



Philadelphia University

Faculty of Engineering and Technology
Summer Semester 2018/2019

Course Details:

Title:	REAL-TIME SYSTEMS (630512)
Prerequisite:	Computer Design Lab. (630430)
Credit Hours:	3 credit hours (16 weeks per semester, approximately 45 contact hours) 1. Real-Time Computer Control, By: Stuart Bennett, Prentice-Hall, 2nd edition, 1994.
Textbook:	2. Software Engineering for Real-Time Systems, By: J. Cooling, Addison Wesley, UK 2003. www.pearsopneduc.com 1.J.W.S. LIN, Real-Time Systems, Prentice Hall, 2000.
References:	2. 2.R.J.A. BUHR & D.L. BAILEY, An Introduction to Real-Time Systems, Prentice Hall, 1999.
Description:	To cover the principles and design methods of real-time computer systems. It covers the interfacing techniques and microprocessor system realization. The principles of real-time operating systems and real-time software system will be covered in this course.
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	INTRODUCTION TO REAL-TIME SYSTEMS: Elements of a computer control system, Classification of RTS, Time constraints, Classification of programs.
3, 4	CONCEPTS OF COMPUTER CONTROL: Sequence control, DDC, Supervisory control, Centralized control, Hierarchical systems, Human-computer interface.
5	HARDWARE REQUIREMENTS FOR REAL-TIME SYSTEMS: Process related interfaces, Data transfer techniques, Standard interfaces.
6	REAL-TIME COMPUTER CONTROL: Implementation of control algorithms, Controller Tuning, Choice of sampling interval, Control algorithm realization.
7, 8	LANGUAGES FOR REAL-TIME APPLICATIONS: Security, Readability, Flexibility, Simplicity, Portability, Efficiency, Run-time support, Interrupt.
9	REAL-TIME SOFTWARE & PROGRAM DESIGN: Design fundamentals, Program control structure, and Data flow design.
10	OPERATING SYSTEMS FOR REAL-TIME APPLICATIONS: Basic features of RTOSs, Scheduling: concepts & implementation, Distributed systems, Analysis & review of scheduling policies

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand the operation of real-time computer systems.	[a, b, c, e, h]
2.	Design and implement microprocessor-based real-time systems	[a, b, c, e]
3.	Modify the performance of real-time systems.	[a, b, c, 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.

Quizzes: (4) quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.

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%
Quizzes	20%
Final Exam	50%
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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.

June, 2019