

**School of Kinesiology  
Faculty of Health Sciences  
Western University**

**LABORATORY IN EXERCISE PHYSIOLOGY  
Kin 3330F  
Fall, 2017**

**Instructor:** J.M. Kowalchuk, PhD

**Lab Coordinator:** M. Herbert, MHK, CSEP-CEP, RKin

**Office:** HSB 411C

**Office:** 3M Centre 2225E

**Lecture:** FIMS & Nursing Bldg, Room 1270  
M; 8:30-9:30

**Office Hours:** by  
appointment (after first  
meeting with GTA)

**Laboratory:** TH 2108  
M, 2:30-4:30  
W, 4:30-6:30  
F, 8:30-10:30

**GTA:** TBA

**GTA Email:** TBA

**Phone:**

**Email:** jkowalch@uwo.ca

**NOTE:** All course information including grades, assignment outlines, deadlines, etc. are available via OWL.

**Calendar Description:** This course focuses on experiments designed to highlight the physiological response to exercise, and to introduce basic techniques for evaluation and monitoring of these responses.

**Course Description:** This course introduces techniques used in exercise, research and fitness settings for evaluating and monitoring a person's physiological response to exercise of varying intensities to better understand how the laboratory protocols and techniques can be used to assess underlying physiological and metabolic responses to exercise. Laboratory protocols are designed as "mini-experiments" and students are required to collect and analyse data, and to describe and interpret the data to reflect the underlying "physiology and metabolism" of the response. Certain protocols will be written-up and submitted as a "manuscript-style" report, where data collected in the laboratory are analysed and interpreted, and compared to the published literature. All students are expected to participate in all aspects of each of the laboratory protocols, including participating in actual exercise protocols, and in data collection and analysis. All students are expected to participate in discussions, and to ask and respond to questions during the lecture.

**Anti-requisite(s)/Pre-requisite(s)/Co-requisite(s) if applicable:**

Kin 2230a/b (formerly Kin 230a/b); Kin 3337a/b (formerly Kin 337a/b);

Priority is given to students enrolled in the BSc Honours Specialization in Kinesiology

You are responsible for ensuring that you have successfully completed all course pre-requisites, and that you have not taken an anti-requisite course (if applicable). Lack of a pre-requisite or the completion of an anti-requisite cannot be used as a basis for appeal. If you are found ineligible for a course, you may be removed from it at any time and you will receive no adjustment to your fees. This decision cannot be appealed.

**Course Format:**

The lecture is held on Monday from 8:30 a.m. - 9:30 a.m. in FIMS & Nursing Bldg, Room 1270; the laboratory sessions are held on Monday @ 2:30 p.m. – 4:30 p.m., Wednesday @ 4:30 p.m. – 6:30 p.m., and Friday @ 8:30 a.m. - 10:30 p.m. in TH 2108 in each of 12 weeks during the term (unless notified by the course instructor). The schedule of topics covered is listed below.

The lecture will serve as an introduction to each of the laboratory protocols and will provide an overview of the laboratory topic with a discussion of the physiology and theory pertaining to the laboratory, and to answer any questions that arise. All students are expected to attend and participate in the lecture discussions, and to have read relevant material in handouts (posted on the course OWL website), textbooks and suggested readings.

The laboratory protocols are intended to reinforce information covered in previous exercise physiology classes and to introduce new material important to the exercise physiology field and that possibly will be discussed in more detail in advanced courses. A brief overview describing the laboratory protocol will be presented at the beginning of each laboratory session and will emphasize set-up, use and care of equipment. Again, it is essential that students come to the laboratory having read the relevant material (posted on the course OWL website), textbooks, and suggested readings. A short summary session will be held at the end of each lab if time permits. It is anticipated that there will be approximately 75 students enrolled in this course every year, with each laboratory section accommodating only 20-25 students. Students will work together in groups of 4-6, with approximately 4-5 groups per laboratory section. *All students are expected to participate in all aspects of the laboratory, including participating in actual exercise protocols, and in data collection and analysis. All students must arrive in each laboratory session dressed appropriately for exercise. ALL students must actively participate in all components of the daily laboratory activity.* Because of student numbers it will not be possible to attend any of the other laboratory sections.

