BIOM 1720: Introduction to Biomedical Engineering Tools
(Syllabus)

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University of Memphis

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Hello! I am Dr. Strain. Welcome to BIOM 1720.

The plan is for us to have face-to-face classes this fall. We will meet in ET 233. Due to uncertainty regarding the pandemic, this could change. It is imperative that you check your UM email and eCourseware daily for announcements regarding the course.

**Per current University policy, masks are REQUIRED in class, even if you are vaccinated.**

Please feel free to contact me with any questions, concerns, etc. that you might have.

**I look forward to hearing from you!**

Use University email only—my address is sfstrain@memphis.edu. Please include “BIOM 1720” in the subject line when you write. Do NOT use the messaging system within eCourseware to contact me (I probably won’t see the message).

**Instructor**

Dr. Stephen Strain  
sfstrain@memphis.edu  
Office: ET308  
Virtual Office: https://memphis.zoom.us/j/3271381594?pwd=VW9FYThrS293d0FwYUZ2TVFyeVJLdz09  
Office hours: MW 2:15-3:30P, or email for appointment

**Teaching Assistants:**  
Matthew Atwill (matwill@memphis.edu)  
Lydia Ross (lross4@memphis.edu)  
Office hours: MW 10-11A  
Email for appointment

**Required Materials:**

- Internet Access,  
- Desktop Computer, Laptop, or Tablet  
- eCourseware (elearn.memphis.edu)  

Preferred is a combination laptop/tablet.  
University resources to support online learning:  
https://www.memphis.edu/umtech/teaching/ecwstudent.php

**Interactive Textbook (required): Programming in MATLAB, zyBooks.com**

1. Sign in or create an account at learn.zybooks.com  
2. Enter zyBook code: MEPROMISBIOM1720StrainFall2021  
3. Subscribe

**Required software:** MATLAB, Microsoft Word, and Microsoft Excel.

*A free MATLAB download is available for UM students through the university’s site license at*  

**MS Word & Excel is available for UM students through the university’s technology access program at**  
https://www.memphis.edu/umtech/solutions/software/software.php

**MATLAB notebook:**  
Course Learning Outcomes

- Use algorithms and logic to design computer programs in a high-level programming language (MATLAB)
  - Make use of arrays/matrices
  - Develop custom functions
  - Implement graphing in two dimensions
- Become familiar with various areas of biomedical engineering including biomechanics, biomaterials, and bioelectricity
  - Make physiologic and material measurements
  - Use physiologic models
  - Gain understanding of integration of mathematics and physical sciences in engineering
- Become skilled at technical documentation and report writing

Course Topics

- MATLAB programs and built-in functions
- MATLAB input/output and plotting
- MATLAB logical functions and control structures
- Tensile testing of biomaterials
- Technical writing
- Data analysis and graphical presentation
- Team project incorporating MATLAB

Grading

- % Attendance (pass/fail)
- 20% Homework
- 20% Individual Technical Reports
- 15% Team Project
- 15% Exam 1
- 15% Exam 2
- 15% Final Exam

Note: The grading scheme may be revised as required during the term.

Attendance (pass/fail)
In order to be successful in this class, attendance is MANDATORY. You are allowed at most three unexcused absences.

If you have a health condition that prevents you from regular class attendance, you MUST register with Disability Resource Services (see Student Accommodations below) and contact me to discuss an alternative plan ASAP.

- Attendance at all class meetings is required.
- You are allowed three unexcused absences.
- **A fourth unexcused absence will result in an “F” for the course.**
- Absences will be excused at my discretion, for instance, for circumstances such as illness, personal/family emergency, academic/professional commitments, etc. must be documented via an email to Dr. Strain. Student athletes may provide scheduled absences for athletic events per usual methods.

Homework (20%)
Homework consists of required assignments and must be submitted as directed, such as uploaded to eCourseware (elearn.memphis.edu) or completing activities in Programming in MATLAB.
(zyBooks.com). Homework assignments will not be accepted via email. Homework assignments are graded and must be turned in by the specified deadline. Approximately three (3) homework grades will be dropped, allowing for such circumstances as time management issues or inadequate preparation. Late assignments may be accepted for other special circumstances at the discretion of the instructor.

**Technical Reports (20%)**
Individual technical reports are required. These reports will be based on laboratory activities completed during class. Instruction on technical writing and report rubrics will be provided. Drafts will be turned in first, and feedback will be provided. This will resemble the peer review process. Then revisions must be made and a revised, final report turned in.

