Wharton County Junior College

Administrative - Master Syllabus
COVER SHEET

***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 – DC-AC Circuits
Course Prefix and Number - CETT 1409
Department – Electronics Eng. Tech. **Division -** Technology and Business
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 – 4.5

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

Course Catalog Description - Fundamentals of DC circuits and AC circuits operation including Ohm's law, Kirchhoff's laws, networks, transformers, resonance, phasors, capacitive and inductive and circuit analysis techniques

Prerequisites/Co Requisites - ELPT1370 or PTAC1302

Prepared by David Kucera ***Date*** 06/10/13

Reviewed by Department Head David Kucera ***Date*** 06/10/13

Accuracy verified by Division Chair David Kucera ***Date*** 06/10/13

Approved by Dean or Vice President of Instruction Amy LaPan ***Date***1/30/2014

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.
- Write and demonstrate correct use of Ohm's Law
- 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
- 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
- Discuss meter loading as a function of the input resistance of a meter
- Given no more than 8 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
- Recall the names and units associated with a sine wave.
- Compute the inductive and capacitive reactance of various inductors and capacitors operating at various frequencies.
- Explain the process of electromagnetic induction.
- Explain the process of generating an AC current.
- Demonstrate use of the oscilloscope and AC meters to analyze alternating waveforms
- Examine the response of RC and RL circuits

II. Course Learning Outcomes

Course Learning Outcome **Upon successful completion of this course, students will:**	Methods of Assessment **Outcomes 1,2,3 will be assessed by:**
• 1.Construct and analyze DC and AC circuits from simple to complex. • 2.Perform test measurements for DC and AC circuits. • 3.Utilize a multimeter and oscilloscope to differentiate between two AC signals with respect to voltage, current, and power	• Exams • Labs • Homework • Quizzes

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

An appropriate electronics text covering DC/AC Circuits. Example- Electricity and Electronics by Gerrish, Dugger, and Roberts

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, bread boarding facility with power supply and signal generator, and a stock of basic DC and 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 demonstration 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, 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%

Grade Scale:

90 to 100: A
80 to 89: B
70 to 79: C
60 to 69: D
0 to 59: F

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**
If needed, revise the Program SCANS Matrix & Competencies Checklist.