

Biomechanics of Soft Tissue

EGM 5584 Section 1234

Class Periods: MWF, 5th Period, 11:45am – 12:35pm

Location: MAE-B 0238

Academic Term: Fall 2025

Instructor:

Thomas E. Angelini

t.e.angelini@ufl.edu

Office Phone Number: 352-392-6438

Office Hours: Tuesdays 9am-10am, Thursdays 10:30am – 11:30am, NPB 2346

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Please contact through the Canvas website

- TBA

Course Description

Introduction to solid and fluid mechanics of biological systems. Rheological behavior of materials subjected to static and dynamic loading. Mechanics of cardiovascular, pulmonary, and renal systems. Mathematical models and analytical techniques used in biosciences.

Course Pre-Requisites / Co-Requisites

EGN 3353C and EGM 3520.

Course Objectives

Upon completion of this course, students will demonstrate:

1. understanding of the historical connection between the mechanics of biopolymers, cells, and tissues;
2. the technical ability to model the cell and cytoskeleton from polymer physics models;
3. phenomenological understanding of cell mechanics and technical grasp of traction force methods;
4. knowledge of material properties of healthy tissue, diseased tissue, and model tissues.

Materials and Supply Fees

NA

Required Textbooks and Software

None

Recommended Materials

Textbooks:

Biological Physics, Philip Nelson

Molecular Biophysics, Michel Daune

Mechanics of Motor Proteins and the Cytoskeleton, Jonathan Howard

Intermolecular and Surface forces, Jacob Isrealachvili

Required Computer

Recommended Computer Specifications: <https://it.ufl.edu/get-help/student-computer-recommendations/>

HWCOE Computer Requirements: <https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/>

Course Schedule

See attached course schedule

Important Dates
See attached course schedule

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Term Exams, Final Exam	100 each	60%
Reading Assignments/ Discussion	100 each	40%
		100%

Grading Policy

To determine your course grade, the exam scores will be averaged. Your reading/discussion points will be averaged. A weighted average between your average exam score and your average reading/discussion score will be computed and rounded to the nearest whole point. We will follow the following grading scale.

Percent	Grade	Grade Points
90 - 100	A	4.00
85 - 89	A-	3.67
80 - 84	B+	3.33
75 - 79	B	3.00
70 - 74	B-	2.67
65 - 69	C+	2.33
60 - 64	C	2.00
55 - 59	C-	1.67
50 - 54	D+	1.33
45 - 49	D	1.00
40 - 44	D-	0.67
0 - 39	E	0.00

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: <https://go.ufl.edu/syllabuspolices>. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Coordinator
- HWCHE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu