JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 425 Microcontrollers applications
_____ Semester

Catalog Data- 2013: **3 Credit hours (3 h lectures)**
Introduction to Microcontroller based systems; architecture, basic assembly language programming, stacks, interrupts, communication. A/D conversion and timer subsystems with applications.

Text Book(s): Arduino Cookbook, 2nd edition, by Michael Margolis

References: Students are urged to refer to the library and to use any book(s).

Instructor: _____

Class Schedule: _____

Office Hours: _____

Attendance: The attendance to this course is mandatory. Any student who miss 20% and above of the classes will be barred from the class.

Pre/Co-Requisites: CS114 , ME 320

Outcomes: After successfully completing this course, the students should be able to:

1. Use the microcontroller in a mechatronics system for control.
2. Program the microcontroller based on the requirements defined by the problem.
3. Build a complete mechatronics system controlled using a microcontroller.

Topics Covered:

1. Introduction to microcontrollers.
2. How to program a microcontroller.
3. Using mathematical operators.
4. Serial communication in microcontrollers.
5. Digital and analog Inputs/outputs.
6. Getting input from sensors.
7. Visual, physical, and audio outputs.
8. Remotely controlling external devices.
9. Using displays.
10. Using time and dates.
11. Communicating using I2C and SPI and wireless communication.
12. Using, modifying and creating libraries.
13. Advanced Coding and Memory Handling.
14. Using the Controller Chip Hardware.

Evaluation:

1st Exam :	**15-20 % (Monday 31/10/2016 in class)**
2nd Exam :	**15-20 % (Monday 5/12/2016 in class)**
HW's + Projects :	**20-30 %**
Final Exam :	**40 %**

ABET a – k	√	Level (L, M, H)	Mechanical Eng. Program Outcomes
a			a. Apply knowledge of mathematics, science, and engineering in practice.
b			b. Design and conduct experiments as well as analyze and interpret data.
c	√	M	c. Design a system, components, or process to meet desired needs.
d			d. Function on multidisciplinary teams.
e	√	M	e. Identify, formulate, and solve engineering problems.
f			f. Understanding of professional and ethical responsibility of an engineer.
g			g. Communicate effectively.
h			h. Broad education to understand the impact of engineering solutions in global and societal context.
i			i. Recognition of the need for, and possess the ability to engage in, lifelong learning.
j	√	L	j. Possess knowledge of contemporary issues.
k	√	H	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

L: Low, M:Medium, H: High

ABET Category:

Engineering Science	3	Credits
Engineering Design	0	Credits

Prepared By: _____ **Date:** _____

Rules and notes:

1) Never come late to the classroom, you will disturb your mates and your instructor if you do so and will be considered absent.
2) Turn OFF your cell phones during the class.
3) **DO Not TALK** during the class please, unless you have a question for me.
4) **No** quizzes make-ups.
5) Make up exams are not held without an official signed and approved excuse from the **Department Chairman**. Please understand that this is a university law and I have no control over it.
6) Office hours are the hours I dedicate for you to ask me. If you think they do not suit you, then we can still arrange for a time of our convenience by sending an e-mail to me (you should expect an approval from my side).
7) The exams specified on the course syllabus are not subject to negotiations or change once approved by you **TODAY**. It is your responsibility to inform the other instructors about your assigned exams.
8) Files will be posted on **e-learning** and you are only allowed to contact me through the **e-learning email**. Contacting me through **Facebook** is prohibited.
9) You are not allowed to post my **emails** content on **Facebook** without my **prior permission**.