COURSE SYLLABUS

Tunxis Community College

Education That Works For a Lifetime

Course Title:	Circuit Theory II	**Date submitted:**	4/30/2018 (18-38)
Department:	Advanced Manufacturing Technology		
Curriculum:	Technology Studies		

Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

Course Code: (eg. ACC*101)	MFG*139
Course Type:	X

A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: Internship M: Seminar P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/ Clinical/Lab Z: Combined Lecture/Studio

Elective Type:	G

AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science

Credit Hours:	3
Developmental: (yes/no)	No
Contact Hours: Lecture:	1.5
Clinical:	0
Lab:	1.5
Studio	0
Other:	0
TOTAL:	3
Class Maximum:	24
Semesters Offered:	Fall

Prerequisites:

C- or better in Circuit Theory I (MFG*137)

Corequisites:

None

Other Requirements:

None

Catalog Course Description:

Circuit Theory II completes an introduction to the fundamental building block for all electrical and electronic devices: the circuit. Circuit Theory II completes the review of basic circuits by guiding the student through a thorough review of alternating current circuits including the RC, RL, and RLC circuits. The student will also be introduced to several electrical devices including capacitors, inductors, and transformers.

Topical Outline: List course content in outline format.

1. Introduction to Alternating Current and Voltage
2. Phasors and Complex Numbers
3. Capacitors
4. Inductors
5. Transformers
6. RC Circuits
7. RL Circuits

8. RLC Circuits and Resonance
9. Basic Filters
10. Circuit Theorems in AC Analysis
11. Pulse Response of Reactive Circuits
12. Polyphase Systems in Power Applications

Outcomes:
Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

Upon successful completion of this course, the student will be able to do the following:

COURSE:

1. demonstrate an understanding of alternating current; its sinusoidal wave form; measurements of the waveform; and the use of the oscilloscope to measure waveforms
2. demonstrate an understanding of Phasors and complex numbers
3. demonstrate an understanding of capacitors' physical construction, electrical properties, and their use in ac and dc circuits
4. demonstrate an understanding of the concept of self-inductance and of inductors, and an understanding of the inductors' physical construction, electrical properties, and use in ac and dc circuits
5. demonstrate an understanding of the concept of mutual inductance; an understanding of the physical construction of a transformer and how it operates
6. demonstrate an understanding of the RC circuit: series, parallel, series parallel, and their application in electronic devices
7. demonstrate an understanding of the RL circuit and their application
8. demonstrate an understanding of the RLC circuit and their application in electronic Devices
9. demonstrate an understanding of passive filters: low-pass, band-pass and band-stop
10. demonstrate an understanding of the following theorems: superposition, Thevenin, Norton, and maximum power transfer
11. demonstrate an understanding of the RC and RL integrator (single pulse and repetitive pulse RC integrators) and of the RC and RL differentiators
12. demonstrate an understanding of the Polyphase Systems in power applications

PROGRAM: *(Numbering reflects Programs Outcomes as they appear in the college catalog)*

Electronics Technology Certificate and A.S. Degree

1. demonstrate an understanding of Shop Safety
2. demonstrate an understanding the theory of electrical structure, voltage, current, resistance, and electrical circuit and their measurement
3. demonstrate an understanding of the basic laws of arithmetic
4. demonstrate an understanding of several number systems and codes that are the

	foundation of digital theory and digital applications 5. make comparisons with personal computers; as well as, develop an understanding of its origin and growth since conception 6. demonstrate an understanding of the fundamentals of Automated Manufacturing systems
	GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)* No General Education outcomes.
Evaluation: List how the above outcomes will be assessed.	**Assessment will be based on the following criteria:** tests and quizzes
Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	**Required:** Full electronics lab. **Desired:** None
Textbook(s)	Principals of Electric Circuits, Conventional Current Version ,Thomas L. Floyd, latest edition