



IND152 Electrical Control Systems I

Course Information

Credits	3
Campus	Washburn Institute of Technology(Forbes Facility)
Address	6530 SE Forbes Avenue
City/State/Zip	Topeka, Kansas 66619
Office Fax	785-670-2734

Description

This course is an introduction to electrical control systems with focus on control devices, electric motors, manual/electric/magnetic motor control and overload/over current protection and monitoring. Lab experience helps develop skills to operate, install, design, and troubleshoot AC electric motor control circuits for various applications.

Prerequisite: IND104 or consent of instructor. Corequisite: IND144 or consent of instructor.

Textbooks

Gary J. Rockis, Glen A. Mazur. Electrical Motor Controls for Integrated Systems (American Technical Publishers 4th edition) ISBN: 978-0-826-91217-6

Student Learning Outcomes:

- A. Communicate effectively
- B. Integrate technology
- C. Learn effectively
- D. Demonstrate cooperative teamwork skills
- E. Apply safety in the workplace
- F. Think critically and creatively
- G. Demonstrate responsible work ethics

Competencies

1. Identify commonly used electrical symbols, recognize electrical abbreviations, and read electrical circuit diagrams
2. Describe common logic functions like AND, OR, NOT, NOR, and NAND.
3. Develop combinations of these logic functions for motor control
4. Install a transformer. Troubleshoot a transformer
5. Describe principle of working of solenoids, DC generators, DC motors .
6. Describe working of AC generators, transformers and AC motors.
7. Connect and operate an electric motor

8. Troubleshoot an electric motor
9. Connect and operate a motor starter
10. Connect seal-in circuit
11. Troubleshoot a manual motor control
12. Troubleshoot three-phase motor control circuit
13. Test and reset overload protection
14. Connect and operate pilot devices
15. Troubleshoot pilot devices
16. Connect and operate a control relay.

Guidelines for Success

Assessment Plan

Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution's technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Rationale

Class sessions and assignments will include daily homework, in-class review of homework, quizzes. Grades will be based on: General participation (15%); daily homework (20%), quizzes and tests (25%), final exam (30%), practical exam (10%). Final exam will be closed book.

Grading Scale

90% or higher	A
80% to 89%	B
70% to 79%	C
60% to 69%	D
Less than 60%	F

Attendance

Policy on attendance: Participation will affect the daily grade for attendance. Students are responsible for course content, for turning in any required homework, and for taking the initiative to make up any missed tests, labs or quizzes.

Disability

The Special Support Services (SSS) Office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Institute of Technology for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin; however, contact the SSS Office as soon as a need may arise. Depending on the accommodation request, four to eight week lead time may be needed for timely and effective provision of services. SSS coordinates and assist in arranging services it deems appropriate of eligible students on a case-by-case basis.

If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Special Support Services Coordinator

Phone: 785-228-6356

E-Mail: ssscoordinator@washburntech.edu

