



Course Syllabus

Course: EET K264/5 Data Acquisition and Controls
Credits: 4
Prerequisites: EET* K105/106, MAT* K137
Instructor: Dan Courtney – dcourtney@trcc.comnet.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
30164	3	Data Acquisition and Controls	R	05:30 pm-08:15 pm	8/31/14-12/23/15
30165	1	LAB, Data Acq. And Controls	R	08:16 pm-09:56 pm	8/31/14-12/23/15

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
 Intro to Microcontrollers
 LabVIEW and Arduino Software
 Introduction to Control Systems
 Operational Amplifiers and Applications
 Signal Conditioning and Transmission
 Mechanical Systems
 Laplace Transforms
 Sensors

Lab Topics:

Lab Safety & Standard Practices
 Project
 Arduino Introduction
 LabVIEW Arduino Interface
 Digital Output Control and PWM
 Analog Input Read
 Thumbstick Read
 Servo Motor Control
 Pan and Tilt Control
 Wireless Serial Communications
 LabVIEW Instrument Control
 Automated Test – LED VI Characteristic



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
One grade is determined for both lecture and laboratory sections.

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

TRCC EET 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 data acquisition and 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