EEL 4744C: Microprocessor Applications

Lecture 0

Course Information

Dr. Tao Li
Instructor

• Instructor: Dr. Tao Li (URL:http://www.taoli.ece.ufl.edu)
  E-mail: taoli@ece.ufl.edu
  Phone: 352-392-9510, Office: 223 Larsen Hall

• Course website:
  http://www.taoli.ece.ufl.edu/teaching/4744/eel4744c-home.htm
  (Or follow the link from the instructor’s home page)

• TAs, instructor and TA office hours: see course website
Textbooks (Required)

• Microcontrollers and Microcomputers (M&M)
  Fredrick M. Cady
  (ISBN#: 0-19-511008-0)

• Software and Hardware Engineering (SHE)
  Fredrick M. Cady & James M. Sibigtroth
  (ISBN#: 0-19-512469-3)
Textbooks (Required)


• **Freescale Manuals**
  – Programming Reference Manual (CPU12RM)
  – M68HC12B Family Technical Data Guide (M68HC12B)
  – 68HC12 Reference Guide (CPU12RG)
Course Objectives

• Theory: functional/technological characteristics of µP structures, memory components, peripheral support devices, and interface logic (Textbooks reading, homework, quiz, exam)

• Practice: apply µP subsystems and components to common interfacing problems (Labs and textbook examples, assembly programming)

• Platform: Motorola 68HC12 µcontroller and in-house development board will be used

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Relation /w other μP Courses

6935: Billion Transistor Computer Architecture
- Multi-core, low-power, reliability, security

6763: Parallel Computer Architecture
- Parallel programming, SMP, MPP, cluster

5764: Computer Architecture
- Microarchitecture, instruction-level parallelism, memory wall, thread-level parallelism

4713C: Digital Computer Architecture
- Pipeline, Memory hierarchy, I/O subsystem

4417C: μP Applications
- Assembly language, Instruction set, I/O interface

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HW/SW Preparation

• Hardware:
  – **UF 6812 development board kit** (will be handed out in lab)
  – **Wire-wrap tool** *(required)* and soldering iron *(highly recommended for work at home)*
    • Radio Shack has wire-wrap/stripper tools

• Software:
  – **Quartus** *(free from Altera)*
    • Will be used to program the 7032 CPLD on your 6812 development board

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## Course Grade

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<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Exam #1</td>
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<td>Exam #2</td>
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<td>Exam #3</td>
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<td>Homework</td>
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<tr>
<td>Quiz</td>
<td>10%</td>
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<td>(in class)</td>
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<td>Total</td>
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- A grade of 60% or better in lab alone is required
- See course syllabus for re-grading policy

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## Grading policy

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<td>B</td>
<td>[80, 84]</td>
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<td>C+</td>
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<td>C</td>
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Lab Rules

• Attending Labs at the assigned time slots

• Be prepared: Pre-lab work is mandatory; each lab section is (or less than) 3 hrs long

• Be here on time: you may miss lab quiz if you are late

• Be responsible: before leaving, return all equipment and clear work area, no food/drinks

• The Lab projects must be your individual work (cheating and will be dealt with in a severe manner)

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Covered Topics

• Introduction and basic processor architecture
• Programming model and addressing modes
• Assembly language programming
• 68HC12 instruction set
• S/W Design and 68HC12 programming

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Covered Topics (2)

- Computer buses and parallel I/O
- Interrupts and real-time events
- Memory concepts and interfacing
- Timers
- Serial I/O
- Analog I/O

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Any Question on ....

• Course material
• Study tips
• Lab
• Grade
• ... ...