

ENGINEERING TECHNOLOGY  
COMPUTER  
LITERACY COURSE CURRICULUM

for

Dr. Ritz  
OTED 785

by

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Virginia Western Community College  
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**CURRICULUM FOUNDATIONS  
DEFINITION AND PHILOSOPHY  
FOR ENGINEERING TECHNOLOGY  
COMPUTER LITERACY COURSE**

The Engineering Technology Computer Literacy Course is used to introduce and develop the computer skills required by the student to complete class work in the upper-level engineering technology courses. The introduction will give the student the basic knowledge to use an operating system, an integrated productivity software suite, and to use the computer to complete electronic research and communications. The aim of the curriculum is to develop basic computer hardware and software knowledge through engineering technology-based problems. The developed curriculum is the first step in integrating the use of computers and various software packages into the Mechanical, Electrical and Construction Engineering Technology Programs. This integrated approach to the curriculum will alleviate the lack of understanding that occurs when we have attached mandates of computer literacy to the programs in a single course without additional practice or use.

**RATIONALE FOR ENGINEERING  
TECHNOLOGY  
COMPUTER LITERACY COURSE**

This curriculum development is in response to changes in course content driven by changes to the VCCS computer competency policy and faculty dissatisfaction with the current curricula caused by technology changes. Its purpose is guided by the requirements of the Virginia Community College System, or VCCS, the technology accreditation board, TAC of ABET, the lay advisory committee, and the requirements of the workplace.

The initial uses of the curricula were to introduce the concepts of engineering technology, ethics, and numerical calculations using the BASIC programming language. With the addition of word processing software the time spent on programming was reduced. Use of Windows based operating

systems further changed the curriculum by reducing its dependence upon DOS and introducing a visual operating system.

One program used a 2-credit course that ran the entire fifteen weeks of a semester. The other two programs used a 1-credit course that ended ten weeks into the semester when taught concurrently with the 2-credit course. The shorter course did not cover the concepts of decision making in programming or matrix development. Mathematic ability requirements for the two courses were directed at completion of High School level Algebra II and Geometry. After the move to Windows 95 operating system and the replacement of the BASIC programming language with the EXCEL spreadsheet software, the two courses were no longer taught concurrently.

The addition of the new VCCS requirements and an option provided by a change in VCCS policy that allows for the move of the introductory and ethics portions of the course to an orientation class along with faculty dissatisfaction with the quantity of problem solving skills developed are the major reasons for the development of the curricula. The Virginia Community College System policy manual mandates in section 5.2.0.1, Appendix A, that students completing an Associate Degree program of study should have computer competencies in field specific software, in general productivity software and in electronic research and communication techniques. In addition, the accreditation organization for the technology programs, TAC of ABET, requires in sections I.C.6, Appendix B, that students who graduate from accredited programs must be able to use computer applications to solve technical problems. Section II.P.2.b also requires technical specialties taught within the programs to use computer applications introduced in prerequisite or co-requisite study.

Faculty and Lay Advisory Committee Members for the Engineering Technology Programs recommend

that the basic skills required by the VCCS be used to develop skills in report writing, use of commercial software programs for problem solving, for electronic communications and research.

CONTENT SOURCE FOR ENGINEERING  
TECHNOLOGY  
COMPUTER LITERACY COURSE

The curriculum content is driven by those requirements "Engineering Computer Applications" mandated by the VCCS and TAC of ABET, Appendices A and B, respectively. In addition, faculty members provided lists of skills that a student in upper level courses needed. Experience with the course shows that the introductory skills for technology students require a depth of knowledge about the software programs without breadth. An example is the content required for a student to complete a laboratory report. The report content typically requires that the student have knowledge in using different fonts, being able to create and complete a table, insert figures, insert mathematical equations, link spreadsheet software for calculation tables, and inserting graphs.

