

**THE UNIVERSITY OF BRITISH COLUMBIA  
SCHOOL OF KINESIOLOGY  
KIN 489D  
EVIDENCE-BASED EXERCISE PRESCRIPTION IN HEALTH AND DISEASE**

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**Course Code: KIN 489D**  
**Course Title: EVIDENCE-BASED EXERCISE PRESCRIPTION IN HEALTH AND DISEASE**  
**Class Location: WOOD-B75**  
**Class Meeting Times: Tuesdays and Thursdays 11:00 AM to 12:30 PM**

**Instructor Name: Dr. Darren Warburton**  
**Contact Information: Rm. 128, Unit II Osborne Centre**  
**Office Hours: By appointment**

**COURSE DESCRIPTION**

The purpose of this course is to determine effective, evidence-based best practice within high performance and clinical settings. Key topics will include elite endurance performance, healthy ageing, chronic disease prevention and treatment, and weight management.

**RATIONALE**

This course provides undergraduate students an opportunity to gain critical competencies for developing evidence-based, best practice exercise prescriptions within high performance and clinical settings. This course supports the School of Kinesiology's course offerings in Clinical Kinesiology. This course will appeal to students in the Exercise and Health Sciences and those interested in working in the fields of health promotion, exercise science, and/or exercise medicine.

**AIMS AND OUTCOMES**

The ultimate goal of this course is to prepare students for a career in health promotion, exercise science, and/or exercise medicine. This course aims to develop a student body that has the critical competencies consistent with being considered a Qualified Exercise Professional including the core knowledge on how to develop evidence-based, best practice exercise prescriptions within high performance and clinical settings. At the end of this course students will be well prepared to work as a Qualified Exercise Professional with diverse clientele and eligible to apply for advanced health and fitness certifications (such as those offered by the American College of Sports Medicine and the Health and Fitness Federation of Canada).

**SPECIFIC PRIMARY LEARNING OUTCOMES**

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

1. Critically evaluate peer-reviewed literature to determine evidence-based best practice within high performance and clinical settings.
2. Develop evidence-based exercise prescriptions for use in high performance and clinical settings.
3. Demonstrate problem-solving and critical thinking skills in an applied manner.
4. Demonstrate the ability to work in a collaborative group setting.

**PREREQUISITES**

Third Year Standing

## **COURSE FORMAT AND PROCEDURES**

This course incorporates self-directed learning techniques, and as such requires that the students have completed their recommended readings before each class and that they take an active role in the in-person lectures/tutorials, online lectures, and group-based discussions. We provide a series of recommended readings for students; however, it is anticipated that students will make use of extensive resources outside of these readings.

## **COURSE REQUIREMENTS**

### **LECTURES AND ONLINE LEARNING MODULES**

This course will follow recent innovations in blended learning including a series of online and in-person lectures/tutorials. Many of the case studies will be provided in a completely online (virtual manner). Students may complete the online modules at their own pace. However, related quizzes will be completed according to the outlined course schedule.

Students are advised to pay close attention to the course schedule and online announcements on Connect ([www.connect.ubc.ca/](http://www.connect.ubc.ca/)) prior to each lecture/tutorial. It is important to highlight that the schedule is likely to vary slightly throughout the term based on the needs of the class (i.e., some case studies may require a greater time of discussion). Students will be required to complete many readings/modules online and then attend in-class summary discussions. Success in this class is highly reliant on students completing all readings and online lectures prior to the in-class discussions.

The course will be based on a series of case studies. Individual case studies and related learning objectives and readings will be placed on Connect ([www.connect.ubc.ca/](http://www.connect.ubc.ca/)) prior to each lecture.

Through out the course, students will be required to complete an online quiz regarding one or more topics (e.g., cases) that have recently been discussed in class. Key points to remember regarding the online quizzes include:

- Quizzes will be completed on individual basis.
- Students missing lectures will still have the opportunity to complete individual quizzes for the respective case study. They will be responsible for conducting the background research and problem solving required for the case-related questions.
- Students will be given at least **24 hr** after the case study to complete the individual quizzes on Connect.
- There will be 5 quizzes for marks based on the case studies. Each quiz will be worth 4% of the final grade.
- Students are required to complete individual assignments from distinct IP addresses to ensure that the quizzes are done in a fair manner.
- Students must complete individual assignments on their own to avoid instances of academic misconduct.

## **POLICIES AND EXPECTATIONS**

There are several policies by which a student should adhere to:

- Full attendance to all lectures is recommended highly, owing to the integrated nature of the course material. Absence from lectures has the potential to impair the ability of students to integrate course content. Students are required to participate in 8 or more case studies throughout the term. Individual quizzes will be created on each case study presented in class. Students are required to complete 5 online quizzes.
- Students are required to complete the online virtual laboratories and lectures. Virtual lectures and laboratories can be completed at each student's own pace. All online modules and related questions must be completed before the final exam period.
- Students should familiarize themselves with the university and departmental policies regarding special accommodation, academic concession, illness, and/or disability. For more information please see: <http://students.ubc.ca/calendar/>
- If you miss the mid-term exam (with appropriate documentation) the final exam will be worth the value of both the mid-term and final exams (i.e., 60%).

