



**Purpose:** It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

**Course Title – D.C. Circuits**

**Course Prefix and Number - CETT 1403**

**Department –**Electronics Technology

**Division –** Bus. and Technology

**Course Type:** (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)  
 Academic WCJC Core Course  
 WECM course (This course is a Special Topics or Unique Needs Course: Y  or N )

**Semester Credit Hours # : Lecture hours# : Lab/other hours #      4:3:3**

**Equated Pay hours for course –  $3+(3*1/2) = 4.5$**

List Lab/ Other Hours
Lab Hours 3
Clinical Hours
Practicum Hours
Other (list)

**Course Catalog Description –** A study of the fundamentals of direct current including Ohm’s law, Kirchoff’s laws, and circuit analysis techniques. Emphasis on circuit analysis of resistive networks and DC measurements. Voltage, current, resistance, Ohm’s Law, Kirchoff’s Voltage and Current Laws, Thevenin, Norton, superposition, and maximum power transfer theorems. Laboratory use of components, meters, power supplies, and oscilloscope.

**Prerequisites/Corequisites -** Credit or concurrent enrollment in CETT1425. Concurrent enrollment or credit for MATH 1314.

**Approvals – the contents of this document have been reviewed and are found to be accurate.**

Prepared by <i>David Kecon</i>	Signature <i>[Signature]</i>	Date 9-24-07
Department Head <i>David Kecon</i>	Signature <i>[Signature]</i>	Date 9-24-07
Division Chair	Signature <i>Stephanie Dees</i>	Date 11/8/07
Vice President <i>Dr. Ty Pate</i>	Signature <i>Ty Pate</i>	Date 11/12/07



**I. Topical Outline** – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non lecture instruction):

The following performance will be expected of any student completing this course with a passing grade. There is no absolute time limit on the performance of these objectives, unless noted, but the grade received by the student will depend, in part, on the relative speed and precision of the student's performance in these tasks. Where subjective evaluations are indicated, the instructor will make these judgments based on his or her knowledge of the skills required to place a graduate with the expectation of successful on-job performance.

The student will be expected to perform the following tasks in written examination or laboratory demonstration:

- Clearly define work, force, energy, charge, voltage, current
- Write and use the basic formulae relating work, force, distance, charge, voltage, and time
- Correctly convert between all commonly used SI prefixed multipliers
- Demonstrate the ability to use a calculator to solve problems involving scientific and engineering units and metric prefixes
- Determine/read correct meter scale for measurement of voltage, resistance, and current.
- Draw a basic circuit and correctly label the components of the circuit
- Draw the correct symbols for resistors, batteries, capacitors, inductors, connected and non-connected conductors.
- Correctly convert between color-codes and resistor values
- Distinguish between linear and non-linear resistances when give a series of paired voltage-current measurements
- Write and demonstrate correct use of Ohm's Law
- Define resistance in terms of voltage and current
- Calculate resistance when given conductance
- Calculate conductance when given resistance
- Calculate the equivalent resistance of series-connected resistors
- Calculate the current, voltage, and power for each resistor in a series circuit given the voltage source and the value of each resistor
- Demonstrate understanding of Kirchoff's Voltage Law by solving problems requiring use in a series circuit
- Indicate understanding of the relativity of voltage measurements by calculating voltages in a series circuit when the reference point is moved
- Determine of the effect of the size of a resistance on the voltage drop across the resistance in a series circuit
- Calculate the equivalent resistance of parallel-connected resistors
- Calculate the voltage, current, and power for each resistor in a parallel circuit given the voltage source and the value of each resistor

- Calculate the voltage, current, and power for each resistor in a parallel circuit given a current source and the conductance of each resistor
- Write a description of the effect of the size of a resistor on the current through the resistor in a parallel circuit
- Discuss meter loading as a function of the input resistance of a meter
- Given no more than 12 resistors in a series-parallel circuit with no delta or wye connections, and given the source voltage or current, solve for the voltage across and the current through each resistor
- Write and correctly solve the voltage divider formula for three resistors in series