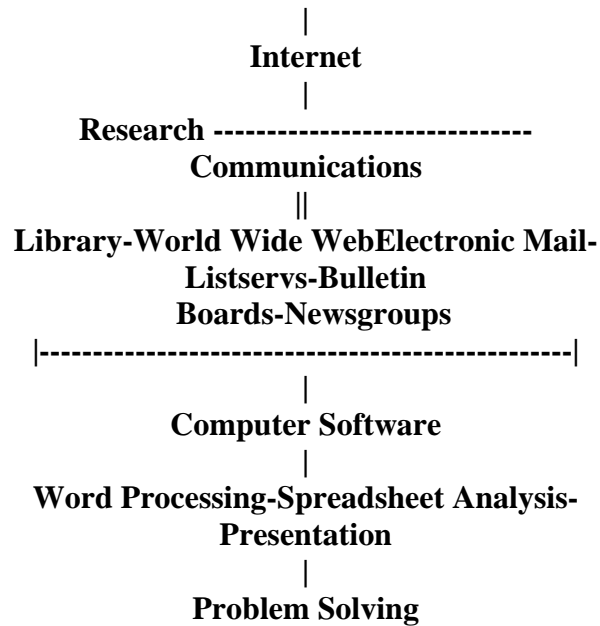
The depth of knowledge required has made it difficult to find a textbook or content source. Engineering texts with the proper depth are not readable and use examples beyond the course mathematic requirements. Business course contents are broad in depth and stop at a level that is elementary for report writing or problem solving. The faculty expectations in the upper level courses drive the content source for this curriculum.

A CONTENT STRUCTURE FOR ENGINEERING  
TECHNOLOGY COMPUTER LITERACY  
COURSE

**Computer Hardware**

|

**Operating System - File Management**



#### ENGINEERING TECHNOLOGY COMPUTER LITERACY COURSE AIM AND GOALS

The program aim of the Computer Literacy Course is to give the student the basic computer skills needed to complete program requirements successfully. The student will develop the computer software skills to manage files, complete written communications, solve problems, complete reports, to talk electronically and to research.

The curriculum will provide instruction and practice that will:

1. Give the learner a working knowledge of the hardware that comprises a personal computer.
2. Develop the learner's ability to use introductory Windows 95/98 commands for file management.
3. Introduce the learner to the Internet and the use of electronic research and web-based communication methods.
4. Enable the student electronically to research the college catalog and library.
5. Introduce the student to the methods of searching the Internet and the problems

associated with using the research materials.

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6. Develop the student's ability to communicate with the instructor, classmates and others using a variety of web-based electronic communication methods.
7. Introduce the learner to word processing software to complete simple technical communications and reports.
8. Provide the student with the skills to complete advanced word processing commands in equation editing, spreadsheet or graph linking to complete technical reports.
9. Allow the learner to use a spreadsheet to complete simple and complex repetitive calculations.
10. Develop the skills in the learner to analyze experimental data using spreadsheet graphs.
11. Give the student the skills to solve problems with a spreadsheet using branching and solver subroutines.
12. Develop the ability to recognize and apply spreadsheet solutions to repetitive workplace problems.
13. Develop the student's ability to use a software program for technical presentations.

## CURRICULUM CONTENT

### ENGINEERING TECHNOLOGY COMPUTER LITERACY COURSE SCOPE AND SEQUENCE

SUMMARY	
TOPIC	WEEKS
Introduction	2
Word processing	3
Internet/Electronic Communications	2
Spreadsheet	5

