

University of Texas at El Paso

Course Title: BME 3303: Fundamentals of Biomedical Engineering I

CRN: 25070

Class Time: Spring 2021 Semester
Asynchronous course on UTEP Blackboard

Textbook: none, course materials will be posted on UTEP Blackboard

Instructors: Dr. Sylvia Natividad-Diaz

Contact: *email correspondence for this class should be sent through the **Blackboard portal only***

Office hours: TBD (a survey will be done at the beginning of the course, check Blackboard)

Goals:

This course teaches the application of various engineering principles to analyze and understand the structure, function, and control of biological systems and relevant medical devices.

Prerequisites: BME minor or consent of instructor.

POINTS DISTRIBUTION:

Discussion Board 20%, Quizzes 10%, Homework 20%, Course project 50%

Approximate Schedule:

Week 1: Introduction to class, introduction to Biomedical Engineering

Week 2: Cells, tissues, organs

Week 3-4: Pathogens and the Immune System

Week 5: Wound healing

Week 6-8: Cardiovascular devices and their design

Week 9: Biocompatibility

Week 10: Biomaterials

Week 11-12: Orthopedic devices and their design

Week 13: FDA

Week 14: Clinical Trial design

Week 15: Translational Medicine

Course Project: Medical Device Evaluation

Midterm Presentation (10%): Device Description, history, targeted disease epidemiology and patient demographics, materials selection, biocompatibility

Final Presentation (20%): Device loading and stress analysis, FDA regulations (current clinical trials if relevant), intellectual property and commercialization

Final Report (20%): A separate file with more specific instructions will be provided.

Components: Device Description, history, targeted disease epidemiology and patient demographics, materials selection, biocompatibility, loading and stress analysis, FDA regulations (current clinical trials if relevant), intellectual property and commercialization

Technology Requirements

Course content is delivered via the Internet through the Blackboard learning management system. Ensure your UTEP Blackboard account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop, scanner, a webcam, and a microphone. You will need to download or update the following software: Microsoft Office, Adobe Acrobat Reader, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and able to access all parts of the course.

If you do not have a word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about [Microsoft Office 365](#) and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you.

Course Communication

This is an asynchronous course that is completely online, we won't see each other in person since there is no designated class meeting time. However, I will be in regular communication with the students enrolled in this course

- **Office Hours:** We will not be able to meet on campus, but I will still have office hours. I will determine my office hours from a survey posted at the beginning of the course. They will be held on Blackboard Collaborate, please check course announcements on Blackboard regularly for notification of the survey, the finalized office hours, and an access link.
- **Email:** Blackboard e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24-48 hours of receipt. When e-mailing me, be sure to email from your UTEP Blackboard student account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name. **Emails related to this course sent to my UTEP account (outside of Blackboard) will not be answered.**
- **Discussion Board:** If you have a question that you believe other students may also have, please post it in the Student Community Board of the discussion boards inside of Blackboard. Please respond to other students' questions if you have a helpful response. I will not check this as often as Blackboard email, so please send urgent questions to me directly (via Blackboard).
- **Announcements:** Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

Netiquette

As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider audience. This is a college-level course; therefore, all communication should reflect polite and respectful consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.
- Keep in mind, anything posted on Blackboard is permanent even if you delete it.

Course Policies

Attendance and Participation

Attendance in the course is determined by participation in the learning activities of the course. Your participation in the course is important not only for your learning and success but also to create a community of learners. Participation is determined by completion of the following activities:

- Reading/Viewing all course materials to ensure understanding of assignment requirements
- Participating in engaging discussion with your peers on the discussion boards
- Other activities as indicated in the weekly modules

Excused Absences and/or Course Drop Policy

According to UTEP Curriculum and Classroom Policies, "When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of "W" before the course drop deadline and with a grade of "F" after the course drop deadline." See academic regulations in the UTEP Undergraduate Catalog for a list of excused absences.

Deadlines, Late work, and Absence policy

Homework Assignments

- Assignments will be posted on Tuesday mornings and are due by the following Tuesday at 11:59 p.m.
- **Example:** If Homework #99 is posted on Tuesday (1/05/2021) at 11:00 a.m., this assignment is due on Tuesday (1/12/2021) by 11:59 p.m.
- Late work will not be accepted (except in the case of UTEP documented excused absences)

Quiz and Blog/Discussion Assignments

- All Quiz, Blog, and Discussion Board (DB) assignments will be posted on Tuesday mornings and are due on the following Friday at 11:59 p.m.
- **Example:** If Quiz #99 and DB #99 are posted on Tuesday (1/05/2021) at 11:00 a.m., they are due on Friday (1/08/2021) by 11:59 p.m.
- Late work will not be accepted (except in the case of UTEP documented excused absences)

Make-up Work

Make-up work will be given *only* in the case of a *documented* emergency or excused absence by UTEP. Note that make-up work may be in a different format than the original work. If you miss an assignment and the reason is not considered excusable, you cannot make up the work. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

Alternative methods of submitting work in case of technical issues

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save (back up) all your work (answers to discussion boards, quizzes, homework, and presentations) in separate files on your own computer or external hard drive. If you are experiencing difficulties submitting your work through the course website, please contact the UTEP Help Desk. You can email me your back-up document as a **last resort**.

Incomplete Grade Policy

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

Accommodations Policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#) (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the [CASS portal](#).

COVID-19 Accommodations and Precautions

If you are experiencing difficulty completing course requirements due to COVID-19 infection, you should email me as soon as possible so we can arrange necessary and appropriate accommodations.

According to UTEP Policy, you must STAY AT HOME and REPORT if you (1) have been diagnosed with COVID-19, (2) are experiencing COVID-19 symptoms, or (3) have had recent contact with a person who has received a positive coronavirus test. Reports should be made at screening.utep.edu. If you know of anyone who should report any of these three criteria, you should encourage them to report. If the individual cannot report, you can report on their behalf by sending an email to COVIDaction@utep.edu. Please note, this is not a disciplinary action, this reporting system has been established by UTEP to provide support for employees and students affected by COVID-19.

Academic Integrity

Students are expected to have a commitment to honesty, reliability, and responsibility, without which you cannot earn the trust and respect of others. Therefore, plagiarism, lying, cheating, or stealing will not be tolerated in any form.

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

Class Recordings

The use of recordings will enable you to have access to class lectures online via Blackboard. Recordings are governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. **You may not share recordings outside of this course.** Doing so may result in disciplinary action.

Plagiarism Detecting Software

Some of your course work may be submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used to review assignment submissions for originality.

Copyright Statement for Course Materials

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.