

Western HealthSciences

School of Kinesiology

KIN 4431A – Physiology of Exercise Performance Fall 2025

Instructor: Dr. Kevin Boldt Office: Thames Hall 4178 Email: kboldt@uwo.ca Phone: 519-661-2111 Ext.86957 Office Hours: Mondays 11am-1pm TA: TBD	Instruction Mode: in-person: Lectures: Tuesdays and Thursdays 8:30-10:20
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NOTE: This course will be run through OWL Brightspace. All course information including grades, assignment outlines, deadlines, etc. are available via OWL Brightspace. Check the website regularly for course announcements, and consider downloading the Brightspace Pulse App.

Calendar Course Description (including prerequisites/anti-requisites):

This course focuses on the acute factors that affect (limiting or enhancing) exercise performance. Consideration is made for both intrinsic (metabolic, cardiorespiratory, neuromuscular, etc.) and extrinsic (temperature, pollution, underwater immersion, altitude, spaceflight, footwear and apparel, alcohol/cannabis, etc.) factors, and their detrimental or ergogenic effects on exercise performance.

Prerequisite(s): (i) Physiology 1021 or equivalent, and Kinesiology 2230A/B or (ii) Physiology 3120, Physiology 3140A and Physiology and Pharmacology 3000E.

Antirequisite(s): Physiology 4420A/B, Kinesiology 4432.

Extra Information: 3 lecture hours, 1 tutorial hour. Note: Priority to BSc Honours Specialization Kinesiology students. Physiology 4420A/B.

You are responsible for ensuring that you have successfully completed all course pre-requisites, and that you have not taken an anti-requisite course.

Statement on Prerequisite Checking

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

NOTE: If you wish to enroll in this course without the stated pre-requisite(s), you must obtain written approval from the course instructor. The approval should then be forwarded to your academic counsellor.

My Course Description:

This course takes a deep-dive into the main physiological systems related to exercise performance (with focus on **performance-limiting** factors for each system) and **how external stimuli impact the performance capabilities of the individual**. Primary systems include metabolic, cardiovascular, respiratory, and neural-muscular systems. The impact of external stimuli includes altitude (hypoxia), thermal (hot and cold) stress, pollution, alcohol and cannabis, pregnancy and the menstrual cycle, underwater immersion (hyperbaria), and micro/mega-gravity (space). The main focus of study is the acute effects of the stimuli on performance, rather than chronic training or acclimation.

Learning Outcomes:

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

1. Understand the limiting factors of the major physiological systems (metabolic, muscular, neural, respiratory, cardiovascular) to overall physical performance.

2. Describe the contributions of each system in maintaining homeostasis under differing external conditions.
3. Describe the impact of external factors (temperature, alcohol, altitude, microgravity, pollution, etc.) on exercise performance, and explain the **specific mechanisms** of how each factor impacts performance.
4. Search the literature for experimental evidence and critically appraise the effectiveness of novel approaches to improving health/performance.
5. Communicate scientific evidence in creative, accurate, engaging, and accessible ways to a broad audience of viewers.
6. Design and conduct a controlled crossover case study experiment to take an in-depth exploration of the impact of an external factor on their own exercise performance.
7. Participate in a mock peer-review process:
 - a) As a “reviewer”, to critically appraise and evaluate the work of their peers, identifying limitations and providing feedback to improve the work.
 - b) As an “author”, to respond to and incorporate reviewer feedback to improve the quality of the scientific manuscript.
8. Demonstrate effective oral and written communication skills.

Course Schedule:

Week	Lecture	Topic	Dates
1	Lecture 1	Intro & Homeostasis	September 4
2	Lecture 2 + 3	Energy Systems & Limits of Metabolic Performance	September 9, 11
3	Lecture 4 + 5	Limits of Cardiovascular Performance & Limits of Respiratory Performance	September 16, 18
4	Lecture 6+7	Limits of Muscular Performance Neural Limits of Performance	September 23, 25
5	Midterm		October 2
6	Lecture 8	Performing with Footwear and Apparel	October 7, 9
7	Lecture 9	Performing at Altitude (Hypoxia)	October 14, 16
8	Lecture 10	Performing in the Heat and Cold (Thermal Stress)	October 21, 23
9	Lecture 11	Performing in Pollution	October 28, 30
Reading Week		November 3-9	
10	Lecture 12	Performance under the Influence (alcohol/cannabis)	November 11, 13
11	Lecture 13	Performing with PMS and Performing Pregnant	November 18, 21
12	Lecture 14	Performing Underwater (Hyperbaria)	November 25, 27
13	Lecture 15	Performing in Space (Megagravity and Microgravity)	December 2, 4
14	Lecture 16	Performing with Supplements	December 9

Through most of the semester, Thursdays will be dedicated to asynchronous presentations (Higher Faster Stronger Docu-series days), and Tuesdays will be lectures.

