

Western University
Faculty of Health Sciences
School of Kinesiology

**KIN 4520B – CLINICAL BIOMECHANICS
Winter 2017**

Instructor:	Dr Jim Dickey	Office:	TH 3159A
Location:	TH 3102	Office Hours:	by appointment
Lectures:	Tuesdays 10:30-12:30 Thursdays 10:30-11:30	Phone:	519-661-2111 ext 87834 (email preferred)
Laboratories (TH 2125):	One of: Mondays 4:30-6:30 Wednesdays 12:30-2:30 Wednesdays 2:30-4:30	Email:	jdickey@uwo.ca
		TAs:	TBA
		TA Emails:	TBA

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

Course Description: This course is designed to explore the theoretical basis of clinical biomechanics and develop hands-on skills necessary to work in the area. Special emphasis will be in the areas of: Posture and Balance, Gait, and Orthopaedic Biomechanics

Course Format:

Lectures (): Tuesdays 10:30-12:30, Thursdays 10:30-11:30

Labs (Thames Hall 2125): One of Mondays 4:30-6:30, Wednesdays 12:30-2:30, Wednesdays 2:30-4:30

Recommended Text:

- none

Learning Objectives:

The students will learn the theoretical underpinnings of Clinical Biomechanics through discussion of Posture and Balance, Gait, and Orthopaedic Biomechanics. The students will be exposed to different biomechanical measurements and analyses in the laboratory components of the course. The students will gain hands-on experience in the small-group research project component of the course.

Upon completion of this course students will be able to:

1. **Identify and delineate** theoretical terms, concepts, and fundamental principles related to specific topics within Clinical Biomechanics such as Posture and Balance, Gait, and Orthopaedic Biomechanics (Knowledge)

2. **Compare and contrast** different theoretical approaches to specific topics within Clinical Biomechanics, such as standing balance and risk of falling. (Analysis)

3. **Develop** hands-on research skills through the small-group research project (Application)

4. **Further develop** abilities to *critically reflect* upon own learning and relate to the topics discussed in class. (Reflection)

Required Course Material:

All required readings and lecture notes will be posted on OWL.

Course Evaluation Summary:

1. Lab Quizzes	10%
2. Group research project written report	20%
3. Group research project presentation and abstract	5%
4. Mid Term (February 28th)	25
5. Final Exam	40%

Laboratory Evaluation: Students will hand in lab quizzes following each lab. These are short-answer style questions based directly on the material presented in the laboratory.

Research Projects: The scope of these projects is to replicate a published research study. Suggested topics include balance or gait, as the background for these topics will be covered in class in the first part of the term. The purpose of these projects is to provide a hands-on laboratory experience tailored to the interests of the group. Students will pick groups of 4 or 5 members from the students in the same lab section. These groups must pick a research study to replicate that must be 1) based within Clinical Biomechanics, 2) must involve collecting and analyzing data, and 3) must use available equipment and software (i.e. force plate). Within each lab section, each project must be unique (based on a different published research study), and must be pre-approved by Dr. Dickey.

The steps include picking a group and approval of the published research article, organizing hardware and software requirements, started data collection, started analyzing the data, writing the final report. A draft copy of the introduction and methods sections, including proper citations and references, must be submitted. Deliverables at the end of the project include an abstract (including the purpose of the study and the main results), and the group will present their project in class or lab. The final report is in the form of a complete manuscript based on the data collected for the group project. The final project must be handed in as both paper and electronic (matching) versions. While your paper may be similar to the article that you are replicating, it should also include additional

current pertinent references, and the discussion should be tailored to your particular project, data and interests.

Part of the evaluation will be based on grades ascribed by group consensus. The midterm evaluation must include a detailed summary of the group's progress. This process is intended to ensure that the project is on track, that there is an even distribution of effort among the group members, and that adequate timely feedback is provided to all group members. In addition, the abstract, presentation, and final report will be graded.

