EIND 371

Introduction to Computer Integrated Manufacturing

Fall 2018

Instructor: Durward Sobek, Ph.D.
318 Roberts Hall, 994-7140, dsobek@montana.edu

Class: MW 3:10 – 4:00, 307 Roberts Hall

Laboratory:
Section 2: R 8:00 – 9:50 115 Barnard Hall
Section 3: R 10:00 – 11:50 115 Barnard Hall
~~Section 4: R 5:10 – 7:00 115 Barnard Hall~~ (closed)
Section 5: R 3:10 – 5:00 115 Barnard Hall

Course Web: Brightspace by D2L: https://ecat1.montana.edu/
http://www.coe.montana.edu/ie/faculty/sobek/ime371

Office Hours: Open door policy or by appointment:
https://www.montana.edu/scheduler/login/student/?fac=6315

Lab Instructors: Jubaer Ahmed, jubaerahmed@montana.edu
Asher Townsend, asher.townsend2012@gmail.com

Required Text:

M. Groover, *Automation, Production Systems, and Computer-Integrated Manufacturing*, 4th Edition, Upper Saddle River, NJ: Prentice Hall, 2015; selected chapters.

Reference Text:

J. W. Webb and R. A. Reis, *Programmable Logic Controllers*, 4th edition, Prentice-Hall, Upper Saddle River, NJ, 1999.

Catalog Description:

3 credits (lec 2, lab 1) -- Introduces core concepts of computer controlled manufacturing systems and their applications. Topics include fundamentals of automation, programmable logic controllers, numerical control, industrial robotics, material handling and storage, and flexible manufacturing systems. Laboratories require students to apply course concepts in solving simulated industrial problems, and implement hardware-software solutions to meet stated objectives.

Pre-requisite: ETME 215: Manufacturing Processes

Objectives:

- Introduce students to fundamental concepts related to modern computer integrated manufacturing technology;
- Give students hands-on experience implementing several core technologies to achieve a specific objective; and
- Sharpen critical thinking and problem-solving skills through implementation and validation of proposed solutions to open-ended problems.

Rules:

1. Be respectful and considerate of others — Be on time. Be all here. Listen.
2. Be an active learner — Participate. Ask questions. Engage the material.
3. Be honest — Do your own work. Give credit where it is due. Tell the truth.
4. Hand in assignments on time.
5. Have fun!

Laboratory:

- The laboratory is a critical component to this course. It reinforces and extends the understanding gained in lecture, homework, and reading through hands-on application. It will also challenge you to deeper, more concrete thinking and problem-solving.
- Do all assigned preparatory work *prior to* coming to lab. Use lab time for validation and trouble-shooting.
- Laboratory attendance and participation is required to receive credit for that week's lab assignment. Do not switch lab sections without prior approval.
- You will frequently work with a lab partner. But, *do not copy other people's work (including your lab partner's work).* This violates Rule #3 above. Plan on changing lab partners periodically throughout the semester.
- Lab assignments will be graded on grammar, organization, and clarity in addition to content. We will return graded work as soon as possible.

Examinations:

- Two midterm exams will be held in the evening in order to remove some of the time pressure. Exact dates, times and locations are to be determined.
- The final exam will be held 8:00 – 9:50 a.m. on Friday, December 14 in 307 Roberts Hall. It will be comprehensive unless class performance on the midterm examinations indicates further assessment is not needed.
- Examinations cover the respective units' learning objectives and are generally closed book and notes.

Reading and Review Questions:

- I expect students to do the textbook reading associated with each class as noted in the course outline. I highly recommend taking notes because we will not be able to cover everything in class, and you will be tested on these concepts in the examinations.
- To assist you with reading comprehension, review questions will be assigned for each chapter. Answers all review questions using your own words. Copying from the text, friends, or internet sources is not permissible.
- Submit the review questions to Brightspace by the assigned deadline to receive credit. Late submissions and email submissions will not be accepted.
- Evaluation of review questions will consist of two parts: effort and mastery. Effort points will be awarded based on completion. Mastery points will be awarded based on the thoroughness and accuracy of your response to one question or problem selected at random. Feedback will be given via Brightspace to help you prepare for examinations.

Grading:

- Grades will be determined by each student's percentage score, according to the following weights:

  30% laboratory
  40% midterm exams
  20% final exam
  10% review questions

- Each student will receive a letter grade based on his/her cumulative percentage score according to the scale below.
- If the average class grade is substantially below B-, grades will be adjusted upwards such that the class average is roughly 75% and letter grade assignments made accordingly. Otherwise, no adjustments will be made.

GRADE	QUALITY	POINTS		
A's	**Excellent**	**A-:** 85	**A:** 86-93	**A+:** 94+
B's	**Good**	**B-:** 75	**B:** 76-83	**B+:** 84
C's	**Average**	**C-:** 65	**C:** 66-73	**C+:** 75
D's, F	**Below Expectations**	**F:** <56	**D:** 56-63	**D+:** 64

Course Listserv:

An email listserv has been automatically created for this class. Since I will periodically post messages to the listserv (such as clarifications on assignments), all students should check their MSU gmail accounts daily.

If you'd like to add another email address to the listserv (perhaps one that you check more regularly), add yourself by following these instructions:

1. Send a message to sympa@sympa.montana.edu from the address you want to subscribe to the list.

2. Enter `subscribe EIND371001-fa18 firstname lastname` into the **subject field** of the message (replacing firstname and lastname with your name).

3. Leave the message body blank.

4. You will receive a reply message confirming your subscription to the list.

Policies:

- I expect each student to make full effort to attend every class and lab. If you miss class or lab, you are still responsible to get assignments submitted on time and for knowing the material covered in class that day. If you know you will be absent, try to see me beforehand.
- Pre-labs and lab assignments are due at the start of class or lab on the assigned due date. I do not accept late work. Exceptions may be granted for extenuating circumstances at my discretion.
- There will be no make-up exams unless you notify me before exam day. Exceptions may be granted for extenuating circumstances.
- The final exam will be held at the time set by the registrar's office. The final is mandatory, and you must take it during the scheduled time. By University policy, the only exception allowed is if 3 or more exams are scheduled for the same day. In this case, you may petition to take one of the exams early.
- If you have a documented disability for which you are or may be requesting special accommodation, please contact Disabled Student Services as soon as possible, and discuss your specific situation with the instructor.
- All records related to this course are confidential and will not be shared with anyone, including parents, without a signed, written release. Before giving such authorization, you should understand the purpose of the release, to whom, and for how long the information is authorized for release.
- Chronic tardiness is unprofessional and unacceptable, and may result in you being asked to leave class. The same holds for disruptive or disrespectful behavior.
- Collaboration on homework and laboratory assignments is permitted in recognition that study groups can be beneficial to student learning. However, each submission should represent your own work, your unique approach to the question or problem. Copying or other duplication of another's work is disallowed.
- Lying, cheating, plagiarism, or any other form of dishonesty will not be tolerated. Students who engage in such behavior will be subject to University sanctions, even for a first offense. Students should be familiar with MSU Student Conduct

Guidelines, particularly sections 300, 400, and 600 (see: http://www.montana.edu/policy/student_conduct/).

- Similarly, students should review the Student Conduct Guidelines for expectations regarding treatment of instructors and teaching assistants, and act accordingly.