab and are actively involved with data collection, equipment operation, etc. Attendance and participation marks will be deducted if you A) arrive late (>15 mins after the lab commences), B) leave early (before your group completes the exercises and cleans their station), and/or C) are not actively engaged in the lab.
- 2) Although laboratory attendance is mandatory, you are permitted to miss one lab during the term without penalty. In such instances, the 2% will be automatically allocated to your final exam. However, any subsequent missed labs that are not accompanied by a valid excuse will result in a grade of zero for that lab. **There are no make up labs in this course**. Should you miss a lab, please make use of the lab resources on eClass for help with understanding and learning the material. You may also reach out to your TA for assistance.
- 3) Students looking to switch lab sections should post a message on the 'Lab switching requests' forum on eClass. If you find someone who agrees to switch with you, both you and that student must e-mail **Lab Coordinator Marco Colavecchia (colavem@yorku.ca)** to confirm your intent to switch. In the e-mail, please include the names, lab sections (A or B) and lab numbers of both you and the other student. Upon receiving confirmation, Marco will provide instructions on how to officially transfer sections. **The deadline for switching labs is Fri, Sept 16<sup>th</sup>, 3:00PM; after this time, the Lab switching forum will be closed, and switching will no longer be permitted.**

## 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**.

## 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 2022)

WEEK #	<u>Mon</u>	<u>Tues</u>	<u>Wed</u>	<u>Thurs</u>	<u>Fri</u>	NOTES
1			Sept. 7 Introduction		9	NO LABS
2	12		14		16	NO LABS
3	19		21		23	Lab #1 (lab sections 1-10)
4	26		28		30	Lab #1 (lab sections 11-20)
5	Oct. 3	last day to enrol with permission	5		7 MIDTERM #1	Lab #2 (lab sections 1-10)
6	10		12		14	READING WEEK
7	17		19		21	Lab #2 (lab sections 11-20)
8	24		26		28	Lab #3 (lab sections 1-10)
9	31		Nov. 2		4	Lab #3 (lab sections 11-20)
10	7		9		11 last day to drop without a grade MIDTERM #2	Lab #4 (lab sections 1-10)
11	14		16		18	Lab #4 (lab sections 11-20)
12	21		23		25	Lab #5 (lab sections 1-10)
13	28		30		Dec. 2	Lab #5 (lab sections 11-20)
14	5		7 Study Day last day to withdraw and receive a 'W' on transcript			NO LABS

Lab section time	Lab #1	Lab #2	Lab #3	Lab #4	Lab #5
<b>01</b> 8:30-10:30	Tues, Sept 20th	Tues, Oct 4th	Tues, Oct 25th	Tues, Nov 8th	Tues, Nov 22nd
<b>02</b> 10:30-12:30	Tues, Sept 20th	Tues, Oct 4th	Tues, Oct 25th	Tues, Nov 8th	Tues, Nov 22nd
<b>03</b> 12:30-2:30	Tues, Sept 20th	Tues, Oct 4th	Tues, Oct 25th	Tues, Nov 8th	Tues, Nov 22nd
<b>04</b> 2:30-4:30	Tues, Sept 20th	Tues, Oct 4th	Tues, Oct 25th	Tues, Nov 8th	Tues, Nov 22nd
<b>05</b> 12:30-2:30	Wed, Sept 21st	Wed, Oct 5th	Wed, Oct 26th	Wed, Nov 9th	Wed, Nov 23rd
<b>06</b> 2:30-4:30	Wed, Sept 21st	Wed, Oct 5th	Wed, Oct 26th	Wed, Nov 9th	Wed, Nov 23rd
<b>07</b> 8:30-10:30	Thurs, Sept 22nd	Thurs, Oct 6th	Thurs, Oct 27th	Thurs, Nov 10th	Thurs, Nov 24th
<b>08</b> 10:30-12:30	Thurs, Sept 22nd	Thurs, Oct 6th	Thurs, Oct 27th	Thurs, Nov 10th	Thurs, Nov 24th
<b>09</b> 12:30-2:30	Thurs, Sept 22nd	Thurs, Oct 6th	Thurs, Oct 27th	Thurs, Nov 10th	Thurs, Nov 24th
<b>10</b> 2:30-4:30	Thurs, Sept 22nd	Thurs, Oct 6th	Thurs, Oct 27th	Thurs, Nov 10th	Thurs, Nov 24th
<b>11</b> 8:30-10:30	Tues, Sept 27th	Tues, Oct 18th	Tues, Nov 1st	Tues, Nov 15th	Tues, Nov 29th
<b>12</b> 10:30-12:30	Tues, Sept 27th	Tues, Oct 18th	Tues, Nov 1st	Tues, Nov 15th	Tues, Nov 29th
<b>13</b> 12:30-2:30	Tues, Sept 27th	Tues, Oct 18th	Tues, Nov 1st	Tues, Nov 15th	Tues, Nov 29th
<b>14</b> 2:30-4:30	Tues, Sept 27th	Tues, Oct 18th	Tues, Nov 1st	Tues, Nov 15th	Tues, Nov 29th
<b>15</b> 12:30-2:30	Wed, Sept 28th	Wed, Oct 19th	Wed, Nov 2nd	Wed, Nov 16th	Wed, Nov 30th
<b>16</b> 2:30-4:30	Wed, Sept 28th	Wed, Oct 19th	Wed, Nov 2nd	Wed, Nov 16th	Wed, Nov 30th
<b>17</b> 8:30-10:30	Thurs, Sept 29th	Thurs, Oct 20th	Thurs, Oct 3rd	Thurs, Nov 17th	Thurs, Dec 1st
<b>18</b> 10:30-12:30	Thurs, Sept 29th	Thurs, Oct 20th	Thurs, Oct 3rd	Thurs, Nov 17th	Thurs, Dec 1st
<b>19</b> 12:30-2:30	Thurs, Sept 29th	Thurs, Oct 20th	Thurs, Oct 3rd	Thurs, Nov 17th	Thurs, Dec 1st
<b>20</b> 2:30-4:30	Thurs, Sept 29th	Thurs, Oct 20th	Thurs, Oct 3rd	Thurs, Nov 17th	Thurs, Dec 1st

Section A → All labs held in room **318A** Lumbers

Section B → All labs held in room **318B** Lumbers

**Check your timetable** to determine the section in which you are enrolled (see example below).

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 - 8:30					
8:30 - 9:00					
9:00 - 9:30					
9:30 - 10:00					
10:00 - 10:30					

Course section → HH KINE 4010 3.0  
 Section A Term F  
 Laboratory 07

Lab section →

## **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.

## **Course Policies**

**Academic Integrity:** In this course, we strive to maintain academic integrity to the highest extent possible. Breaches of academic integrity range from cheating (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.) to aiding and abetting (helping someone else to cheat). All breaches in this course will be reported to the appropriate university authorities, and can be punishable according to the Senate Policy on Academic Honesty."

**Audio-visual recordings:** Each live recording will be made available to students via eClass. Please note: 1) the recordings are used for educational purposes only and as a means for enhancing accessibility; 2) you do not have permission to duplicate, copy and/or distribute the recordings outside of the class (these acts can violate not only copyright laws but also **FIPPA** <https://www.ontario.ca/laws/statute/90f31> and intellectual property rights); and 3) all recordings will be destroyed after the end of classes.