CMSC 311
Computer Organization
Syllabus

Catalog listing:	CMSC 311-C01Section
Course Level:	Undergraduate
Prerequisites:	A minimum grade of C in CMSC 101 and MATH 211 (pre-/co-requisite: CMSC 302)
Instructor:	Changqing Luo
Office:	Engineering Research Building 2312
Phone:	(804) 828-0460
Fax:	(804) 828-2771
Email:	cluo@vcu.edu (**Prefer email to contact me!**)
Classroom:	Virtual
Class website:	Canvas
Office Hours:	T/ Th 4:50 – 5:50 PM (or by appointment)

1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits. Introduction to the basic organization of computers including elementary digital logic design, processor and arithmetic/logic unit design, data paths, memory hierarchy, I/O devices, instruction set architecture, addressing modes, and data representation.

2.0 – Course Structure:

Lecture hours[1]/week – 3
Lab hours/week – 0

3.0 – Course Goals

Upon successful completion of this course, the student will be able to:

1. Understand computer system organization
2. Understand data types and their representations
3. Understand digital logic circuits and state machine
4. Understand machine language

[1] This course has built-in lab sessions in digital circuit design and programming. Please **bring your computer** to the class.

5. Understand system-level I/O
6. Understand memory management
7. Understand processor architecture

4.0 – ABET Criteria Addressed:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

5.0 – Major Topics Covered:

- A tour of computer system
- Data types and representations
- Digital Logic Structures
- The von Neumann Model
- Instruction Set Architecture: the LC-3
- Machine Language & Programming
- Assembly Language & Programming
- I/O
- Trap Routines/Subroutines
- Stack
- Memory Management

6.0 – Textbook(s):

"Introduction to Computing Systems: From bits & gates to C and beyond," by Yale N. Patt and Sanjay J. Patel, McGraw-Hill, 2nd Edition, 2004, ISBN: 978-0-07-246750-5

7.0 – Class Schedule:

- Lecture: TR 9:30-10:45 AM (Section C01)
- Lecture: TR 3:30-4:45 PM (Section 001)

8.0 – Evaluation:

- **General Instructions:**
  - **Final grade**: A (>=90%), B (>=80% and < 90%), C (>=70% and >80%), D (>=60% and < 70%), F (< 59%)
  - **Homework:** 5 homework assignments via Canvas.

In-class Lab:	There will be 2 lab assignments.
Project:	There will be 4 projects.
Quiz:	There will be random in-class quizzes to test the knowledge that student learned in classes.
Exam:	There will be 2 close book exams.
Late submission:	***No late submission will be accepted.***
Class participation:	You are required to attend class.

Grading:

Category	Weight (%)
Assignments	25%
In-class Labs	10%
Projects	20%
Exam I	20%
Exam II	20%
Other	5%

Technology Support
Engineering & VCU Resources:

- **Personal Computer Requirement**: For our current system requirements and recommendations, see: https://egr.vcu.edu/admissions/accepted/computer-recommendations/
- **Remote Access to Public Lab computers**: To provide remote access, we use the Citrix App2Go environment to provide full and exclusive control over "the next available" computer in the lab. See this link for more details: https://wiki.vcu.edu/x/Oa0tBg
- **VCU provides a lot of software available for students to download to their personal computers.** For a list of software and the specifics for each, see: https://ts.vcu.edu/software-center/. In particular, Microsoft Office is available free to students.
- **VCU is transitioning to Canvas.** See the Canvas Student Guide at this link: https://community.canvaslms.com/t5/Student-Guide/tkb-p/student
- **For IT help in the College of Engineering**, see our Wikipedia for "student" help at: https://wiki.vcu.edu/display/EGRITHELP
- **VCU's Technology Services (TS) provides support for "central IT" services**. If you have a technical issue with any of the following services, please submit a ticket with VCU Technology Services at https://itsupport.vcu.edu/ or call (804) 828-2227. VCU TS maintains and supports these services and will be able to provide assistance to you.
    - VCU Cisco VPN
    - 2Factor or Dual Authentication (DUO)
    - Blackboard/Canvas
    - Gmail or other Google Apps
    - Zoom videoconferencing
    - VCU App2Go (Application server)
    - Resetting VCU password
- **For IT issues related to College of Engineering teaching and research, email egrfixit@vcu.edu**

For loaner Chromebooks for emergency purposes: See this link for more details: https://vcutsmpc.getconnect2.com/

Statements for Syllabi

This content was last updated in January 2016. Please reference http://provost.vcu.edu/faculty-resources/academic-affairs/syllabus-statements/ for the online version.

The topics include:

- Class registration required for attendance
- Honor System: upholding academic integrity
- Important dates
- Mandatory responsibility of faculty members to report incidents of sexual misconduct
- Military short-term training or deployment
- Student conduct in the classroom
- Student email policy
- Student financial responsibility
- Students representing the university – excused absences
- Students with disabilities
- VCU Mobile
- Withdrawal from classes