

WILLIAM & MARY
DEPARTMENT OF KINESIOLOGY
Kinesiology 308, Biomechanics of Human Movement
Spring 2022

Instructor: Evie Burnet, PT, DPT, PhD

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Office Hours: by appointment

Course Description

The course is designed to provide the student with information in the mechanical evaluation of human movement. Fundamental mechanical principles affecting human movement during locomotion and a variety of daily and sports activities are considered. Techniques and methods of mechanical analysis, quantitative video analysis, isometric muscle force, total body force, electromyography, and research evaluation are incorporated into laboratory projects.

Course Objectives

To gain understanding of:

1. Forces and the properties of forces including vectors
2. Forces and how they act to maintain balance and stability (Statics)
3. Forces and how they act on bodies to produce motion (Dynamics)
4. Motion that occurs when a force acts on a mass either rotational or translational
5. Biomechanical relationships of joints in the body
6. Application of the biomechanical relationships through reading and evaluation of literature pertaining to the mechanics of human movement

Prerequisites and/or Course Requirements

Students enrolled in this course should have demonstrated successful completion of KINE 303 Human Anatomy.

Required Text

Hall, Susan J. (2022). *Basic Biomechanics* (9th edition). New York, New York: McGraw Hill.

If you prefer an E-text, please utilize the following link:

<https://www.mheducation.com/highered/product/basic-biomechanics-hall/M9781260836981.html>

Grading

Exam 1	15%
Exam 2	15%
Final	20%
Project	10%
Checkpoints	15%
Lab	25%

All final grades are rounded to the nearest whole number (ex: 84.4 becomes an 84; 84.5 becomes an 85). In the event of a curve, changes to the scale will be posted to Blackboard. Please note that the "Total" column in Blackboard **DOES NOT** correctly show your weighted average for the course. The following grading scale applies:

Letter	Numerical Grade
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	Below 60

Class Requirements/Policies

Class announcements will be posted on Blackboard or students will be notified by email when changes or additions are made to the syllabus or course on Blackboard.

While there is no lecture attendance policy, attendance is critical to your success in this course. Should you be unable to attend for illness reasons, please reach out to the instructor for accommodations.

Checkpoints will be turned in by 11:59 pm EST on the due date. Late assignments will only be accepted when a valid excuse has been **preapproved**.

All exams will be taken through Blackboard. HonorLock software will be utilized and should be downloaded prior to the exam, and opened with Chrome. It is the student's responsibility to contact HonorLock support, not the instructor, if problems arise during the exam. Should changes need to be made to your exam time/day, these arrangements need to be made **prior to the absence**.

Accommodations

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see www.wm.edu/sas.

Honor Code

William & Mary has had an honor code since at least 1779. Academic integrity is at the heart of the university, and we all are responsible for upholding the ideals of honor and integrity. The student-led honor system is responsible for resolving any suspected violations of the Honor Code, and I will report all suspected instances of academic dishonesty to the honor system. The *Student Handbook* (www.wm.edu/studenthandbook) includes your responsibilities as a student and the full Code. Your full participation and observance of the Honor Code is expected. To read the Honor Code, see www.wm.edu/honor. ***All academic work, including topic checkpoints, assignments, and exams, is to be your own work. Therefore, group work and use of previous course material to include but not be limited to checkpoints, assignments and exams are not permitted. When in doubt, it is your responsibility to confirm whether collaboration is permitted.***

Mental and Physical Well-Being

William & Mary recognizes that students juggle different responsibilities and can face challenges that make learning difficult. There are many resources available at W&M to help students navigate emotional/psychological, physical/medical, material/accessibility concerns. Asking for help is a sign of courage and strength. If you or someone you know is experiencing any of these challenges, we encourage you to reach out to the following offices:

- For psychological/emotional stress, please consider reaching out to the W&M Counseling Center <https://www.wm.edu/offices/wellness/counselingcenter/>; or (757) 221-3620, 240 Gooch Dr., 2nd floor. Services are free and confidential.
- For physical/medical concerns, please consider reaching out to the W&M Health Center at <https://www.wm.edu/offices/wellness/healthcenter/>; or (757) 221-4386, 240 Gooch Drive.
- For additional support or resources, please contact the Dean of Students by submitting a Care Report at <https://www.wm.edu/offices/deanofstudents/services/caresupportservices/index.php>; or by calling 757-221-2510, or by emailing deanofstudents@wm.edu.
- For a list of many other resources available to students, see [Health and Wellness Resources for Students](#)

As your professor, I also ask you to reach out to me if you are facing challenges inside or outside the classroom; I will guide you to appropriate resources on campus.

Tentative Class Schedule

Add/Drop Deadline: 2/4 at 11:59pm

Withdrawal Deadline: 3/28 at 11:59pm

	Associated Readings	Due Dates
<i>Exam 1 Material</i>		<i>26 January to 21 February</i>
Topic 1: Introduction to Biomechanics	Chapter 1	1/26
Topic 2: Kinematic Concepts	Chapter 2	1/31
Topic 3: Kinetic Concepts	Chapter 3	2/2, 2/7
Topic 4: Equilibrium and Human Motion	Chapter 13	2/9, 2/14
Exam Review		2/16
Checkpoints (Topics 1 – 4)		By 2/20 at 11:59pm EST
Exam #1 (Topics 1 – 4)		2/21 8am to 11:59pm EST
<i>Exam 2 Material</i>		<i>23 February to 4 April</i>
Topic 5: Biomechanics of Bone	Chapter 4	2/23
Topic 6: Biomechanics of Joints	Chapter 5	2/28
Topic 7: Biomechanics of Muscle	Chapter 6	3/2, 3/7
Topic 8: Upper Extremity Biomechanics	Chapter 7	3/9, 3/21
Topic 9: Lower Extremity Biomechanics	Chapter 8	3/23, 3/28
Exam Review		3/30
Checkpoints (Topics 5 – 9)		By 4/3 at 11:59pm EST
Exam #2 (Topics 5 – 9)		4/4 8am to 11:59pm EST
<i>Exam 3 Material</i>		<i>6 April to 4 May</i>
Topic 10: Linear Kinematics	Chapter 10	4/6, 4/11
Topic 11: Angular Kinematics	Chapter 11	4/13, 4/18
Topic 12: Linear Kinetics	Chapter 12	4/20, 4/25
Topic 13: Angular Kinetics	Chapter 14	4/27, 5/2
Exam Review		5/4
Checkpoints (Topics 10 – 13)		By 5/9 at 11:59pm EST
Final Exam		Due by 10 May at noon