



# CAPILANO UNIVERSITY

COURSE OUTLINE		
TERM: Fall 2021	COURSE NO: KINE 151	
INSTRUCTOR:	COURSE TITLE: Biomechanics	
OFFICE: LOCAL: E-MAIL: @capilanou.ca	SECTION NO(S):	CREDITS: 3.0
OFFICE HOURS:		
COURSE WEBSITE:		

Capilano University acknowledges with respect the Lil'wat, Musqueam, Squamish, Sechelt, and Tsleil-Waututh people on whose territories our campuses are located.

## COURSE FORMAT

Three hours of class time, plus an additional hour delivered through on-line or other activities for a 15-week semester, which includes two weeks for final exams.

## COURSE PREREQUISITES/CO-REQUISITES

None

## CALENDAR DESCRIPTION

This course introduces students to the qualitative and quantitative analysis of human movement. Using basic principles of physics and math, students will learn and apply kinematic and kinetic analysis to understand motion. The course also utilizes musculoskeletal anatomy and physiology to describe and explain movement.

## COURSE NOTE

KINE 151 is an approved Quantitative/Analytical course for baccalaureate degrees.

KINE 151 is an approved Science course.

KINE 151 is equivalent to HKIN 151. Duplicate credit will not be granted for this course and HKIN 151.

MATH 097 OR BMTH 043 is recommended if Math has not been taken in the last 12 months.

## REQUIRED TEXTS AND/OR RESOURCES

Hall, S. (2019). *Basic Biomechanics* (Custom Edition). New York: McGraw-Hill Education.

MATH 097 or BMTH 043 is recommended if Math has not been taken in the last 12 months.

## COURSE STUDENT LEARNING OUTCOMES

On successful completion of this course, students will be able to do the following:

1. **Facilitate** active learning, critical thinking, and problem-solving skills in the qualitative analysis of human movement.
2. **Explain** and use a free-body diagram as it applies to human movement.

3. **Derive** and solve equations of human motion in two dimensions.
4. **Interpret** graphs and simple models, which are used to explain human movement.
5. **Describe** which tools are used to acquire human movement data and show an understanding of their efficacy.
6. **Apply** knowledge of applied anatomy to describe human movement and motor skills in both anatomical and mechanical terms.

## COURSE CONTENT

WEEK	TOPIC (S)
1	<ul style="list-style-type: none"> <li>• What is Biomechanics?</li> <li>• Kinematic and Kinetic Concepts</li> </ul>
2	<ul style="list-style-type: none"> <li>• Motion Analysis Project: Research Question and Design</li> <li>• Math Review</li> </ul>
	<b>Part I: Kinematics</b>
3	<ul style="list-style-type: none"> <li>• Linear Kinematics</li> <li>• Math Quiz</li> </ul>
4	<ul style="list-style-type: none"> <li>• Projectile Motion</li> <li>• Motion Analysis Project: How to Collect Data</li> </ul>
5	<ul style="list-style-type: none"> <li>• Projectile Motion</li> <li>• Angular Kinematics</li> </ul>
6	<ul style="list-style-type: none"> <li>• Angular Kinematics</li> <li>• Midterm Review</li> </ul>
7	<ul style="list-style-type: none"> <li>• Motion Analysis Project: Digitization &amp; Qualitative Analysis</li> <li>• MIDTERM</li> </ul>
	<b>Part II: Kinetics</b>
8	<ul style="list-style-type: none"> <li>• Linear Kinetics</li> <li>• Motion Analysis Project: Quantitative Analysis</li> </ul>
9	<ul style="list-style-type: none"> <li>• Linear Kinetics</li> </ul>
10	<ul style="list-style-type: none"> <li>• Equilibrium</li> </ul>
11	<ul style="list-style-type: none"> <li>• Equilibrium</li> <li>• Angular Kinetics</li> </ul>
12	<ul style="list-style-type: none"> <li>• Motion Analysis Project: Results &amp; Conclusions</li> <li>• Angular Kinetics</li> </ul>
	<b>Part III: Muscles and Motion</b>

<b>13</b>	<ul style="list-style-type: none"> <li>• Human Anatomy and Biomechanics</li> <li>• Final Exam Review</li> </ul>
<b>14 - 15</b>	FINAL EXAM PERIOD

### EVALUATION PROFILE

ASSESSMENT	% OF FINAL GRADE	INDIVIDUAL/GROUP
Math Skills Quiz	5%	Individual
Assignments	25%	Individual
Motion Analysis Assignments	15%	Group
Motion Analysis Final Paper	10%	Group
Midterm Examination	20%	Individual
Final Examination	25%	Individual
<b>Total</b>	<b>100%</b>	

The assignment structure for this course is determined by the instructor in accordance with the learning outcomes outlined above. Please refer to the course syllabus and eLearn site for a detailed breakdown.

