



Course Syllabus

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| Course: | K105/6 Electric Circuits and Systems |
| Credits: | 4 |
| Prerequisites: | High School Algebra or MAT* K095 |
| Corequisites: | MAT* K137 |
| Time/Classroom: | Class: TR 9:30-10:45 D104, Lab: T or R 2:00-3:40 B229 |
| Instructor: | Dan Courtney – dcourtney@trcc.commnet.edu |
| Office Hours: | TR 4:00-5:00, W 10-11 |
| 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: Attendance, Positive Participation, Class Notebook
In Class Assignments, Homework, Tests, Labs
All Assignments graded on Graphics/Presentation as well as Technical Content**

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
Reactive Circuit Analysis
Magnetic Circuits
Power Systems
Motors and Generators

Lab Topics:

Lab Safety & Standard Practices
Lab Familiarization
Breadboarding Techniques
Electrical Measurements – Multimeters and Power Supplies
Basic Circuit Analysis
Circuit Analysis – Spice/Multisim
Basic Troubleshooting Techniques
Troubleshooting Case Study
AC Measurements – Function Generators and Scopes
AC Circuit Analysis – Filters
AC Circuit Analysis – Amplifiers
Pulsed Circuit Analysis



Instructor Bio - Dan Courtney

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|-----------------------------|--------------|--|
| 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 - Electronic Benchwork, Electronic Technology, LEOT, Microprocessor Tech |
| 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 Sunstrand | 1984-95 | Principal Engineer - Fiber Optics Gyro Development, Aircraft Environmental Control Systems |
| JDS Uniphase (JDSU) | 1995-present | Director/Specialist - Operations Management |
| TRCC | 2009-present | Program Coordinator – Electrical Engineering Technology |