BENG2 Introductory Computer Programming & MATLAB
Prof. Wheeler, Fall 2021
Draft – Subject to Change
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Lab Session: Wednesday 9:00-10:50, PFBH 161
DO NOT EXPECT A "TYPICAL" LECTURE. Expect to be working through programming problems throughout the two hour period. The lab will be open and staffed from 9 to 10:50; we expect you to come at 9 and to work until class ends. There will be short lectures to introduce the labs and new computational concepts.

Instructor: Bruce Wheeler, 229 Powell-Focht, bcwheeler@ucsd.edu
TA: Ms. Katelyn Miyasaki, kfmiyasa@ucsd.edu

Office Hours: *Zoom: Tuesdays: – Wheeler 5:15-7; Miyasaki 7-9*
See home page for zoom links. Hours may change subject to canvas of student availability and preferences.
Individual Meetings: We very strongly encourage you to ask to meet us via zoom or in person – please email to make an appointment. Any topic is okay – class, bioengineering, careers, …

If COVID "shuts us down":
We did this last year and it worked. During regular lab hours: students in breakout rooms (3 or 4 per room) so they can ask each other questions. Instructors visit breakout rooms, answering questions. Exams via "Lockdown Browser" with questions equivalent to pencil and paper exam problems. Office hours – they work just as well and perhaps better than in person hours. Student performance was a little better under Zoom than in person! – Congratulate the class of 2024 for their diligence.

Hybrid Offering
We are likely to offer the course in "hybrid" mode, with the regular lab session available by Zoom. It will consist of lectures / powerpoint made available to both in person and remote students, then a zoom session monitored by the instructors to answer questions.

Outside the Class "Advising"
Ms. Miyasaki and Prof. Wheeler welcome questions about all kinds of things outside of BENG 2. Ask us for whatever is on your mind. There will be a Biosystems "coffee hour" – either in person or via zoom – please come.

Matlab access: you must have Matlab access – if you are off campus, make sure you have VPN working for licensing to work. Check this out before the quarter begins – both on and off campus access. Please search UCSD for Matlab and VPN.

Texts and Lab Exercises
Most of your work will follow from Lab Exercises available on Canvas.
MATLAB for Engineering and the Life Sciences, Joseph V. Tranquillo, Morgan Claypool Publishers, Synthesis Lectures on Engineering. Search the library for author name and you should find a link where you can download the pdf.
There are a great many introductory MATLAB texts. I recommend obtaining one from a friend, the library or bookstore, or online. Possible reference: Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers, by Rudra Pratap, Oxford, 2010. But there are many and they are cheap and you can get them in a day or two.

Grading Details:
Tentatively: Quizzes: Midterm (30%) and Final Exam (40%)

Lab Exercises (10%) – work done while working through the new material

Homework (20%) – assignments meant to be done after the lab and before the next lab.

We will not grade all items in the exercises or homework you submit, nor we will announce which items will be graded. Your lowest single Homework and lowest single Lab Exercise grades will be dropped from the quarter average.

The quiz and final exam will be done with "pencil and paper", emphasizing understanding concepts of programming but not syntax, spelling, etc

Final grading standards will conform to the instructors' best judgment of performance and will involve adjustment of the numerical distribution.

If the instructors find students coming to class unprepared, Pop Quizzes (not to exceed 10%) will be given to reward those who are prepared. Total percentage will be adjusted to 100%.

Work Expectations:

You are expected to have read the laboratory exercises before coming to class. You are expected to have completed most of the exercises (not including homework) before leaving the class.

You will turn in your laboratory assignments according to the schedule below. Exercises are due – "Thursday Night" = Fridays at 8 am. Homework is due "Tuesday Night Before the Next Lab" = Wednesdays at 8 am. The early morning due times are intended to allow you to work as late as you wish the evening before. Note that we have office hours Tuesday late afternoon/early evening to assist you in finishing the homework.

Learning Expectations

Your most productive sources of learning are your peers – students in this class. You are encouraged to work with them to gain greater understanding. Despite COVID19 and enabled by Zoom and various social media, your classmates are your new life-long friends and professional colleagues; please start the relationship and use it to improve your performance in this course.

However, you are expected to learn the material to a level of competency where you individually are the expert in settings outside this course – so that you can instruct another set of students who are new to MATLAB. Accordingly, you must discipline yourself to understand by yourself the laboratory exercises and to complete the homework by yourself.

Statement on Integrity of Scholarship

Academic integrity is of utmost importance. As part of the learning process, discussion of homework assignments with colleagues, TA's, etc., is encouraged, but the final answers you submit must be your own. If you have discussed the homework with others, you must include a brief statement with their names. It is okay to discuss your misunderstandings on homework but it is not okay to simply copy answers or to divide up a homework assignment with, for instance, one student doing odd numbered problem and the partner doing even numbered problems.

The use of Web-based and other sources to obtain solutions to homework assignments (especially postings by previous students) is not acceptable. All infringements of academic honesty will automatically be reported, dealt with aggressively, and may have long-term consequences.

Schedule

Meeting Weds	Week	Topic	Lab #	Exercises Due Fri 8 am	HW Due Weds 8 am
29-Sep	1	Programming Environment and Vectors	Lab 0, T2 and T3		6-Oct
6-Oct	2	Matrices and Vectors, Intro	T4 and T5 and Lab 1	8-Oct	13-Oct
13-Oct	3	Plotting / If / Else	2	15-Oct	20-Oct
20-Oct	4	Loops, File I/O	3	22-Oct	27-Oct
27-Oct	5	Functions	4	29-Oct	3-Nov
3-Nov	6	Quiz; Start Dif EQ			
10-Nov	7	Dif Eq	5	12-Nov*	17-Nov*
17-Nov	8	Statistics	6	19-Nov*	24-Nov*
24-Nov	9	Problems– Submit as many as you can	6		
1-Dec	10	Problems– Submit as many as you can	7		6-Dec
8-Dec		FINAL EXAM (Wednesday)	8-11 am		

* Schedule may be changed depending on progress with Differential Equation Lab

The exercises labeled T2, T3, T4, and T5 are taken from the text by Dr. Tranquillo. Labs 0 thru 6 are modified from Prof. Hasty at UCSD. Lab 5S is enrichment material. Lab 7 is problem practice.