

BMEN 3200 Course Syllabus (Fall 2025)

Course Information

Course Number & Section: BMEN 3200

Course Title: Biomedical Engineering Fundamentals and Design

Term: Fall 2025

Meeting Times and Location:

- | | | | |
|-------------|-----------|--------------------|-----------|
| • Lecture | Friday | 11:00AM – 11:50 AM | GR 2.530 |
| • Lab (301) | Tuesday | 1:00PM – 3:45 PM | ML1 1.118 |
| • Lab (302) | Wednesday | 11:30AM – 2:15 PM | ML1 1.118 |
| • Lab (303) | Thursday | 1:00PM – 3:45 PM | ML1 1.118 |

Contact Information

Professor Christian Rivera, PhD (He, Him, His)

Office Phone 972-883-4482

Email Address cprivera@utdallas.edu

Office Location 2.226 ECSN or via MS Teams

Office Hours Wednesday 3-5PM in ML1 1.118/1.114

Other Information Always glad to meet with students in-person or virtually.
Additional office hours can be scheduled via email.

Teaching Assistant Marvin Alvarez

Email Address Marvin.Alvarez@utdallas.edu

Office Hours Monday 1PM-4PM in ML1 1.118

Other Information Additional office hours can be scheduled via email.

Teaching Assistant Tarik Shihabeddin

Email Address Tarik.Shihabeddin@utdallas.edu

Office Hours Friday 1PM-4PM in ML1 1.114

Other Information Additional office hours can be scheduled via email.

Client David Schmitke

Email Address David.Schmitke@utdallas.edu

Office Hours Office hours via appointment

Client Zieanna Chang

Email Address Zieanna.Chang@utsouthwestern.edu

Office Hours Office hours via appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-Requisites:

- BMEN 3220 (Electrical and Electronic Circuits in Biomedical Engineering Lab)
- BMEN 3320 (Electrical and Electronic Circuits in Biomedical Engineering)
- BMEN 3331 (Cell and Molecular Engineering)
- BMEN 3399 (Introductory Biomechanics)

If you have not mastered or forgotten these concepts, please visit me or the TA and we will provide resources that can help you learn and review the material which should prepare you for this course.

Course Description

This course will cover the fundamentals of biomedical engineering and design techniques through a combination of labs, lectures, and a guided design project.

Students will learn the broad fundamentals of biomedical engineering and also the design process including such topics as ethical behavior, particularly with respect to human and animal subjects, intellectual property considerations, global biomedical engineering, codes and standards, and FDA regulations.

The students will receive hands-on training on machining, wet-lab techniques, computer-aided modeling and simulation, basic electrical and electronic circuit design and computer programming.

Completion of this course will provide students with the skills and knowledge to enable them to be successful in future design courses.

Student Learning Objectives/Outcomes

1. Apply design principles to a bioengineering problem and create potential solutions based on client specifications (SO2 - Engineering Design)
2. Fabricate and assemble a prototype that meets a client's requirements (SO2 - Engineering Design)
3. Test and analyze systems to draw conclusions (SO6 - Analyze Data)
4. Document work in technical reports and verbally communicate project results to an audience (SO3 – Communication)
5. Develop team collaboration skills (SO5 – Teamwork)

Textbooks and Materials

Required Materials: Computer with internet, webcam, and audio

Recommended Textbook(s): Zenios, Makower, Yock, "Biodesign: The Process of Innovating Medical Technologies", 1st ed., Cambridge University Press, 2009. (ISBN 978-0521517423)

Assignments & Grading Policy

The final course grade will be determined based on the following assessments:

- Individual Assignments (40%)
- Final Group Grad (60%) = Group Assignments × Peer Evaluations

From the percentage points, letter grades will be assigned according to the following table:

Letter Grade*	Numerical Grade
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	≤ 60%

(Normal rounding rules apply to the hundredth of a point. Grades are based on the percent earned for each assignment, not total points in an assignment.)

Ranges may change at the end of the semester.

