

Department of Electrical and Computer Engineering

College of Engineering and Applied Sciences

WESTERN MICHIGAN UNIVERSITY



ECE 4510/5530

Microcontroller Applications

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Course/Lecture Overview

- Syllabus and Web Site
- Personal Intro.
- Textbooks Used
- Additional Reading
- ID and Acknowledgment of Policies
- Plan/Schedule for the Course

- CAN Test Bench
- Intro

Syllabus

- Everything useful for this class can be found on Dr. Bazuin's web site!
 - <http://homepages.wmich.edu/~bazuinb/>
- The class web site is at
 - Lecture/Class
http://homepages.wmich.edu/~bazuinb/ECE4510/ECE4510_Su1_11.htm
 - Lab
http://homepages.wmich.edu/~bazuinb/ECE4510/ECE4510Lab_Su1_11.htm
 - The ABET syllabus
http://homepages.wmich.edu/~bazuinb/ECE4510/Syl_4510_ABET.pdf
 - The Full Course syllabus
http://homepages.wmich.edu/~bazuinb/ECE4510/Syl_4510.pdf
http://homepages.wmich.edu/~bazuinb/ECE4510/Syl_5530.pdf
 - Supplemental Information from Dr. Grantner
<http://homepages.wmich.edu/~grantner/ece4510/>
- The password protected solution set and hand-out site
 - https://homepages.wmich.edu/~bazuinb/PasswordMaterial/ECE4510/ECE4510_Solutions.htm
 - Use your Go WMU “Bronco NetID” login and password

Who am I?

- Dr. Bradley J. Bazuin
 - Born and raised in Grand Rapids Michigan (Forest Hills Northern)
 - Undergraduate BS in Engineering and Applied Sciences, Intensive Electrical Engineering, Yale University in 1980
 - Graduate MS and PhD in Electrical Engineering Stanford University in 1982 and 1989.
 - Part-time ARGOSystems, Inc. (purchased by The Boeing Co.) 1981-1989
 - Full-time ARGOSystems, Inc. 1989-1991
 - Full-time Radix Technologies 1991-2000
 - Term-appointed Faculty, WMU ECE Dept. 2000-2001
 - Tenure track Assistant Professor, WMU ECE Dept. 2001-2007
 - Tenured Associate Professor, WMU ECE Dept. 2007-

Required Textbook and Materials

- *The HCS12/9S12: An Introduction to Software & Hardware Interfacing, 2nd ed.*, Han-Way Huang, Thompson, 2010, ISBN # 1-4354-2742-4.
 - The 1st edition textbook should be acceptable if you have or can get one.
Dr. Bazuin will attempt to point out differences.
- Adapt9S12DP512 Evaluation Board by Technological Arts
 - Approximately \$150
- ECE 4510 Parts Kit and Solderless Breadboard
 - Approximately \$83
- ICC12 IDE software by ImageCraft
 - Approximately \$50
- A USB Memory stick

Provided Required Materials

- CPU12 Reference manual, Motorola/Freescale
- MC9S12DP256B Device User, Motorola/Freescale
- Materials disseminated using the ECE 4510/ECE5530 Class Web Page (the official media for the class). They include the Instructor's Lecture Notes
- Everything you used in ECE 2510 will be reused, but done much faster!

Recommended Materials

- *The C Programming Language*, 2nd ed., B.W. Kernighan and D.M. Ritchie, Prentice Hall, 1988. ISBN: 0-13-110362-8.
- Jean L. Labrosse, *MicroC/OS – II The Real Time Kernel*, 2nd ed., CMP Books, ISBN 1-57820-103-9

Supplemental Books

1. Introduction to Embedded Systems: Interfacing to the Freescale 9S12, J.W. Valvano, Cengage Learning, 2010. ISBN: 978-0-495-41137-6.
2. Software and Hardware Engineering, Fredrick M. Cady, and James M. Sibigtroth, OXFORD, 2000, ISBN: 0-19-512469-3.
3. 68HC12 Microcontroller Theory and Applications, Daniel J. Pack, Steven F. Barrett, Prentice Hall, 2002, ISBN 0-13-033776-5.
4. Introduction to Microcontrollers, G. Jack Lipovski, Academic Press, 1999, ISBN: 0-12-451831-1.

Identification and Acknowledgement

- Identification for Grade Posting, Course and University Policies, and Acknowledgement
- Please read, provide a unique identification, sign, date, and return to Dr. Bazuin.

Lab Plan

Date	MW 10:30-1:20pm	Activity/Other
Intro		No labs 5/4 or 5/5
Lab #1	W 5/11	SW Dev. Env.
Lab #2	M 5/16	uCOS-II and Flash Prog
Lab #3	W 5/18	Parallel I/O and SW Delay
Lab #4	M 5/23	Polling & Int. and non-TTL
Lab #5	W 5/25	Timer and Compare
Memorial Day	M 5/30	
Lab #6	W 6/1	Capture, PWM & uCOS-II
Midterm Exam	F 6/3	
5530 Proje	F 6/3	
Lab #7	M 6/6	UART and SPI
Lab #8	W 6/8	ADC/DAC
Lab #9	M 6/13	ADC Temp & 7-Segment
Lab #10	W 6/15	Sonar Distance
Lab #11	M 6/20	CAN
Lab Project	W 6/22	
Lab Final	M 6/27	
Final Exam	W 6/29	

Any Questions ?

On to the Material