

ETec274 Course Syllabus

Course: ETec274 – Fundamentals of Microprocessors

Quarter: Spring 2008

Credits: 5

Instructor: Todd Morton

Office: ET313

Phone: 360-650-2918

Email: Todd.Morton@wwu.edu

Office Hours:	Monday	Tuesday	Wednesday	Thursday	Friday
	1-2pm	9-11pm	1-2pm	9-11am	1-2pm

Course Description: Introduction to microprocessors and programming concepts. Study of structured programming, instruction sets, hardware and interfacing techniques. Laboratory experiments with popular units.

Prerequisites: ETEC 273, EET major or written permission. A working knowledge of digital electronics, familiarity with computer numbering systems.

Texts: Embedded Microcontrollers, Todd Morton (Optional)
CPU12 Reference Manual, Freescale
9S12DG128 Data Sheets and User Guides, Freescale, On S12U Board CD
Reference Guide For D-Bug12 Version 4.x.x, On S12U Board CD

References: 'Embedded Microcomputer Systems', Valvano.
'Microcontroller Technology', Peter Spasov.
'Software and Hardware Engineering', Frederick Cady.
'The HCS12/9S12: An Introduction to Software & Hardware Interfacing', Han-Way Huang

Software: Freescale CodeWarrior Development System (64K Special Edition)
D-Bug12 Debugger

Internet Resources:

Email Listserv: etec374@etec.wwu.edu

EET Web Site: <http://eet.etec.wwu.edu>

Student Work and Evaluation:

Two 2-hour Exams ~30%
One Final ~20%
Homework, Quizzes ~10%
Laboratory/Code Reviews ~40%

Homework Policy:

No late homework is accepted. Solutions are handed out on the due date.

Lab Policy:

Points possible: 10pts for 1-week labs, 15pts for 2-week labs.

Late penalty: -5% per day late.

Maximum late penalty: -50%

Plagiarism: All lab programs must be written individually. The University plagiarism rules are strictly enforced in this course. Plagiarized material can result in loss of all laboratory points or an F for the course. (Refer to 'Appendix D - Academic Dishonesty Policy and Procedure' in Western's 2006-2007 Bulletin)

ETec274 Course Syllabus

Schedule *(Subject to Change)*

Apr 2:	Microcomputer Concepts, CPU, Bus System Handout Syllabus and Homework 1 Text: Chapter 1
Apr 4:	Memory Maps and Devices, IO Devices
Apr 7:	A Survey of Microcontrollers, The 9S12 MCU.
Apr 9:	Programming Model – CPU Operation and Register Set. Software Development and Construction. Text: 2, 3, 4
Apr 11:	Lab System Demonstration – Dbug12
Apr 14:	Assembly Language programming, Syntax, Directives, Addressing Modes
Apr 16:	Addressing Modes, Data Transfer Instructions Text: 5
Apr 18:	Lab1 – Software Development Introduction Homework1 due, Handout Homework2
Apr 21:	Bitwise, Arithmetic Instructions
Apr 23:	Program Flow Instructions, Subroutines, Position Independence
Apr 25:	Homework2 Due, Handout Homework3, Midterm Review. Midterm 1
Apr 28:	Structured Programming, Flow Diagrams Text: 6
Apr 30:	Structured Constructs, Data Objects
May 2:	Lab2 – Basic GPIO and Arithmetic Homework3 Due, Handout Homework4
May 5:	Program Structure, Parameter Passing.
May 7:	Software Delays, Type Conversions, Basic I/O. Text: 7
May 9:	Lab3 – Memory Test Homework 4 due, Handout Homework 5
May 12:	Basic I/O
May 14:	Basic I/O
May 16:	Lab4 – Memory Test w/ User Interface Homework 5 due, Handout Homework 6
May 19:	Fixed-Point Arithmetic Programming
May 21:	Fixed-Point Arithmetic Programming
May 23:	Homework6 Due, Handout Homework7, Midterm Review. Midterm
May 26:	Real-time Programming Introduction Text: 8
May 28:	CPU12 Interrupts, RTI, Multitasking Text: 8, 9.2.2
May 30:	Lab 4 – Calculator Homework7 Due, Handout Homework8
Jun 2:	Final Product Design, Startup code, Vectors. Text: 10
Jun 4:	Final Product Development, BDM-based Debugging.
Jun 6:	Lab5 – ADC Calculator Homework8 Due Final Review
Thurs, June 12:	Final, 10:30-12:30
