

Course Syllabus
IT 331 Industrial Control Systems

Instructor: Mr. Robert (Bob) Deeb, Instructor
Classroom: Anzalone Hall Room 217
Office Hours: Posted on Office Door and by appointment
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Course Credit: 3 hours with lab

Prerequisites: Industrial Technology 236 Advanced Electronics
and Industrial Technology 264 Industrial Fluid Power

Course Description: A study of the operating principles of electric motors and discrete control systems with an introduction to process control. Topics will include methods of controlling, protecting and specifying motors and their controls. Components covered will include: starters, sensors, timers, programmable logic controllers and analog controllers with emphasis on industry applications.

Course Objectives: Upon successful completion of this course students should have, or know:

1. A fundamental understanding of Electric Motors and their protection.
2. A fundamental understanding of Motor Control Components, including combination starters and motor control centers.
3. A fundamental understanding in the application of sensors.
4. A fundamental understanding of Digital Logic.
5. A working knowledge of the configuration, writing of control programs for programmable logic controllers.
6. A fundamental understanding of the operation of PID controllers.

Texts: Electrical Motor Control Systems by D. Patrick and S.Fardo
Programmable Controllers Using the A-B SLC500 Family by D. Geller

Grading Scale:

A=93-100
B=85-92
C=77-84
D=69-76
F= 0-68

Grading Determination: Final grade will consist of:
Homework Assignments 10%
Laboratory Assignments 15%

Writing Assignment	5%
Special Projects	5%
Semester Tests (2-4)	40%
Final Exam	25%

Lab Work: You may not be able to complete all assigned work during the class time. We may plan other times during the semester on an as needed basis. It may be necessary for you to use other labs in the department (Drafting rooms, CAD lab, etc.) to prepare for experiments and presentations. If that is the case the following guidelines must be followed to properly abide with department and university policies:

1. Obtain proper permission to go in the lab from the professor(s) in charge of the lab.
2. Never disturb a class in progress.
1. Missed Lab work due to an excused absence must be made up within 10-week days of the absence. Coordinate available lab time with the instructor.

Course Outline:

1. Electronics Review
2. Power Distribution
3. Motors
 1. D. C. Motors
 2. Single Phase Motors
 3. Three Phase Motors
 4. Special Purpose Motors
 - a. A.C. Servo motors
 - b. Stepper motors
2. Motor Starting and Controllers
 1. Manual starters
 2. Electrical starters
 3. Combination starters
 4. Motor Control Centers
3. Motor Schematics and other Drawings
4. Photo-optic sensors, Limit switches, Thermocouples and Thermistors
5. Microprocessors and Microcomputers
6. Number systems and Binary Arithmetic
7. Digital Logic gates and registers

8. Programmable Logic Controllers – Programming and Troubleshooting
9. Analog Controllers

Attendance Policy

Attendance is an important part of successfully completing any course. It is especially important in this course as the new materials covered build on the preceding materials.

Students who miss an excessive number of class meetings, for whatever reason, during the semester will have their final course grade reduced by one letter grade. The official policy of the Department of Industrial Technology defines excessive absences as all those (excused or unexcused) in excess of 10% of scheduled class meetings (approx 3 classes).

Students who have a valid excuse for missing a class may be allowed to make-up missed work (except tests). Departmental policy defines excused absences as: (1) an absence authorized by the instructor prior to the class meeting, (2) an absence authorized by an appropriate University official with documentation, (3) a medical emergency of the student or death of an immediate family member for which documentation is provided. Unavoidable emergencies may also be considered excusable at the instructors' discretion when properly documented.

Work missed during an unexcused absence may not be made up.

A grade of zero will be immediately assigned for any work due on the date of an absence and will be the official grade for that work unless the requirements of the attendance policy are complied with.

Students with an excused absence are responsible for contacting the instructor as soon as possible after the absence to arrange for making up any missed work. Students with an excused absence who wait more than three (3) school days after returning to classes to contact the instructor will not be allowed to make up missed work. Any work submitted late with an excused absence must have a copy of the documentation stapled to it when turned in.

Students who are late coming to class disrupt class meetings. Therefore, three tardy days will be counted as an unexcused absence. Students who arrive after the roll has been called are responsible for contacting the instructor after that day's class and insuring that the recorded absence is adjusted to a tardy, otherwise the absence is permanent.

Additional Information:

1. Students will NOT automatically be dropped from class. Students who choose to drop or withdraw must do so by the semester deadline. See the university calendar for the last day to withdraw or resign from the University.

2. If you are a qualified student with a disability seeking accommodations under Americans with Disabilities Act, you are required to self-identify with the office of Disability Services, Room 2003, Student Union. No accommodations will be granted without documentation from the Office of Disability Services.
3. The classroom is not a place for children, students are not to bring their family members for day care or baby sitting.
4. Classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of students to benefit from the instruction is not acceptable.
5. Email communications to the instructor and from the instructor shall utilize the Southeastern Louisiana University email system.
6. Students are expected to maintain the highest standards of academic integrity. Behavior that violates these standards is not acceptable, such as cheating, plagiarism or communication with fellow students during examinations. Disciplinary action will take place as outlined in the current Southeastern Louisiana University General Catalogue.

Guidelines for Success

1. Come to class on time every scheduled class meeting with materials needed to facilitate learning, such as the textbook, notebooks, pencil and calculator.
2. Take good notes.
3. The Blackboard system will be used extensively in this course, monitor it often for course announcements, assignments, the syllabus and many external links for use in addition to the course textbooks.
4. Read and understand the assigned material from the text, if the material is not understood ask questions in class so the whole class can hear the answer.
5. Complete homework and submit homework when it is due, not later.
6. The electricity lab can be a dangerous place. The student should understand and follow all safety precautions with regard to safety, being sure not to endanger oneself, fellow classmates, the instructor, those who follow or the equipment. Any student that does not know how to operate a piece of equipment should not attempt to use the equipment or allow others to do so. Horseplay will not be tolerated. Compensation for damages to University property may be assessed.
7. Turn cell phones to "silent" during class and lab.
8. The use of tobacco, eating or drinking is not allowed in the classroom or lab.

9. Return lab equipment to its storage location when finished.