Required Course Material and Costs:

There is no textbook for the course and no additional expenses.

Course Evaluation:

The following assessments have been carefully designed to engage learners and facilitate achievement of the learning outcomes. The exams contain creative questions that focus on critical thinking and application of knowledge and heavily de-emphasize simple recall. The assignments incorporate options where students will have the autonomy to select the direction of their projects through selecting both the topics and outcomes that are meaningful to them.

Due dates are provided below and will be communicated on OWL Brightspace. Assigned work,

including formal assignments are due as communicated below and in OWL Brightspace. Assignments are due before the date and time listed. **Failure to submit assignments by due dates and times will result in a late penalty of 10% per day.**

If a student receives an academic consideration, they are to submit their assignment within 24 hours of the considerations time elapsing (e.g. If the accommodation ends October 20 at 11:59 pm, the assignment must be submitted by October 21 at 11:55).

Assessment	Weight	Date
Mid-term Exam	20%	October 2
Documentary-style Presentation	20%	Ongoing (Thursdays)
Performance Experience Assignment	25%	October 31
Performance Experience Peer-Review	10%	November 14
Final Exam	25%	Scheduled by Registrar
Total	100%	

Midterm Exam (20%): The on-paper Midterm Exam will be comprised of a combination of multiple choice and short/long answer questions, and held during class time on October 2nd. Students will have 110 minutes (the full class-time) to complete the exam. The focus of the midterm exam will be on intrinsic limits to performance, covering Lectures 1-7 inclusive. A missed examination without appropriate documentation will result in a zero (0) grade. Following formal documentation, a make-up mid-term will be available on October 9th. Students unable to write the make-up midterm will have the weight of that test pushed to the final exam. **The Midterm Exam is the designated assessment, meaning you cannot use an undocumented absence if you require consideration.**

Higher, Faster, Stronger Docu-series Assignment (20%): Students (in groups of 3) will be guest hosts of the weekly Higher, Faster, Stronger Docu-series, where they will present recent research on an ergogenic or ergolytic aid. Each group will prepare one video, with three groups' videos "airing" each week. The purpose of the documentary is to highlight an original research article on a trending topic and to provide a critical appraisal discussion of the research and the factors' effectiveness. Students will submit one (approximately) 15-minute video, for their peers to view. The grade will be based on the group's ability to introduce the topic, present and critically assess the research, and communicate the content. Groups will sign up for their "airing" date at the beginning of the semester.

Videos will be due on Wednesdays at 5pm and the episodes will be posted for the class at 8:30am on Thursdays. Peer-evaluation will be due for the rest of the class the following Tuesday.

Performance Experience Assignment (25%): Students will self-experiment with the effects of an external factor on their own performance and reflect on their experience. Students will select an external factor and complete an exercise session (resistance-based, sprint-based, or aerobic) under normal (control) conditions and under exposure to the external factor. They will take relevant objective measures (heart rate, blood pressure, reps-to-failure, speed, distance covered, muscle circumference/pump, etc.) and report on the impact of the factor.

When students submit their assignment, it will be graded with both a numerical grade and itemized written feedback. The grade will be determined by the instructor and the feedback will be provided by both the instructor and a peer from the class. **Itemized feedback will be provided, but the grade will be withheld:**

- Students may choose not to revise the assignment based on the feedback, in which case they will receive the numerical grade from the assessment of their original submission.
- Students may also choose to implement the feedback and to respond to the "Reviewer Comments", submitting a revised version of the assignment. If a student submits a revised assignment, the assignment will be re-assessed and the assignment grade will also reflect how effectively the feedback was implemented in the final draft.

Performance Experience Peer-Review (10%): Students will be assigned the submitted work of

one of their peers. Students will be required to provide an in-depth review and assessment of the work in the style of a reviewer for a peer-reviewed journal. Reviewers will be blinded to the author and authors will be blinded to reviewers. The itemized feedback will be provided to the author of the assignment for consideration in their revision.

Final Exam (25%): The on-paper Final Exam will be comprised of a combination of multiple choice and short/long answer questions and will be scheduled by the registrar during the examination period. The Final Exam will be cumulative but will have emphasis on the material since the midterm: external factors. A missed examination without appropriate documentation will result in a zero (0) grade. Per University policy, makeup examinations for the final exam (i.e., during the December exam periods) are held on the second Thursday of January (for first-term courses).

