

BMEN 1300 Course Syllabus – The University of Texas at Dallas

Course Information

Course Number: BMEN1300.002

Course Title: Introduction to Biomedical Engineering Computing (3 Credits)

Term: Fall 2024

Course Meeting: Tuesday/Thursday 4:00 – 5:15 pm

Location: ECSW 2.250/2.210

Professor Contact Information

Instructor: Levi Good, PhD

Email: levi.good@utdallas.edu

Office location: ECSN 2.910

Office phone number: 972-883-4692

Office hours: M/W 2:30-3:30 pm, T/Th 2:00-3:00 pm

Office hours format: In person or via MS Teams (by appointment)

***Graduate TA Contact Information**

Teaching Assistant: Niharika Pandala

Email: niharika.pandala@utdallas.edu

Office hours: Tuesdays 10:30-11:30 am

Office hours location: ML1 1.106

Graduate TA Contact Information

Teaching Assistant: Yupeng Wu

Email: yupeng.wu@utdallas.edu

Office hours: Tuesdays 11:30 am – 12:30 pm

Office hours location: ML1 1.106

Undergrad TA Contact Information

Teaching Assistant: Jennah Noffel

Email: jennah.noffel@utdallas.edu

Office hours: Tuesdays 2:45 – 3:45 pm

Office hours format: ML1 1.106

Please contact the instructor via email if the existing office hour schedules are unworkable for you so that reasonable accommodation can be made

Course Modality and Expectations

Instructional Mode	Traditional
Course Platform	eLearning (Blackboard) and MS Teams
Expectations	

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

Prerequisite or Corequisite: NA

Course Description

The purpose of the course is to introduce computer programming with a focus on bioengineering applications. Programming languages of choice are MATLAB and C/C++. In this course, the mechanics of running, testing, and debugging of these languages are reviewed. The main topics of the course are pseudo-codes, flowcharts, basic data types, memory usage, control structures, input/output, functions, and parameters passing. The course includes biomedical engineering related projects/assignments.

Student Learning Objectives/Outcomes

1. Ability to use fundamental programming constructs (e.g., assignment, loops, conditions, arrays) (SO 1)
2. Ability to develop programs in a functional form (SO 1)
3. Ability to find technical information and research appropriate software tools (SO 7)
4. Ability to work effectively on collaborative programming projects (SO 5)

Required Textbooks and Materials

Both of the following textbooks:

- A. King, P. Aljabar, "MATLAB Programming for Biomedical Engineers and Scientists," 2nd Edition, Elsevier, 2022.
- T. Gaddis, "Starting Out with C++ from Control Structures to Objects," 9th edition, Pearson, 2017.

Suggested Course Materials

- P. Kattan, "MATLAB for Beginners: A Gentle Approach," Petra Books, 2008.
- H. Moore, "MATLAB for Engineers," 6th, 2022.
- P. Deitel and H. Deitel, "C: How to program," 9th Edition, Pearson 2021.
- H. H. Cheng, "C for Engineers and Scientists," McGraw Hill, 2009.
- V. A. Spraul, "Think Like a Programmer," 2012.

Software Requirement:

- Install MATLAB on your personal computers (or laptops) using the following link:
<https://atlas.utdallas.edu/TDClient/30/Portal/KB/ArticleDet?ID=52>
- Install Visual Studio using the following link:
<https://visualstudio.microsoft.com/>

Tentative Academic Calendar

Week	Dates	Textbooks Chapter	Main Topic
1	8/20, 8/22	MATLAB – Chapter 1 C++ – Chapter 1	Intro to computers and programming Intro to MATLAB and C/C++
2	8/27, 8/29	MATLAB – Chapter 1	Intro to MATLAB
3	9/3, 9/5	C++ – Appendix C MATLAB – Chapters 1 and 3	Pseudocodes, Flowcharts, Intro to MATLAB, Data Types
4	9/10, 9/12	MATLAB – Chapter 2	Control Structures
5	9/17, 9/19	MATLAB – Chapter 2	Control Structures
6	9/24, 9/26	Exam 1 (in class) MATLAB – Chapter 4	Functions
7	10/1, 10/3	MATLAB – Chapters 4, 5 and 6	Functions, Debugging, Advanced Data Types
8	10/8, 10/10	MATLAB – Chapter 7	File Input/Output
9	10/15, 10/17	Project 1 and Exam 2 (in class)	
10	10/22, 10/23	C++ – Chapters 2 and 3	Intro to C++ Expressions, Interactivity,
11	10/29, 10/31	C++ – Chapter 4	Making Decisions
12	11/5, 11/7	C++ – Chapter 5	Loops
13	11/12, 11/14	C++ – Chapters 5 and 6	Input/Output Files, Functions
14	11/19, 11/21	C++ – Chapter 6 and 7	Functions, Arrays
15	11/26, 11/28	Fall Break (No Class)	
16	12/3, 12/5	Project 2 and Exam 3 (in class)	

Grading Policy

Assessment Type	Portion of Overall Grade
Class Participation	10%
In-Class Assignments	15%
Homework Assignments	20%
Project(s)	10%
Quizzes	9%
Exam 1	12%
Exam 2	12%
Exam 3	12%

Class Participation:

Due to the practical nature of the course, your in-person attendance is required.

In-Class Assignments: These assignments will be posted on eLearning. They must be done during class time and will be due by the end of each session.

