



ORIGINAL COURSE IMPLEMENTATION DATE: September 1993
 REVISED COURSE IMPLEMENTATION DATE: September 2018
 COURSE TO BE REVIEWED: (six years after UEC approval) March 2024
 Course outline form version: 09/15/14

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: KIN 215		Number of Credits: 3 Course credit policy (105)																	
Course Full Title: Introduction to Biomechanics																			
Course Short Title (if title exceeds 30 characters):																			
Faculty: Faculty of Health Sciences		Department (or program if no department): Kinesiology																	
Calendar Description: <p>An introduction to the fundamentals of biomechanics, and the principles of both kinetic and kinematic assessment techniques as applied to human motor performance. Students learn to apply this knowledge to observe, evaluate, and modify technique, style, and skill in sport performance.</p> <p>Note: Students with credit for KPE 215 cannot take this course for further credit.</p>																			
Prerequisites (or NONE):		KIN 170 (formerly KPE 170). Note: BIO 111 and PHYS 101 are recommended.																	
Corequisites (if applicable, or NONE):		None																	
Pre/corequisites (if applicable, or NONE):		None																	
Equivalent Courses (cannot be taken for additional credit) Former course code/number: KPE 215 Cross-listed with: Equivalent course(s): KPE 110; KPE 215 <i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		Transfer Credit Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Transfer credit requested (OReg to submit to BCCAT): <input type="checkbox"/> Yes <input type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input type="checkbox"/> No To find out how this course transfers, see bctransferguide.ca .																	
Total Hours: 45 Typical structure of instructional hours: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td>Lecture hours</td><td style="text-align: center;">30</td></tr> <tr><td>Seminars/tutorials/workshops</td><td style="text-align: center;">5</td></tr> <tr><td>Laboratory hours</td><td style="text-align: center;">10</td></tr> <tr><td>Field experience hours</td><td></td></tr> <tr><td>Experiential (practicum, internship, etc.)</td><td></td></tr> <tr><td>Online learning activities</td><td></td></tr> <tr><td>Other contact hours:</td><td></td></tr> <tr><td style="text-align: right;">Total</td><td style="text-align: center;">45</td></tr> </table>		Lecture hours	30	Seminars/tutorials/workshops	5	Laboratory hours	10	Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		Total	45	Special Topics Will the course be offered with different topics? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit <i>Note: The specific topic will be recorded when offered.</i>	
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Online learning activities																			
Other contact hours:																			
Total	45																		
		Maximum enrolment (for information only): 36																	
		Expected frequency of course offerings (every semester, annually, every other year, etc.): every semester																	
Department / Program Head or Director: Alastair Hodges		Date approved: May 2017																	
Faculty Council approval		Date approved: May 2017																	
Campus-Wide Consultation (CWC)		Date of posting: October 20, 2017																	
Dean/Associate VP: Joanne MacLean		Date approved: May 2017																	
Undergraduate Education Committee (UEC) approval		Date of meeting: March 23, 2018																	

Learning Outcomes

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

1. Demonstrate fundamental mechanical principles relating to movement and force production in sport, athletics, and ergonomics.
2. Explain the properties and structure of the human body including the muscular, skeletal, and articular systems, with particular consideration of how they act to produce force and movement.
3. Evaluate and produce an integrated model of human performance incorporating biological and mechanical influences.
4. Utilize the tools for kinetic and kinematic analysis.
5. Interpret the data acquired for kinetic and kinematic analysis.

Prior Learning Assessment and Recognition (PLAR)

Yes No, PLAR cannot be awarded for this course because

Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Lectures, multimedia, biophysics calculations, case studies, student presentations.

Grading system: Letter Grades: Credit/No Credit: Labs to be scheduled independent of lecture hours: Yes No

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Watkins, J.	Fundamental Biomechanics of Sport and Exercise	<input checked="" type="checkbox"/>	Routledge	2014
2. Grimshaw, P., Lees, A., Fowler, N., & Burden, A.	Instant Notes: Sport & Exercise Biomechanics	<input checked="" type="checkbox"/>	Taylor & Francis	2006
3. Hall, S.	Basic Biomechanics	<input checked="" type="checkbox"/>	McGraw-Hill	2014
4. McGinnis, P.	Biomechanics of Sport and Exercise, 3 rd ed.	<input checked="" type="checkbox"/>	Human Kinetics	2014

Typical Evaluation Methods and Weighting

Final exam:	%	Assignments:	%	Midterm exam:	%	Practicum:	%
Quizzes/tests/exams:	50%	Lab work:	25%	Field experience:	%	Shop work:	%
Term project:	25%	Other:	%	Other:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

1. Course introduction
2. Biomechanics
 - a. qualitative
 - b. quantitative
3. Anatomical systems
 - a. skeletal
 - b. articular
 - c. neuromuscular
4. Tissue characteristics
 - a. material properties
 - b. stresses and strains
5. Linear motion
 - a. kinematic
 - b. kinetic
 - c. equations/calculations
 - d. lab activity(ies)
6. Angular motion
 - a. kinematic
 - b. kinetic
 - c. equations/calculations
 - d. lab activity(ies)
7. Fluid motion
 - a. in air
 - b. in water
 - c. equations/calculations
 - d. lab activity(ies)
8. Movement analysis of human movement
 - a. anatomical analysis
 - b. biomechanical analysis
 - c. hierarchical modeling