## II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
<p>Apply safety techniques while working on and troubleshooting various circuits and components;</p> <p>Interpret color codes and other descriptors used in electronics</p> <p>Identify various sources of electricity in DC circuits</p> <p>Interpret characteristics of voltage, current, resistance, and power in DC circuits;</p> <p>Measure voltage, current, and resistance in DC circuits using measuring devices;</p> <p>Analyze DC circuits using applicable mathematical formulas such as Ohm's Law, Kirchhoff's Law, and the power formula; Troubleshoot various DC circuits using schematics diagrams.</p>	<p>Assessed in Capstone Experience: ELMT 2330 Final Project course.</p>

## III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

An appropriate electronics text covering DC Circuits. Example-Foundations of Electronics by Meade

Calculator – scientific with Sine, Cosine, Tangent capabilities..

## IV. Suggested Course Maximum - 30 lecture, 15 laboratory

## V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Lecture facilities for 30 students. Laboratory facilities for 18 students must include 9 bench positions each with a digital meter, logic probe, 20 MHz oscilloscope and probes, breadboarding facility with power supply and signal generator, and a stock of basic AC circuit components.

**VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course**

Evaluation of Performance:

Course grades will be determined by the percentage of course objectives for which the student can demonstrate mastery and by attendance as stated in the Departmental Policy sheet provided to the student. Mastery of course objectives will be determined by written examinations, physical soldering exams, an attendance grade as described in the Departmental Policy handout, a daily work grade which will include graded homework, graded laboratory work, and a comprehensive final exam.

Approximate Grade Evaluation Summary:

Major tests .....	60%
Attendance.....	10%
Lab reports, homework, and quizzes. ....	15%
Comprehensive Final examination .....	15%

**VII. Curriculum Checklist**

- **Academic General Education Course** (from ACGM – but not in WCJC Core)  
No additional documentation needed

- **Academic WCJC Core Course**  
Attach the Core Curriculum Checklist, including the following:

- Basic Intellectual Competencies
- Perspectives
- Exemplary Educational Objectives

- **WECM Courses**  
Attach the following:

- Program SCANS Matrix
- Course SCANS Competencies Checklist

Program: Electronics Technology								Credential: AAS Degree	
LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES									
Competencies								Course Number	Course Title
1	2	3	4	5	6	7	8		
X			X	X	X	X	X	CETT 1321	Electronic Fabrication
X	X	X	X	X	X	X	X	CETT 1403	D. C. Circuits
X	X	X	X	X	X	X	X	CETT 1425	Digital Fundamentals
X	X	X	X	X	X	X	X	CETT 1405	A. C. Circuits
X	X	X	X	X	X	X	X	CETT 1449	Digital Systems
X	X	X	X	X	X	X	X	CETT 1331	Technical Programming
X		X	X	X	X	X	X	CETT 1341	Solid State Circuits
X	X	X	X	X	X	X	X	CETT 1445	Microprocessors
X	X	X	X	X	X	X	X	CETT 1457	Linear Integrated Circuits
X	X	X	X	X	X	X	X	EECT 2439	Communication Circuits
X	X	X	X	X	X	X	X	ELMT 1301	Programmable Logic Controllers
X	X	X	X	X	X	X	X	ELMT 2330	Final Project
X		X	X	X	X	X	X	ELMT 2433	Industrial Electronics
X	X	X	X	X	X	X	X	EECT 1303	Introduction to Telecommunications
X	X		X	X	X			ENGL 1301	English
X		X	X	X	X			MATH 1314	College Algebra
X	X		X	X	X			ENGL 2311	Technical Report Writing
X		X	X	X	X			Math 1316	Trigonometry
X			x	x	x			Elective	Social Behavioral Science
X			X	X	X			Elective	Humanities/Fine Arts
								<b>COMPETENCY REFERENCES</b>	
								8 B BASIC USE OF COMPUTERS	
								7 B WORKPLACE COMPETENCIES	
								6 B PERSONAL QUALITIES	
								5 B THINKING SKILLS	
								4 B SPEAKING AND LISTENING	
								3 B ARITHMETIC OR MATHEMATICS	
								2 B WRITING	
1 B READING									