
CENG 455 – Real Time Computer Systems Design Project

Term – Spring 2018 (201801)

Instructor

Dr. Ahmad Abdullah

Phone:

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Office Hours

Days: TWF

Time: 9:20 – 10:00 am.

Location: TBA

Course Objectives

- To provide understanding of the principles and practice of designing and implementing real-time computer systems and applications.

Learning Outcomes

- Illustrate the characteristics of real-time computer systems.
- Use experimental and production real-time operating systems.
- Design and Implement application and environment to ensure processing deadlines are met.
- Justify the hardware support in real-time systems.
- Assess hazards in real-time mission-critical systems.
- Design and validate the requirements of a real-time system

Syllabus

- Characteristics of real time computer systems
- Hard vs. Soft Real-Time Systems
- Real-Time System design Process
- Operating system support for real-time systems
- Introduction and use of a commercial real-time operating system: MQX
- Interrupts handling; dynamic memory allocation
- Scheduling considerations, deadline scheduling, time-driven scheduling
- Deadlocks: detection, avoidance, recovery
- System modeling and verification

Lectures:

Section: A01 / CRN 20241

Days: TWF

Time: 8:30 – 9:20 am.

Location: ECS 108

LABs:

B01 Tue 3:30-6:20 pm. TA (email)

B02 Thr 3:30-6:20 pm. TA (email)

Required Text

Title: Notes available on course website

Author:

Publisher:

Year:

Optional Text

Title: Real-Time Systems

Author: Jane Liu

Publisher: Prentice Hall

Year: 2000

Assessment:

Labs	35%
Mid-term	20%
Final Exam	45%

Date: February 9, 2018

Note:

Failure to complete all laboratory requirements will result in a failing grade for the course.

Failure to get at least a 30% of the total course grade from exams (a combined score of the midterm and final) will result in a failing grade for the course.

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

<https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/grading.html>

There will be no supplemental examination for this course.

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Assistant to set up an appointment.

Accommodation of Religious Observance:

<https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/religious-observanc.html>

Policy on Inclusivity and Diversity:

<https://web.uvic.ca/calendar2018-01/general/policies.html>

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.

<https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.

<https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/academic-integrity.html>

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.