Presentation	2
Results	1
Evaluation	1
TOTAL	16

16 week semester/1 hour lecture/2 hour  
laboratory/Total 3 hours

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### SCOPE AND SEQUENCE

- WEEK 1 - Computer
  - Housekeeping
  - Controls
  - Input/Output
  - File management
  - Program
- WEEK 2 - Operating System
  - Windows xx
  - Commands
  - Explorer
- WEEK 3 - Word Processing
  - Commands
  - Tools
  - Format
  - Printing
- WEEK 4 - Word Processing
  - Tables
  - Clipboard
  - Paste
  - Insert
- WEEK 5 - Word Processing/Internet
  - Internet software
  - Internet browsing
  - Formulas
  - Pictures
- WEEK 8 - Spreadsheet
  - Data input
  - Commands
  - Calculations
  - Output
- WEEK 9 - Spreadsheet
  - Graphical analysis
  - Documentation
  - Simple functions
  - Output
- WEEK 10 - Spreadsheet
  - Intermediate functions
  - Prediction
  - Linking to word processing
- WEEK 11 - Spreadsheet
  - Advanced functions
  - Iterative methods
- WEEK 12 - Spreadsheet
  - Conditional branching

- WEEK 6 - Internet
  - E-mail
  - College website
  - Virtual library
- WEEK 7 - Internet
  - Research
  - Search engines
- WEEK 13 - Presentation
  - Commands
  - Tools
  - Slide development
- WEEK 14 - Laboratory
  - Presentation development
- WEEK 15 - Presentation
  - Project presentation
- WEEK 16 - Final Examination

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UNIT: Introduction to Computers

GOALS:

1. To introduce the student to the procedures required for the safe and proper operation of a computer system.
2. To provide the student with knowledge of the input/output controls of a personal computer
3. To provide the student with the rudimentary command knowledge of a visual operating system.
4. To enable the student to understand how information is stored and retrieved from a computer.

RATIONALE FOR UNIT:

Many students have never used a computer in their academic or work careers. This introduction is to provide the student with information to overcome any apprehensions concerning the use of a computer. It is also important to protect both the student and the laboratory from misuse. The introductory commands of the operating system, Windows xx, are repetitively



used in all Windows-based programs. Early understanding of the Windows pattern is essential for success in using the multitude of software programs the student will see in their career.

OBJECTIVES FOR UNIT:

1. Review the housekeeping requirements for safe operation of the computer system.
2. Demonstrate the proper methods of storing, retrieving and managing files.
3. Employ visual and keyboard entry methods for controlling input and output.
4. Demonstrate the uses and advantages of multi-tasking.
5. Use a Windows xx file manager, Explorer, to manage files.

POSSIBLE UNIT ACTIVITIES:

1. Turn on the computer and then correctly shut down to prevent file damage.
2. Use the mouse and keyboard to enter commands to open and close a program.
3. Maximize, minimize, and multitasking of two programs.
4. Demonstrate visual input methods such as scroll bars, radio buttons, pull down menus, e.g..
5. Format a floppy storage disk and create a directory tree.
6. Use a software program to open, change and save a file.
7. Use Explorer to move, copy, rename and delete a file on a floppy disk.
8. Use a software program to open a file and print the contents.

REFERENCES:

Prior experience with textbook selection has indicated that no text has sufficient depth to cover the wide number of topics in this curriculum. Content has been

determined by VCCS, TAC/ABET, advisory committee recommendations and faculty and curricula requirements in upper level courses. Reference is then made to course outlines for the following MET, EET and CET courses building on this curriculum.

Table 1. Program courses building on skills developed in Engineering Technology Computer Literacy Course.

Program	Course
Mechanical Engineering Technology	MTH 113-114, DRF 231-232, MEC 113, MEC 118, ELE 150, MEC 131-132, MEC 135, PHY 201-202, IND 230, MAC 245, and MEC 211
Electrical Engineering Technology	MTH 113-114, ETR 132, ETR 280, ETR 251, ETR 265, PHY 201-202, ETR 241, and ETR 252
Construction Technology	MTH 113-114, DRF 231-232, MEC 131-132

All units use this content as their reference.

UNIT: Word processing

GOALS:

1. To provide students with the ability to create appropriate documents used in the upper level courses and in the workplace.
2. To make the student aware of the advantages of using a computer to complete repetitive tasks such as report writing.

