



Course Syllabus

Course: EET K264/5 Data Acquisition and Controls
Credits: 4
Prerequisites: EET* K105/106, MAT* K137
Instructor: Dan Courtney – dcourtney@trcc.commnet.edu – 860-215-9417
Office Hours: As Posted – Office C134
Text: Modern Control Technology, Kilian, 3rd Edition

Course Detail:

CRN	Cred	Title	Day	Time	Date
12914	3	Data Acquisition and Controls	W	05:00 pm-07:45 pm	01/23-05/20
12915	1	LAB, Data Acq. And Controls	W	07:46 pm-09:25 pm	01/23-05/20

Course Description:

This course provides an introduction to data acquisition circuits and systems as well as basic feedback control systems. Topics include measurements techniques, computerized data acquisitions, introduction to Labview, Interfacing, signal processing and communications, frequency and transient response, feedback control techniques, mechanical systems and mechanical power transmission. Students will learn the basics of measurements and data acquisition using Labview based exercises.

The lab portion provides students with hands-on experience with analog and digital closed loop automatic control components, circuits, and systems. It familiarizes students with analog and digital simulation techniques.

Course Topics:

Course Overview
Intro to DAC
Arduino Microcontroller
LabVIEW Software
Introduction to Control Systems
Operational Amplifiers and Applications
Signal Conditioning and Transmission
Mechanical Systems
Laplace Transforms

Lab Topics:

Lab Safety & Standard Practices
Equipment Familiarization
Arduino Setup
Basic LabVIEW
Project
Op Amp Applications
Advanced LabVIEW
1st and 2nd Order Systems
Motor Control



ABET Student Outcomes – Associate Degree Programs - 2011/2012

- a. an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities;
- b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge;
- c. an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments;
- d. an ability to function effectively as a member of a technical team;
- e. an ability to identify, analyze, and solve narrowly defined engineering technology problems;
- f. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature;
- g. an understanding of the need for and an ability to engage in self-directed continuing professional development;
- h. an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity; and
- i. a commitment to quality, timeliness, and continuous improvement.

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.

K134/5 Course Outcomes

- 1. Mastery of Electrical Technology concepts as defined in the course syllabus
- 2. Knowledge of concepts of closed-loop control systems
- 3. Demonstrate an ability to build and test circuits and systems related to control systems
- 4. Demonstrate an ability to analyze and solve problems related to closed-loop control systems
- 5. Demonstrate an ability to build and test software systems related to LabVIEW data acquisition and control
- 6. Demonstrate an ability to analyze and solve problems related to LabVIEW systems
- 7. Demonstrate senior level oral and written communication skills



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

Course Grading: Class Participation, Course Portfolio, Laboratory Skills, Professional Attitude. Grading is based on progress toward EET Program, ABET and Course Outcomes.

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

Use of electronic devices: Use of mobile phones, tablets, laptops and similar devices is limited to direct application to class work. All other usage will have a significant negative impact on grading.

Course Portfolio:

The Course Portfolio will be a major component of a student's grade. The Portfolio consists of a 3 ring binder with dividers. All class materials will be filed in the Portfolio. Course activities will consist of topic discussions, in class assignments, laboratory exercises, homework and reports.

Portfolio Grading Factors: Completeness, Organization, Timeliness

Portfolio Grading Frequency – Mid Term & Final

Portfolio Physical Requirements:

3 Ring Loose Leaf Binder (1" or greater)

3 Hole Punched 8 ½ X 11 Lined Filler Paper – No Spiral Bound Notebooks or Paper

Divider Tabs

Example Portfolio Sections: Class Notes & Handouts, In Class Assignments, Homework, Lab Reports, Other

Other Required Course Materials:

Flash Drive – all class electronic files should be maintained on a personal flash drive for the duration of the semester

Scientific Calculator e.g. TI-30 – Calculators should be available at all times during classes.

Disabilities Statement

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact the Disabilities Counseling Services at 383-5240. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. Please note that I cannot provide accommodations based upon disability until I have received an accommodation letter from the Disabilities Counselor.