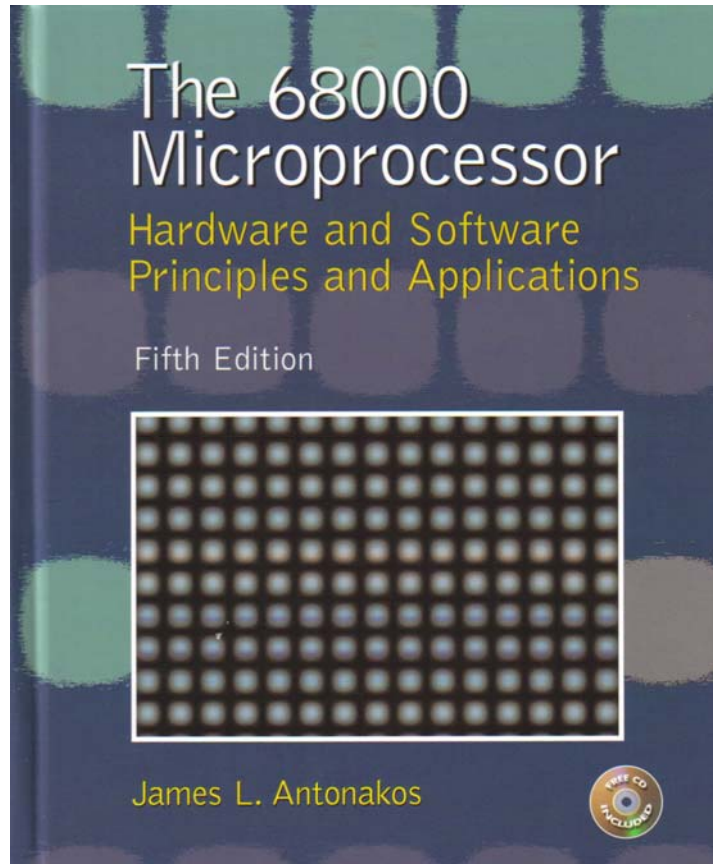


EECE416 :Microcomputer Fundamentals and Design (“Microcomputer & Microprocessor”)

Instructor: Dr. Charles Kim

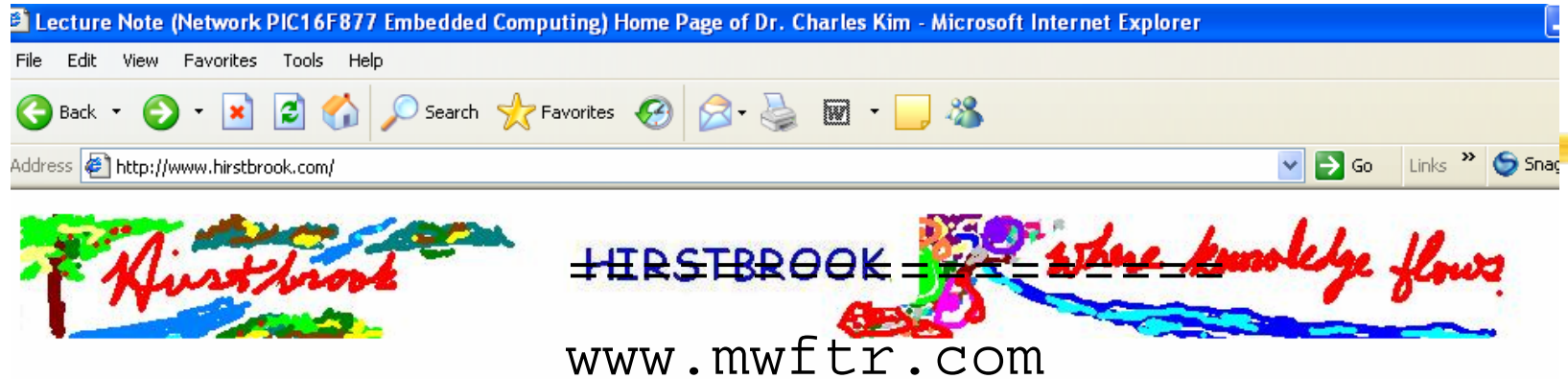


EMBEDDED COMPUTING WITH PIC16F877
- Assembly Language Approach



Source: www.mwftr.com

Class Web-Site



Welcome to Hirstbrook! - where knowledge flows.

