

**ELEC 68A Course Outline as of Spring 2010****CATALOG INFORMATION**

Dept and Nbr: ELEC 68A Title: PULSE &amp; DIGIT CIRCT 1

Full Title: Software Applications for Pulse and Digital Circuits 1

Last Reviewed: 11/3/2008

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Introduction to Visual BASIC language and how to use it to analyze electronic circuits.

Programs will be developed on IBM-compatible computers. Students will develop programs to solve electronic problems such as those presented in the first year of the electronics certificate program. (No previous programming experience required.)

**Prerequisites/Corequisites:**

(Completion of ELEC 60 or ELEC 70B) AND (Completion or Current Enrollment in ELEC 61 OR ELEC 71A.)

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Introduction to Visual BASIC language and how to use it to analyze electronic circuits. Programs will be developed on IBM-compatible computers. Students will develop programs to solve electronic problems such as those presented in the first year of the electronics certificate program. (No previous programming experience required.) (Grade Only)

Prerequisites/Corequisites: (Completion of ELEC 60 or ELEC 70B) AND (Completion or Current Enrollment in ELEC 61 OR ELEC 71A.)

Recommended:

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>		Effective:	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

1. Identify hardware components of a computer system.
2. Analyze circuit operation through evaluation of input and output data using Visual BASIC.
3. Write and debug software programs in Visual BASIC used to solve electrical and electronic circuit problems.
4. Edit Visual BASIC programs for corrections and or extensions.
5. Produce a hard copy of the programs.

### **Topics and Scope:**

- I. Introduction to Visual BASIC
- II. Arithmetic operations
- III. Writing basic programs
- IV. Disk operating instructions
- V. Program testing and looping
- VI. Application required for writing a computer simulation
  - A. Direct current (DC) circuit analysis
  - B. Alternating current (AC) circuit analysis
  - C. Resonance, power and non-sinusoidal systems
  - D. Electronic devices and DC transistor biasing
  - E. Small signal analysis
  - F. Multistage transistor systems and large signal amplifiers
  - G. Feedback, operational amplifier (OP-AMP), and oscillator circuits
  - H. Frequency response and communications systems
  - I. Filter networks

- J. Digital fundamentals and codes
- K. Digital applications
- L. Mathematical techniques and numerical methods

### Assignment:

1. Textbook readings, 20-30 pages per week
2. Homework problems using Visual BASIC include analysis of:
  - a. Basic Ohm's law circuitry
  - b. Series, parallel, and series-parallel resistive circuits
  - c. Voltage divider circuits
  - d. Amplifier voltage gain input and output impedance
  - e. AND, OR, XOR gate circuit arrays for output
3. Write, debug, verify and analyze Visual BASIC programs
4. Quizzes (2-10)
5. Midterm
6. Final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because skill demonstrations are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems

Problem solving  
30 - 45%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Write, debug, verify and analyze programs

Skill Demonstrations  
20 - 30%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, Completion, Midterm exams, essay questions

Exams  
30 - 40%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Class participation

Other Category  
5 - 10%

**Representative Textbooks and Materials:**

Microsoft Visual Basic 2008, Halvorson, Michael. First edition. Microsoft Press 2008.