RATIONALE FOR UNIT:

Successful written and oral communications are a significant part of the advancement of a career. The word processing skills developed in the creation of

technical reports will allow the student to better transmit their ideas and results to the other members of their working team. The skills will also be used to complete simple technical reports in upper level courses. Knowledge of the use of a computer to create templates to complete repetitive tasks will provide increased productivity in academic and workplace tasks.

**OBJECTIVES FOR UNIT:**

1. Acquire the word processing skills to create the basic components of a technical report.
2. Demonstrate the use of editing tools to correct and modify a document.
3. Identify and demonstrate the commands required to save and retrieve documents.
4. Summarize the productivity advantages of the computer in completing repetitive tasks.
5. Produce a table of data or results inside of a document.
6. Demonstrate the skills to create, modify, and move pictures, files and equations.
7. Understand and use the Windows clipboard feature.

**POSSIBLE UNIT ACTIVITIES:**

1. Use word processing software to create an autobiography, save the file to a designated directory and provide a hard copy of results.
2. Use spell and grammatical checking tools to correct the autobiography.
3. Review the components of a technical report. Setup and save a simply formatted template for report completion.
4. Complete portions of the technical report.
5. Create, format, and complete tables of results within the technical report.
6. Use clipboard to block, copy, cut and paste corrections to the technical report.
7. Insert a file or picture into the technical report.
8. Use both the regular word processing text and

- the equation editor to create equations in the technical report. Compare the two methods.
9. Open two documents and copy a part of one report into the other.

REFERENCES:

See "Introduction to Computers" unit.

UNIT: Internet/Electronic Communications

GOALS:

1. Provide an introductory knowledge of the use of electronic communications.
2. Make the student aware of the methods of electronic research.
3. Provide the student with an understanding of the responsibility of a researcher to authenticate their research by using "reputable" sources.
4. Make the student aware of the ownership of Internet documents and their responsibilities for proper use.

RATIONALE FOR UNIT:

The rapid growth in the Internet and the accompanying advances in virtual libraries, discussion groups, on-line information sources and communications has provided the student with a wealth of opportunities to easily and quickly research topics and find answers to questions. Electronic communications have allowed us access to the experts in different fields without the tediousness of formal contacts and communication. These powerful tools have provided the students with a wide variety of methods to solve problems. However, problems can occur in using information that is not in the public domain, quoting sources that are questionable, and using non-peer reviewed reports. The student

must understand the workings of electronic communications to benefit from the productivity that e-mail can provide by stopping the "phone tag game" in trying to get answers.

OBJECTIVES FOR UNIT:

1. Demonstrate the skills to access the Internet.
2. Illustrate the means of completing electronic research using the virtual libraries, search engines, newsgroups, listservs, and bulletin boards.
3. Complete electronic communications with e-mail.
4. Explain the hazards of using Internet sources.

POSSIBLE UNIT ACTIVITIES:

1. Access the Internet using a web browser and explore the features of the browser.
2. Use the browser to go to a specific site and determine the answer to questions about that site.
3. Research a topic using the virtual library and download the results. Create a footnote page with four different common types of quotes. Borrow a book using an interlibrary loan.
4. Use search engines and boolean connectors to search web sites for specific topics. Use limiters to reduce the quantity of results and focus on the topic.
5. Create an e-mail address using "HotBot" and then use to communicate course assignments and questions about the course.
6. Participate in a classroom bulletin board discussion of several topical questions.
7. Enroll in a technical listserv and provide a summary of a days topics.
8. Communicate with an expert through a listserv, bulletin board, direct e-mail, or newsgroup to find the answer to a technical question.
9. Provide a technical question to the students that is answered incorrectly on a webpage and present the results in class.
10. Access the class homepage for course

outlines, assignments, and graded results.

REFERENCES:

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See "Introduction to Computers" unit.

