Syllabus for ME021-01: Engineering Computing

Spring 2017
Instructor: Michael Brokowski

Designation:	Lower division required undergraduate course
Catalog Description:	Letter grade only. Introduction to Fortran and Matlab. Concepts of formatted input/output, data types, variables, arrays, strings, variable scopes, logic statements, loops and repetition, functions and subroutines, and data graphing. Computing examples are drawn from mechanical engineering topics including linear algebraic equation, root search, two and three-dimensional graphics. Laboratory included.
Text Books and Other Required Materials:	• Introduction to Programming with Fortran with coverage of Fortran 90, 95, 2003 and 77 (2006) by Ian Chivers, Jane Sleightholme, Springer. • Solving Applied Mathematical Problems with MATLAB (2012) by Dingyu Xue and YangQuan Chen, CRC Press.
Course Objectives/ Student Learning Outcomes:	After successful completion of this class, students will be able to: • Learn basic knowledge of programming for engineering computations • Learn basic skills to formulate engineering computing problems in Fortran and Matlab • Gain ability to continue to learn advanced computing and programming skills • Apply programming skills to studies of various engineering subjects • Apply programming skills to solve complicated engineering problems • Gain an understanding of the importance of computing in modern engineering Students will practice and demonstrate the computer programming skills in programming assignments. They will demonstrate their proficiency formally in the programming projects.
Program Learning Outcomes:	
Prerequisites by Topic:	None
Course Policies:	
Academic Dishonesty Statement:	a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work. b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.

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	c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	Computer programming with Fortran and Matlab in different computing environment including Windows and Linux.
	Formatted input/output, data types, variables, arrays, strings, variable scopes, logic statements, loops and repetition, functions and subroutines, and data graphing with graphic library.
	Concepts of vectors and matrices.
	Iterative solution methods.
	Linear algebraic equation, root search, integrals and differential equations derived from engineering problems.
Class/laboratory Schedule:	Lectures: Monday 10:30-12:20PM, Labs: TR 7:30 AM to 10:20 AM, TR 10:30 AM to 1:20 PM, TR 2:00 PM to 4:50 PM, MW 7:30 PM to 10:20 PM,
Midterm/Final Exam Schedule:	Project due dates vary
Course Calendar:	
Professional Component:	Engineering problem formulation, description of engineering problem in computer language and computational analysis skill.
Assessment/Grading Policy:	55% on programming assignments 20% on programming projects 25% on quizzes
Coordinator:	
Contact Information:	M. E. Brokowski School of Engineering University of California, Merced 5200 N. Lake Road Merced, CA 95343 Email: mbrokowski@ucmerced.edu
Office Hours:	Monday 12:30-2:30 PM + appointments