DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

Course Syllabus

1. **Course number and name**
   IE579 IoT Applications For Industrial Engineering

2. **Credits and contact hours**
   (3+0) 3 credit hours, 3 contact hours

3. **Course type**
   Blended Learning Course (2+1)

4. **Instructor's or course coordinator's name**
   Dr. Mohammad Nasir
   Eng, Dana Salameh
   Dr. Hanan Saleet

5. **Textbook information**
   Adeel Javed, Building Arduino Projects for the Internet of Things. (2016)

   a. **Other supplemental materials**

   Michael Miller, The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World. (2015)
   Internet of Things with Arduino Cookbook. (2016) ISBN 978-1-78528-658-2

6. **Specific course information**
   a. **Catalog description**

   IoT course teaches students the basic knowledge of the IoT structure, communication networks, internet protocols such as HTTP, web server basics, Programming language and applications with Arduino IOT kits. IoT applications in the industry and the network security. Cloud applications and some Case studies.

   b. **Prerequisites or co-requisites**

   IE413 Introduction To Data Analytics And Machine Learning

   c. **The course is:**
   Required in Industrial Engineering program.

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7. Specific goals for the course

a. Course outcomes:

After completion of the course, students are expected to be able to:

1. Understand the IoT structure and main components.
2. Knowing the basic knowledge of the web server and cloud applications
3. Understand the Industrial internet of things
4. Applying a project on the Arduino IoT kit.

b. The following student outcomes are addressed by the course: None

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
CO-(1): Understand the IoT structure and main components.	-	synchronous active learning	Discussion boards
CO-(2): Knowing the basic knowledge of the web server and cloud applications	-	Lectures (Example and Problems)	Assignment
CO-(3): Understand the Industrial internet of things	-	Lectures (Example and Problems)	Exam
CO-(4): Applying a project on the Arduino IoT kit.	-	asynchronous active learning	Project

9. Weekly Teaching Plan

Week No.	Lecture	Topic	Method of Delivery
1	Sun (9-10)	Chapter 1: Introduction to IOT	Lecture
	Tue (9-10)	Chapter 1: Introduction to IOT	Lecture

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	Thu (9-10)	Arduino basics Task1	synchronous active learning
2	Sun (9-10)	Chapter 1: Introduction to Arduino Programming	Lecture
	Tue (9-10)	Chapter 1: Introduction to Arduino programming	Lecture
	Thu (9-10)	Arduino basics Task2	synchronous active learning
3	Sun (9-10)	Chapter 1: Introduction to sensors	Lecture
	Tue (9-10)	Chapter 1: Introduction to actuators	Lecture
	Thu (9-10)	Arduino basics Task3	Online Lecture/ synchronous
4	Sun (9-10)	Chapter 2: IoT structure	Lecture
	Tue (9-10)	Chapter 2: IoT structure	Lecture
	Thu (9-10)	Arduino basics Task4	Online Lecture
5	Sun (9-10)	Chapter 3: Introduction of Networks and communication	Lecture
	Tue (9-10)	Chapter 3: Introduction of Networks and communication	Lecture
	Thu (9-10)	Arduino basics Task 5	Online Lecture
6	Sun (9-10)	Chapter 3: IoT protocols	Lecture
	Tue (9-10)	Chapter 3: IoT protocols	Lecture
	Thu (9-10)	Arduino basics Task 6	Online Lecture
7	Sun (9-10)	Chapter 4: HTTP basics	Lecture
	Tue (9-10)	Chapter 4: HTTP basics	Lecture
	Thu (9-10)	HTTP examples	Online Lecture
8	Sun (9-10)	Chapter 5: JAVA Script	Lecture
	Tue	Chapter 5: JAVA Script	Lecture

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	(9-10)		
	Thu (9-10)	Arduino webserver	Online Lecture
9	Sun (9-10)	Chapter 5: JAVA Script sending data to IOT	Lecture
	Tue (9-10)	Chapter 5: JAVA Script sending data to IOT	Lecture
	Thu (9-10)	Arduino webserver task1	Online Lecture
10	Sun (9-10)	Chapter 5: webserver	Lecture
	Tue (9-10)	Chapter 5: webserver	Lecture
	Thu (9-10)	Arduino webserver task2	Online Lecture
11	Sun (9-10)	Chapter 5: webserver	Lecture
	Tue (9-10)	Chapter 5: webserver	Lecture
	Thu (9-10)	Arduino webserver task3	synchronous active learning
12	Sun (9-10)	Chapter 5: webserver	Lecture
	Tue (9-10)	Chapter 5: webserver	Lecture
	Thu (9-10)	Arduino webserver task3	Asynchronous active learning
13	Sun (9-10)	Chapter 5: Database	Lecture
	Tue (9-10)	Chapter 5: Database	Lecture
	Thu (9-10)	Arduino webserver task3	Asynchronous active learning
14	Sun (9-10)	IOT Security	Lecture
	Tue (9-10)	IOT Security	Lecture
	Thu (9-10)	Case study	Asynchronous active learning
15	Sun (9-10)	Project presentations	Lecture

	Tue (9-10)	Project presentations	Lecture
	Thu (9-10)	Online project presentations	Asynchronous active learning

10. Grade Distribution:

Assessment	Grade	Week No.
- Midterm Exam	20%	7th Week
-Assignments (Reports /Quizzes/ Seminar / Tutorials/ Home works ….)	30%	1-16th Week
- Final Examination	50%	16th Week

Note: Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.