UNIT: Spreadsheet

GOALS:

1. To develop the student's skills in the use of a spreadsheet to solve technical problems.
2. To provide the student with the ability to effectively solve repetitive work place and education calculation tasks.
3. To realize that many real life problems must be solved by a trial and error solution or an iterative process.
4. To develop the student's ability to recognize when branching and conditional statements are required to solve problems.
5. To develop the skill to analyze data and present the results in an appropriate manner.
6. To make the student aware of the advantages of linking software programs in problem solution and presentation of results.

RATIONALE FOR UNIT:

The use of computers to complete calculations has been the major driving force in their development. The use of a higher level language has been a requirement for the solution of problems until the growth of spreadsheet software has made the programming of the solution into a visual problem. The student will need the ability to setup and solve complex or tedious calculations in completing classroom and work place tasks. The use of a spreadsheet allows the student to import the data and calculated results into word processing or presentation software packages without having to

redo the data entry. Conditional statements are used for templates allowing constants to be selected from tables and appropriate equations used for the problem solution.

**OBJECTIVES FOR UNIT:**

1. Practice the use of a spreadsheet to solve technical problems.
2. Illustrate the ability to create templates that can be used to solve typical problems in the workplace.
3. Demonstrate the skills to create tables of constants commonly used to solve problems.
4. Develop the skills to use branching and conditional statements to solve problems that require different solution methods for different conditions. The quadratic equation is an example.
5. Use the software to solve technical problems that may require an iterative approach. An example is the solution of a shaft diameter when the material can be varied and the applied torque is a constant.
6. Summarize the advantages of visually analyzing and presenting data with graphs and charts.

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7. Explain the time savings provided by using a common database for all software applications.

**POSSIBLE UNIT ACTIVITIES:**

1. Create a table of experimental data and perform simple calculations.
2. Create a scatter graph of the fuel economy of a vehicle versus its weight, document the graph and plot the results.
3. Edit the fuel economy scatter graph to change the gridlines, y-intercept, and to remove the legend for better understanding.
4. Apply a trendline to the scatter graph of fuel

- economy and use it to predict the fuel economy of a vehicle.
5. Apply more advanced functions to calculate results from a collection of data.
  6. Create a wind chill, heat index, or mortgage payment table.
  7. Copy, insert, and link a spreadsheet data set to a word processing file and compare the results for each case.
  8. Use a solver type program to find the desired solution to a problem by varying the inputs parameters.
  9. Use conditional statements to create a spreadsheet that will calculate grades based on varying percentages for tests, quizzes, homework, projects. The program should assign a letter grade based on the weighted average.

REFERENCES:

See "Introduction to Computers" unit.

UNIT: Presentation

GOALS:

1. To provide the student with an appreciation of the integrated use of software packages and suites.
2. To be able to provide the student with the skills to develop an appropriate level presentation.

RATIONALE FOR UNIT:

The most important requirement in career advancement is the ability to communicate. The purpose of this unit is to provide the student with the skills to produce a computer-generated presentation of a type appropriate for experimental trials. The use of other software programs in developing the presentation will be emphasized to insure that



existing work is never repeated. Emphasis will be on the use of charts, figures and pictures as it is well known that a picture is worth a thousand words.

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OBJECTIVES FOR UNIT:

1. Demonstrate the basic skills required to create a multimedia presentation.
2. Practice linking and importing existing documents and files into a presentation.
3. Summarize the advantages of multimedia presentations over static overhead slides.
4. Prepare and present a technical slide show.

POSSIBLE UNIT ACTIVITIES:

1. Create a slide show presentation of the results of the technical report.
2. Import pictures, video, and files into the existing slide show.
3. Produce note taking handouts of the slide show.
4. Present the slide show with appropriate transitions and control.

REFERENCES:

See "Introduction to Computers" unit.

## CURRICULUM EVALUATION

### STUDENT EVALUATION - SAMPLES

Included are examples of assignments from the word processing and spreadsheet units. Also included are examinations or tests that cover each of the two units.

Weekly assignment examples for the Word Processing Unit.

