Department of Computer Science
INFS 515 Computer Organization
Fall 2018

Instructor: **Dr. Lei He**
E-mail: **lhe3@gmu.edu**
Classroom: **Art and Design Building L008**
Day & Time: **Tue 7:20pm – 10:00pm**
Office Hour: **By appointment**

Course Description

Computer hardware architecture concepts including arithmetic and logical operations, number systems, machine representation of numbers, instruction set formats, addressing techniques, memory organization, internal processor structure and operation. Symbolic assembly language and fundamental operating systems concepts: process synchronization and scheduling, interrupt and memory management, virtual memory, file I/O and disk management. Credit cannot be applied to a graduate degree in the Volgenau School or the BS degree in computer science.

Textbooks

- **Required**
  The Architecture of Computer Hardware and System Software: An Information Technology Approach, by Irv Englander

  Publisher: Wiley; 5th Edition (January 21, 2014) ISBN-10: 1118322630

Course Format

Lectures will be given by the instructor. Besides material from the textbook, topics not discussed in the book may also be covered. Handouts of material not covered in the book will be made available. Grading will be based on homework assignments and exams.

Course Outcome

As an outcome of taking this class, a student will be able to

- Understand the basic concepts and techniques related to computer systems, including both hardware and software;
- Know the current standards and protocols of computer network and the Internet;
- Read research papers pertaining to modern computing technologies.

Grading

Grades will be based on two examinations (30%), homework (40%), research paper review (20%), and class participation (10%).

- **Examinations (30%)**
  All examinations are closed books, see the class schedule for the exam weeks. Make up exams and incompletes will not be given for this class.

- **Homework (40%)**
  Homework writing assignments will be posted to your Blackboard account after each chapter. Working on your homework is critical to develop a deep understanding of the course topics. The homework assignments will not be graded based only on the correctness. The instructor will also record your efforts to solve problems. Proper documentation and typed homework is required.
  <Late Work> Homework is due at the beginning of class on the due date. **Late work will not be accepted**.

- **Research Topic Review or Practice (20%)**
  You will select a specific course topic to conduct the review (e.g., parallel computing, Internet) or hands-on practice, based on which a report will be developed. More detailed requirements will be given in the assignments.

- **Class Participation (10%)**
  Requirements include class attendance, active participation in discussions and in-class problem solving. If you must miss a class due to an emergency or documented illness, please email the instructor before the class and provide the documents (doctor notes or other proof papers) to the instructor later on. You are still responsible for any material covered, assignments given, and homework due during the missed classes unless pre-approved by the instructor. **Each absence without prior notice and proof documents** will result in a **2%** deduction on the final grade. If you miss more than half the classes (the exam classes are not counted), you will be withdrawn from the class.

Tentative Class Schedule

Time may not permit the coverage of all the chapters of the book. The pacing below is not rigid, and the list is subject to change. The topics will be:

- Week 1: Computer, systems concepts and systems architecture
- Week 2: Numbers and data formats
- Week 3: Data representation
- Week 4: Little man computer
- Week 5: CPU and memory
- Week 6: Input and output
- Week 7: Exam 1.
- Week 8: Computer peripherals
- Week 10: Modern computer systems
- Week 11: Networks and data communications
- Week 12: Ethernet and TCP/IP
- Week 13: Operating systems

- Week 14: File management
- Week 15: Internal operating system
- Week 16: Exam 2

Honor Code Statement

Collaboration on homework is permitted; copying of solutions is not. The work you hand in should be your own. Please check the Mason Honor Code at http://www.gmu.edu/academics/catalog/9798/honorcod.html, and the CS Department policies http://cs.gmu.edu/wiki/pmwiki.php/HonorCode/HomePage.

Disability Accommodations

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474, http://ods.gmu.edu. All academic accommodations must be arranged through the ODS.