

Course Title: Mechanics of Bioengineering 1

Course Number: BIOE 2312

Credit Hours: 4.0

Day and Time: MWF 2:40 – 3:50 PM in Engineering 930

Professor:

Ruth Ochia, Ph.D., P.E.

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Office Hours: Wednesdays: 9:30 am – 10:30 am

Thursdays: 12 pm – 2 pm

Textbook:

Statics and Mechanics of Materials, 4th Edition (2014) by R.C. Hibbeler

ISBN-10: 0133455416

ISBN-13: 9780133455410

Course Description:

This course will provide students with an understanding of the application of statics and mechanics of solids to engineering problem analyses. Topics will introduce basic concepts of mechanics with application to physiologic loading and motion in the body.

Student Outcomes:

Successful completion of this course, students will attain:

- (a) An ability to apply knowledge of mathematics, science and engineering
- (e) An ability to identify, formulate, and solve engineering problems

Course Goals:

- 1) Construct and properly use free-body diagrams (FBD) to solve engineering problems
- 2) Develop the ability to analyze a given problem in a simple and logical manner
- 3) Use the fundamental principles to solve engineering problems
- 4) Perform analyses for stresses, strains, and deformations of simple solids and structures subjected to axial, torsional, flexural, and combined loads
- 5) Design simple structures to meet specified requirements for safety and/or performance

Pre-requisites:

PHYS 1061, PHYS 1062, MATH 1041, MATH 1042

Mutual Exclusions:

ENGR 2331, ENGR 2333

Course Outline:

Topic - Statics	Chapters	Topic – Mechanics of Solids	Chapters
Vectors/Units	1-2	Stress and Strain	7-8
Statics of Particles	3	Axial Loading	9
Equilibrium of RB	4	Torsion	10
Structural Analysis	5	Pure Bending/ Shear	11-12
Centroids/COG/MOI	6	Combined Loadings	13

Grading:

Homework/Participation	8 %
Quizzes	7 %
Exam #1	20 %
Exam #2	20 %
Exam #3	20 %
Group Project	25 %
Total	100%

Assignments:

The assignments will be due at the start of class on the due date. Late assignments will be deducted 3% per day. After two weeks the assignment will be given a grade of zero.

Exams:

Make-up exams will only be offered for excused absences.

Attendance:

You are expected to attend all lectures. Students are allowed to miss up to 3 classes before their grade is affected (excused absences must be discussed with Prof. Ochia prior to missing class except for emergencies). For each additional class that is missed, two percentage points will be subtracted from the student's final grade. **Please note that cell phones must be turned off during class; text messaging or answering phone calls during class is very inconsiderate and distracting, and is not permitted.**

Accommodations:

In accordance with the Americans with Disabilities Act, any student has the right to request reasonable accommodation of a disability. Accommodations can be requested through Disability Resource Services, (1000 Ritter Annex (004-03), 1301 Cecil B. Moore Avenue, 215-204-1280), the program that authorizes all accommodations on Campus. Please note that you will need to present documentation of your disability to the Disabilities Office.

For Temple University policies on student responsibilities and academic honesty please see:
http://www.temple.edu/bulletin/Responsibilities_rights/responsibilities/responsibilities.shtm

Academic Rights and Responsibilities

Temple University students who believe that instructors are introducing extraneous material into class discussions or that their grades are being affected by their opinions or views that are unrelated to a course's subject matter can file a complaint under the University's policy on academic rights and responsibilities. The full policy can be found at:

http://policies.temple.edu/getdoc.asp?policy_no=03.70.02

The policy encourages students to first discuss their concerns with their instructor. If a student is uncomfortable doing so, or if discussions with the instructor do not resolve the student's concerns, an informal complaint can be made to the Student Ombudsperson for the student's school or college. Unresolved complaints may be referred to the dean for handling in accordance with the school or college's established grievance procedure. Final appeals will be determined by the Provost.

"This course endorses and complies with Temple's policy on "Freedom to teach and freedom to learn" (Policy Number: 03.70.02), which can be found online: <http://policies.temple.edu/PDF/99.pdf>"