ELEG 3924 Microprocessor System Design

Preface

Dr. Jing Yang
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GENERAL INFORMATION

• Instructor: Dr. Jing Yang
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  – Phone: (479) 575-2635
  – Office: Bell 3177

• Office Hours
  – Mon. 12:30 PM – 2:30 PM
  – By appointment

• Lecture Schedule
  – Bell 1108G
  – MWF 8:30 AM – 9:20 AM

• Lab Schedule
  – Bell 3139
  – Session I: Wed. 1:30 – 4:20 (33 students)
  – Session II: Fri. 1:30 – 4:20 PM (10 students)
  – TA: Guoqing Zhou (gzhou@uark.edu, ENGR 109, WF12:30–1:30 PM)
TEXTBOOK AND REFERENCES

• **Required Text Book**

• **Required Software**
  – Keil uVision3 trial version
  – Available at: https://www.keil.com/demo/eval/c51.htm
  – Please download the software and install it on your own computer

• **References (optional)**
COURSE INFORMATION

• Pre-requisite:
  – Digital Design I
  – Programming I

• This course involves heavy programming exercises
  – Assembly language programming, C programming
  – Programming exercises will be assigned in both homework and labs
  – A large amount example programs will be given in class – It’s ESSENTIAL for you to repeat all examples by yourself after class.
  – Practicing is the only way to learn a new language!

• Teaching format
  – Slides, board, exercises
  – Demos
  – Labs (software, hardware)
  – Homework assignments (problems, software)
COURSE INFORMATION

- **Test format**
  - True and false (25 points)
    - Basic concepts
    - 25 questions
  - Short questions (40 points)
    - Basic concepts, analyze the operations of programs, structures of microprocessors
    - 6 – 10 questions
  - Programming (35 points)
    - Write Assembly or C program to achieve certain functions
    - 3 – 5 questions

- Most of the questions will be from examples given in lecture and homework assignments with small modifications.
LABS

• Experiment platform
  – MDE8051 trainer
  – Keil uVision 3 trial version
  – 4x4 matrix keypad
  – LCD display
  – LED
  – Temperature sensor, ADC, DAC

• Some experiment topics
  – Square Waveform Generator
  – LCD Message Board
  – Temperature Sensing
  – Traffic Light Controller
  – Robot Auto-navigation
  – ……. 
LABS

• **Lab Schedule**
  – Starting from Week 2, we have labs every week
  – Each experiment is designed for 2 lab sessions (6 hours)
  – You are required to be present at all the lab sessions unless you finished the experiment in a previous lab session.

• **Breadboard**
  – It’s RECOMMENDED that you buy your own breadboard
    • You will need the same hardware connections for 2 weeks
    • The hardware connection process is usually very time consuming.
    • With your own breadboard, you don’t need to disassemble the circuit, and can reuse the hardware connection at session 2 of the experiment.
LABS

• Lab Teams
  – 2 students work as one team
  – Lab partners are randomly assigned, and you will have a new lab partner for each new experiment.
  – I will announce the lab partner assignment 1 week before the experiment. The lab partner assignment will be posted on the course website.

• Pre-lab
  – Before you come to the lab, you need to finish the Assembly code or C code for the experiment, and assemble/compile the program with Keil uVision to make sure there is no error.
  – The TA will check your program at the beginning of the lab.
  – Each student is required to finish the pre-lab independently.
  – Pre-lab is worth 10% of your lab grade.
Lab Reports

- Each student is required to submit a lab report.
- Must be typed with word processor. No handwritten report will be accepted.
- Format
  - Cover page: Lab #, Lab Title, Name, Lab Partner, Work Bench #, Date.
  - I. Objective: what we want to achieve
  - II. Equipment: what equipments are used in the experiment.
  - III. Procedures and results: briefly describe procedures; list measurement results (use figures and tables when appropriate).
  - IV. Questions and Discussions: Answer the questions in lab manual; what you have learned/observed in the experiment.
  - V. Appendix (Source code)
- Don’t need to be long. (2 – 4 pages).
- Two students can work together, but each student must write the lab report independently.
GRADING POLICY

• Grades Percentage
  – Assignments  20%
  – Labs  20%
  – Test 1  30%
  – Test 2  30%

• Grades
  – A:  90 ≤ grade ≤ 100
  – B:  80 ≤ grade < 90
  – C:  70 ≤ grade < 80
  – D:  60 ≤ grade < 70
  – F:  0 ≤ grade < 60
GRADING POLICY

• Due dates for homework and lab report will be strictly enforced. Late submission within one week after due will receive a 20% deduction; no credit if submitted one week past due.

• Each student has 1 personal day: you can miss 1 class without losing point
  – Each additional missing class will result in a 1 point deduction of your final grade.

• If for a valid reason (a medical emergency, a death in the family, etc.), you cannot take an exam on the scheduled day, you must notify the instructor a.s.a.p.
ONLINE RESOURCES

• **Course Home Page**
  - [http://comp.uark.edu/~jingyang/Teaching](http://comp.uark.edu/~jingyang/Teaching)
  - All the course related materials, such as slides, homework assignments, lab handouts, links, announcements, etc., will be posted on this website.
  - Please check the webpage regularly *(at least once per week)* for update.
ADDIONAL ISSUES

• **Academic Honesty**
  – Each University of Arkansas student is required to be familiar with and abide by the University’s ‘Academic Integrity Policy’ which may be found at http://provost.uark.edu/
  – Any kind of activities related to academic dishonesty (copying homework, lab report, code, plagiarism, etc.) will be dealt with.
  – If you are not sure about plagiarism, please contact the instructor.

• **Questions are welcome in my class**
  – You are welcome to raise any questions related to the course material.
  – Please feel free to stop me at any time if you have any questions.
  – You can also ask me questions via email or during office hours.

• **To respect your fellow students as well as the instructor, please turn off or silence your cell phone.**
  – No text messaging or web surfing!

• **BE ON TIME! (late for class twice = = 1 missing class)**

• Have Fun!