

Western University
Faculty of Health Sciences
School of Kinesiology

**KIN 9466 – Biomechanics in Research and Practice
Winter 2023**

<p>Instructor: Derek Pamukoff Office: Thames Hall 4178 Email: dpamukof@uwo.ca Phone: 519/661-2111 x84681 Office Hrs: Tues/Wed 11am – 12pm</p>	<p>Lectures: Tuesday, 2-5pm Instruction Mode: In-person</p>
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NOTE: All course information including grades, assignment outlines, deadlines, etc. are available via OWL. Check the website regularly for course announcements.

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

Methodology and applications of biomechanical analyses for research and clinical/professional practice in kinesiology. In depth analysis of specific movements using 3-dimensional kinematic and kinetic analyses.

Extra Information: 3 lecture/laboratory hours

Prerequisite: Any undergraduate course in biomechanics is strongly recommended

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 provides foundational skills in quantitative biomechanical analyses. Modules will expose students to basic elements of motion capture analyses. Lectures and applied laboratory experience will focus on kinematic and kinetic data analyses during linear and angular motions. Students will be exposed to basic data reduction, analysis and visualization methods. Finally, students will be exposed to biomechanical research and peer-reviewed literature.

Learning Outcomes/Schedule:

1. Students will understand methodology for biomechanical analyses in research and clinical/professional practice
2. Students will critically appraise contemporary topics in biomechanics literature
3. Students will conduct systemic investigations of human movement patterns using biomechanical theory and equipment.
4. Students will convey interpretations of biomechanical data in oral and written format.

Required Course Material/Text:

All materials will be posted on OWL. Students are expected to have moderate proficiency with obtaining/reviewing scientific literature.

NOTE the following important dates:

Winter 2022

Mon Jan 9:

Sat Feb 18 – Sun Feb 26

Fri April 10:

Winter term begins

Reading Week NO CLASS

Last Day of Class

Proposed Course Schedule

Week 1 (Jan 10) – Course Introduction, Data Sampling Theorem, Laboratory Visit

Week 2 (Jan 17) – Kinematics Lecture

Week 3 (Jan 24) – Kinematics Lecture and Reading Quiz and Discussion; identify project topic

Week 4 (Jan 31) – Kinematics Data Collection

Week 5 (Feb 7) – Kinematics Data Analyses

Week 6 (Feb 14) – Kinematics Presentations (Kinematics paper due at start of class)

Week 7 (Feb 21) – Reading Week

Week 8 (Feb 28) – Kinetics Lecture

Week 9 (March 7) – Kinetics Lecture and Reading Quiz and Discussion; identify project topic; select article synthesis topic

Week 10 (March 14) – Kinetics Data Collection

Week 11 (March 21) – Kinetics Data Analyses

Week 12 (March 28) – Kinetics Presentations (Kinetics paper due at start of class)

Week 13 (April 4) – Special Topics (Article synthesis due at start of class)

Notes – The order and dates of topics may change at the discretion of the instructor; lectures will not be recorded, and attendance in data collection and analysis sessions is required.

Course Evaluation Summary (Due Dates listed below):

(1) Linear/Angular Kinematics Project. (Weeks 1-6)

(2) Linear/Angular Kinetics Project. (Weeks 7-12)

Reading Quizzes ($5\% \times 2 = 10\%$)

Project Presentation ($20\% \times 2 = 40\%$)

Project Paper ($20\% \times 2 = 40\%$)

Article Synthesis ($10\% \times 1 = 10\%$)

Course Evaluation:

Assignments are due as stated in the course syllabus and will not be accepted late. Submitting a late assignment without appropriate documentation will result in a zero (0) grade. A missed mid-term examination, without appropriate documentation will result in a zero (0) grade. Acceptable reasons might include hospital stays, serious illness, family emergencies (like serious accidents, illness or death) or similar circumstances.

Course/University Policies

Academic 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:

https://www.uwo.ca/univsec/pdf/academic_policies/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.

