

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**PROBLEM SOLVING FOR ENGINEERING TRANSFER
ENS 1300**

Lecture/Lab Hours: 1 / 2

Credit Hours: 2

Date Revised: Spring 2017

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.

Prerequisites

ENS 1050

Co-requisites

ENS 1520

Textbooks and Other Supplies

Required Textbook: *None*

Materials: A USB Flash Drive is recommended.

Week/Topic Basis

Week	Topic
1	Intro to computers, computer components, Math concepts, Engineering Use of Computers, MatLab Development Editor and Environment, Lab Assignments
2	Variables, Scalar Data, Vectors and Matrices, Lab Assignments
3-4	Data Input/Output, Data retrieval and matrix generation, Lab Assignments
5-7	Program Flow, Functions, 2D Plots, Decisions and Looping, Lab Assignments, Review
8	Midterm Test (Written and Lab Requirements)
9-10	Advanced Math Modeling, Lab Assignments

11-12	Advanced Plotting, Lab Assignments
13-14	3D Plotting, Statistical Outcomes, Lab Assignments, Review
15	Final Exam Period

Course Goals

NOTE: Roman numerals after course goals reference the University Parallel Transfer program (General Education 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)

Expected Student Learning Outcomes

NOTE: Capital letters after Expected Learning Outcomes reference the course goals listed above.

The student will

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 a 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)

Evaluation

Testing Procedures 40%

There will be assignments weekly to assess knowledge and proficiency of the products used. There will be comprehensive midterm and final exams. Grades are based on total points accumulated using the scale provided below.

Laboratory

Laboratory Expectations 50%

There will be a number of labs to reinforce lecture content. Lecture and lab attendance is required. Assignments will be given and must be completed and handed in at the designated date and time. All assignments turned in late will be reduced by 50%. Lab assignments may not be turned in for credit if more than 1 week late. There will be a quiz over each lab topic to verify attainment of lab objectives.

Field Work

N/A

Other Evaluation Methods

Class participation and performance on required homework or practice quizzes make up the final 10% of the course grade. Students must sign the roll-sheet daily to be counted in attendance.

Grading Scale

A	93-100
B+	88-92
B	83-87
C+	78-82
C	73-77
D	65-72
F	Below 65

Policies

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.

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 Mississippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

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 Disability Services (DS) in order to receive accommodations in this course. [Disability Services](#) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

Computer Usage Guidelines

College-owned or -operated computing resources are provided for use students of Mississippi State Community College. All students are responsible for the use of Mississippi State's computing resources in an effective, efficient, ethical and lawful manner.