

**MILWAUKEE SCHOOL OF ENGINEERING**  
**Computing in Biomedical Engineering II (BE-205)**

This document is based largely on one prepared by Dr. S. Richerson

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Lecture & lab: Tu 10:00 to 10:50; Friday 8:00 to 10:50 both in S-359.

My general course policies: <http://www.msoe.edu/~tritt/policies.pdf>.

**Textbook:** *Matlab Programming for Engineers, 3<sup>rd</sup> Ed* by Stephen J. Chapman, 2005

**Objectives:** The intent of this course is to advance the computer programming skills of students. This includes an understanding of and capability to develop console procedure-oriented and windows event-driven programs. Each student is required to demonstrate proficiency in solving problems by writing computer programs meeting the required specifications. Many of the programs are related to general engineering applications or biomedical applications of computing.

**Pre-Requisite:** BE-104

**Course Outcomes:** Upon successful completion of this course, the student will:

- Be able to write a computer program performing a specified algorithm.
- Understand encapsulation and inheritance such that these topics can be used in writing a software program.
- Understand the components of a modern computer application such that they can write a windows-based application (Graphical User Interface).

**Attendance:** Attendance is expected. This class is mandatory for your major and the content provided within is a necessary building block for your education. Therefore, I expect you to not be absent (or tardy) for class. However, I understand that you can not always control the circumstances that affect your academic life, so every student is entitled to a few absences. Excessive absences may result in a grade reduction. All laboratories are mandatory and any unexcused absence from them will result in a grade reduction. There will be **no** make-up labs.

**Approximate Grade Weights**

Exams and Quizzes (Announced or Unannounced)	25%
Laboratory Assignments	45%
Final Project and Presentation	15%
Final Exam	15%

## **Student Integrity**

All students are expected to abide by MSOE's policy on student integrity. If at any point in the semester you have a question about an assignment, please come discuss it with me. Student Integrity Policy (as stated in the MSOE Handbook):

The expectations of the university with respect to academic and classroom integrity are reflected in, but not limited to, the following guidelines:

- 1) The student must recognize that even a poorly developed piece of work that represents his or her best efforts is far more worthwhile than the most outstanding piece of work taken from someone else.
- 2) Assignments prepared outside of class must include appropriate documentation of all borrowed ideas and expressions. The absence of such documentation constitutes "plagiarism," which is the knowing or negligent use of the ideas, expressions or work of another with intent to pass such materials off as one's own.
- 3) The student should consistently prepare for examinations so as to reduce temptation toward dishonesty.
- 4) A student may not share examination answers with others for the purpose of cheating, nor should he or she, through carelessness, give them an opportunity to obtain them.
- 5) The student should know that a person of integrity will not support, encourage or protect others who are involved in academic dishonesty in any way, and will furthermore attempt to dissuade another student from engaging in dishonest acts.

Acceptance of this responsibility is essential to the educational process and must be considered as an expression of mutual trust, the foundation upon which creative scholarship rests. Students are directed to use great care when preparing all written work and to acknowledge fully the source of all ideas and language other than their own.

In cases of alleged academic dishonesty, procedures involving the student, the instructor, the department chair, and a Board of Review have been established to assess the facts and determine the appropriate penalties. For further information on the policy please see the MSOE Academic Catalog.

## **Grading Policy**

This class is required as part of a core. One of the outcomes of this class is that you will possess the skills necessary to function as an entry level biomedical engineering in the area of computer programming. In order for you to succeed in that outcome, each individual must grasp the concepts on his or her own and be able to program effectively. To ensure this, all laboratories will be performed individually. No group work will be accepted. However, you may discuss the laboratory projects with your peers in and out of class provided that you disclose these discussions in your code and reports. Additionally, because laboratory is an integral part of this class, any person missing a laboratory without a very good reason will receive a zero on that lab.

### **Cell Phone Policy**

To enhance learning and avoid disruptions cell phones will be turned off during class. If your cell phone rings during class, I will be annoyed. If it happens repeatedly, I may reduce your grade.

### **E-mail Policy**

I read e-mail a few times a day. This means that I will not always respond to you immediately. This type of communication does not always allow instant feedback. I prefer that you come see me in my office, but if you need to e-mail please do not expect an instant response.

### **Laptop Policy**

We will be using your laptops for certain activities during class. You may use your laptops during these activities only. No e-mail, websurfing, instant messaging, or other unsolicited work on the laptop will be tolerated during class. If you are caught during class, one point will be subtracted from your final grade. Two additional points will be subtracted from your final grade for each additional offense. If you are caught using your e-mail, websurfing, instant messaging, or otherwise during an exam, you will receive a zero on that exam without the possibility of a make-up exam.

### **Midterm and Final Exam Format**

Midterms and final exams will generally involve two parts. The first part will be closed book, closed notes, closed laptop and will generally evaluate your knowledge and understanding of Matlab. The second part will be open book, open notes, open laptop and will evaluate your ability to write Matlab code. For each test, you will be required to complete and submit the first part prior to receiving the second.

### **Daily Schedule Follows...**

### Tentative Lecture and Reading Schedule

Week	Date	Lec/Lab	Topics Covered
1	11/29	Lec	Syllabus and Review of Chapter 5: User Defined Functions
	12/1	Lab	Lab 1: Review of User Defined Functions
2	12/5	Lec	Chapter 6 : Additional Data Types and Plots
	12/8	Lab	Lab 2: Additional Plotting Techniques
3	12/12	Lec	Chapter 9: Handle Graphics
	12/15	Lab	Lab 3: Handle Graphics
4	12/19	Lec	Review
	12/22	Lab	Exam 1
5	1/9	Lec	Chapter 10: GUI – Sections 10.1 and 10.2
	1/12	Lab	Chapter 10: GUI – Section 10.2
6	1/16	Lec	Chapter 10: GUI – Section 10.3 and 10.4
	1/19	Lab	Lab 4: GUI 1
7	1/23	Lec	Chapter 10: GUI – Section 10.4
	1/26	Lab	Lab 5: GUI 2
8	1/30	Lec	Chapter 10: GUI – 10.5 and Review
	2/2	Lab	Exam 2
9	2/6	Lec	Chapter 10: GUI – Section 10.5 and 10.6
	2/9	Lab	Lab 6 Final Project
10	2/13	Lec	Chapter 10:GUI – Section 10.7 and 10.8
	2/16	Lab	Lab 6 Cont.
11	T.B.A.		<b>Cumulative Final</b>

### Other Class Information

The instructor reserves the right to change the schedule to enhance your learning.

It is highly recommended that you come to class prepared by reading the material (or handouts) ahead of time.