

Course ID:	Course Title:	Winter 2019
Kin 385	Biomechanics	Prerequisite: Zoo261 and Zoo263 Phys111 recommended
		Credits: 3

Class Information		Instructor Information		Important Dates	
Days:	Tues. / Thurs.	Instructor:	Dr. Mehdi (Nader) Dehghany, PhD	First day of classes:	Thursday, Jan 3, 2019
Time:	9:45 – 11:00 am	Email:	Mehdi.Dehghany@ambrose.edu	Last day to add/drop, or change to audit:	Sun, Jan. 13, 2019
Room:	A 2210	Phone:	--	Last day to request revised exam:	Mon, Mar. 11, 2019
Lab/ Tutorial:	Wednesday, 2:30 – 5:30 pm, A2145	Office:	L 2091	Last day to withdraw from course:	Fri, Mar. 22, 2019
		Office Hours:	Wednesday 2:00 - 2:30 pm or by appointment (send email before)	Last day to apply for coursework extension:	Fri, Mar. 29, 2019
Final Exam:	Wednesday, April 10 th 1-4:00, A2141			Last day of classes:	Fri, April 5, 2019

Course Description

This course will cover the biomechanical properties of tissues and organs and will discuss the effects of these properties on function. Methods for the analysis of deformational mechanics will be introduced as they apply to biological tissues including bone, muscle, and connective tissues. Analysis of movement will also be discussed at a biomechanical level.

Expected Learning Outcomes

It is the aim of the course that students acquire the following skills:

1. To gain an understanding of the principles of physics and mechanics as they apply to body movement and function.
2. To learn the biomechanical properties of various body tissues and the effects of these properties on function and the mechanical design of various animals
3. To learn methods for the analysis of deformational mechanics as they apply to biological tissues including bone, muscle, and connective tissues.
4. To analyze body movements at a biomechanical level.
5. To further develop their presentation skills – both written and oral

Textbooks and resources:

1. Biomechanical Basis of Human movement, J. Hamill, K. Kuntzen, T. R. Derrick, Fourth edition, Wolters Kluwer business (Pdf version available from course Moodle website)
2. Fundamentals of Biomechanics, Duane Knudson, Springer-Verlag (Pdf version available from Moodle website)
3. Journal papers and readings MAY also be assigned.

Course Schedule

<u>Dates (Week of)</u>	<u>Topic</u>	<u>Text Chapters</u>
Jan. 3	Part I: Foundations of Human Movement;	Chapter 1: Basic Terminology
7		
14	Biomechanical Characteristics of Bone	Chapter 2: Skeletal Considerations for Movement
21	Forces and their effect on bones.	
28	Joints, stability and motion.	Chapter 3: Muscular Considerations for Movement,
Feb. 4	Stability and motion of body – Newtons Laws	
11	Torque and muscle roles in body stability	Midterm Exam (Wednesday Feb 13 th)
18	Force–Velocity Relationships in Skeletal Muscle	
25	Part II: Functional Anatomy	
Mar. 4	Detail study: The Shoulder Complex	
11	Anatomical and Functional, Combined Movement Characteristics, Muscular Actions	
18	The Knee Joint, Static and dynamic Loads	Midterm Exam (Wednesday March 20 th)
25	Static and dynamic Loads	
Apr. 1	Part III: Mechanical Analysis of Human Motion.	
8	Review	

If a section does not have a textbook chapter, then other sources might be assigned.

Laboratory Schedule

Independent lab topics will include: Anatomy and Physiology of the skeletal and muscular system, flow dynamics of the cardiovascular system, Mechanical properties of animal systems, linear kinetics and kinematics, angular

kinetics and kinematics. While there will be some experimental work, this will be supplemented with case study and journal paper reviews.

Requirements:

The course will be evaluated with two midterm and one final exam. There will also be several assignments, a group presentation, and a term paper. Case studies and inquiry-based learning will be used in the class - Student participation is expected in the form of discussion and presentation.

The midterms and final exam will be a combination of multiple-choice questions, as well as short and long answer questions. While most questions will be based on lecture material, the textbook reading will absolutely help in the understanding of this material.

Assignments will be handed in during class time. There will be a 20% deduction in grade per day that an assignment or lab report is handed in late. No assignments will be accepted past one week late. If there are extenuating circumstances resulting in the lateness, please contact the instructor.

Attendance:

While attendance at lectures is not mandatory, it will help ensure success on course exams and assignments.

Course Assessments:

Online and in-class Assignments.	15%
Tutorial/ Paper reading /Laboratory	15%
Two Midterm Exams (Wednesday Feb13 and March 20th).	20%+20%
Final Exam (April 10 th 1-4:00, room: A2141- 3 hours)	30%

The available letters for course grades are as follows:

95-100	(A+)	77-79	(B+)	67-69	(C+)	55-59	(D+)
85-94	(A)	73-76	(B)	63-66	(C)	50-54	(D)
80-84	(A-)	70-72	(B-)	60-62	(C-)	0-49	(F)

Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor’s assessment of the level of each class, compared to similar classes taught previously. Please note that final grades will be available on student registration system. Printed grade sheets are not mailed out.

Classroom Etiquette:

It is expected that students will take an active role in the learning process. This includes: (a) regular class attendance, (b) reading course material in advance of class, and (c) engaging in discussions during class.

In respect to the professor and to your fellow students, we ask that you:

- a) Turn your cell phone off during class and that you don’t use it for texting during lecture or lab/tutorial
- b) Do not engage in any task that is distracting to other students and your instructor.

- c) Use your laptops for lecture material and assignments only – that you are not using the internet or facebook during class time.
- d) Arrive to lecture and lab on time

These will help to maximize the learning experience for you and your fellow students (and will keep your professor in a good mood).

Ambrose University Academic Policies:

Communication

All students have received an Ambrose e-mail account upon registration. It is the student’s responsibility to check this account regularly as the Ambrose email system will be the professor’s instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a “Request to Withdraw from a Course” form or by sending an email to the Registrar’s Office by the **Withdrawal Deadline**; please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of “W” will appear on their transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Exam Scheduling

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar’s Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing any exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devices in class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student

to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Note: Students are strongly advised to retain this syllabus for their records.