Homework Assignments: These assignments will be posted on eLearning and will be due on Wednesdays at 11:59 pm.

Projects: Projects (2 projects) will be posted on eLearning and will be teamwork.

Quizzes: Quizzes will be held weekly. Being absent in a quiz you will lose the whole credit for that quiz.

Exam 1: Exam 1 will cover MATLAB-related course materials.

Exam 2: Exam 2 will cover MATLAB-related course materials.

Exam 3: Exam 3 will cover C++-related course materials.

Grade	Points	Grade	Points	Grade	Points	Grade	Points
A+	97-100	B+	87-89.99	C+	77-79.99	D+	67-69.99
A	93-96.99	B	83-86.99	C	73-76.99	D	63-66.99
A-	90-92.99	B-	80-82.99	C-	70-72.99	D-	60-62.99
						F	<60

Note: Grading policy subject to change.

Course Policies

- In-class instructions:
 - Class starts at 4:00 pm. Please **be in ECSW 2.250/2.210 by 3:59 pm and do not enter the classroom later than that.**
 - Do not use your personal laptop during class time.

- BMEN 1300 class time is a **no-cellphone time**. No cellphone should be used or seen in class.
- Do not check your **mailbox, messages, social media, or any page or applications unrelated** to our course discussion.
- Do not use headphones.
- Do not bring **food or drink** to ECSW 2.250/2.210.

You will lose your entire class participation credits associated to the day(s) you do not follow any of the above instructions.

- You may discuss background issues and general solution strategies with others. You are even encouraged to help each other to become a more knowledgeable programmer. However, **copying or sharing files/solutions is never acceptable**. Never use someone else's file or solution – doing so will be considered a violation of academic integrity.
- The quizzes/exams must be individual efforts. You are not allowed to reach out to other people or resources (such as online websites) for your quizzes/exams. The quizzes/exams questions and your responses may not be shared or distributed in any form. Such communication or distribution will constitute a violation of academic integrity.
- No make-up exams or quizzes will be administered. In case of excused absence (family events, vacation plans, etc. are not considered as a valid excuse), the weight of the missed exam/quiz is split between the other exams/quizzes. For cases of medical illness, a signed document from a medical doctor excusing the student from activities on the date in question must be submitted prior to the exam deadline. The student is responsible for providing satisfactory evidence to the instructor. In medical emergency situation, the student must provide satisfactory evidence to the instructor within 48 hours of the exam/quiz.
- Online submissions to the eLearning must be in the requested format (mainly pdf, mlx, and cpp). Do not forget to add a heading (Full name, Assignment Name, Date, Class Number, Class Section, TA's Name) to your submission.
- All assignments will be due on the assigned dates. Late assignments turned in after the deadline will be penalized 20%. No credit is given to the assignments submitted later than 48 hours after the deadline. No credit is given to the assignments submitted after the solution availability.
- Check your online submission to assure that the file has been through and it is a correct file. **No credit will be assigned to incomplete (in-progress), or wrong submitted files**. Make sure you received submission confirmation email from eLearning. Do not delete the confirmation email from your mailbox.
- Students have one week to review graded homework, quizzes, or exams with the professor for any possible grading corrections. After one week no changes will be allowed.
- As noted in the UT Dallas policies and procedure, use your UTD email account to contact the instructor and **check this account (and eLearning) daily for possible update/course changes**.

Course Policy on the use of Artificial Intelligence (AI)

Since writing code, analytical, and critical thinking skills are part of the learning outcomes of this course, all code writing assignments should be prepared by the student. Developing strong competencies in this area will prepare you for a competitive workplace. While A.I. is readily available and can be useful in some circumstances, it is essential that you learn basic skills to help you identify what good code writing looks like before you'll be able to accurately and ethically employ their use.

This course aims to provide students with a comprehensive understanding of the subject matter by engaging in critical thinking, problem-solving, and creative exercises. To promote the development of essential skills and encourage active participation, the use of artificial intelligence (A.I.) tools or technologies such as paraphrasing software or ChatGPT is prohibited in this course. Use of any such tools will be considered a violation of the academic integrity policy and disciplinary action will be taken.

Use of an A.I. Generator such as ChatGPT, etc. is explicitly prohibited. Additionally, be aware that the information derived from these tools is often inaccurate or incomplete. It's imperative that all work submitted should be your own. Any assignment that is found to have been plagiarized or to have used unauthorized A.I. tools may receive a zero and / or be reported for academic misconduct.

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website.

Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information.

To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the [Student eLearning Tutorials](#) webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the [eLearning Current Students](#) webpage for more information.

Class 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](#).**

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. Texas Governor Greg Abbott's Executive Order [GA-38](#) prohibits us from mandating vaccines and face coverings for UT Dallas employees, students, and members of the public on campus. However, we strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the [Comets United: Latest Updates webpage](#) for the latest guidance on the University's public health measures. Comets are expected to carry out [Student Safety](#) protocols in adherence to the Comet Commitment. Unvaccinated Comets will be expected to complete the [Required Daily Health Screening](#). Those students who do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the [Student Code of Conduct – UTSP5003](#).

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It 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](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

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.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please go to <http://go.utdallas.edu/academic-support-resources> webpage for these policies.

Student AccessAbility

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow one week advance notice. 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 Student 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.

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