

**ETT 101**

COURSE OUTLINE

<b>Course Information</b>	<b>ABET Unit Classification</b> (3 Quarter Units)
Department: Engineering Technology Course Number: ETT 101 Course Title: Computer applications for Engineering Technology Revision Date: 01/3/05 Revised by: Thomas Thoen Compliant: Catalog 2004/05	Math: Basic Science: Engineering Topics: 3  <i>Contains significant design content:</i> No Other: Curriculum Designation: Required

**I. Catalog Description**

ETT 101/101L Introduction to ET with Computer Applications/Lab(2/1)

Introduction to engineering technology and basic engineering mathematics. Use of personal computers for engineering problem-solving and documentation using current software application packages. Independent computer projects required. 2 lectures/problem-solving. 1 three-hour laboratory. Prerequisites: open to ET majors only.

**II. Prerequisites and Corequisites**

Ability to perform high-school level algebraic and trigonometric calculations. Ability to communicate at college level, including reading, writing, and oral communication.

**III. Textbook and/or other Required Material**

McCurdy, Gayakwad, Babikian, *Engineering*, McGraw-Hill Companies, inc, 2001  
 Chatfield / Johnson, *Project2000 Step By Step*, Microsoft Press, 2000.

**IV. Course Objectives**

1. Work with typical IBM-oriented PC's and MS Windows operating system. Define components of a typical PC including CPU, RAM, ROM, I/O, etc.; work with bits, bytes, kB, MB, GB, kHz, MHz, etc.
2. Work with computer and scientific numbers including decimal/binary/hex/2s complement and their respective conversions; integers and floats, SI units and prefixes, and ASCII binary/hex characters. Use Excel to verify their operation and use.
3. Use MS Word effectively to create reports and documents that meet professional writing and format standards, including text editing, formatting, embedded tables, graphics, equations, and flowchart symbols.  
 Work with MS Excel effectively, including cell addressing, equations, graphics, and lookup functions.
4. Write a formal library research paper on computer hardware and/or software or equivalent to meet professional writing standards. An embedded line drawing, table of data, and curve plot is required.

5. Calculate student GPA and grade-point deficiency problems, equations of lines, complex algebra and vectors, summary statistics, and determine area under a curve by summing rectangles. Use Excel to verify each of these operations.
6. Use peer-grading techniques to develop team skills and evaluation techniques of student work; typically team-written reports and team-presented oral reports, etc.

## V. Expanded Course Description

### A. Lecture expanded outline

1. Introduction to PC Hardware, Software, and Number Systems
  - a. PC hardware and systems; binary numbers, bits, bytes, kB, MB, Ghz, etc.
  - b. Computer numbers – decimal-hex conversions, unsigned and signed numbers; basics of 2s complement (why a 4-bit number ranges from -8 to +7, etc.); use and convert ASCII binary/hex characters.
2. Use of Word Processors for Technical Communication
  - a. Overview of MS Word; text editing, etc.
  - b. Developing and embedding graphics, tables, and figures, etc., into Word documents.
  - c. Write effective homework assignments and lab reports.
  - d. Write technical library research reports to professional standards of content and format.
  - e. Write and format homework and lab reports to professional standards.
  - f. Work with MS Word's equation editor.
  - g. Work with MS Word's flow-chart symbol editor.
3. Techniques for Presenting Effective Oral Reports
  - a. Content and format of formal oral reports – text and graphics, etc.
  - b. How to present effective oral reports – eye-contact, voice, body language, etc.
  - h. Presentation techniques – use of overhead projectors and PowerPoint etc.
4. Introduction to Engineering Mathematics and Use of Spreadsheet Tools
  - a. Overview of spreadsheets, MS Excel or equivalent. Cell entries, references and content formats (integers, scientific notation, text). Absolute and relative addressing.
  - b. Engineering numbers – integers and floats, scientific notation; SI units; standard prefixes; 2s complement numbers; use Excel to verify these numbers.
  - c. Calculate point-slope equation from plot of data points; use Excel to verify results.
  - d. Use Excel to plot graphs and charts.
  - e. Calculate student GPA and grade-point deficiencies; verify with Excel using vertical look-up function.
  - f. Calculate mean and standard deviation of small set of data; verify with Excel's statistical functions.
  - g. Work with rectangular and polar numbers and conversions; plot vectors on an axis and find resultant; verify with Excel's trig functions for vector manipulations and vector addition.
  - h. Approximate area under a curve using sum-of-rectangles approach; verify results with Excel.
  - i. Use Excel to make linear and log plots.
  - j. Use Excel to introduce relational database concepts -- tables, queries, sorting, etc; overview of Access.
5. Introduction to the ET Department and College of Engineering
  - a. Course objectives, personal values and educational ethics.
  - b. Define similarities and differences of engineering and engineering technology.
  - c. Define the department's major, documents, advising forms, etc.

B. Typical lab assignments:

- (1) Write a simple descriptive document using MS Word with two-column formatting and a simple embedded graphic-symbol,
- (2) Write a formal library research report using MS Word, complete with cover page, standing headings, table of contents, introduction, definitions, a body with embedded figures, tables, curves and/or plots, summary, recommendations, and an appendix.
- (3) Use MS Paint to create simple line graphics, and then embed the graphic into a suitable report with a written reference.
- (4) Work with a team to write a team-oriented formal library report for peer grading, both written and oral, that meets professional writing standards. Students must use overheads or Powerpoint for their oral reports.
- (5) Use Excel to develop a worksheet of student GPA based upon a given model, to include the use of the VLOOKUP function to make the worksheet dynamic as a student changes grades on the worksheet.
- (6) Use Excel to plot a curve of data.
- (7) Use Excel to create a worksheet of data that uses embedded IF functions.
- (8) Use Excel to work with integer and scientific numbers, unit prefixes and exponents etc.
- (9) Use Excel to work with the point-slope formula to compute the slope and y-intercept of a given set of data.
- (10) Use Excel to estimate the area under a curve using the sum-of-rectangles approach.
- (11) Use Excel to compute student GPA and grade point deficiencies using Cal Poly Pomona techniques.
- (12) Use Excel to compute the mean and standard deviation of a student population of test scores or equivalent.

## VI. Class/Laboratory Schedule

1 sessions per week: 1 hour 50-minute lectures and problem discussions. 1 3 hour lab.

## VII. Contribution of Course to Professional Component

In lab, students must work in teams to write reports that meet professional writing standards of format and presentation methodology. Students perform oral presentations to professional standards.

## VIII. Evaluation of Students

The instructor evaluates outcomes using the following methods:

- Homework assignment submittals
- Examinations
- One-on-one discussions during office hours

The student grades are typically based on the following factors:

quizzes, homework, midterm exams, literature and Internet project, final Exam

## IX. Relationship of Course to Program Outcomes

Crse Obj	Program Outcomes										
	(a) Use of modern tools of discipli	(b) Use of math, science, Engg & Tech	(c) Do experi- ments	(d) Dsn of sys & compo nents	(e) Work on teams	(f) Do Tech probs	(g) Eff Com	(h) Life- long learn	(i) Prof, ethics, social resps	(j) Prof, soc, globl, diversity	(k) Qual, Cont impr, timeli ness
1	X	X				X					
2	X	X				X					
3	X	X				X	X				
4	X						X				
5	X	X				X					
6	X				X						