Syllabus for: MATH 4 MATLAB Programming

Semester & Year:	Spring 2014
Course ID and Section Number:	MATH-4-E5275
Number of Credits/Units:	3 Units
Day/Time: **Location:**	TTh 11:40AM-1:05PM Science Bldg, Room SC202
Instructor's Name:	Jackson
Contact Information:	Office: SC216L Telephone: 476-4219

Course Description

An introduction to programming in MATLAB, with emphasis on programming applications in science, mathematics, and engineering.

- **Student Learning Outcomes (as described in course outline) :**

1. Complete independent work and research on scientific programming problems.
2. Communicate effectively, both in oral and written presentations.
3. Apply knowledge of basic science, mathematics, and engineering principles to solve computing and information processing problems.
4. Write correct, efficient, and well-documented programs.

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at:
http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Math 4 is a 3-unit course on the fundamentals of computer programming, with an emphasis on programming for scientific, mathematical, and engineering applications. We will use MATLAB as our programming environment. MATLAB is a powerful yet easy-to-use program with advanced numerical, graphical, and symbolic capabilities, and over the last several years it has become the programming environment of choice in most engineering curricula around the country.

Course topics include:

- Introduction to programming and *Matlab*; history
- Algorithms and programs
- Data types; floating point arithmetic; error analysis and stability
- Arrays and array operations
- Control structures: conditionals, loops
- Input/output; strings and formatting; file operations
- User-defined functions
- Plotting
- Using built-in algorithms: optimization and numerical integration (areas)
- Root-finding
- Numerical solutions of systems of linear equations; ill-conditioned matrices
- Interpolation
- Least-squares data-fitting
- Numerical solutions of ordinary differential equations

PREREQUISITES: Math 30 (College Algebra) and Math 25 (Trigonometry), or equivalent, with a grade of "C" or better. Math 50A (Calculus I) or concurrent enrollment in Math 50A is also strongly recommended.

TEXTBOOK: *M*ATLAB *An Introduction With Applications 5ed*, Author: Amos Gilat. Publisher: Wiley, ISBN13:. 978-1118629864 Text Web Site: www.wiley.com/college/gilat

SOFTWARE: Students will be able to use MATLAB on the laptop computers in SC202, so no purchase of software is required. However, for use at home, students may want to purchase the student version of MATLAB, which is available for $99.
http://www.mathworks.com/academia/student_version/

A calculator is *not* required for this course.

HOMEWORK, EXAMS, AND GRADING: There will be weekly homework assignments, but no exams in this course. There will also be a project due at the end of the semester. More information on the grading policies for homework assignments and the project will be provided in the future, but here are some considerations that will be taken into account:

1. Does the program work as it is supposed to?
2. Documentation.
3. Variable naming conventions and consistent use throughout programs; appropriate variable name choices.
4. Efficiency; creativity in algorithm design and/or program design.
5. Considering all cases, error trapping.
6. Handing the assignment in on time.

80% of your grade will be based on homework/quizzes/exams, and 20% on the final project.

COURSE INFORMATION ON myCR: Course information will be available throughout the semester via Blackboard. You should consult myCR for this course regularly for information on homework assignments, exams, etc.

COMPUTING RESOURCES: The Eureka campus houses computing facilities for its mathematics, science, and engineering students. They are located in the physical sciences building, rooms PS116, PS118 and PS110. See your instructors for login name and password. If you use the facilities on the Eureka campus, please see Computer Lab Code of Conduct for a set of rules and guidelines for computer use and maintaining decorum in the study rooms available in the physical sciences building.
If you wish to work on your programs at home, then you will need to purchase a copy of the Student Edition of MATLAB. There are links on this page that direct you to pricing and ordering information.

TRANSFERRING FILES TO AND FROM THE DEPARTMENT SERVER:
Along with your username and password, which allow you to log on to computers in the Math/Science/Engineering computer labs and print your class assignments, you are granted some file storage space on the Math department's file server, msemac, which allows you to save files files and access them at school as well as at home. Using the server to store and back up your class files will help ensure that you are always up-to-date on your assignments, will let you work on projects in multiple places, can guard against computer failure, and lets you transfer files from campus and back without needing a memory stick.
The process for connecting to MSEMac is different for Macs and PCs (the former is somewhat simpler). If you have a Mac, please read our guide to connecting to msemac for Macs, and if you have a PC, please read our guide to connecting to msemac for PCs.

CLASSROOM ENVIRONMENT: It is expected that everyone involved in this class, teacher and students alike, will act in a manner conducive to providing a comfortable environment for learning, a classroom where students feel free to ask and answer questions without fear of embarrassment or ridicule. It is important to stay on task when class is in session. Hence, conversation not pertaining to the subject at hand should be taken outside the class room. It is understood that students will have to get up and leave the room for various reasons and that students will arrive late from time to time. However, courtesy requires that you enter and leave as quietly as possible, without disturbing discussion or lecture. It is essential for student success to maintain a good environment in the classroom. If you have any personal difficulties with the learning environment in the classroom, please visit us in our office to discuss them (or send an email with any suggestions or difficulties).

Note: This syllabus is subject to change with prior warning.