



DEPARTMENT OF PHYSICAL EDUCATION AND KINESIOLOGY

COURSE OUTLINE – WINTER 2019

PE2060: Biomechanics 3 (3-0-1) UT, 60h

INSTRUCTOR: Fábio Minozzo

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OFFICE HOURS: As posted or requested

CLASS TIMES:

Lectures: Monday & Wednesday, 8:30 – 9:50, J229

Labs: Friday, 11:30- 12:20, J229

CALENDAR DESCRIPTION: This course presents a method of qualitative analysis of human movement based on knowledge of biomechanical principles.

PREREQUISITE(S)/COREQUISITE: None

REQUIRED TEXT/RESOURCE MATERIALS:

McGinnis, P. 2013. Biomechanics of sport and exercise, (3rded). Windsor: Human Kinetics.

Lecture Notes on Moodle.

Additional Readings and Resources as designated by the instructor.

DELIVERY MODE(S): A variety of methodologies will be employed including lecture, discussion, lab activities, seminars group/ individual work.

COURSE OBJECTIVES:

1. Explain the importance of biomechanics in the analysis of sport and exercise.
2. Describe Newton's laws of motion and how they apply to exercise and sport.
3. Differentiate between kinetic and kinematic quantities for both linear and angular motion.
4. Describe the effects fluid mechanics water and air on motion.
5. Implement the procedures of a Qualitative Biomechanical Analysis to improve performance, reduce injury and improve training
6. Implement the procedures of a Qualitative Biomechanical Analysis to Improve Training.

LEARNING OUTCOMES:

1. Student will be able to identify and understand mechanical principles governing human motion.
2. Student will be able to analyze and apply mechanical principles governing human motion in the context of sport or human movement skills to improve technique, improve training and prevent injury.
3. Student will be able to construct, design and carry out a biomechanical observation plan.
4. Students will be able to determine faults in observed performance based on mechanical principles.

COURSE TENTATIVE TIMELINE:

1. Introduction
2. Forces: Maintaining Equilibrium or Changing Motion
3. Linear Kinematics – Describing Objects in Linear Motion
4. Linear Kinetics – Explaining the Causes of Linear Motion
5. Work, Power & Energy: Explaining the causes of Motion without Newton
6. Torques & Moments of Force: Maintaining Equilibrium or Changing Angular Motion
7. Angular Kinematics: Describing Objects in Angular Motion
8. Angular Kinetics: Explaining the Causes of Angular Motion
9. Fluid Mechanics: The Effects of Water and Air
10. Qualitative Biomechanical Analysis to Improve Technique
11. Qualitative Biomechanical Analysis to Improve Training

PE2060 BIOMECHANICS WINTER 2019 SCHEDULE (Tentative)					
Mondays	TOPIC	Wednesdays	TOPIC	Fridays	TOPIC
				4-Jan-19	Intro to the course
7-Jan-19	Ch1 Forces	9-Jan-19	Ch 1 Forces	11-Jan-19	No lab
14-Jan-19	Ch2 Linear Kinematics	16-Jan-19	Ch2 Linear Kinematics	18-Jan-19	Ch1,2 Lab (Gym)
21-Jan-19	Ch 3 Linear Kinetics	23-Jan-19	Ch 3 Linear Kinetics	25-Jan-19	Ch 2,3 Lab (Gym)
28-Jan-19	Review Seminar	30-Jan-19	TEST I (Ch1,2,3)	1-Feb-19	Test Recap / Seminar
4-Feb-19	Ch4 Work, Power, Energy	6-Feb-19	Ch4 Work, Power, Energy	8-Feb-19	Stability Lab (Gym)
11-Feb-19	Ch5 Torques, M of Force	13-Feb-19	Ch5 Torques, M of Force	15-Feb-19	Ch 4,5 Lab (Gym)
18-Feb-19	Winter Break	20-Feb-19	Winter Break	22-Feb-19	Winter Break
25-Feb-19	Review Seminar	27-Feb-19	TEST II (Ch 4,5)	1-Mar-19	Test Recap / Seminar
4-Mar-19	Ch6 Angular Kinematics	6-Mar-19	Ch6 Angular Kinematics	8-Mar-19	Project Explanation
11-Mar-19	Ch7 Angular Kinetics	13-Mar-19	Ch7 Angular Kinetics	15-Mar-19	Angular Kinematics Seminar
18-Mar-19	Ch8 Fluid Mech	20-Mar-19	Ch8 Fluid Mech	22-Mar-19	Aquatics Lab (EastLink)
25-Mar-19	Review Seminar	27-Mar-19	TEST III (Ch 6,7,8)	29-Mar-19	Test Recap / Seminar
1-Apr-19	Ch13 Qualitative A Tech	3-Apr-19	Ch14 Qual Analysis Tr	5-Apr-19	Skill Analysis Lab
8-Apr-19	In Class Activity/ Nicol	10-Apr-19	Final Review / Seminar	12-Apr-19	

EVALUATIONS:

Lab Assignments	10%
Seminars	10%
Tests (I, II, and III @ 10% each)	30%
Final Project	20%
Final Exam	30%

GRADING CRITERIA: (The following criteria may be changed to suit the particular course/instructor) Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100	C+	2.3	67-69
A	4.0	85-89	C	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
B	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

TRANSFERABILITY:

- [Athabasca University: APST 2xx \(3\)](#)
- [Burman University: PETH 3xx \(3\)](#)
- [Concordia University of Edmonton: PESS 2xx \(3\)](#)
- [King's University, The: PHED 2xx \(3\)](#)
- [MacEwan University: PEDS 206 \(3\)](#)
- [University of Alberta: KIN 206 \(3\) OR AUPED 232 \(3\)](#)
- [University of Calgary: Jr. KNES \(3\)](#)
- [University of Lethbridge, The: KNES 2650 \(3\)](#)

***Warning:** Although we strive to make the transferability information in this document up-to-date and accurate, **the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities.** Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page <http://www.transferalberta.ca> or, if you do not want to navigate through few links, at <http://alis.alberta.ca/ps/tsp/ta/tbi/onlineSearch.html?SearchMode=S&step=2>

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

STUDENT RESPONSIBILITIES:

Regular attendance and participation is expected at ALL sessions as much of the information provided cannot be obtained in any other way. Students who miss more than 10% of the total number of classes may NOT be granted permission to write the final exam, and/or asked to withdraw from the course. Students who miss class due to medical reasons MUST present medical verification to their instructor. Notify the instructor of any allergies or medical conditions.

Refer to the College Policy on Student Rights and Responsibilities at www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <http://www.gprc.ab.ca/about/administration/policies/>

**Note: all Academic and Administrative policies are available on the same page.