The project should be written up for submission to The Western Undergraduate Research Journal: Health and Natural Sciences (WURJHNS). Information about the formatting requirements is available at <http://ir.lib.uwo.ca/wurjhns/>. Please consider using bibliographic citation management software such as Mendeley (<https://www.lib.uwo.ca/essayhelp/mendeleyquickstartguide.html>). Please consider the differences between essays and scientific writing --- you are writing a scientific paper, not an essay (Wagner PD. Writing Up Your Research Results for Publication. Chest 2009;136:639-642.).

Several projects from previous years have been successfully published in WURJ-HNS:

Nielson C, Deegan E, Hung A, Nunes A (2010) Potential Effects of Sleep Deprivation on Sensorimotor Integration during Quiet Stance in Young Adults. WURJ Health and Natural Sciences 1: Article 5.

<http://ir.lib.uwo.ca/wurjhns/vol1/iss1/5/>

Delgado G, Coghlin C, Earle K, Holek A, O'Hare K (2011) Trunk extensor muscle fatigue does not affect postural control during upright static stance in young-adults and middle-aged adults. WURJ: Health and Natural Sciences 2: Paper 2.

<http://ir.lib.uwo.ca/wurjhns/vol2/iss1/2/>

Grey T, Redguard R, Wengle R, Wegscheider P (2013) Effect of Plantar Flexor Muscle Fatigue on Postural Control. Western Undergraduate Research Journal Health and Natural Sciences 4: 1-7.

<http://ir.lib.uwo.ca/wurjhns/vol4/iss1/1>

Small-Group Project Timeline of deliverables:

Picking a group and approval of the published research article	Due Jan 17th
Hardware and software requirements	Due Jan 26th
Started data collection	Feb 9th as a guide
Midterm evaluation must include a detailed summary of the group's progress.	Due Feb 9th
Started analyzing the data	Starting Mar 3rd as a guide
Writing the final report	Starting Mar 15th as a guide
Submit a draft copy of the introduction and methods sections, including proper citations and references	Due on March 22th
An abstract (including the purpose of the study and the main results) must be	Due on March 25
The group will present their project in class or lab	March 31st
Submit the final report	Due April 5 th by 4pm
Final evaluation including the distribution of effort among the group members	Due April 5 th by 4pm

Course/University Policies

1. **Lateness/Absences:** Assignments are due at the beginning of class on the assigned due date and will not be accepted late, except under medical or other compassionate circumstances. Electronic submission of assignments will not be accepted (unless otherwise specified) under any circumstances. Submitting a late assignment without appropriate documentation will result in a zero (0) grade. Appropriate documentation for assignments worth less than 10% should be submitted to the Undergraduate office. A missed mid-term examination without appropriate documentation will result in a zero (0) grade. The course policy is not to allow make-ups for scheduled midterms, presentations or final exams, nor to assign a grade of Incomplete without acceptable and verifiable medical (or equivalent compassionate) reasons. Acceptable reasons might include hospital stays, serious illness, family emergencies (like serious accidents or illness, death) or similar circumstances.

2. **Written documentation:** Whenever possible, 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. 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.

3. **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 or TA. 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.

4. **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.

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 might 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.

5. **Formatting** (*as recommended by the course instructor*): example- APA style is the approved style of writing for all assignments produced for this course. Please refer to Western University Library webpage for information on citation style and format or consult the APA publication manual: Publication manual of the American Psychological Association (6th ed.). (2009). Washington, DC: American Psychological Association.

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.* There will be no make-up for the mid-term exam. Students who miss this exam with a valid reason will have the final re-weighted accordingly.

7. **Classroom Behaviour**: Class will begin promptly at the time specified at the top of page one of this syllabus. In the event that you must arrive late, please enter the classroom with a minimal disturbance to the class. I 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 typing lecture notes** are permitted in class, but please be respectful to your fellow students and turn the sound off. If I receive complaints 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/>