Google Search

Web www.hirstbrook.com

- [CLASS NOTES](#) and [THE OTHER SIDE-A \(Q&A\)](#) and [THE OTHER SIDE-B](#) of the CLASSNOTES - Circuit Theory, Microcomputer, PIC16F877, Embedded Computing, and Electrical Engineering Lab.
- [Embedded Computing with PIC 16F877-Assembly Language Approach:A complete guided project book for PIC students](#) - Topics covered, with full assembly source codes, are: **Bootloader**, Hex code download, LED light on/off, Piezo-electric buzzer application, LCD and series LCD connection, AT Keyboard

⌘ **Contents: Syllabus, Presentation Files, Software, Etc**

⌘ **Note that class notes in the web-page may not be the same as the one I use in the class. In other words, web-page is not always timely updated.**

Learning Outcomes

- ⌘ **(c) An ability to design a system component, or process to meet desired needs**
 - ⊞ Programming of assigned works
- ⌘ **(e) An ability to identify, formulate, and solve engineering problems**
 - ⊞ Programming of class projects
- ⌘ **(g) An ability to communicate effectively**
 - ⊞ Writing Class Project Reports
 - ⊞ Presentation of Class Projects
- ⌘ **(h) A knowledge of contemporary issues**
 - ⊞ Assignment on emerging technologies and their socio-cultural impact
 - ⊞ Go-green
 - ⊞ Sustainability
 - ⊞ E-waste
 - ⊞ Robots
- ⌘ **(i) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice**
 - ⊞ Familiarity in assembly language coding environment



Course Objectives

- ⌘ Familiarity in Computer Architecture
- ⌘ Architecture of Motorola 68000 Microprocessor
- ⌘ Assembly Language Programming in 68000
- ⌘ Architecture of PIC 16F877 microcontroller
- ⌘ Assembly Language Programming in PIC 16F877
- ⌘ Application of 16F877 for project

Course Structure

⌘ Computer Architecture-Brief

- ☒ Computer History
- ☒ Computer Architecture-brief

⌘ 68000 Processor (40%)

- ☒ Architectural Study
- ☒ Instruction Sets
- ☒ ASM68K & EMU68K (DOS-based assembler and emulator)
- ☒ EASY68K (Windows-based assembler/simulator)
- ☒ Programming Practices

⌘ 16F877 microcontroller (60%)