Letter Grades are reflective of course performance:

- A – Expectational performance that would result in employee earning a promotion
- B – Satisfactory performance that would result in employee earning a bonus
- C – Employee performance is acceptable, but it will not lead to bonus or advancement
- D – Employee would be put "on notice" at a company and would require significant additional oversight
- F – Unsatisfactory performance resulting in employee being fired

You will be expected to allow for a minimum of two hours working outside of class for every credit hour.

Assignment Breakdown

Individual Assignments (40%)

Individual Assignments	40%	
Professionalism	9%	
Training Requirements	1%	
Quizzes (6)	5%	(1% Each – 1 dropped)
Pre-labs (2)	10%	(5% Each)
Reflections (5) (Marvin)	15%	(3% Each)

Attendance will be recorded in each class. You may work on pre-labs with your peers; however, everyone must submit a separate assignment. All other assignments must be done individually.

****Failure to meet satisfactory performance (28% out of 40% in Individuals Assignments) in this category will result in your grade becoming a minus (e.g., B → B-)**

Final Group Grade (60%) = Groups Assignments × Peer Evaluations

Group Assignments	60%	
Team Contract and Outing	1%	
Post-Labs (2)	8%	(4% Each)
Design Updates (4)	8%	(2% Each)
Preliminary Design Review	5%	
Final Prototype Demonstration	10%	
Final Design Review	10%	
Final Design Report	14%	
Client Evaluation (2)	4%	(2% Each)

Only one submission is needed per team for group assignments. All members will share the same score for a given assignment if they participate. Members who did not contribute/participate in assignment will receive a 0%.

Peer Evaluations:

Confidential evaluations will be performed multiple times throughout the semester. This will be used for student teams to evaluate group members in order to improve or maintain team dynamics. Your peer evaluation score will be assigned based on your % contribution to the project, which will be calculated as the average of the scores reported individually by your team members (including yourself). Based on your percent contribution a scaling factor will be assigned. We will average your evaluations for one average scaling factor. This scaling factor will be multiplied with your group assignment score to calculate your final group grade.

For an evaluation if you contributed equally with your team members, you will get a 1.00x scaling factor; thus, in this nominal case the peer evaluation will not affect your grade. **If there is a significant disparity in effort on your team, please make the instructors**

aware of the issue as early as possible so that the instructors may provide guidance.

Poor peer evaluations may result in the FIRING of the student from the team. This means that the student will have to complete the remainder of the project by themselves and are responsible for submitting their own assignments as a separate grade.

For a 4-person team, the scaling factor will be assigned as follows:

Percent Contribution	Scaling Factor
<15%	0.5x
15-16%	0.6x
16-17%	0.7x
17-18%	0.8x
18-20%	0.9x
20-23%	0.95x
23-27%	1x
27-30%	1.05x
30-33%	1.1x
33-35%	1.15x
35-37%	1.2x
>37%	1.25x

Teams of 3 or 5 will be evaluated on a case-by-case basis, recognizing that the load is different than a 4-person team. **If a peer evaluation that is not submitted, a deduction of 0.05 will be applied to that evaluation (e.g. 0.9x → 0.85x)**

Grading Errors:

If you think we have made an error in grading, please email the original assignment to the instructor and TA within one week of receiving the grade. Please note what you perceive to be the error, problem, or discrepancy. Changes to grades will be posted on eLearning. All questions regarding grades should be handled in office hours or via email.