- **Failure to revise the final report according to the draft feedback will result in an F on the final report.**
- **Failure to turn in the final report will result in an “F” for the course.**

**Team Project (15%)**
A team project is required. Detailed instructions, deliverables, and grading scheme will be provided. Teammates will be assigned by the instructor.

**Exams (45%)**
Three (3) exams will be given; two during the semester and a final exam. The final exam is not comprehensive; however, MATLAB topics build upon previous topics and the final exam will include topics from previous exams. Exam dates will be posted to eCourseware.

**Policies**
1. Please communicate with me by university e-mail. All assignments must be submitted via eCourseware. You are responsible for any information sent to your University of Memphis e-mail address (UUID@memphis.edu) or posted to eCourseware (elearn.memphis.edu) in the same manner as you are responsible for written materials distributed in the classroom. **When sending email to your instructor, include the text ‘BIOM 1720’ in the subject line and your first and last name in the body of the message.**

2. You are responsible for all material, whether covered in class or as part of an assignment. If you miss a class, you are responsible for obtaining any material covered in class.

3. You are expected to come to class prepared and to participate actively in class. This participation may include, but not be limited to, explanation or demonstration of concepts, in–class problem solution, or discussion of assignments. Volunteers for participation may be solicited, or you may be called upon.

4. There will be regular assignments, and many of them will be graded. You are expected to complete and understand all assignments, whether they are graded or not.

5. Except when teamwork is specifically required, any work submitted for a grade must be your own original work. Working together on assignments is certainly acceptable and encouraged, but each person must work through the problem individually. **Do not simply copy someone else’s solution. Do not electronically share your assignment files with classmates.**

6. Make-up exams will be given at the discretion of the instructor. Alternately, if your absence from an exam is officially excused (documentation required), then you may replace the missed exam grade with your final exam grade. A grade of zero will be assigned for a missed exam in all other cases.

7. Academic dishonesty and disruptive behavior of any form will not be tolerated. See the **Code of Student Rights and Responsibilities** at www.memphis.edu/studentconduct. See the section on Academic Integrity below.

8. You are responsible for determining the availability of the computing resources used in this class and for scheduling your work accordingly.
9. You must fully comply with all university guidelines and applicable laws regarding the use of computing facilities and software that may be provided for this course.

10. You should bring your own laptop to class. The computer and wireless usage policy is as follows:
   (a) Checking email and social websites, surfing, gaming, or other activities not directly related to the assigned task is not appropriate. (b) Cell phone usage, including text messaging, is not appropriate at any time during class unless instructed to do so.

11. Please treat the classroom environment as you would for any professional situation: be on time, be prepared, be respectful, do not disrupt or distract others.

**Academic Integrity**

The University of Memphis expects all student to behave honestly. The Code of Student Rights & Responsibilities explains what constitutes a violation of our Academic Integrity policy. Please see the website for more information: [https://www.memphis.edu/osa/](https://www.memphis.edu/osa/). Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students who violate the academic misconduct policy, either directly or indirectly, through participation or assistance, are immediately responsible to the instructor of the class in addition to other possible disciplinary sanctions which may be imposed through the regular institutional disciplinary procedures.

**COVID-19 Health and Safety Policy:** Until further notice, all students, faculty and staff will wear masks in all public spaces, including the classroom per the COVID-19 policy.

**Student Health**

Students who are experiencing symptoms such as sneezing, coughing or a higher than normal temperature should inform me by email so they can be excused from class and should stay home. Students should contact their health care provider or the Student Health Center at [https://www.memphis.edu/health](https://www.memphis.edu/health). Students who have a positive COVID-19 test should contact the Dean of Students at deanofstudents@memphis.edu.

**Student Accommodations**

Students with accessibility issues or learning accommodation issues due to a disability should contact Disability Resources for Students (DRS) to submit an official request for course accommodations. Contact DRS at 901.678.2880 or at drs@memphis.edu. (https://www.memphis.edu/drs/index.php)

**Student Resources**

Students who need additional resources can contact the Dean of Students Office at [https://www.memphis.edu/deanofstudents/crisis/index.php](https://www.memphis.edu/deanofstudents/crisis/index.php).

Note: Policies may be revised during the term at the instructor’s discretion.