CENG 455 – REAL TIME COMPUTER SYSTEMS DESIGN PROJECT

Term – Spring 2016 (201601)

Instructor
Mr. Tony Antoniou
Phone: TBA
E-mail: tantonio@ece.uvic.ca

Office Hours
Days: Mondays
Time: 2:30 – 3:20
Location: TBA

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

Learning Outcomes
1. Illustrate the characteristics of real-time computer systems.
2. Use experimental and production real-time operating systems.
3. Design and implement application and environment to ensure processing deadlines are met.
4. Justify the hardware support in real-time systems.
5. Assess hazards in real-time mission-critical systems.
6. Design and validate the requirements of a real-time system.

Syllabus
The characterization of a Real-Time Computer System. The significance and management of Time, Fault-Tolerance and Environmental Integration. The major part of the course will concentrate on the management of time as a computational resource. Several techniques including rate-monotonic scheduling, deadline scheduling, time-driven scheduling, etc. will be discussed. Several experimental and production Real-Time kernels will be examined. A dedicated focus on the Freescale MQX RTOS will be applied in the Laboratory, as all projects will be built using this Real-Time Operating System.

LECTURE-Section(s): A01 / CRN 20368 B01/ CRN 20369 (tantonio@ece.uvic.ca)
Days: Mondays, Thursdays
Time: 13:00-14:20
Location: Cunningham Building 146

Required Text
Title: Notes available on class website
Author: Nikitas Dimopoulos
Publisher: Prentice Hall
Year: 2000

Optional Text
Title: Real-Time Systems
Author: Jane W. S. Liu
Publisher: Prentice Hall
Year: 2000

References: See Class Website: http://www.ece.uvic.ca/~ceng455. Password will be provided in class.
LAB-Section(s): B01 / CRN 20370
Days: Mondays, Wednesdays
Time: 15:30 - 18:20
Location: Engineering Lab Wing B328

B02/ CRN 20371
Monday TA: tantonio@ece.uvic.ca
Wednesday TA: TBA

Required Text
Title: Notes available on class website
Author: Nikitas Dimopoulos
Publisher: Prentice Hall
Year: 2000

Optional Text
Title: Real-Time Systems
Author: Jane W. S. Liu
Publisher: Prentice Hall
Year: 2000

References: See Class Website: http://www.ece.uvic.ca/~ceng455. Password will be provided in class.

Assessment:
Projects/Reports/Presentation: 25%
Assignments: 5%
Mid-term 20%
Final Exam 50%

Note: Failure to complete all laboratory requirements will result in a grade of N being awarded for the course. Failure to pass the final exam 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.

There will be no supplemental examination for this course.

<table>
<thead>
<tr>
<th>Passing Grades</th>
<th>Grade Point Value</th>
<th>Percentage for Instructor Use Only</th>
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<td>9</td>
<td>90 – 100</td>
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<tr>
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<td>8</td>
<td>85 – 89</td>
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<td>5</td>
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<tr>
<td>B</td>
<td>4</td>
<td>70 – 72</td>
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<tr>
<td>C+</td>
<td>3</td>
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<table>
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<th>Failing Grades</th>
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<th>Description</th>
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<tr>
<td>E</td>
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<td>35 -49</td>
<td>Fail, conditional supplemental exam. (For undergraduate courses only)</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>0 – 49</td>
<td>Fail, no supplemental.</td>
</tr>
<tr>
<td>N</td>
<td>0</td>
<td>0 – 49</td>
<td>Did not write examination, Lab or otherwise complete course requirements by the end of term or session; no supplemental exam.</td>
</tr>
</tbody>
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Updated December 15, 2015
**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 Secretary to set up an appointment.

**Accommodation of Religious Observance**  
http://web.uvic.ca/calendar/GI/GUPo.html

**Policy on Inclusivity and Diversity**  
http://web.uvic.ca/calendar/GI/GUPo.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.

http://web.uvic.ca/calendar/FACS/UnIn/UARE/PoAcI.html

**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.