**I. COURSE TITLE:**  Computer Applications in Engineering

 **COURSE NUMBER:**  1145 **CATALOG PREFIX:** ENDS

**II. PREREQUISITE(S):** None

**III. CREDIT HOURS:** 3 **LECTURE HOURS:** 3

 **LABORATORY HOURS:** 0 **OBSERVATION HOURS:** 0

**IV. COURSE DESCRIPTION:**

An introductory course where students learn of areas in engineering in which

computers are commonly used. Computer hardware and software are introduced,

and an introduction to programming. Topics include reporting, calculation, drafting, analysis, computer aided design, numerical control, rapid prototyping and direct material deposition. The student will gain hands-on experience in

these areas.

**V. ADOPTED TEXT(S):**

 No Textbook Required.

**VI. COURSE OBJECTIVES:**

The student will:

1. Learn the growing influence that computers have in the field of engineering and manufacturing today.

2. Learn personal computer system operation.

3. Learn the history of the development of numerical control, and observe the procedure and a part being machined.

4. Write a basic language program with an engineering application.

5. Use a spreadsheet program to perform an engineering calculation, and learn application for analysis.

6. Learn the basic functions of word processing and write a document.

7. Be introduced to numerical control and observe a demonstration.

8. Learn the operation of computer aided design and draw a part using

 a personal computer.

9. Learn how computers may build and test a prototype part and observe a part being made of ABS plastic without a mold by using the computer and equipment for direct material deposition.

**VII. COURSE METHODOLOGY:**

May include but not limited to Lecture and problem solving, independent and group projects, in-class and home assignments, quizzes, and tests. Problem solving will use both graphical and mathematical methods.

Attendance is required.

**VIII. GRADING**

Grading will follow guidelines in the college catalog. Typically:

A = 90-100

 B = 80-89

 C = 70-79

 D = 60-69

 F = 0-59

 See catalog for description of other possible grades.

**IX. COURSE OUTLINE:**

 **Suggested course outline by the week.**

WEEK: MATERIAL:

 1. FUNDAMENTALS OF MICROCOMPUTER USE

 PC MEMORY, OPERATING SYSTEMS

2. SURVIVAL COMMANDS USING A PC

 DIRECT DATA LINE ENTRY OF COMMANDS

 3. WINDOWS - COMMANDS AND REDIRECTION

 TEST ONE

 4. NUMERICAL, LITERAL STRING, LOGICAL EXPRESSIONS

BASIC PROGRAMMING

 5. BASIC PROGRAMMING

BASIC PROGRAMMING – PROGRAM TO MAKE A DECISION

 6. TEST TWO

WORD PROCESSING

 7. WORD PROCESSING

 SPREADSHEETS

 8. SPREADSHEETS

 SPREADSHEETS – SENSITIVITY ANALYSIS

 9. MATHCAD

 MATHCAD

10. COMPUTER GRAPHICS

 COMPUTER GRAPHICS

11. TEST THREE

COMPUTER AIDED MANUFACTURING

12. COMPUTER INTEGRATED MANUFACTURING

NUMERICAL CONTROL

13. LINEAR AND CIRCULAR INTERPOLATION

 NC AND CNC EQUIPMENT, AXES OF CONTROL

14. TEST FOUR

. SOLID MODELING, MANUAL METHODS VS CAD

15. MATERIALS SCIENCE, PLASTIC MATERIALS

RAPID PROTOTYPING OR DIRECT MATERIAL DEPOSITION

 LOW QUANTITY PRODUCTION OR HIGH QUANTITY

Week 16. Final Examination

**X. OTHER REQUIRED TEXTS, SOFTWARE, AND MATERIALS:**

Scientific calculator

 Scale and Protractor

 Graphing paper (1/4” squares)

 Student will need an auxiliary storage device, flash drive or network home-drive.

**XI. EVALUATION:**

Assignments count 30% of Final Grade

 Attendance counts 10% of Final Grade

 (3) Tests count 40% of Final Grade

 Final examination counts 20% of Final Grade

**XII. SPECIFIC MANAGEMENT REQUIREMENTS:**

All assignments and tests must be turned in on time. Students may work on their own time to complete the assignments. Some group work is encouraged on exercises and assignments.

For credit, all assignments will be completed as scheduled.

No test may be taken late without prior approval of instructor.

No make-up tests. Read the student handbook.

**XIII. OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others.

Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes.

Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES:** Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.