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Start

### **EGR xxx Laboratory 3**

#### **Introductory Windows 95 commands, file management and WORD Document- Autobiography**

#### **Objective:**

The objective of this laboratory is to become familiar with the computer, file management , Windows 95 commands, Explorer and beginning usage of WORD for document creation.

#### **Procedure:**

The following tasks will be accomplished in

Windows 95.

- 1) format a disk.
- 2) create and manipulate a directory structure.
- 3) copy, rename and delete a file.

First use Windows 95 Explorer to format the two floppy disks. You must run a virus check after the disks are used in any other computer away from the college. Create a directory tree with **EGR127** as the parent folder on one of the disks and **FALL98** as a folder located within **EGR127**. Create another folder called **HOMEWORK** and place it inside of **FALL98**. Copy any existing file and place it inside of **HOMEWORK**. **COPY** the file from **HOMEWORK** to **FALL98** and rename it as **DONE**.

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Create an autobiography in WORD or another word processing program. It should include a cover sheet and be one and a half pages in length. Double space and use a standard 12 point font and normal margins in the body of the paper.

Include the following in the body:

A location and approximate date of birth (nearest decade), where you have lived and traveled, schools attended and jobs worked, include your hobbies and interests. Elaborate only on what you are comfortable with sharing and lie about the rest.

Include a short description of why you are attending college. You may include any other facts. Save as a file named **AUTO** on both disks in the **HOMEWORK** folder.

The cover sheet should include the following:

---

An Autobiography by \_\_\_\_\_

For

EGR 127  
Laboratory 2  
Date?

---

Space to fill the complete sheet. Use three different fonts and three different font sizes. The title should be bold and Laboratory 2 should be underlined.

Print out a hard copy of the autobiography and bring the two identical disks to class. Be able to use Windows Explorer to demonstrate that you have completed the tasks.

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## **Weekly assignment examples for the Spreadsheet Unit.**

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Start

### **EGR xxx Laboratory 11 Advanced Spreadsheet Functions**

#### **Objective:**

Explore the logic operations of the spreadsheet.

#### **Procedure:**

Solve the problems 3,4 and either one of 1 and 2 for a

total of three problems.

1. Use the "If, Then " decision function to help in making a spreadsheet that will calculate the average grade of four tests, three quizzes and eight homework assignments. Each of the three areas is weighted as one third of the final grade. The format is as shown.

NAME	TESTS				QUIZ			HOMEWORK								Average	Final Grade
	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8		

The final grade should be automatically assigned based on a grade scale of 91-100 as an "A" and ascending with the same pattern.

2. Use the "If, Then " decision function to make a spreadsheet that will solve for the roots of an equation using the quadratic equation. Use the format on the handout. The spreadsheet should solve for the three results that can occur; one real root, two real roots and two imaginary roots. Use the discriminate to determine the number and type of roots. Label as shown in the handout.

3. Insert by "cut and paste" the two potential vs. current charts in the laboratory report. Label and print a hard copy. Use a bitmap or picture format.

4. Use "solver" to determine the roots of the simultaneous equations.

$$x + 2y + 2z = 6$$

$$15$$

$$-x + y + 3z = 6$$

$$4x - 3y - 2z = 5$$

Turn in a floppy disk with the problems solved and a hard copy of the spreadsheet with a solved problem. In addition, indicate the file names.


# Examination for the word processing unit.

Start

**EGR xxx**

## **WORD PROCESSING EXAM**

Complete the following document on WORD in the computer lab. There is a 30 minute time limit on this open book/notes exam. Use the standard setup and modify as directed in the typed text.



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Insert any picture and make the text wrap as above.

It is easy to make equations such as this centered one with WORD.



This is the end of the test. Your printed sheet should contain all statements and activities described below the line across the page.