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Faculty of Health Sciences Academic Policies and Statements

Support Services

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

1. Academic Support and Engagement - <http://academicsupport.uwo.ca>
2. Wellness and Well-being - <https://www.uwo.ca/health/>
3. Registrar's Office -- <http://www.registrar.uwo.ca/>
4. Ombuds Office -- <http://www.uwo.ca/ombuds/>

The websites for Registrarial Services (<http://www.registrar.uwo.ca>), and the same for affiliated university colleges when appropriate, and any appropriate Student Support Services (including the services provided by the USC listed here: <http://westernusc.ca/services/>) and the Student Development Services, should be provided for easy access.

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

Statement on Gender-Based and Sexual Violence

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at: https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

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

Absence from Course Commitments

Students must familiarize themselves with the Policy on [Academic Consideration – Undergraduate Students in First Entry Programs](#)

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request at the central [academic consideration portal](#). Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes), when there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period), or when timed assessments (e.g., quizzes) are available over an extended period of time (e.g., when you are given a 72 hour time period to start – and finish – the assessment).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the [Student Medical Certificate](#) or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays

Students should review the policy for [Accommodation for Religious Holidays](#). Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examination dates. The Faculty of Health Sciences has set School-specific dates for these Special Examinations. Please speak with your instructor about the date on which the Special Examination for this course will be held.

Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Plagiarism

Student work is expected to be original. Plagiarism is a serious academic offence and could lead to a zero on the assignment in question, a zero in this course, or your expulsion from the university. You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging that the work belongs to him/her. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. All 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 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 (www.turnitin.com).

Use of Artificial Intelligence for the Completion of Course Work

Within this course, you may only use artificial intelligence tools (e.g., "ChatGPT") in ways that are specifically authorized by the course instructor. All submitted work must reflect your own thoughts and independent written work.

Re-submission of Previously Graded Material

Without the explicit written permission of the instructor, you may not submit any academic work for which credit has been obtained previously, or for which credit is being sought, in another course or program of study in the University or elsewhere.

Use of Statistical Pattern Recognition on Multiple Choice Exams

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.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

Correspondence Statement

The centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner. Students are further expected to attend to announcements presented through Brightspace, and to read emails generated in this way.

Use of Electronic Devices

During Exams

Unless you have medical accommodations that require you to do so, or explicit permission from the instructor of the course, you may not use any electronic devices (e.g., cell phones, tablets, cameras, smart glass, smart watches, or iPods) during ANY tests, quizzes, midterms, examinations, or other in-class evaluations. **These devices MUST either be left at home or with your belongings at the front of the room. They MUST NOT be at your test/exam desk or in your pocket. Any student found with a prohibited device will receive an automatic grade of zero on the test or exam.**

During Lectures and Tutorials

Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.

Contingency Plan for an In-Person Class Pivoting to 100% Online Learning

In the event of a situation that requires this course to pivot to online content delivery, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on Brightspace for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

Online Proctoring

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

Grades

Where possible assignment objectives and rubrics will be posted on OWL.

Rounding of Grades

This is a practice some students request (for example, bumping a 79 to 80%). The final grade documented is the grade that you have achieved. There is no rounding to the next grade level, or 'giving away' of marks. Please don't ask me to do this for you; the response will be "please review the course outline where this is presented."

University-wide Grade Descriptions

A+	90-100	<i>One could scarcely expect better from a student at this</i>
A	80-89	<i>Superior work that is clearly above average</i>
B	70-79	<i>Good work, meeting all requirements and eminently satisfactory</i>
C	60-69	<i>Competent work, meeting requirements</i>
D	50-59	<i>Fair work, minimally acceptable.</i>
F	below 50	<i>Fail</i>

Appealing a Grade Within this Course:

You have the right to appeal any grade within this course. The grounds for a grade appeal may be one or more of: medical or compassionate circumstances, extenuating circumstances beyond the student's control, bias, inaccuracy, or unfairness. All grounds advanced in a request for relief must be supported by a clear and detailed explanation of the reasons for the request together with all supporting documentation.

Appeals generally proceed in this order:

1. Course instructor (informal consultation)
2. Department Chair (submission of written request)
3. The Dean of the Faculty (submission of written request)

In the case of perceived procedural unfairness, steps 2 and 3 are carried out within the Department and Faculty offering the course. In the case of extenuating medical or compassionate circumstances that impact on a grade, steps 2 and 3 are carried out within a student's Home Department and Faculty.

A request for relief against a mark or grade must be initiated with the instructor as soon as possible after the mark is issued. In the event that the instructor is not available to the student, or fails to act, or if the matter is not resolved satisfactorily with the instructor, a written request for relief must be submitted to the Chair of the Department within three weeks of the date that the mark was issued. In the case of a final grade in a course, the written request for relief must be submitted to the Chair of the department by January 31st (for first-term half courses) or June 30th (for second-term half courses or full-year courses).