Academic Calendar

Week	Dates	Lab	Lecture
1	1/20 - 1/24	Lecture: Syllabus Overview and Intro to the Design Process Activity: Marshmallow Design	<i>Recorded Lecture: Project Management</i> Activity: Teamwork Case Studies
2	1/25 - 1/31	<i>Recorded Lecture: Stakeholders</i> Lecture: Problem Scoping and Problem Statements Activity: AEIO and Problem Trees	Activity: Writing Problem Statements
3	2/1 - 2/7	<i>Recorded Lectures: Requirements and Standards</i> Lecture: Documenting Requirements and Specifications Activity: Block Diagraming	Activity: Team building
4	2/8 - 2/14	Group A: Project Related Lab	<i>Recorded Lecture: Conceptual Design</i> Activity: Ideation
		Group B: Fabrication Tutorial (Meet in SPN)	
5	2/15 - 2/21	Group A: Fabrication Tutorial (Meet in SPN)	Group Working Time
		Group B: Project Related Lab	
6	2/22 - 2/28	Lecture: Downselection Activity: Peer Review of Problem Statements	Activity: Creating Decision Matrices
7	3/1 - 3/7	Lab: Arduino Lab Day 1	Group Working Time
8	3/8 - 3/14	<i>Recorded Lecture: Presentation Skills</i>	Group Working Time (Attendance not Required)
		Lab: Arduino Lab Day 2	

9	3/15 - 3/21	Spring Break	
10	3/22 - 3/28	Lab: Arduino Lab Day 3	Group Working Time
11	3/29 - 4/4	Preliminary Design Review	
12	4/5 - 4/11	<i>Recorded Lecture: Verification and Validation</i> Activity: Creating Test Plans	Group Working Time
		Build and Test Day 1	
13	4/12 - 4/18	Build and Test Day 2	Group Working Time
14	4/19 - 4/25	Build and Test Day 3	Group Working Time
15	4/26 - 4/2	Build and Test Day 4	Group Working Time
16	5/3 - 5/9	Final Design Presentations and Demonstrations	
17	5/10 - 5/15	Finals Week	

Feb 4 - Last day to drop without a "W"

Last updated: **January 21, 2026**

Mar 14 - Midterm Grades
Apr 8 - Withdrawal period ends
May 20 – Final Grades

Please note the dates of the presentations. The schedule is subject to change, based on the pace of the course, inclement weather, etc. Changes will be announced in class, via email, and on eLearning.

Course & Instructor Policies

Corporate Guidelines:

All submitted documents must follow “**Corporate Documentation Guidelines**”. Failure to follow these guidelines will result in a penalty to the assignment grade.

Life Policy:

Life happens and personal situations can introduce complications. Please talk to the instructor if you need assistance regarding class. The instructor wants you to succeed and early communication is key. Allowances for exceptional documented circumstances will be accepted with **prior** consent of the instructor. In such circumstances, late work will be dealt with on a case-by-case basis. Contact the instructor and TA by email as soon as practical if these circumstances may apply to you. The email reply documenting acceptance of reason and documentation for late work will set a new deadline.

Late Work:

Assignments turned in after the due date and time will be assessed a penalty of 25% per 24 hours. For team assignments all members are equally affected by this penalty. Email the assignment to the instructors and TAs directly if you experience or expect an error submitting an assignment on eLearning.

Email Policy and Privacy:

All official student email correspondence will be sent only to a student's UT Dallas email address and UT Dallas will only consider email requests originating from an official UT Dallas student email account. At some points in the term, my inbox gets quite full, but I do want to hear from you. If you email me, please wait 1 business day for all email responses. If you do not receive an email within that time period, please send a follow-up email or reach out in-person. I will appreciate the gentle reminder.

UTD takes your privacy very seriously. The instructor is unable to email grades or discuss grades by email. Grades will be posted on eLearning and all questions regarding grades should be handled in office hours.

Classroom Citizenship:

Please be respectful of your peers at all times.

AI Policy:

Some assignments in this course will explicitly state that you may use Artificial Intelligence (A.I.) such as ChatGPT when completing the work. If you use A.I. you must clearly indicate any use of A.I. tools and provide appropriate citations or references for any A.I.-generated content or results produced. This should include full documentation of exactly how the tool

was used. Use of A.I. to produce or help develop content when an assignment does not explicitly allow for it is a form of plagiarism and will be treated as academic misconduct.

