Philadelphia University

Faculty of Engineering and Technology
Summer Semester 2018/2019

Course Details:

Title:	Embedded Systems (0630414)
Prerequisite:	Microprocessors (630313)
Credit Hours:	3 credit hours (8 weeks per semester, approximately 44 contact hours)
Textbook:	"Designing Embedded Systems with PIC Microcontrollers: Principles and Applications", Second Edition, By: Tim Wilmshurst
References:	"Embedded Systems: Architecture, Programming & Design", by: R. Kamal, 1st edition, McGraw Hill, USA 2007.
	"PIC Microcontroller and Embedded systems using assembly and C" by M. Mazidi, R. Mckinlay, D. Causey, Pearson Education 2008
Course Description:	The course is an introduction to microcontroller-based embedded systems design, development and implementation. It includes embedded system types, microcontroller architecture, programming, I/O interfacing, interrupt management and other related topics.
Website:	http://www.philadelphia.edu.jo/academics/kaubaidy/page.php?id=7
Instructor:	Prof. Kasim M. Al-Aubidy **Email**: kma@philadelphia.edu.jo **Office**: Engineering building, Room 6736, Ext: 2330 **Office hours**: Sun, Tues, Thurs: 14:00-15:00 and Mon, Wed: 10:00 -11:00

Course Outlines:

Week	Topic

1,2,3	Introduction to embedded systems:
	  - Microcontroller: Architecture and operation,
	  - Microcontroller instruction set

4,5	PIC Programming and simulation
6,7	Microcontroller interfacing with external devices (LEDs, 7-segment display, LCDs, keybad,...)
8,9	Interrupts and Timers
9	Project Presentations
10	Project Presentations, and final exam

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, the student should:

1.	Identify an embedded system, and the components of the system	[h, j]
2.	Be able to design and implement an embedded system	[a, b, c, e]
3.	Understand the basic components of an embedded system	[a, b]
4.	Understand the operation of PIC microcontroller	[a]
5.	Interface various input/output devices to the PIC microcontroller	[a, b, c]
6.	Have the ability to troubleshoot and fix a problem in an embedded system	[e]

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Sub-Exams: The students will be subjected to two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.

Assignment: (2) Assignments will be conducted during the semester.

Projects: The project is an implementation of a simple embedded system. It is divided into three graded phases, Design, Simulation, and Implementation. Each student should work individually on the project and it should be submitted before or on a set agreed date.

Cheating by copying reports from others is strictly forbidden and punishable by awarding the work with zero mark.

Collective Participation: Brain storming and collective discussions will be carried out during any lecture. Individual studentwill be assessed accordingly.

Final Exam: The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading Policy:

Mid Exam	30%
Projects	10%
Quizzes and Homework	10%
Final Exam	50%
Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.