This course relies heavily on self-directed learning; therefore, students must take responsibility for their learning including (but not exclusive to) incorporating information not provided in the course text and laboratory manual. The marks may be scaled to maintain the normal average and distribution for this course. It is important to note that marks in this course are awarded based on hard work and dedication and not through negotiation.

**It is important to highlight that this course will involve completely student centred-learning, similar to what is now currently employed in many undergraduate medicine programs.** Students who complete this course will be well prepared for other programs that use problem-based learning. In this course we will follow the principals of Barrows (1996) wherein student learning occurs in smaller student groups (4-6 students per group), and original problems provide the basis for learning and the development of critical thinking and self-directed learning skills. The role of the instructor is to help students learn through self-discovery. The instructor therefore serves as the facilitator in each lecture rather than providing traditional lectures.

Real-life problems will be used as a stimulus for the development of problem solving and critical thinking skills. Generally, cases will be presented and discussed over a one-week period. The first allocated time period will include the introduction and general discussion of the topic. This will generally involve an online learning module that students may complete on their own or in class. In-class time will be provided for students to complete these modules; however, to enhance the flexibility for student learning students may also complete these online learning modules at their preferred location and time.

Students are asked to write down questions and submit these online through Connect for the rest of the class to consider prior to the next discussion period. The second day will include the synopsis of opinions regarding the case, and the re-analysis of the problem allowing for a better understanding of the topic.

Students are required to be active participants in the discovery of information and the solution of the cases. Thus, unlike traditional lectures, in this course students will have an active engagement with course content. Students must come to class well prepared including the completion of the recommended readings and online learning modules for the course. Students are expected to build upon the information from previous case studies and other courses in their undergraduate education. The skills learned from various fields (such as the humanities, biological sciences, etc) can be used effectively in tackling the various problems presented. Students should welcome individuals from diverse backgrounds as their experiences and expertise will bring a fresh approach to each case study. In the past, the most successful students are those that are active participants in each discussion and are able to develop the skills necessary for continual life long learning.

Importantly, the classroom is meant to be an environment that is conducive to learning, challenges the learner, and encourages intellectual curiosity. As such, students should feel comfortable, supported, and respected in the classroom environment. Any behaviours compromising the environment and/or well-being of others will not be tolerated.

## **READINGS AND RESOURCES**

### **REQUIRED TEXTS**

Stone, J.A. (Ed.). (2009). *Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention: Translating Knowledge into Action* (3rd ed.). Winnipeg, Man.: Canadian Association of Cardiac Rehabilitation. ISBN: 978-0-9685851-3-9 Available at: [www.cacr.ca](http://www.cacr.ca)

Warburton, D.E.R. (Ed.). (2017). *Health-related Exercise Prescription for the Qualified Exercise Professional* (Sixth ed.). Vancouver, BC: Health & Fitness Society of BC. ISBN: 978-0-9916794-0-9 Available in class (second month of term).

### **RECOMMENDED SUPPLEMENTARY TEXT**

- Skinner, J. S. (2005). *Exercise testing and exercise prescription for special cases: theoretical basis and clinical application* (3rd ed.). Philadelphia: Lippincott Williams & Wilkins. ISBN: 9780781741132 ISBN 10: 0781741130

**INFORMATIVE WEBSITES**

American College of Sports Medicine

<http://www.acsm.org>

Canadian Association of Cardiovascular Prevention and Rehabilitation

<http://www.cacpr.ca>

Health & Fitness Society of BC

<http://www.healthfitnessbc.ca>

Sport Science

<http://www.sportsci.org>

Canadian Academy of Sport and Exercise Medicine (CASEM)

<http://www.casm-acms.org/>

**EVALUATION**

1. Midterm	30%
2. Individual Case Study Quizzes (5 quizzes x 4%)	20%
3. Virtual Lab Presentation	20%
4. Final exam	30%

**EVALUATION PROCEDURES****1) Mid-Term (30%)**

This exam will cover all areas discussed up to the mid-term exam.

**2) Quizzes (20%)**

Each student will be required to complete 5 quizzes (4% each) throughout the course related to the case studies. Students are to complete these quizzes individually. Students will be provided 120 min to complete each quiz. The date of each quiz will be announced in lecture and posted online. Students are responsible for completing each quiz prior to the established deadline.

**3) Virtual Learning Video (20%)**

Each student will be responsible for completing a short video vignette for the effective evidence-based presentation related to a topic of their choice (related to the content of this course). Further instructions regarding these video vignettes will be provided in class. However, it is important to follow these key principles:

- BE CREATIVE
- HAVE FUN
- CREATE SOMETHING THAT YOU AND YOUR FRIENDS/FAMILY WOULD ENJOY VIEWING
- MAKE AN EVIDENCE-BASED STATEMENT
- BE RESPECTFUL OF OTHERS
- CREATE A VIDEO THAT WOULD BE APPROPRIATE FOR SOCIAL MARKETING CAMPAIGNS
- USE YOUR OWN WORDS AND IMAGES TO AVOID ANY COPYRIGHT INFRINGEMENTS

**4) Final Exam (30%; scheduled during the examination period)**

This exam will be all-inclusive covering all topics discussed throughout the course.

**COURSE CONTENT**

The course content is that of the recommended readings, and information (including handouts) derived from the lectures and discussions. Below is a general overview of the topics to be covered in this course.

Approximately 8-10 case studies will be used throughout the year.

The group discussions in KIN 489D will be conducted at a pace that requires students to be familiar with key concepts surrounding the measurement of energy expenditure, pulmonary structure and function, gas exchange and transport, dynamics of pulmonary ventilation, and cardiovascular function, regulation and integration. If students have not taken KIN 275 or KIN 375 it is highly recommended that they refer to basic exercise physiology texts to assist in their understanding of these key concepts.

**RECOMMENDED READINGS AND IMPORTANT DATES**

Owing to the interactive nature of this course, the areas covered are subject to change depending on the requirements and/or requests of the class. The dates provided for the recommended readings are approximate and may change depending on the needs and pace of the class. \*Individual case studies and related learning objectives will be placed on Connect prior to the upcoming lecture to allow students to prepare in advance. Often the presentation of case studies will require mini-introductory lectures. These presentations will be posted following the respective lecture incorporating the feedback that was provided during the group discussions. This course will make extensive use of readings from the recommended course textbooks and related scientific literature.

<b>Example Case Study Topics</b>	<b>Recommended Readings</b>	<b>Potential Dates</b>
<ul style="list-style-type: none"> <li>Introduction to Blended and Problem-based Learning</li> </ul>		Sept 8
<ul style="list-style-type: none"> <li>Case Study: VO<sub>2</sub>max relationship with endurance performance in elite athletics and the Vancouver Marathon.</li> </ul>	Maximal Aerobic Power (scientific literature or other relevant text)	Sept 13, 15
<ul style="list-style-type: none"> <li>Case Study: Lactic acidosis and fatigue.</li> </ul>	Lactic Acidosis (scientific literature or other relevant text)	Sept 20, 22
<b>QUIZ NUMBER ONE: DUE SEPTEMBER 26 BY 10 PM (PST)</b>		
<ul style="list-style-type: none"> <li>Case Study: Aerobic Training for 200 and 400 m Runners</li> </ul>	Aerobic Training (scientific literature or other relevant text)	Sept 27, 29
<ul style="list-style-type: none"> <li>Case Study: Intersex Athletes in the Olympics</li> </ul>	Popular Media and Scientific Literature	Oct 4, 6
<b>QUIZ NUMBER TWO: DUE OCTOBER 11 BY 10 PM (PST)</b>		
<ul style="list-style-type: none"> <li>Case Study: Physical Activity and Healthy Ageing</li> </ul>	Physical Activity, Health, and Ageing (DuManoir Chapter 16 and relevant scientific literature)	Oct 11, 13
<ul style="list-style-type: none"> <li>Case Study: Health-related exercise prescription for chronic disease prevention.</li> </ul>	General Principles of Exercise Testing and Prescription for Health (Warburton Chapter 8 and relevant scientific literature)	Oct 18, 20
<b>QUIZ NUMBER THREE: DUE OCTOBER 24 BY 10 PM (PST)</b>		
<ul style="list-style-type: none"> <li>Case Study: Clinical Exercise Rehabilitation for CVD</li> </ul>	Clinical Exercise Physiology for Cardiovascular Rehabilitation (CACR Chapters 4, 5, 9, 10 and relevant scientific literature)	Oct 25, 27
<b>MID-TERM EXAMINATION (IN CLASS) TUESDAY, NOVEMBER 1, 2016</b>		
<ul style="list-style-type: none"> <li>Case Study: Clinical Exercise Rehabilitation for Breast Cancer</li> </ul>	Clinical Exercise Physiology for Cancer Rehabilitation (CACR Chapters 4, 5, 9, 10 and relevant scientific literature)	Nov 3, 8
<b>QUIZ NUMBER FOUR: DUE NOVEMBER 14 BY 10 PM (PST)</b>		
<ul style="list-style-type: none"> <li>Case Study: Clinical Exercise Rehabilitation for Spinal Cord Injury</li> </ul>	Clinical Exercise Physiology for Spinal Cord Injury and Special Conditions (CACR Chapter 14 and relevant scientific literature)	Nov 10,15
<ul style="list-style-type: none"> <li>Case Study: Effective Exercise Prescription for Weight Management</li> </ul>	Weight Management and Metabolic Conditions (Foulds Chapter 18 and relevant scientific literature)	Nov 17,22
<b>VIDEO PRESENTATIONS: DUE NOVEMBER 23 BY 10 PM (PST)</b>		
<b>QUIZ NUMBER FIVE: DUE NOVEMBER 28 BY 10 PM (PST)</b>		
	<b>PRESENTATION OF VIDEOS</b>	Nov 24 - Dec 1
	<b>FINAL EXAM</b>	<b>FINAL EXAM PERIOD</b>