

Comparative Biomechanics BIOL 356 – Fall 2016

Instructor: Dr. Jason Vance

e-mail: vancejt@cofc.edu (please put “Biol356” in Subject Line)

Office: 204 Harborwalk West (HWWE)

Phone: 843-953-4880 (do not leave a message)

Office Hours: MWF 9:30-10:20, or by appointment (or if my office door is open).

Lecture: 10:30 - 11:20am Monday, Wednesday, Friday; 305 HWWE

Lab: 12:00 - 3:00pm, 3:00-6:00pm Tuesday; 208 HWWE

Required Text: Animal Locomotion (Andrew Biewenner)

Required Program: Matlab (student version) or Octave (open source)

Course Description

Biomechanics is the study of organismal structure and function using Newtonian mechanics. In this course, you will learn to quantify mechanical properties in living systems, and understand how structure and function facilitate animal behavior and shape organismal ecology, evolution and diversity. The laboratory component of Comparative Biomechanics provides hands-on experience using techniques and equipment for recording and analyzing the kinematics and kinetics of biomechanical phenomena, including using high-speed videography, force transducers, and MatLab. Finally, you will gain experience communicating scientific results and findings both in oral presentations and written reports.

Assessment

Assessment of the course (total: 1000 pts) will be in the form of three exams (200 pts each), oral presentations of selected research papers (100 pts), four laboratory reports (50 pts each), and four programming assignments in Matlab/Octave (25 pts each). The lecture and laboratory components both count towards the final grade, and are not assessed as separate units.

Schedule

Week of:	Subject	Chapter	Lab Subject	Exams/Assignments
8/22	Introduction	1, 2		
8/29	Terrestrial Locomotion	3	Intro to Matlab	
9/5	Terrestrial Locomotion	3, 7	Optics, Running Kinematics	9/5: Matlab 1
9/12	Terrestrial Locomotion	7	Kinematics Analysis	9/12: Matlab 2
9/19	Swimming	4	Jumping and Kinetics	9/23: Lab Report 1
9/26	Fluids	4	Plants and Drag	9/26: Exam 1
10/3	Flight	5	Swimming	
10/10	Flight	5	Kinematics Analysis	10/14: Lab Report 2
10/17	Flight	5	2D Flight	
10/24	Materials Properties		3D Flight	10/24: Matlab 3
10/31	Materials Properties		Kinematics Analysis	11/4: Lab Report 3
11/7	Feeding		Fall Break (no lab)	11/9: Exam 2
11/14	Ecology	7,9	Materials Analysis	
11/21	Eco/Evolution	9	Snapping Shrimp	
11/28	Evolution		Kinematics Analysis	11/28: Matlab 4
12/5	Finals Week			12/5: Lab Report 4 12/9: Exam 3

Student Conduct

1. There is to be no talking during the instruction portion of the lecture and lab. If you have a question, please raise your hand prior to asking the question. While answering a student's question, please remain quiet so that the student and other class members can hear the reply.
2. Remember you are attending the lecture and lab to learn and apply the material/principles covered in the lecture, not to text-message, surf the internet, read newspapers/magazine, sleep, or distract the instructor or the other students.
3. Please turn off all cellular phones before entering the lecture or lab. Computers will be provided to perform the laboratory exercises. Personal tablets and laptops may be used during lab for the research, data analysis and write-up exercises and projects. If you choose to use these devices for non course-related material, you will be excused and you will earn an absence for that week's lecture or lab.
4. If you have a documented disability than may require assistance, please contact the Center for Disability Services for coordination in your academic accommodations. If the CDS will be involved in administering an exam, I request that you inform me in advance (e.g. the day before the exam is not acceptable). The CDS is located in the Lightsey Center in Suite 104. The CDS phone number is (843) 953-1431. For more information about disabilities, see <http://disabilityservices.cofc.edu>.
5. No College of Charleston employee or student should be subject to unwelcome verbal or physical conduct. It is expected that students, faculty and staff will treat one another with respect. Individuals who violate this policy are subject to discipline up to and including termination and/or expulsion from the College and the possibility of civil and criminal prosecution.
6. Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at: <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>