In order to enhance the learning experience students will be responsible for collecting and analysing their own data as well as data collected on other students. On occasion, individual student data will be collected and used for the laboratory report. For this to happen it will be necessary that each student provide the instructor with all required data as rapidly as possible (usually within 1 week of the laboratory session). The instructor will be responsible for summarizing and posting the class data. **It is important that students check the course OWL on a regular basis for information pertaining to the lecture and laboratory sessions and assignments.**

**Course Recommended, Required and Supplementary Textbooks:**

Course Laboratory Manual – individual laboratory protocols will be posted on the Kin 3330 course OWL

Textbook assigned in Kin 2230 (or any other suitable textbook in Exercise Physiology)

### **Learning Objectives:**

Upon completion of this course students will be able to:

1. have a better understanding of the physiological and metabolic responses i) associated with non-steady-state and steady-state exercise, and ii) at different intensities and domains of exercise
2. understand and be competent at using specific laboratory equipment and techniques for measuring and monitoring the physiological and metabolic responses to exercise
3. collect and analyse data in a laboratory setting, and interpret these data to help understand the underlying “physiology and metabolic” processes
4. describe and report the data and responses collected in a laboratory setting and to explain and compare these responses using data from the published literature

### **Course Evaluation:**

Theory Exam: 25% (set in examination period by Registrar’s Office)

Laboratory Major Reports: 60% (2 major laboratory reports @ 30% each)  
- Lab report #1 due TBA (usually in TBD)  
- Lab report #2 due TBA (usually in TBD)

Laboratory Assignments: 10% (assignment @ 5% each – questions posted on OWL)  
5% (completed and approved data sheets and calculations)

### **Course & University Policies**

1. **Assignment Deadlines:** Laboratory reports are to be handed in the Coca-Cola laboratory (or as specified in lecture) on the assigned due date (to coincide with the start of the laboratory, or as specified in lecture). Assignments *must* be handed in *at the start* of your assigned laboratory section on the due date (or as specified in lecture). Electronic submission of assignments will not be accepted (unless otherwise specified) under any circumstances. Assignments will not be accepted late, except under medical or other compassionate circumstances. Submitting a late assignment without appropriate documentation will result in a zero (0) grade. Appropriate documentation for missed/late assignments must be submitted to the course instructor and to the Kinesiology Undergraduate office.

2. **Grades:** Assignments will be returned to students. The final examination will not be returned but students are able to view their exams by making an appointment with the GTA. Should you have a concern regarding the grade you received on an assignment or final examination or feel that it is unfair in any way, you must wait 24 hours from the receipt of the assignment to approach the instructor or TA. In doing so, please make an appointment and prepare in writing, with evidence, why you feel your grade is inappropriate. However, be aware that in requesting a grade reassessment, the entire assignment or examination could be re-evaluated and your grade could go up/down/or stay the same. Note that calculations errors (which do occur!) should be brought to the attention of the GTA immediately. At least **15% of course grades will be posted by the last**

**day to drop a course.**

3. **Attendance and Performance in Laboratory:** Students are required to work in groups of 4-6. All students are expected to contribute equally to all aspects of each of the laboratory assignments. Failure to exercise and to participate fully in all laboratory (and tutorial) work will impact on the learning experience and performance of not only the student but all other students within the group, and also will impact on the grading of student/group assignments. As a consequence it is important that students attend and participate in each of the laboratory classes (and related lecture). **Therefore, attendance will be taken and if no good reason is presented for missing a class, a 2% deduction from the final grade will be assessed for each laboratory class (in whole or in part) missed. Also, student participation will be monitored by the laboratory leader and GTAs and if, throughout the term, you fail to actively participate in laboratory activities, a 5% deduction from the final grade will be assessed.**

4. **Written documentation:** Students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. stating specific reasons and dates. Students must follow-up with their professors and their Academic Counselling office in a timely manner. Documentation for any request for accommodation shall be submitted directly, as soon as possible, to the appropriate *Academic Counselling Office* of the student's Faculty/School of registration not to the instructor, with a request for relief specifying the nature of the accommodation being requested. This documentation should be obtained at the time of the initial consultation with the physician or walk-in clinic. An "Accommodation Consideration Request Form" found online or in the Kinesiology Undergraduate Office" for **ALL** such accommodation requests must be submitted into the Kinesiology Undergraduate office. These documents will be retained in the student's file, and will be held in confidence in accordance with the University's Official Student Record Information Privacy Policy. See <https://studentservices.uwo.ca/secure/index.cfm> for specific policy and forms relating to accommodation.

5. **Scholastic offences:** They are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf).

A) Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com (<http://www.turnitin.com>)

B) Computer marked multiple-choice tests and/or exams may be subject to submission for

similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Plagiarism and the copying of other students' work are taken to be a serious offences. In addition to this Web site, information on plagiarism is provided at the end of the lab manual. Note that anyone caught plagiarising and/or copying will receive "zero" on the report or assignment.

6. According to the Examination Conflict policy, "A student who is scheduled to write more than two examinations in any 24-hour period may request alternative arrangements through the office of their Academic Counsellor." *This policy does NOT apply to mid-term examinations.*

7. **Classroom Behaviour:** Class will begin promptly at the time specified in this syllabus. In the event that you must arrive late, please enter the classroom with a minimal disturbance to the class. The course instructor or GTAs reserve the right to lock the classroom door and deny entrance if lateness becomes a common occurrence. Excessive talking during class time is disruptive, disrespectful, and will not be tolerated. Students engaging in such behaviour may be asked to leave the room. Cellular phones, pagers, and text-messaging devices are disruptive when they ring in class. If you must bring these with you, please place them on silent mode or turn them off during class. Failure to do so may result in your being asked to leave.

8. Laptops for the **purpose of viewing lecture material and typing lecture notes** are permitted in class, but please be respectful to your fellow students and turn the sound off. If complaints are received from other students regarding noise or other disruptive behaviour (e.g., watching videos on YouTube.com, updating your Facebook status, playing Solitaire), your classroom laptop privileges will be revoked.

9. **Audio and/or videotaping of lectures is not permitted unless approval has been** sought from the instructor in advance.

## STUDENT CODE OF CONDUCT

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed, and set out the disciplinary procedures that the University will follow. For more information, visit

<http://www.uwo.ca/univsec/board/code.pdf>

## ENGLISH PROFICIENCY FOR THE ASSIGNMENT OF GRADES

Visit the website <http://www.uwo.ca/univsec/handbook/exam/english.pdf>

## SUPPORT SERVICES

There are various support services around campus and these include, but are not limited to:

1. Student Development Centre -- <http://www.sdc.uwo.ca/ssd/>
2. Student Health -- <http://www.shs.uwo.ca/student/studenthealthservices.html>
3. Registrar's Office -- <http://www.registrar.uwo.ca/>

4. Ombuds Office -- <http://www.uwo.ca/ombuds/>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.”

**Laboratory Schedule (2017-2018) (tentative schedule - subject to change):**

<u>Weeks:</u>	<u>Lab #</u>	<u>Topic</u>
Sept 12 - Sept 16	1	Introduction to the PowerLab Data Acquisition System and Measuring Pulmonary Gas Exchange
Sept 19 - Sept 23 Sept 26 - Sept 30 Oct 3 – Oct 7	2	Project Lab #1: Physiological Responses to Incremental Exercise: assessing the Lactate Threshold, Respiratory Compensation Threshold and Maximal O <sub>2</sub> Uptake using different protocols <b>(Lab report due - TBA)</b>

*(The class will be divided and half of the students will exercise in this protocol and the other half will participate in Lab #6. All students will be required to attend and participate in the laboratory protocol and all students will submit a written report for marking)*

Oct 10 - Oct 14	3	Mechanical and Exercise Efficiency #1 (note - schedule modified to accommodate university closures and class cancellations: - Mon (Oct 10) - no classes b/c of Thanksgiving Day - Wed & Fri (Oct 12 & 14) – class does Lab #3
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Oct 17 - Oct 21 Oct 24 - Oct 28	4	Anaerobic Energy Systems (note - schedule modified to accommodate university closures and class cancellations: - Mon (Oct 17) - complete Lab #3 - Wed, Fri (Oct 19, 21) & Mon (Oct 24) - complete Lab #4 - Wed, Fri (Oct 26, 28) – labs cancelled (Fall Break (Oct 31))
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Oct 31 - Nov 4 Nov 7 - Nov 11 Nov 14 – Nov 18	5	Project Lab #2: Critical Power assessing Critical Power and “Anaerobic Work Capacity” (W’) using different protocols <b>(Lab report due - TBA)</b>
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*(The class will be divided and half of the students will exercise in this protocol and the other half will participate in Lab #2. All students will be required to attend and participate in the laboratory protocol and all students will submit a written report for marking)*

Nov 21 - Nov 25 Nov 28 - Dec 2	6	Exercise Intensity and Repayment of the O <sub>2</sub> Debt (Excess Post-Exercise O <sub>2</sub> Consumption [EPOC])
Dec 5 - Dec 7		Review classes (final day of class for the fall term - Dec 7)