CSC 231 Programming for Engineering Students

1. CSC 231 Programming for Engineering Students

2. **credit units** 2  **contact hours** 2

3. **Course Coordinator**: Kurt Voelker

4. **Textbook (or other required material)**: Material provided by instructor

5. a. **Course Description**: Programming techniques and procedures with applications to engineering problems. Introduction to numerical methods and simulation. Credit not allowed for CSC, Software Engineering or CPE majors. 2 activities.

   b. **Prerequisite**: MATH 142; PHYS 121 or PHYS 131 or PHYS 141.

   c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**

   For non majors

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6. a. **Course Learning Objectives**

   This course will give student experience in writing and running scripts in the MATLAB environment using the built-in programming language. The student will rapidly progress from coding to writing their own scripts, modifying and adding features implemented using branching and looping methods of their own design. Upon completing the course, the student will understand and be able to:

   - Edit and run scripts using the MATLAB programming language.
   - Properly document script and related functions using sections and comments.
   - Use single-entry/single-exit structured programming constructs.
   - Properly test scripts and user defined functions
   - Write MATLAB scripts to solve typical engineering problems
   - Implement functions to solve typical engineering problems.

   b. **Level at which Student Outcomes are addressed**

   (“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

   For non majors

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7. **Major Topics Covered**: (number of lecture hours per)
• Computers and the programming environment used (2)
• Data types, variables, constants, strings, arrays, matrices (4)
• Branching with IF and/or SWITCH-CASE (4)
• Looping with WHILE and FOR (4)
• User defined functions (4)
• Plotting (4)
• Numerical methods and approximation techniques (4)
• Formatted output (2)