Syllabus for: Math 4	
Semester & Year:	Spring 2015
Course ID and Section Number:	E7361
Number of Credits/Units:	4
Day/Time: **Location:**	TuTh 10:05-11:30 LRC 105
Instructor's Name:	Bruce Wagner
Contact Information:	Office location and hours: SC 216K, M 12:45-11:05, F 11:00-11:30 & 12:45-11:05 Phone: 476-4207 Email: bruce-wagner@redwoods.edu

Course Description (catalog description as described in course outline):
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: MATLAB Programming

Spring 2015

Eureka section E7361

Instructor: Bruce Wagner
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Office: Science 216K
E-mail: bruce-wagner@redwoods.edu
WWW: *http://msemac.redwoods.edu/~wagner*

Course homepage: *http://msemac.redwoods.edu/~wagner/math4*
Class Sessions: TuTh 10:05-11:30 in LRC 105

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: *MATLAB: A Practical Introduction to Programming and Problem Solving (3rd Edition),* by Stormy Attaway, published by Butterworth-Heinemann (2013), ISBN 978-0-12-405876-7. An electronic version of the textbook is also available.

SOFTWARE: Students will be able to use MATLAB in the computer lab in SC 212, 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.

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. Efficiency; creativity in algorithm design or program design
4. Consideration of all cases; error-trapping
5. Completion of assignments on time

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

AVAILABLE HELP: Office hours and Math Lab hours are listed on the "Help" page on the course web site. However, I'm also quite willing to answer questions outside of office hours unless I have some time constraint, so don't hesitate to ask.

You can also send me questions via email.

See the "Help" page for more details on help resources.

COURSE INFORMATION ON THE WEB: Course information will be available throughout the semester on the World Wide Web. You should consult the homepage for this course (listed above) regularly for information on homework assignments, exams, etc.

ATTENDANCE POLICY: Any student who is absent from class for the amount of time equal to two weeks of classes through week 10 will be withdrawn from the course, unless there are extenuating circumstances that are communicated to the instructor in a timely manner. This policy conforms with Mathematics Department guidelines regarding Faculty Withdrawal of students after census day.

DISABILITIES: Any student who feels that s/he may need an accommodation based on the impact of a disability should contact the instructor as soon as possible. The student will also need to visit the Disabled Student Programs and Services office (476-4280) and obtain a DSPS Support Services Agreement. Every effort will be made to meet accommodation requests. However, no retroactive accommodations will be provided.