



Philadelphia University
Computer Engineering Department

Course Title: REAL-TIME SYSTEMS (630581) - Section 1

Instructor: Dr. Mohammed Mahdi

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Semester: 2011-2012/1

Class Time: 10:10-11:10 (6716)

Prerequisite: Embedded Systems Design (630470)

Office Hours: 11:10-12:00

Office Number: 709

Text Book: 1. Real-Time Computer Control, By: Stuart Bennett, Prentice-Hall, 2nd edition, 1994.

2. Software Engineering for Real-Time Systems, By: J. Cooling, Addison Wesley, UK 2003. www.pearsopneduc.com

Course Goals:

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.

Objectives:

At Completing this module the student should be able to :

- Understand the operation of real-time computer systems.
- Design and implement microprocessor-based real-time systems
- Modify the performance of real-time systems.

Course Contents

| | Week |
|---|---|
| ❖ INTRODUCTION TO REAL-TIME SYSTEMS | 2 nd October |
| ❖ CONCEPTS OF COMPUTER CONTROL | 9 th October |
| ❖ HARDWARE REQUIREMENTS FOR REAL-TIME SYSTEMS | 23 rd October |
| ❖ REAL-TIME COMPUTER CONTROL | 6 th November |
| ❖ Quiz 1 | |
| ❖ First Exam Period | 6 th – 14 th Nov |
| ❖ LANGUAGES FOR REAL-TIME APPLICATIONS | 20 th November |
| ❖ REAL-TIME SOFTWARE & PROGRAM DESIGN | 27 th November |
| ❖ OPERATING SYSTEMS FOR REAL-TIME APPLICATIONS | 18 th December |
| ❖ Quiz 2 | |
| ❖ Second Exam Period | 22 nd -30 th Dec. |
| ❖ Deadline for DROPPING courses | 5 th Jan. |
| ❖ Quiz 3 | |
| ❖ Distributed systems, Analysis & review of scheduling policies | 8 th January |
| ❖ Final Exams period | 15 th -24 th Jan |

Mode of Assessment

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|----------------|-----|
| 1- First Exam | 20% |
| 2- Second Exam | 20% |
| 3- Quizzes | 15% |
| 4- Performance | 5% |
| 5- Final Exam | 40% |

References

- 1- J.W.S. LIN, Real-Time Systems, Prentice Hall, 2000.
- 2- N. NISSANKE, Real-Time Systems, Prentice Hall, 1997.
- 3- R.J.A. BUHR & D.L. BAILEY, An Introduction to Real-Time Systems, Prentice Hall, 1999.
- 4- S. BENNETT & G.S. VIRK, Computer Control of Real-Time Processes, IEE 1990.
- 5- S. HEATH, Embedded Systems Design, Newness 1999.
- 6- W. VALVANO, Embedded Microcomputer Systems: Real-Time Interfacing, Brooks-Cole Publisher, 2000