

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**COMPUTER METHODS IN ENGINEERING PROBLEM SOLVING
ENS 1050**

Lecture/Lab Hours: 0.5/1.5

Credit Hours: 1

Date Revised: Spring 2017

Catalog Course Description

Introduction to computer applications used in engineering problem solving and communication. This course includes an introduction to programming concepts, including conditional statements, looping, problem analysis, engineering data utilization and algorithm development.

Prerequisites

None

Co-requisites

ENS 1510

Textbooks and Other Supplies

Required Textbook: *None*

Required Materials: 2GB (minimum) Flash/Pen/Jump USB Storage Drive, 3 Ring Notebook, ear buds or earphones, graphing calculator (e.g. TI-84).

Week/Topic Basis

Week	Topic
1	Introduction to computers, computer components, engineering use of computers, resources, application software, lab assignments
2	Math concepts, engineering use of computers, review of calculator skills
3	Introduction to Excel; algorithm development
4	Use of Excel for mathematical problem solving and plotting; data utilization
5	Use of Excel for numerical integration and differentiation
6-7	Excel Solver skills and practice

8	Midterm exam (written and applied)
9	Introduction to Computer Aided Design
13-14	Matlab basics
11-12	Matlab plotting & numerical methods
13	Matlab programming; other programming languages
14	Make-up labs; final exam review
15	Final exam

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 application software suitable for engineering problem solving and communication. (I, II,III, IV)
- B. Provide opportunities for students to apply engineering processes to convert raw data into meaningful information. (I, II,III, IV)
- C. Provide instruction in the construction of solutions to common engineering problems using Excel, Matlab and other programming languages or applications. (I, II, III, IV, V)
- D. Provide entry level understanding of data storage, program storage, coding syntax, function usage, algorithm development, and programming concepts. (I, 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 Excel, Excel functions, and the Excel Solver. (A,B,C,D)
2. Demonstrate the ability to formulate solutions to common engineering problems from specifications, real-world data representation, and real-world problem examples. (A,B,C)
3. Demonstrate efficient use of the computer system and its operating environments. (A,B,C, D)
4. Use Matlab to convert raw data into meaningful output and accurate results. (A,B,D)
5. Create solutions to simple engineering problems using a programming language. (A,B,C,D)
6. Demonstrate proficient use of Excel and Matlab to manipulate, store, process, retrieve and display data and information. (A,B,C,D)
7. Detect and correct errors in their proposed solutions. (A, C, D)

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 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.

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.

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 Pellissippi State Community College. All students are responsible for the use of Pellissippi State's computing resources in an effective, efficient, ethical and lawful manner.