



PROGRAMMING AND PROBLEM SOLVING COURSE SYLLABUS

DATE: 12/06/2011

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COURSE NUMBER: EGR 270

PREREQUISITE(S): EGR 269

CO-REQUISITE(S): MAT 140 or MAT 141 Analytical Geometry and Calculus

**COURSE
DESCRIPTIONS**

The MATLAB programming language is introduced and applied to engineering problems. Students participate in lecture and lab activities to gain a thorough familiarization with this powerful engineering tool. A class project is an integral part of the course and language for this MATLAB study is developed during the course (with the bulk of the project being completed outside of class and lab times). Technical communication is emphasized using textual and graphical schemes.

TEXTBOOK(S): Thinking Like an Engineer: An Active Learning Approach by E. A. Stephan, D. R. Bowman, W. J. Park, B. L. Sill, and M. W. Ohland (Prentice Hall, 2011 / ISBN – 13:978-0-13-606442-8)

REFERENCE(S):

**OTHER REQUIRED
MATERIALS, TOOLS,
AND EQUIPMENT:**

Engineering calculator (No, you may not use your cell phone as a calculator on tests and exams), Engineering paper (graph paper).
Computer with MATLAB software. These are provided for students in the lab during lab times and are available for use by students at other times. Optionally, students may purchase MATLAB Student Version for use on their own computers.

**METHOD OF
INSTRUCTION:**

Student initiated study guided by instructor lecture and problem solving. Blocks of time during class and lab will be directed towards “learning by doing” with help from the instructor as needed.

<u>GRADING SYSTEM:</u>	90	-	100	=	A
	80	-	89	=	B
	70	-	79	=	C
	60	-	69	=	D
	Below	-	60	=	F

<u>GRADE</u>	Tests (2 @ 20%)	=	40%
<u>CALCULATION</u>	In-class activities (10 drop 1 @ 2%)	=	18%
<u>METHOD:</u>	Project	=	20%
	Final Exam	=	<u>22%</u>
		=	100%

The standard mathematical procedure of rounding will be applied to arrive at a whole number percentage in final grade calculation.

ATTENDANCE
POLICY:

The student is responsible for punctual and regular attendance in all classes, laboratories, clinical, practica, internships, field trips, and other required class activities. The College does not grant excused absences; therefore, students are urged to reserve their absences for emergencies. When illness or other emergencies occur, the student is responsible for notifying instructors and completing missed work if approved for late submission by instructors.

The student is tardy if not in class at the time the class is scheduled to begin and is admitted to class at the discretion of the instructor. If you are late, you will not be given credit for the in-class activity for that day. If you are habitually late, you will be encouraged to drop the class and reschedule one which suits your personal schedule better. Punctuality is a discipline that all students need to develop early to prepare them for success in college and the working world. For purposes of maintaining attendance, a student will be considered absent one day for each three tardies.

Instructors maintain attendance records. However, it is the student's responsibility to withdraw from a course. A student enrolling in and attending at least one course session remains enrolled until the student initiates a withdrawal.

Withdrawal Policy: During the first 75% of the course, a student may initiate withdrawal and receive a grade of W. A student cannot initiate a withdrawal during the last 25% of the course. Extenuating circumstances require documentation and approval by the appropriate department head and academic dean.

Absences for Religious Holidays: Students who are absent from class in order to observe religious holidays are responsible for the content of any activities missed and for the completion of assignments occurring during the period of absence. Students who anticipate their observance of religious holidays will cause them to be absent from class and do not wish such absences to penalize their status in class should adhere to the following guidelines:

1. Observance of religious holidays resulting in three or fewer consecutive absences: Discuss the situation with the instructor and provide written notice at least one week prior to the absence(s). Develop (in writing) and instructor-approved plan which outlines the make up of activities and assignments.
2. Observances of religious holidays resulting in four or more consecutive absences: Discuss the situation with the instructor and provide the instructor with written notice within the first 10 days of the academic term. Develop an instructor-approved plan with outlines for the make-up of activities and assignments.

**CLASSROOM
CONDUCT:**

ACADEMIC DISHONESTY: Students are expected to uphold the integrity of the College's standard of conduct, specifically in regards to academic honesty. All forms of academic dishonesty including, but not limited to, cheating on assignments/tests, plagiarism, collusion, and falsification of information will call for disciplinary action. Disciplinary action imposed may include one or more of the following: written reprimand, loss of credit for assignment/test, termination from course, and probation, suspension, or expulsion from the College. For further explanation of this and other conduct codes, please refer to the Student Handbook.

CELLULAR PHONES AND PAGERS/BEEPERS: Cellular phones, pagers and beepers are not permitted to be turned on or used within the classroom. Use of these devices during classroom time will be considered a violation of the student code as it relates to "disruptive behavior."

**CLASS/LAB
PROCEDURES:**

Missed in-class activities, including tests, may not be made up for any reason. If you know you must be absent on a scheduled test date, please notify the instructor in advance.

ACCOMMODATIONS: Students who need special accommodations in this class because of a documented disability should notify Student Disability Services by calling (864) 592-4818, toll-free 1-800-922-3679; via email through the SCC web site at www.sccsc.edu/resources/disabilities; or by visiting the office located in the East Building Room 30-B on the SCC Central campus. Contacting Student Disability Services early in the semester gives the College an opportunity to provide necessary support services and appropriate accommodations.

The Learning Center, located in the rooms E-2 & E-5 of the East Building, provides computers for your use. Check the website <http://www.sccsc.edu/resources/tutoring/tlc> or call 592-4968 for current semester operating hours.

Inclement Weather Schedule:

- Check STC Web Site: www.sccsc.edu
- Tune to **Channel-7** Local T.V. Station (CBS)
- Tune to an FM/AM Local radio station

Program Department Chair

Mrs. Marcia Schenck
592-4839
schenckm@sccsc.edu

**COURSE OUTCOMES
& OBJECTIVES:**

Upon satisfactory completion of this course, the student will be able to:

- I. Understand and use algorithms to aid in the analysis of an engineering task:
 - A. Present an algorithm as written statements
 - B. Understand the logic required in the decision-making steps
 - C. Construct a flowchart to represent the algorithm.

- II. Have a working knowledge of the MATLAB programming language including:
 - A. Functions / Programs
 - B. Matrix Operations
 - C. Input
 - Test for valid input
 - Menu driven input
 - D. Output
 - Plots
 - Subplots
 - E. Logic and Conditionals
 - F. Looping
 - G. Debugging techniques.

- III. Test computerized solutions:
 - A. Check for units consistency
 - B. Perform estimates to assess reasonableness
 - C. Manually calculate exact solutions using actual data to verify MATLAB program accuracy.

- IV. Complete an engineering project using the MATLAB programming language:
 - A. Analyze the assignment and create appropriate algorithms and flowcharts
 - B. Write a MATLAB program to address the problem
 - C. Communicate project results in the form of written and oral technical reports
 - D. Demonstrate the project.