



ORIGINAL COURSE IMPLEMENTATION DATE: January 2002  
 REVISED COURSE IMPLEMENTATION DATE: September 2018  
 COURSE TO BE REVIEWED: (six years after UEC approval) March 2024  
 Course outline form version: 09/15/14

## OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

<b>Course Code and Number:</b> KIN 363		<b>Number of Credits:</b> 3 <a href="#">Course credit policy (105)</a>																	
<b>Course Full Title:</b> Lab-Based Exercise Physiology																			
<b>Course Short Title (if title exceeds 30 characters):</b>																			
<b>Faculty:</b> Faculty of Health Sciences		<b>Department (or program if no department):</b> Kinesiology																	
<b>Calendar Description:</b> Deals with laboratory-based measurements of the functional capacity associated with various physiological systems, including the muscular, cardiovascular, respiratory, and nervous systems.  Note: Students with credit for KPE 363 cannot take this course for further credit.																			
<b>Prerequisites (or NONE):</b>		KIN 362 (formerly KPE 362).																	
<b>Corequisites (if applicable, or NONE):</b>																			
<b>Pre/corequisites (if applicable, or NONE):</b>																			
<b>Equivalent Courses (cannot be taken for additional credit)</b> Former course code/number: <b>KPE 363</b> Cross-listed with: Equivalent course(s): <b>KPE 363</b> <i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		<b>Transfer Credit</b> Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Transfer credit requested (OREg to submit to BCCAT): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (if yes, fill in transfer credit form)  Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input type="checkbox"/> No  To find out how this course transfers, see <a href="http://bctransferguide.ca">bctransferguide.ca</a> .																	
<b>Total Hours: 45</b> <b>Typical structure of instructional hours:</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td>Lecture hours</td><td style="text-align: center;">15</td></tr> <tr><td>Seminars/tutorials/workshops</td><td style="text-align: center;">10</td></tr> <tr><td>Laboratory hours</td><td style="text-align: center;">20</td></tr> <tr><td>Field experience hours</td><td></td></tr> <tr><td>Experiential (practicum, internship, etc.)</td><td></td></tr> <tr><td>Online learning activities</td><td></td></tr> <tr><td>Other contact hours:</td><td></td></tr> <tr><td style="text-align: right;"><b>Total</b></td><td style="text-align: center;"><b>45</b></td></tr> </table>		Lecture hours	15	Seminars/tutorials/workshops	10	Laboratory hours	20	Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		<b>Total</b>	<b>45</b>	<b>Special Topics</b> Will the course be offered with different topics? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit  <i>Note: The specific topic will be recorded when offered.</i>	
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Other contact hours:																			
<b>Total</b>	<b>45</b>																		
		<b>Maximum enrolment (for information only):</b> 36																	
<b>Expected frequency of course offerings (every semester, annually, every other year, etc.):</b> once per year																			
<b>Department / Program Head or Director:</b> Alastair Hodges		<b>Date approved:</b> October 2017																	
<b>Faculty Council approval</b>		<b>Date approved:</b> October 2017																	
<b>Campus-Wide Consultation (CWC)</b>		<b>Date of posting:</b> November 24, 2017																	
<b>Dean/Associate VP:</b> Joanne MacLean		<b>Date approved:</b> October 2017																	
<b>Undergraduate Education Committee (UEC) approval</b>		<b>Date of meeting:</b> March 23, 2018																	

**Learning Outcomes**

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

- Explore data collection methods in Kinesiology (e.g. test protocols, specialized equipment)
- Explain the theory of signal conversion to meaningful physiological variables
- Set up, calibrate, collect and interpret
  - EMG data
  - ECG data
  - pulmonary data
- Collect arterial blood pressure data at rest and during exercise, understanding postural effects
- Set up, calibrate, and collect metabolic and gas data to determine maximal aerobic power
- Determine the influence of environment (e.g. heat simulated altitude) on cardiorespiratory response to exercise

**Prior Learning Assessment and Recognition (PLAR)**

Yes  No, PLAR cannot be awarded for this course because of the applied and practical lab components,

**Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)**

Lab, lecture

**Grading system:** Letter Grades:  Credit/No Credit:  Labs to be scheduled independent of lecture hours: Yes  No

**NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.**

**Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)**

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Course pack	<input type="checkbox"/>		
2.	Laboratory manual for Exercise Physiology	<input type="checkbox"/>		

**Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)****Typical Evaluation Methods and Weighting**

Quizzes/tests:	40%	Assignments:	40%	Case Studies:	20%	Total:	100%
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**Typical Course Content and Topics**

1. Biometrics
  - a. Instrument range, sensitivity, linearity, hysteresis, frequency response
  - b. Signal-to-noise ratio
  - c. Basic electricity and safety measures
  - d. Computer data collection, signal input and A/D conversion
2. Neuromuscular Function (e.g. EMG)
  - a. Electrode placement and skin preparation
  - b. Recording muscle potentials (EMG)
  - c. Analysis and interpretation of EMG signal
  - d. Application of EMG (e.g. muscle activation during sit-ups and curl-ups)
3. ECG
  - a. Three vs 12 lead ECG's
  - b. R-R interval frequency
  - c. ECG interpretation
4. Pulmonary Function
  - a. Measuring static volumes
  - b. Measuring dynamic volumes
  - c. Measuring pulmonary response to exercise and environmental changes
  - d. Changes in dynamic volume following exercise
5. Arterial Blood Pressure
  - a. Measurement techniques
  - b. Orthostatic effects
  - c. Exercise effects
6. Maximal Aerobic Power
  - a. Metabolic equations
  - b. Use of a metabolic cart
    - i. Calibration
    - ii. Theory
    - iii. Assessing metabolic and aerobic response to exercise and environmental changes
  - c. Different VO<sub>2</sub> values with different exercise modes
  - d. Different testing protocols