



**Department of Computer Science**  
**COMP 503 Computer System Foundations**  
**Spring 2024**

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**Instructor:** Dr. Lei He  
**E-mail:** [lhe3@gmu.edu](mailto:lhe3@gmu.edu)  
**Classroom:** Engineering 1108  
**Day & Time:** Monday 7:20pm – 10:00pm  
**Grader:** Chandish Kumar Reddy Somu ([csomu@gmu.edu](mailto:csomu@gmu.edu))  
**Office Hour & Location:** Thursday 12pm – 2pm

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Meeting ID: 886 6962 2454  
Passcode: 8tKxnh  
<https://us05web.zoom.us/j/88669622454?pwd=vQUP4UuFNqZNIvZoudi8Gkz0I5Zi1j.1>

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### **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, System Software, and Networking: An Information Technology Approach, by Irv Englander and Wilson Wong

Publisher: Wiley; 6th Edition (April 6, 2021) ISBN-10: 1119495202

### **Course Format**

Lectures will be given by the instructor in the classroom. 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 (40%), homework (40%), research paper review (20%), and extra attendance credits (5%).

### ⌘ **Examinations (40%)**

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 midnight of 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.

### ⌘ **Extra Attendance Credits (5%)**

An extra credit (5%) will be added to the final grade if a student attends all the classes, and the only exceptions of absence are for military service or medical emergency with the doctor notes.

## 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.