### GRADING PROFILE

A+ = 90-100	B+ = 77-79	C+ = 67-69	D = 50-59
A = 85-89	B = 73-76	C = 63-66	F = 0-49
A- = 80-84	B- = 70-72	C- = 60-62	

### Incomplete Grades

Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

### Late Assignments

Assignments are due at the beginning of the class on the due date listed. Any late assignment will be penalized 10% per day unless otherwise discussed with the instructor.

### Missed Exams/Quizzes/Labs etc.

Make-up exams, quizzes and/or tests are given at the discretion of the instructor. They are generally given only in medical emergencies or severe personal crises. Some missed labs or other activities may not be able to be accommodated. Please consult with your instructor.

**Attendance**

Regular class attendance, and participation in course activities and assignments, is expected and likely essential to successfully achieving the course learning outcomes. Students are responsible for any and all content and instructions communicated during scheduled classes, in course handouts, and (if applicable) via course e-mail and websites. In cases where participation by all students is essential for conducting the planned instructional activities, attendance may be mandatory.

**English Usage**

Students are expected to proofread all written work for any grammatical, spelling and stylistic errors. Instructors may deduct marks for incorrect grammar and spelling in written assignments.

**Electronic Devices**

Students may use electronic devices during class for note-taking and research purposes. A non-scientific calculator is required during lectures, assignments and exams to solve equations pertaining to the course.

**On-line Communication**

Outside of the classroom, instructors will (if necessary) communicate with students using either their official Capilano University email or eLearn; please check both regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

**UNIVERSITY OPERATIONAL DETAILS****Tools for Success**

Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: <https://www.capilanou.ca/student-life/>

**Capilano University Security: download the [CapU Mobile Safety App](#)**

**Policy Statement (S2009-06)**

Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Academic Integrity, Academic Probation and other educational issues. These and other policies are available on the University website.

**Academic Integrity (S2017-05)**

Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy and procedures S2017-05 Academic Integrity for more information: <https://www.capilanou.ca/about-capu/governance/policies/>

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

**Academic dishonesty** is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

**Cheating:** Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:

- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

**Fraud:** Creation or use of falsified documents.

**Misuse or misrepresentation of sources:** Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

**Plagiarism:** Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

**Self-Plagiarism:** Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

**Prohibited Conduct:** The following are examples of other conduct specifically prohibited:

- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

### **Sexual Violence and Misconduct**

All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence and Misconduct Policy and B.401.1 Sexual Violence and Misconduct Procedure (found on Policy page <https://www.capilanou.ca/about-capu/governance/policies/>)

**Emergencies:** Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.

## **DEPARTMENT OR PROGRAM OPERATIONAL DETAILS**

### **Participation:**

This mark, if included as part of the assessment items by the instructor, is based on both the frequency and quality of the student's comments, questions, observations, and involvement, with the emphasis on quality. The quality is determined by, among other things, the relevance, insight and clarity of remarks. Preparing the required readings will support a student's ability to participate. The participation mark is also influenced by professionalism (as described below), attitude and punctuality.

### **Professional Behaviour:**

Students must demonstrate a professional attitude and behaviour toward work, fellow students and their instructors. Each student should demonstrate reliability, respect for and cooperation with colleagues. A willingness to work calmly and courteously under difficult conditions as well as a determination to achieve first-class work while meeting deadlines is necessary. Students should display a constructive response to criticism. Professional behaviour include appropriate language use. Appropriate language use involves using respectful, moderate, and inclusive language at all times.

### **Copyright Policy:**

Students are expected to familiarize themselves with and abide by the University's Copyright Policy. The University's Copyright Policy is published on the University website.