

# Fundamentals of Electric Circuits & Machines EET K-144

## COURSE SYLLABUS

This syllabus is subject to change; notice of any changes will ONLY be provided in class

**Instructor:** Professor G. Kent Harding  
**Class Room:** D-128  
**Class Time:** MW 8:00am – 9:15am

**Office Hours:** MW-11:00am to noon: T-12:15pm to 1:15pm  
**Office:** Room C-148  
**Phone:** (860) 215-9435

**E-mail:** kharding@trcc.commnet.edu

### Course Prerequisites

- MAT K-186 or equivalent;

### Course Co-Requisites

- EET K-145

### Course Description

Please see the TRCC course catalog for official description; the instructor's description follows.

- **CORE** - An approximately nine week study of the basic theory of electricity and electrical circuit analysis and the electrical characteristics of three components – the resistor, capacitor & inductor – in **DC, AC and 3-phase AC** environments. Emphasis is placed on the AC characteristics of circuits including frequency, period, impedance, phase shift and power concepts and their application to transformers, motors and generators. This analysis makes extensive use of complex numbers.
- **GENERATORS and MOTORS** – An approximately five week study of the operating characteristics and capabilities of DC generators and 3-phase AC generators and DC motors, single phase AC motors and 3-phase asynchronous and synchronous AC motors.

### Learning Outcomes

This course is designed to develop specific knowledge, skills and abilities. Upon successfully completing the course, you should be able to demonstrate an understanding of:

- Basic Electric circuit principles & concepts;
- The terminology applicable to basic electric circuits and machines;
- The electrical characteristics of resistors, capacitors and inductors;
- The electrical and operational characteristics of transformers; and
- The electrical and operational characteristics of basic motors and generators.

You should also be able to analyze and compute the voltage, current, impedance and power characteristics of basic electric circuits including those characteristics of motors and generators:

- Analyze circuits using Kirchhoff's and Ohm's laws and using Thevenin's, Norton's, Maximum power transfer and Superposition Theorems;
- Evaluate Wye and Delta circuit configurations for single and three phase systems;
- Evaluate the characteristics of capacitors and inductors in DC, AC and transitional circuits; and
- Evaluate the performance and operational characteristics of select motors and generators.

### Required Texts and other Materials/Supplies

- *Basic Circuits Analysis, 2<sup>nd</sup> Ed.* by John O'Malley; McGraw-Hill Publisher
- *Electrical Machines, Drives and Power Systems, 6<sup>th</sup> Ed.* by Theodore Wildi; Pearson Prentice Hall Publishers
- TI 85, 89, 91 or equivalent calculator (only TI-89 instructions covered in class)

### Performance (Grade) evaluation

Students will be evaluated using the following with related points applied to computing the final grade:

**Exams (lowest grade dropped)----- 50 points**

**Quizzes assignments (lowest grade dropped) ----- 50 points**

### Attendance

No consideration for attendance or lack of attendance will be considered in determining the student's final grade. However certain grade components (for example quizzes) will require your presence in class. An attendance sheet containing the names

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of all currently registered students will be distributed for the student's signature within approximately 15 minutes of the start of each class and will be available during class. **IF YOU DO NOT SIGN IT AFTER YOUR NAME ON THE DATE OF THE CLASS YOU DID NOT ATTEND THE CLASS!** This sheet will be the only evidence of attendance in this course and will be used to document your attendance for financial aid or other externally required purposes. It may also be used to substantiate the reason for a poor or failing grade performance.

### Grading

## **THERE ARE NO MAKE-UP OR EXTRA-CREDIT OPTIONS**

One exam and quiz (the lowest grade) will be dropped to accommodate an unanticipated absence

**TESTS AND QUIZZES WILL BE DISTRIBUTED AND COLLECTED ON THE DATES SHOWN IN THE INCLUDED COURSE ASSIGNMENT SHEET OR AS MAY BE ANNOUNCED IN CLASS. NO ASSIGNMENT WILL BE ACCEPTED AFTER THE CLASS FOLLOWING THE ORIGINALLY SCHEDULED DUE DATE WITHOUT MAKING PRIOR ARRANGEMENTS WITH THE INSTRUCTOR.** You may return a test or quiz after the designated due date but no later than the beginning of the class in which the graded test, project or quiz is returned **ONLY IF** you make appropriate arrangements with the instructor **PRIOR TO OR WITHIN 24 HOURS** of the class during which the test or quiz is distributed. Notice may be provided by e-mail or phone message.

All graded assignments will be graded on a 100 point scale. The final grade will be determined by totaling the points the student earned in each category (exams & quizzes) and dividing that total by the total possible points for the respective category to produce a percentage value. That percentage will be multiplied by the weighted value for its category (60 or 40 points), the results for all categories then totaled and the resulting numeric value converted into a letter grade according to the following:

LETTER	BASE	-	+
A	93+ - 100	90 - 93	NONE
B	83+ - 86	80 - 83	87 - 89
C	73+ - 76	70 - 73	77 - 79
D	63+ - 66	60 - 63	67 - 69
F	BELOW 60 POINTS		

### Due Dates

Due dates are as shown in the attached assignment sheet(s) and are subject to change. Changes will only be announced in class. The student is responsible for maintaining currency on all assignment due dates. If a class is cancelled for some reason, expect to do the work and turn in any assignments associated with the cancelled class in the following session. The student may obtain an assigned test by postal mail (e-mail corrupts some content and may therefore not be available) and may return an assigned test by postal mail if and only if arrangements, including the student's mailing address, have been made with the instructor sufficiently far in advance (at least one week). Only students having previously submitted a disability release will be granted any accommodation (generally extended time or relocation) for in-class assignments. No accommodation will be given for take home assignments.

### Academic Honesty

All students are expected to adhere to the institutional policies pertaining to student conduct as describe in college catalog. Each graded assignment will include the following statement: "I have neither given nor received any assistance from or to any source or person not authorized by my instructor." Signed (and your signature). Violation of this agreement will result in the immediate removal from this course and a grade of F.

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### College Policies

THIS SYLLABUS IS A SUPPLEMENT OF AND IS SUBORDINATE TO THREE RIVERS COMMUNITY COLLEGE'S (TRCC) POLICY AND PROCEDURES DOCUMENTS – THE STUDENT HANDBOOK, THE COLLEGE CATALOG AND ALL OTHERS – EITHER PRINTED OR AVAILABLE ON THE COLLEGE'S WEB SITE. TRCC POLICIES AND PROCEDURES SHALL BE THE FINAL BASIS FOR RESOLVING ALL ISSUES PERTAINING TO THE STUDENT'S PARTICIPATION IN THIS COURSE AND SHALL OVERRIDE ANY CONFLICTING COMPONENTS OF THIS SYLLABUS, INCLUDING ANY ATTACHED DOCUMENTS.

### Accommodations

Accommodations for disabilities, religious practices or other reasons will be granted in accordance with TRCC policies and procedures. The student is responsible for following those procedures and providing the instructor with the appropriate documentation necessary to provide the requested accommodation.

### ATTACHMENTS:

- Course assignment sheet