



## Course Syllabus

**Course:** EET K105/6 Electric Circuits and Systems  
**Prerequisites:** High School Algebra or MAT\* K095  
**Corequisites:** MAT\* K137  
**Instructors:** Dan Courtney, Jim Rhoades –  
 dcourtney@trcc.commnet.edu, jrhoades@trcc.commnet.edu  
**Office Hours:** As Posted

**Text (Optional):** Introduction to Electricity, Robert Paynter and Toby Boydell

### Course Detail:

CRN	Course #	Credits	Title	Day	Time	Date	Room
31839	EET K105	3.00	Electric Circ & Syst	TR	02:00 pm-03:15 pm	08/29-12/22	B209
32971	EETK106	0.00	LAB, Elec Ckts & Systems	MW	03:16 pm-04:06 pm	08/29-12/22	B209

### 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. Other topics include semiconductor devices, transformers and power supplies, microcontrollers, motors and drive circuits, and electrical power generation/distribution. The lab portion of this 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.

### Course Topics:

Week	Topic	Week	Topic	Week	Topic
1	Syllabus, Portfolio, & Outcomes	3	Intro to microcontrollers	8	Inductors
1	Lab Safety	3	Intro to MultiSim	8	Magnetic Circuits
1	DMM	3	Waveforms	8	Transformers
1	Breadboards	3	Function Generator/Oscilloscope	8	Regulated Power Supply
1	Power Supply	4	Reading Voltage with Arduino	9	Transistors
1	Electrical Quantities/Ohm's Law	4	Software	9	Transistor Driver
1	Systems Analogues	4	LED VI Characteristic	10	Torque
1	Electrical Components	5	Parallel Circuits	10	Motors 1
1	Powers of Ten/Metric Prefixes	5	Series Parallel Circuits	10	Torque/Speed
1	Charge/Elementary Algebra	5	Wheatstone Bridge	11	Motors 2
2	Electrical Materials	5	Sources/Equivalent Ckts	11	Motor Driver
2	Wire Gauges	6	Capacitors	11	Pulse Width Modulation
2	Resistors	6	Capacitor Charging	12	Transistor Amplifier
2	Series Circuits	6	Reactance/Impedance	12	AC Equivalent
2	Voltage Divider	6	Frequency Response	13	Generators
2	LED String	7	Batteries, Capacitors & Fuel Cells	13	Power Generation & Transmission
2	Power Calculations	7	Battery Charging	14	Inverters/Grid Tie

Link to Shared Drive - <https://drive.google.com/folderview?id=0B-0fu1O6-a22ejRUdjJOR0ZNRDg&usp=sharing>



**Course Format:** Classes will consist of topic discussions, classroom exercises, projects and laboratory exercises. Classes will move fluently between these activities.

**Course Grading:** Class Participation, Technical Aptitude, Laboratory Skills, Professional Attitude

**Attendance/Timeliness:** Attendance is mandatory at all class and lab sessions. Tardiness of attendance and assignments will have a significant negative impact on grading.

Do not email the instructor asking if you missed anything when absent. You did. Get the information from your lab partner or another student.

All students are also required to maintain an online learning portfolio in Digication that uses the college template. The Digication Portfolio may be separate from the Course Portfolio. Specific items may be required for upload to the Digication Portfolio. The instructor will give specific direction concerning course content for upload to the Digication Portfolio.

**Other Required Course Materials:** Scientific Calculator e.g. TI-30 – Calculators should be available at all times

#### 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 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 technician level oral and written communication skills
6. Demonstrate an ability to engage in self-directed professional development
7. Demonstrate proper professional and ethical behavior
8. Demonstrate a commitment to quality, timeliness and continuous improvement