PROBLEM SOLVING FOR ENGINEERING TRANSFER
CSIT 1300

Class Hours: 1.0  Credit Hours: 2.0
Laboratory Hours: 2.0  Revised: Fall 2013

Catalog Course Description:

Application of computers to engineering problem solving. Introduction to computer mathematical tools, problem analysis, code formulation, engineering data plotting and simulations. Solutions of engineering problems using MatLab.

Entry Level Standards:

The entry-level student is expected to have familiarity with computers. The student must have math, writing, verbal and English language skills at the college-entry level.

Prerequisites:

CSIT 1050 and MATH 1910

Textbook(s) and Other Course Materials:

- 2" (minimum) Three Ring Notebook (course will have weekly documents & projects. You are required to assemble a complete organized set of all materials and completed projects.)
- 2GB (minimum) Flash/Pen/Jump USB Storage Drive.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro to computers, computer components, Math concepts, Engineering Use of Computers, MatLab Development Editor and Environment, Lab Assignments</td>
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<tr>
<td>2</td>
<td>Variables, Scalar Data, Vectors and Matrices, Lab Assignments</td>
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<tr>
<td>3-4</td>
<td>Data Input/Output, Data retrieval and matrix generation, Lab Assignments</td>
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<tr>
<td>5-7</td>
<td>Program Flow, Functions, 2D Plots, Decisions and Looping, Lab Assignments, Review</td>
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<tr>
<td>8</td>
<td>Midterm Test (Written and Lab Requirements)</td>
</tr>
<tr>
<td>9-10</td>
<td>Advanced Math Modeling, Lab Assignments</td>
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<tr>
<td>11-12</td>
<td>Advanced Plotting, Lab Assignments</td>
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II. Course Goals*

The course will:

A. Provide lab use of the MatLab math modeling application tool so that students can apply engineering processes as input and produce calculated outputs. I, II, III, IV.

B. Provide instruction in the construction of C language based programming code. I, II, III, IV, V.

C. Provide the application of engineering and math problem solving techniques to C language coding standards and graphical outcome generation. I, II, III, IV, V.

D. Provide entry level understanding of data storage, program storage, programming syntax, usage, compiling and programming concepts. I, III, IV, V.

E. Provide 2D and 3D graphical representation of numerical data outcomes through the use of matrix data set development and use. I, II, III, IV, V.

*Roman numerals after course objectives reference goals of the CSIT program.

III. Expected Student Learning Outcomes*

The student will be able to:

1. Demonstrate proficient use of the MatLab math modeling application, its editor, command environment and data modeling output environments. (A,B,C,D,E)

2. Demonstrate the ability to formulate program code from specifications, real-world data representation, engineering problems and real-world problem examples. (A,B,C)

3. Demonstrate efficient use of the computer system and its operating environments. (A,B,C, D,E)

4. Use an engineering product and produce data output and graphs. (A,B,D,E)

5. Demonstrate computer problem solving in the engineering environment. (A,B,C,D,E)

6. Demonstrate proficient use of engineering software in problem solving, graphing, plotting and data manipulation. (A,B,C,D,E)

7. Enter programs and data to produce product outcomes and plots using MATLAB. (A,B,C,D,E)

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures: 30% of grade

There will be assignments weekly to access knowledge and proficiency of the products used. There will be a comprehensive midterm and final test. Grades are determined based on a total points accumulated process using the scale provided below.
B. Laboratory Expectations: 70% of grade

There will be a number of labs from each section. Lecture and Lab attendance is required. Assignments will be given and must be completed and handed in at the expected date and time. All assignments turned in late will be reduced by 50%. Students must sign the rollsheet daily in both lecture and lab to be counted as in attendance.

C. Field Work:

N/A

D. Other Evaluation Methods:

N/A

E. Grading Scale:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93 - 100%</td>
<td>A</td>
</tr>
<tr>
<td>88 – 92 %</td>
<td>B+</td>
</tr>
<tr>
<td>83 – 87%</td>
<td>B</td>
</tr>
<tr>
<td>78 – 82%</td>
<td>C+</td>
</tr>
<tr>
<td>73 – 77%</td>
<td>C</td>
</tr>
<tr>
<td>65 – 72%</td>
<td>D</td>
</tr>
<tr>
<td>Below 65%</td>
<td>F</td>
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V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:
• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.
Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by sending email to disabilityservices@pstcc.edu, or visiting Goins 127, 132, 134, 135, 131. More information is available at http://www.pstcc.edu/sswd/.

D. Other Policies:

This information, if applicable, will be provided by the instructor via a syllabus supplement.