

EECS 3215 – EMBEDDED SYSTEMS



Electrical Engineering and Computer Science

H. Chesser (PSE 246)

Winter 2014

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Course Overview

- Embedded System – various definitions/ways of thinking
 - Use of computers outside of traditional “desktop” applications
 - Use of a computer to monitor (and control) a system or allow remote human monitor and control (telemetry and telecommand – TT&C)
 - Cyber-physical systems (see textbook for discussion)

INTERNET OF THINGS (IoT)

- Embedded Systems collecting huge amounts of sensors (temp sensors... cameras) monitoring streets, houses, appliances, wearable devices



UNIQUE EMBEDDED SYSTEMS CHARACTERISTICS

- Sensor/Actuator hardware interfaces
- Size, mass
- Power Consumption
- “Real Time” Response
- Reliability, Fail Safe
- Development Environment
- Operating System vs. “Bare Metal”

COURSE SYLLABUS

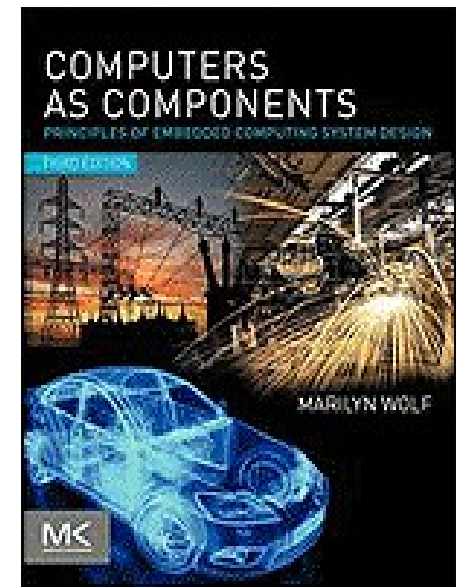
- Bi-weekly lectures, 90 minutes (T, R) – have arranged CB115 on T, CB129 on R
- Labs (LAS 1002) – session each week (starting next week) – 2 sections – Monday and Friday
- Assessments
 - 24% - Labs A-D @6% each
 - 20% - Midterm
 - 12% - 2 Quizzes @6% each
 - 44% - Final Exam
- Course web site:
https://wiki.eecs.yorku.ca/course_archive/2014-15/W/3215/

COURSE SCHEDULE

Week #	Week of	T	R	Lab	Lecture, Readings
1	Jan 05	√	√		Embedded Systems – Chp 1 - Requirements
2	Jan 12	√	√	A	
3	Jan 19	√	√	A	ISA – Review MIPS, Introduce Nios II – Chp 2
4	Jan 26	√	Q1	B	
5	Feb 02	√	√	B	Chp 3 – Inputs and Outputs
6	Feb 09	√	MT	Make-up	
7	Feb 16	-	-		Chp 4 – Computing Platforms
8	Feb 23	√	√	C	
9	Mar 02	√	-	C	Chp 5 – Program Design and Analysis
10	Mar 09	√	Q2	D	
11	Mar 16	√	√	D	Chp 6 – Processes and Operating Systems
12	Mar 23	√	√	Make-up	
13	Mar 30	√	√		Chp 7 – System Design Techniques
14	Apr 06	√(M)			

TEXTBOOK

- Textbook - ***Computers as Components: Principles of Embedded Computing System Design***, Third Edition, Marilyn Wolf, Morgan Kaufmann Publishers, ISBN:9780123884367 – available in bookstore (and as an e-book from library)



LABS (LAS 1002A)

- Will continue on with the DE2 boards (available for sign-out, software – see 'Readings' pg)
- Work individually - 15 stations in the lab (17 in Mon section)
- Lab quizzes at the end of each lab (eg – Lab A quizzes week of Jan 19th)