## Examination for the spreadsheet unit.

---

Start

**EGR xxx**

### **SPREADSHEET EXAM**

**NAME:** \_\_\_\_\_

**GRADE:** \_\_\_\_\_

Complete each problem and **print out a hard copy** of the results within the **60** minute time limit. Work as many of the problems as you can and to as complete a stage as possible. **Only questions pertaining to interpretation of the test problems will be answered. Open book/notes.**

5. Use *EXCEL* to create a scatter plot of the following data (the force causes the length). Label all parts of the graph as needed. Put in gridlines for the major x-axis values. Create a *trendline*, extend it to the y-axis; determine and display the equation of the line on the graph. What is the correct significant value of the length for a weight of 1.25 Newtons?

FORCE, Newtons	.5	1.0	1.5	2.0	2.5	3.0
LENGTH, meters	.25	.32	.4	.48	.55	.6

**GRADING:**

Scatter graph	13 _____
	points
Title/axis labels	5 _____
	points
Trendline	4 _____
	points
Spreadsheet labels	3 _____
	points
Equation	2 _____
	points
Trendline extension	3 _____
	points
<b>Estimated length=_____</b>	<b>3 _____</b>
	<b>points</b>

6. Open any *WORD* document and insert the graph from Problem 1 as a bitmap picture between two paragraphs. The picture should be approximately 6 inches by 6 inches in size. Keep the aspect ratio, or the ratio of height to width, such that the picture is not overly distorted and the text is readable.

**GRADING:**

Insertion of picture	20 _____
	points

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Size	10 _____
	points

Aspect ratio	3 _____
	points

7. Solve the following simultaneous equations using *solver*. Use starting values of 1 for all variables. Label the spreadsheet and enter the answers to 2 decimal places.

1)  $x^2 + 2y^2 - 22 = 0$  **X=\_\_\_\_\_**



$$Y = \frac{\quad}{\quad}$$

2)  $-2x^2 + xy - 3y + 11 = 0$

**GRADING:**

Equations	10 _____
	points
Problem Setup	10 _____
	points
Answers	5 _____
	points
Spreadsheet labels	5 _____
	points
Rounded answers	3 _____
	points

## LETTER OF TRANSMITTAL FOR CONTENT VALIDITY SURVEY

Dear Evaluator:

The development of this curricula has been in response to the rapid advances in both hardware and software of computers. The use of computers in the technology programs has evolved from their initial use in programming solutions to calculations to today's use of integrated software suites that can both analyze and present results of experiments. The growth in the Internet has also been a recent development that has changed the way that research and communications are completed. The Virginia Community College System, TAC of ABET and the workplace requirements were used to decide the curricula content.

The curricula is intended to provide the basic computer competencies required of an engineering technician to complete program requirements in upper level courses. It is also to give the student the background to successfully complete their work duties in the work place.

I appreciate the time and effort it will require to evaluate the curricula. Returning the completed evaluation before June 15, 1999 will provide time for the curriculum to be modified before application in the Fall 1999. Please feel free to contact me at 540.857.7379 if I can answer any questions. Thank you in advance for your help.

Sincerely

David E. Webb, P.E.  
Assistant Professor of Mechanical Engineering  
Technology

**ENGINEERING TECHNOLOGY COMPUTER  
LITERACY COURSE  
CONTENT VALIDITY SURVEY**

Put an "X" in the area provided for the answers for problems 1 through 4. Please elaborate on any questions marked "NO."

The following questions refer to the VCCS Computer Competency Requirements.

