IND152 Electrical Control Systems I Syllabus

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

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.
11. Troubleshoot a manual motor control.
12. Troubleshoot three-phase motor control circuit.
13. Test and reset overload protection.
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: Attendance and general participation, daily homework, quizzes and tests and final exam.

**Grading Scale**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% or higher</td>
<td>A</td>
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<tr>
<td>80% to 89%</td>
<td>B</td>
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<tr>
<td>70% to 79%</td>
<td>C</td>
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<tr>
<td>60% to 69%</td>
<td>D</td>
</tr>
<tr>
<td>Less than 60%</td>
<td>F</td>
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**Attendance**
Tardies and absences will affect the daily grade for attendance. Students who miss class should inform the instructor beforehand whenever possible, and 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@washburn.edu