

ETec271 Course Specifications

Catalog Information

Course Number and Title: ETec271 – Circuit Analysis I

Credit Hours: 4

Course Description: Fundamental properties of electrical components and their use in DC and AC circuits. Use of basic laws and theorems in circuit analysis and design. Laboratory experiments with electrical components and circuits.

Prerequisites: Pre- or co-req: MATH 114, EET major or permission

Prerequisite Outcomes: Strong algebra skills.

Schedule Information

Quarter: Fall 2006

Meeting Times and Rooms

Days	Times	Instructor	Room(s)
MWF	10:00-10:50	Steve Moskowitz	ES123
R	11:00-12:50	Steve Moskowitz	ET331
R	1:00-2:50	Steve Moskowitz	ET331

Lab Fee: \$10.00

Enrollment Limit: 18

Student Resources

Student Syllabus: <http://eet.etec.wvu.edu/etec271/271f06syl.pdf>

Course Website: <http://eet.etec.wvu.edu/etec271/index.html>

Facilities and Materials

Required Text: "Introductory Circuit Analysis", 10th Edition, Robert Boylestad

"Experiments in Circuit Analysis", 10th Edition, Robert Boylestad

Lab Equipment: Prototype Board, DMM, VOM, DC Power Supply, Oscilloscope, Function Generator.

Software: None

Course Outcomes

1. Understand and be able to apply standard electrical units and engineering notation.
2. Understand and be able to apply basic electrical concepts including voltage, current, resistance, power and energy.
3. Be able to apply ohms law in resistor circuits with voltage or current sources.
4. Be able to analyze series-parallel resistor circuits using KVL, KCL, Thevenin equivalence, Norton equivalence, and/or superposition.
5. Understand the basic concepts involved with capacitance and inductance.
6. Be able to analyze RC or RL circuits at initial and steady-state conditions.
7. Understand and express AC signals and be able to calculate peak values, average values, and RMS values of sinusoids.
8. Have an introductory level of understanding and competency in analyzing simple AC circuits using complex numbers, reactance, impedance, and phasors.
9. Be able to measure and manipulate voltages, currents, and resistance in the lab using a DMM, VOM, DC Power Supply
10. Be able to measure amplitude, frequency, and phase of an AC signal using the oscilloscope and function generator.
11. Know the standard color code including tolerances and be able to read values off of numerically labeled resistors, inductors, and capacitors.
12. Be able to construct circuits using real parts and a solderless breadboard and be introduced to basic tools such and wire cutters, strippers, and pliers.
13. Know the basic safety and usage rules for the lab and behave in a professional and responsible manner. Know and heed the requirements to not destroy or overstress equipment and parts.
14. Understand the need for completing work in a timely manner.

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Courses Contribution to the Program Outcomes

P – Primary to the purpose of the course. Course contains significant instruction and opportunities for practice.

S – Secondary to the purpose of the course. Course contains limited instruction and opportunities for practice.

N – Not a significant part of this course.

Program Outcome		Course Contrib	Applicable Course Outcome(s)
a	An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines.	P	1,2,3,4,5,6,7,8,9,10,11,12
b	An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	S	1, 2, 5, 7
c	An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	S	2,3, 4, 6, 8, 9, 10,11,12
d	An ability to apply creativity in the design of systems, components or processes appropriate to program objectives	N	
e	An ability to function effectively on teams,	N	
f	An ability to identify, analyze and solve technical problems	P	1,2,3,4,5,6,7,8,9,10
g	An ability to communicate effectively,	N	
h	A recognition of the need for, and an ability to engage in lifelong learning	N	
i	An ability to understand professional, ethical and social responsibilities	S	13
j	A respect for diversity and a knowledge of contemporary professional, societal and global issues,	N	
k	A commitment to quality, timeliness, and continuous improvement	S	14
A	The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers to the building, testing, operation, and maintenance of electrical/electronic(s) systems	P	1,2,3,4,5,6,7,8,9,10
B	The applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry	N	
C	The ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems	N	
D	The ability to apply project management techniques to electrical/electronic(s) systems	N	
E	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems	N	

Outcome Assessment Tools

1. Circuits module senior survey