Electronic Device Usage:

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 of the following electronic devices during ANY of the tests, quizzes, midterms, examinations, or other in-class evaluations: cellphones, smart phones, smart watches, smart glasses, audio players or recorders of any sort, video cameras, video games, DVD players, televisions, laptop/notebook/netbook computers, flashlights or laser pointers.

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. Please be respectful to your fellow students and turn the sound off. If the professor receives complaints from other students regarding noise or other disruptive behavior (e.g. watching videos on YouTube.com, updating your Facebook status, playing Solitaire), your classroom privileges will be revoked. 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. **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.**

Health and Wellness:

Information regarding health and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

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

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 & Wellness* -- <http://www.health.uwo.ca/>
3. *Registrar's Office* -- <http://www.registrar.uwo.ca/>
4. *Ombudsperson Office* -- <http://www.uwo.ca/ombuds/>

Accommodation, Illness Reporting and Academic Considerations:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

Academic Consideration for Student Absence

Assignments are due as stated in the course syllabus and will not be accepted late. Submitting a late assignment will result in a zero (0) grade. Students seeking academic accommodation for any missed tests, participation components and/or assignments worth less than 30% of their final grade, must contact the instructor prior to due dates to discuss alternative arrangements. Acceptable reasons may include hospital stays, serious illness, family emergencies (like serious accidents, illness or death) or similar circumstances. With instructor approval, students will be afforded 24 hours beyond the end of their emergency event to submit late work.

Students seeking academic accommodation on illness grounds for any missed tests, exams, participation components and/or assignments worth more than 30% of their final grade, must

apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor, or department.

For Western University policy on Consideration for Student Absence, see [Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs](#) and for the Student Medical Certificate (SMC), see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

Examination Conflicts: A student with examinations having flexible submission times (e.g., where one or more examination is a take-home examination) cannot request alternative arrangements unless a conflict cannot be avoided by rescheduling writing the exam to a different time within the window specified by the instructor. This applies to direct conflicts as well as “heavy load” conflicts (e.g., three exams within a 23-hour period). The student should discuss any concerns about a potential conflict and/or request accommodation with their academic counselling unit prior to the deadline to drop a course without academic penalty

In the case of online examinations, an “Examination Conflict Room,” which may be assigned when a student is scheduled to write two proctored exams concurrently, will be interpreted as arrangements for continuous proctoring.

Grades: Where possible assignment objectives and rubrics will be posted on OWL. Should you have a concern regarding the grade you received for an assignment or feel that it is unfair in any way, you must wait 24 hours from the receipt of the assignment to approach the instructor. In doing so, please make an appointment and prepare in writing, with evidence, why you feel your grade is inappropriate. Please be aware that in requesting a grade reassessment, your grade could go up/down/or stay the same. Note that calculations errors (which do occur!) should be brought to my attention immediately.

A+	90-100	<i>One could scarcely expect better from a student at this level</i>
A	80-89	<i>Superior work that is clearly above average</i>
B	70-79	<i>Good work, meeting all requirements and eminently</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>

Rounding of Grades (for example, bumping a 79 to 80%):

This is a practice some students request. **This practice will not occur here.** The edges of this course are clear and sharp. The mark attained is the mark you achieved and the mark assigned; 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”.

Contingency Plan for an In-Person Class Pivoting to 100% Online Learning: In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, 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 OWL 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

Online Etiquette: Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- please “arrive” to class on time

- please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- to minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- [suggested for classes larger than 30 students] In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak
- [suggested for cases where video is used] please be prepared to turn your video camera off at the instructor's request if the internet connection becomes unstable
- unless invited by your instructor, do **not** share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- if you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- remember to unmute your microphone and turn on your video camera before speaking
- self-identify when speaking.
- remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

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 Learning Support

If you require support with online learning tools and resources, please refer to the Faculty of Health Sciences Online Teaching and Learning Support [Jira request links](#) for students

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>