A.I. should not replace your individual effort or original work but rather, should be used as supplemental resources to support your own analysis, critical thinking, and problem-solving. Any misuse or violation of the policy, including unauthorized or excessive use of A.I., will be considered a breach of academic integrity and subject to disciplinary actions as per the institution's policies and procedures on academic misconduct. ([UTD Generative AI Use in Academic Work](#))

Acceptable uses:

- Using AI to help brainstorm ideas and organize thoughts.
- Using AI image generators to create visuals.
- Using AI to help with grammar and spelling checks.
- Using AI to explain confusing concepts in simple language.
- Using AI to translate text from one language to another.

Unacceptable uses:

- Using AI to generate paragraphs for reports.
- Using AI to plagiarize content from other sources.
- Using AI to answer reflection questions.
- Using AI to automate the completion of assignments.

Academic Dishonesty:

Academic dishonesty can occur in relation to any type of work submitted for academic credit or as a requirement for a class. It can include individual work or a group project. Academic dishonesty includes plagiarism, cheating, fabrication, and collaboration/collusion. In order to avoid academic dishonesty, it is important for students to fully understand the expectations of their professors. This is best accomplished through asking clarifying questions if an individual does not completely understand the requirements of an assignment.

UT Dallas has a no-tolerance policy for plagiarism, copyright infringement, or scholastic dishonesty. Plagiarism is using another's work as your own without appropriate credit or attribution. Do not cheat. Do not copy assignments, do not post assignments or make answers public, do not work on assignments as a group unless instructed to, do not plagiarize, do not use the internet or outside sources when you are not allowed to, do not use AI, do not discuss assignments with those who are not done, or do anything else that would be construed as academic dishonesty. If the instructor suspects academic dishonesty, they will follow UTD procedures with the Office of Community Standards and Conduct (OCSC).

Academic dishonesty is considered unacceptable performance and a drop of 1 letter grade for the course will be recommended to OCSC.

From this point forward the instructor will no longer be involved in the investigation or results. The instructor will not notify a student of a report to OCSC, nor will they discuss pending investigations with the student. Do not cheat.

Additional information related to academic dishonesty and tips on how to avoid dishonesty may be found here: <https://conduct.utdallas.edu/dishonesty>

You should cite any sources you reference, providing in-text citation and references, both in your written work and in your online postings. If you are uncertain about how to cite sources, the following references are useful resources to guide you.” (*Adapted from Dr. Bill Hefley*)

Guidance on citations and references:

- <https://libguides.utdallas.edu/citation-resources-guide>
- https://owl.purdue.edu/owl/avoiding_plagiarism/index.html
- https://owl.purdue.edu/owl/research_and_citation/using_research/quoting_paraphrasing_and_summarizing/index.html
- https://owl.purdue.edu/owl/research_and_citation/resources.html

Course Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Attendance and Participation

Regular and punctual class attendance is expected regardless of modality. Students who fail to attend class regularly are inviting scholastic difficulty. **Attendance will be recorded in each class.** For Lab classes arriving 5 minutes after class is considered late and 15 minutes is considered absent. For the Friday Lectures arriving after 5 minutes is considered absent. **Students are given one unexcused absence for the Friday lectures to be used when needed.**

Regular class participation is expected. This also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Resources

[Academic Support Resources](#): The information contained in the following link lists the University's academic support resources for all students.

[Student Resources](#): A variety of resources are available to help students to obtain counseling, health care, and academic support.

[Student Services & Support](#): UTD services to support students in and out of the classroom.

[Resources for Study and Campus Life](#): Additional list of resources at UTD.

Accommodations for Students with Disabilities

It is the policy and practice of UT Dallas to make reasonable accommodations for students with properly documented disabilities. If you are a student with a disability and believe you will need academic accommodations for this class, you are encouraged to register with the Office of Student AccessAbility (OSA). Some aspects of the course, the assignments, the in-class activities, and the way the course is typically taught may be accommodated to facilitate your participation and progress. OSA will assist you in determining academic accommodations that are appropriate for your situation. Any information you provide is private and confidential and will be treated as such. To avoid any delay, please contact OSA as soon as possible. Please note that accommodations are not retroactive and disability accommodations cannot be provided until an OSA Letter of Accommodation has been given to the instructor. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Administration Building, AD 2.224 They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.