



Course Syllabus

Course: K105/6 Electric Circuits and Systems
Credits: 4
Prerequisites: High School Algebra or MAT* K095
Corequisites: MAT* K137
Instructor: Dan Courtney – dcourtney@trcc.commnet.edu – 860-885-2338
Office Hours: As Posted – Office C134
Text: The Science of Electronics – DC/AC, David M. Buchla & Thomas L. Floyd

Course Description:

This course provides an introduction to the basic concepts of DC and AC electric circuits. Voltage, current, resistance, energy, and power relationships are introduced. Circuit analysis of basic series and parallel circuits is covered. Instruments and techniques of electrical measurement for both DC and AC circuits are also discussed.

This lab course will supplement the course Electric Circuits & Systems. Students will apply the concepts learned in the classroom and gain practical hands-on experience making electrical measurements using a variety of test instruments.

Grading: Notebooks, Lab Reports, Oral Presentation, Class Participation, Attendance, Promptness, Homework, Tests, Professional Attitude

Course Topics:

Course Overview
Electrical Engineering Technology
Engineering Roles & Processes
Review of Prerequisite Concepts
Electrical Quantities and Measurements
Electrical Components and Systems
Basic Circuit Analysis
AC Concepts/Waveforms
Magnetic Circuits
Motors and Generators
Power Systems
Reactive Circuit Analysis

Lab Topics:

Lab Safety & Standard Practices
Equipment Familiarization
Semiconductor Diode VI Characteristic
LED Driver Circuits
Voltage and Current Dividers
AC Measurements – Function Generators and Scopes
Wheatstone Bridge
AC/DC Circuit Analysis – Amplifiers
Pulsed Circuit Analysis



ABET Outcome Requirements

- a) an appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines
- b) an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology
- c) an ability to conduct, analyze and interpret experiments, and apply experimental results to improve processes
- d) an ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives
- e) an ability to function effectively on teams
- f) an ability to identify, analyze and solve technical problems
- g) an ability to communicate effectively
- h) a recognition of the need for, and an ability to engage in lifelong learning
- i) an ability to understand professional, ethical and social responsibilities
- j) a respect for diversity and a knowledge of contemporary professional, societal and global issues
- k) a commitment to quality, timeliness, and continuous improvement

TRCC EET Stated Outcomes

1. Students will practice the skills needed to work effectively in teams and as an individual.
2. Students will demonstrate the ability to use appropriate mathematical and computational skills needed for engineering technology applications.
3. Students will combine oral, graphical, and written communication skills to present and exchange information effectively and to direct technical activities.
4. Students will know of a professional code of ethics.
5. Students will describe concepts relating to quality, timeliness, and continuous improvement.
6. Students will describe how the concepts of electric circuits, electrical measurements, digital electronic devices, programmable logic circuits, electromechanical and automated systems, affect the design, maintenance, and operation of electrical systems.
7. Students will illustrate an ability to think critically and identify, evaluate and solve complex technical and non-technical problems; demonstrate creativity in designing problem solutions; and conduct and interpret experimental data and outcomes.
8. Students will recognize actions and acts of professionalism that allows them to become informed and participating citizens cognizant of ethics, civic duty, and social responsibility.
9. Students will recognize the need to be lifelong learners.

K105/6 Course Outcomes

1. Mastery of Electrical Technology concepts as defined in the course syllabus
2. Knowledge of electrical quantities, units and relationships
3. Demonstrate an ability to build and test electrical circuits and systems
4. Demonstrate an ability to analyze and solve problems relating to basic electrical systems
5. Demonstrate senior level oral and written communication skills
6. Demonstrate an appreciation for lifelong learning
7. Demonstrate proper professional and ethical behavior
8. Demonstrate a commitment to quality, timeliness and continuous improvement



Course Detail

CRN	Subj	Crse	Sec	Textbook	Crd	Title	Inst	Day	Time	Instructor	Date	Room
10705	EET*	K105	T1	textbook info	3.00	Electric Ckts & Systems	TRAD	M	05:00 pm-07:45 pm	Daniel P Courtney	01/20-05/18	KTRCC B229
10706	EET*	K106	T1A	textbook info	1.00	LAB, Elec Ckts & Systems	TRAD	M	08:00 pm-09:40 pm	Daniel P Courtney	01/20-05/18	KTRCC B229

Instructor Bio - Dan Courtney

AS 1976 (STCC)	1976	Electronic Technology
MSEE (UMass)	1983	Electrical and Computer Engineering, Microwave Engineering
Galileo Electro-Optics	1976	Engineering Technician, Fiber Optic Characterization, Fiber Optic Fabrication
STCC	1977-83	Assistant Prof – Electronics, Laser/Electro-Optics Technology
Western New England College	1983-84	Adjunct Faculty - Computer Algorithms, Advanced Programming Languages
United Technologies	1983-95	
UT Diesel Systems	1983-84	Systems Engineer - Diesel Engine Electronic Controls
UT Hamilton Sundstrand	1984-95	Principal Engineer - Fiber Optics Gyro, Aircraft Environmental Control Systems
JDS Uniphase (JDSU)	1995-present	Specialist – Business Processes
TRCC	2009-present	Program Coordinator – Electrical Engineering Technology