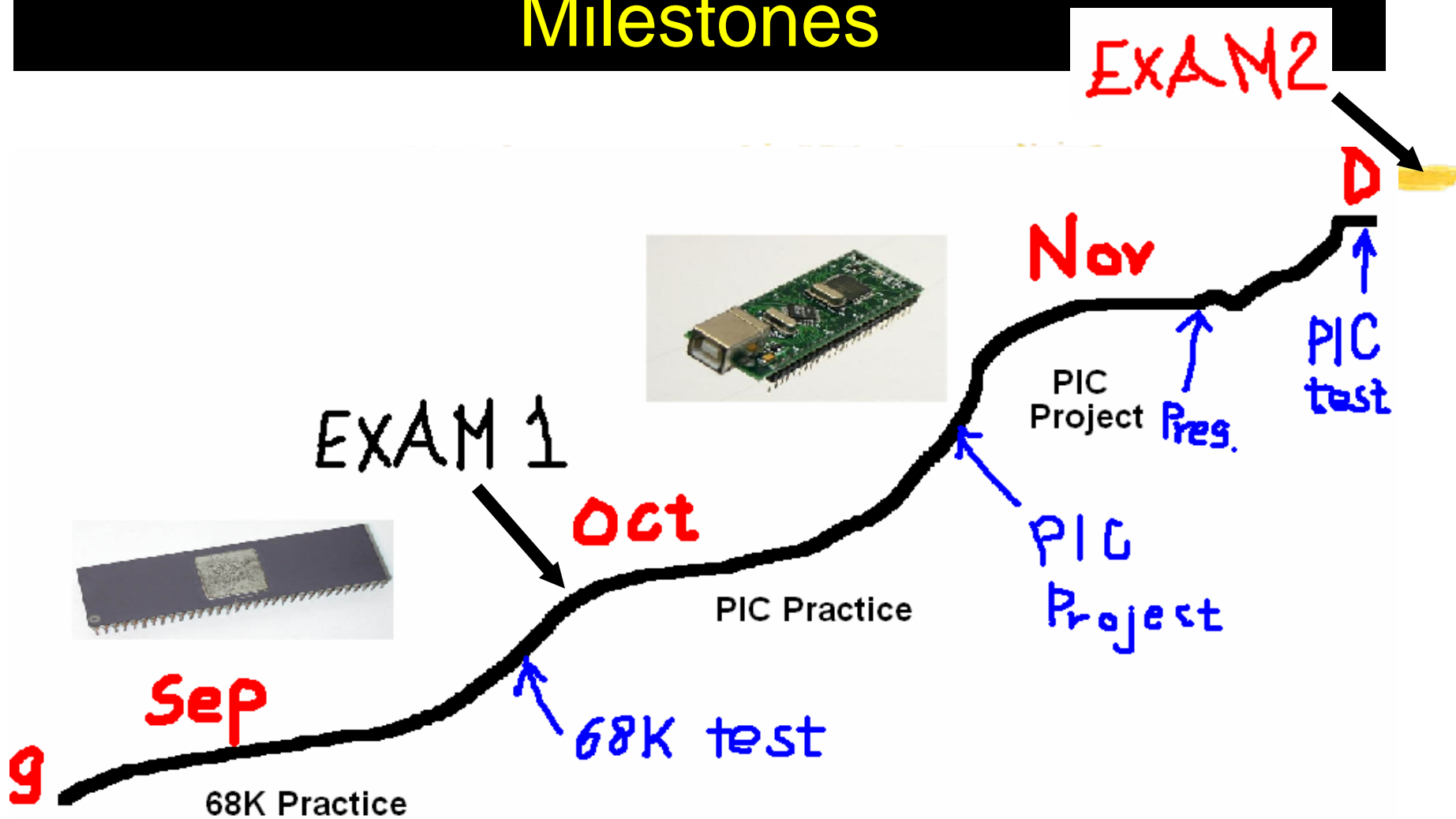
- ☒ Architectural study
- ☒ Instruction Sets and MPLAB(Windows-based assembler & simulator)
- ☒ Programming Practices
- ☒ Projects



Course Expectations

- ⌘ Lecture/Programming Lab Combination
- ⌘ Active Participation in Class Coding Practices
- ⌘ Timely Submission of Program Practices
- ⌘ Could be an Early Start of Senior Design Project Implementation
 - ☑ PIC Board Purchase encouraged, but not a must
- ⌘ Individual Work –PC/Laptop/Tablet use in Classroom encouraged.
- ⌘ Greater Efforts in Project

Milestones



Grading

⌘ Motorola 68000 Programming (40%)

- ☒ Practice Coding

- ☒ Homework

- ☒ Exam

⌘ PIC 16F877 Programming (50%)

- ☒ Practice Coding

- ☒ Homework

- ☒ Exam

- ☒ Class Project

⌘ uP Related Assignment (5%)

- ☒ Contemporary Issues – emerging technology and its impact

⌘ Others (5%)

- ☒ Attendance – on-time arrival only

Advice for success in the class

- ⌘ Be on time – Important things are covered at the very first moment and at the very first few classes.
- ⌘ Finish work in the class – Do not postpone or extend the work to the evening/night hours.
- ⌘ Bring your own Laptop – It would be more convenient and productive than using a PC in the class.
- ⌘ Do your first coding work yourself and master it – all other coding practices will be built on the first work.
- ⌘ **Classroom**
 - 📍 LKD3121
- ⌘ **Office Hour**
 - 📍 TR 3:00 – 4:30pm , F 1:30 – 3:00pm (appt only)