Course Description:

A study of control systems and programming languages related to robots, programmable logic controllers, and automated systems used for control. Mechanical, electrical, and fluid control systems used for automated control will be emphasized.

Text(s)


Objectives:

Upon completion of the course the student will be able to:

1. Identify and describe programmable logic controller circuits and usages.

2. Construct, program, and use programmable logic controller systems.

3. Identify and describe robotic systems and their usage in industry.

4. Construct, program and use robotic systems.

5. Design, construct, and demonstrate a robotic or automated system.

Responsibilities:

- Access the class web site in WebCT AT LEAST ONCE PER WEEK to keep up to date on specific class activities.
- Review your grades in WebCT on a regular basis. Inform the instructor ASAP if you believe there is a grade discrepancy. Do not expect a grade to be changed at the end of the semester if you have not notified the instructor of a grade discrepancy prior to the 15th week of the semester.
- Be prepared for class by reading assigned materials, preparing appropriate questions, completing assigned projects, etc.
- Attend all classes and be on time.
- Use a professional attitude in your approach to the class, fellow classmates, and instructor; class written and oral work, tests and other activities. This will become part of your preparation for professional employment in technology fields.
- Cheating and plagiarism are not appropriate at anytime and can result in dismissal from the class.
• Do not disturb the class with pagers, cell phones, tape recorders, CD players, etc.
• If you miss a class, you are personally responsible to obtain the work assigned, discussion information, lectures, handouts, etc. on your own.
• Be prepared for class by reading assigned materials, preparing appropriate questions, completing assigned projects, etc.
• Use a professional attitude in your approach to the class, fellow classmates, and your instructor; class written and oral work, tests, and all other activities. This will become part of your preparation for professional employment in technology fields.
• Cheating and plagiarism are not appropriate at anytime. ANY instance of cheating or plagiarism will be referred to the EIU Office of Student Standards (http://www.eiu.edu/~judicial/acadishonest.php). Instances of cheating and plagiarism can result in dismissal from the class and the University.
• If you miss a class, you are personally responsible to obtain the work assigned, discussion information, lectures, handouts, etc. on your own.
• LABORATORY AND ONLINE QUIZZES - Laboratories and online quizzes are due by the assigned due dates. ANY work submitted after the due date will NOT BE ACCEPTED. To receive full credit for lab assignments, do the following:
  o Your name MUST BE legibly entered on the assignment.
  o Written responses must be readable by me or your grade will be lowered; assignments must contain instructor/GA initials/signatures where required. (Assignments submitted without initials will not be considered complete, credit will not be awarded.)
  o The LABS must contain the submission/completion date and instructors initials (as required). Students with Disabilities:
• If you have a documented disability and wish to discuss academic accommodations, please contact the coordinator of the Office of Disability (581-6583) as soon as possible.

Open Labs:

• The Automation and Control lab is available as an open lab time, usually Tuesday's and Thursday's, for the purpose of providing additional laboratory time for you who find it difficult to accomplish lab assignments during the regular class time, and for those of you who want to go beyond the course requirements in developing expertise in the area of automation and control.
• THE OPEN LAB IS NOT TO BE CONSIDERED AS A SUBSTITUTE FOR CLASS ATTENDANCE.
• A Graduate Assistant will be available and possibility a student worker as well. However, although these people are available for help with minor problems, their responsibilities are not to provide instruction or tutorial assistance because of missed classes. Each of you using the open lab should understand the purpose and procedure of the laboratory assignment before attempting to accomplish it during an open lab. Check with the GA or days and times for the open lab.

Additional Costs:

• Consumable items, breakage of components and parts as well as duplication of assignments, software, etc. cost is $35.00 (lab fee).
**Course Requirements:**

- **TESTS** - Two written tests of which one will be a final.
- **LABS** – Involving robotics and technologies related and used with robots.
- **ONLINE QUIZZES** – Involving integrating course concepts you have learned to create an automated process. Documentation of the project as well as a formal presentation maybe required.

**Evaluation**

Final grade is calculated using the following point distribution:

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<tbody>
<tr>
<td>Tests</td>
<td>2 @ 100 Pts</td>
</tr>
<tr>
<td>Labs</td>
<td>10 Pts Each</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10 Pts Each</td>
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</tbody>
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The letter grade will be assigned as follows:

- > 90% = A
- > 80 to 90% = B
- > 70 to 80% = C
- > 60 to 70% = D
- < 60% = F

**COURSE SCHEDULE** - see course schedule page for specific details for each week.

- Week 1-2 Course Introduction, Robots, and Safety. Ch 1-5, Labs.
- Week 3-4 Robot components and arm tooling, Ch 9, 11. Labs.
- Week 5-6 Maintenance, Justification, Operating, and Programming. Ch 8, 12, 14, 15. Labs.
- Week 7-8 Sensors, Vision, and Tactile Systems. Ch 6, 17, 18. Labs. **Midterm Test**.
- Week 13-14 Final Project. Labs.
- Week 15-16 Final Project. **Final Test**