8. Does the content give a student the skills to be able to show an introductory level working knowledge of computer:

	YES	NO
1. Concepts?	_____	_____
2. Components?	_____	_____
3. Operations to complete educational tasks?	_____	_____
4. Operations to complete career tasks?	_____	_____

1. Could the student use appropriate components of:

	YES	NO
1. A visual operating system?	_____	_____
2. An integrated productivity software package?	_____	_____

- 3. A word processing software package? \_\_\_\_\_
- 4. Spreadsheet or database software? \_\_\_\_\_
- 5. Electronic communications applications? \_\_\_\_\_
- 6. Presentation software? \_\_\_\_\_

2. Could the student access and use the following electronic resources:

- |  | YES   | NO    |
|--|-------|-------|
| 1. On-line college catalogs?                   | _____ | _____ |
| 2. A virtual library?                          | _____ | _____ |
| 3. Internet?                                   | _____ | _____ |
| 4. World wide web?                             | _____ | _____ |
| 5. Electronic mail?                            | _____ | _____ |
| 6. Listservs, bulletin boards, and newsgroups? | _____ | _____ |

The following questions refer to the TAC of ABET Computer Competency Requirements.

3. Are the computer skills developed in the curriculum sufficient to provide:

- |   | YES   | NO    |
|---|-------|-------|
| 1. A working knowledge of computer usage?                                 | _____ | _____ |
| 2. Introductory skills in using the computer to solve technical problems? | _____ | _____ |
| 3. Provide sufficient skills for the student to use the                   | _____ | _____ |

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computer as a tool in upper level courses?

4. List any changes that we should make to the curriculum for any area in Questions 1

through 4 marked with "NO."

5. What changes could be made to the curricula content better to meet the aim and objectives?

The following questions refer to the learning activities.

6. Do the learning activities provide sufficient practice to develop skills in:

	YES	NO
1. An integrated productivity software package?	_____	_____
2. Word processing?	_____	_____
3. Spreadsheet usage?	_____	_____
4. Electronic communications applications?	_____	_____
1. A virtual library?	_____	_____
2. Internet?	_____	_____
3. World wide web?	_____	_____
4. Electronic mail?	_____	_____
5. Listservs?	_____	_____
6. Bulletin boards?	_____	_____
7. Newsgroups?	_____	_____
5. Presentation software?	_____	_____
7. List any changes that we should make to the learning activities for any area in Questions 7 marked with "NO."		
8. What other changes could be made to the learning activities better to meet the aim and objectives?		

## APPENDICES

Appendix A, VCCS Computer Competency Requirements.

### 5.2.0.1 Computer Competency Requirements (SB)

The Virginia Community College System believes that all students should experience a teaching-learning environment that espouses computer and information literacy in accessing electronic resources and applying knowledge through technology. The VCCS endorses the principle of computer competency for all students intent on completing a curriculum in excess of 45 semester credits. Students must demonstrate proficiency in specific computer competencies defined within programs and by individual institutions.

Each institution must insure that a computer competent student will:

- be able to demonstrate a working knowledge of computing concepts, components, and operations to accomplish educational and career tasks;
- be able to use appropriate components of an integrated productivity software package involving word processing, spreadsheet, database, presentation, and/or communication applications;
- be able to access, retrieve, access, and apply networked information resources, e.g., on-line catalog, virtual libraries, the Internet and world wide web; and
- be able to use telecommunication software, e.g., electronic mail, listservs, bulletin boards, and/or newsgroups, to communicate with faculty, students, and information providers.

## Appendix B, TAC of ABET Computer Competency Requirements

### I.C.6.Computer Competency ---

Engineering technicians and technologists are dependent upon the computer to effectively perform their job functions. It is therefore essential that students acquire a working knowledge of computer usage. Instruction in applications of software for solving technical problems and student practice within appropriate technical courses is required for all programs. Additionally in Baccalaureate degree programs, instruction must be included in one or more of the computer languages commonly used in the practice of engineering technology. Following formal instruction or demonstrated proficiency in computing skills, baccalaureate students should gain experience using programming skills in technical courses to an extent appropriate for the discipline.

### II.P.2.b. Technical Specialties. (Amplifies criteria section I.C.2.)

1.Technical specialty instruction must prepare the associate degree graduate for immediate employment and include sufficient depth to enable the student to continue in upper-division studies. Sequential courses must provide increasing depth. Technical specialty instruction must incorporate mathematical and basic science principles and computer applications learned in prerequisite or co-requisite study.

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