Dr. Sajjan G. Shiva

Dr. Sajjan Shiva is a Professor of computer science and served as the Director and founding chairman of the Department from 2002 to August 2015. He is the Director of Game Theory and Cyber Security laboratory. He has served on the computer science faculty at the University of Alabama in Huntsville and Alabama A&M University and has been a consultant to industry and Government. His current research spans cyber security, cloud security, secure software development and machine learning applications. He is a Life Fellow of IEEE and has authored four books (9 editions) on computer architecture used in more than 120 universities around the world.

Contact Info

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<thead>
<tr>
<th>Office: Dunn Hall, 335</th>
<th>Email: <a href="mailto:sshiva@memphis.edu">sshiva@memphis.edu</a></th>
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<tr>
<td>Class: Online 2:20 – 4:20 pm M W</td>
<td>Phone: 678-5667</td>
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VIRTUAL OFFICE HOURS

Please allow two business days for responses to email and phone communication and five business days for assessment feedback.

Office Hours:
Dr. Shiva - office hours, Dunn Hall 335 (Virtual)
Monday and Wednesday 1:00 – 2:00 pm
And by appointment. Send email to confirm.

Teaching Assistant:
Saikat Das <sdas1@memphis.edu>

Office hours, Dunn Hall 210 (Virtual)
T 11 am to 2 pm
And by appointment. Send email to confirm.
Course Information

Course Description

Basic concepts in assembly language programming, including logic, comparing and branching, interrupts, macros, procedures, arrays, program design, testing, debugging, loading, and linking; combinational, arithmetic and logical circuits ALU; memory circuits, latches, flip-flops, registers; computer structure; fetch-execute cycles, clocks and timing; microprogramming and microarchitecture; data path, timing, sequencing; cache memory organization; RISC architectures.

Course Objectives

At the end of the course, students will be able to:

1) write simple programs in assembly level language

2) Work with Number systems and Data representation in modern computer systems

3)Design hardware components at logic level of detail.

4) Understand advanced computer architecture concepts and mechanisms.

Prerequisites and Co-requisites

PREREQUISITE: COMP 2150.

Course Topics

<table>
<thead>
<tr>
<th>MODULE</th>
<th>TOPIC</th>
<th>BOOK CHAPTER</th>
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<tbody>
<tr>
<td>1</td>
<td>Overview of Computer System architecture</td>
<td>1</td>
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<tr>
<td></td>
<td>Number systems</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>combinational logic</td>
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<td>3</td>
<td>Sequential Circuits</td>
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<td>Sequential Circuits</td>
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4 TEST 1
A Simple Computer 5
Assembler 5
Assembler, Loaders, Instruction cycle details 5
Macros, Subroutines 5
ASC control unit 6
ASC control unit 6
Input/output 7
Processor and Instruction set Architectures 8

TEST 2
Memory types and parameters 9
Memory types and parameters 9
Arithmetic Logic Unit 10
Control unit enhancement 11
Control Unit Enhancement 11
Advanced Architectures 12
Advanced Architectures 12
Performance Evaluation 16
Review

FINAL EXAM

Textbooks, Supplementary Materials, Hardware and Software Requirements

Required Textbooks

Textbooks are available from the University Store at 901-678-2011, and online opens in new window.


- You must acquire the Textbook and bring it to class – I will follow the book close
- Prior to each class, you must read the sections and pages of the book specified in the module description and be ready with questions.

Supplementary Materials
You will need a Simulator for the Simple Computer used as a learning tool in the class. The Simulator software will be provided by the instructor along with the instructions. This software can be downloaded to your device.

**Hardware and Software Requirements**

The minimum requirements can be found at [https://www.memphis.edu/uofmglobal/services/technology/requirements.php](https://www.memphis.edu/uofmglobal/services/technology/requirements.php).

**Assessment and Grading**

**Testing Procedures**

After the second class each week (and before the next week), you must to take an online quiz. You will get 3 attempts to complete each quiz.

There will be two TESTS. There won't be quizzes during the weeks of Tests and the last week of classes.

There will be a Final Exam.

**Grading Procedure**

Each quiz carries 10 points. The ten highest scores from the weekly quizzes will count towards 20% of the final grade.

Class attendance 5%

2 Tests 25% each

Final Exam 25%

**Grading Scale**

Letter grades will be determined as follows:

A: 90 – 100  B: 80 – 89  C: 70 – 79  D: 60 – 69  F: Below 60

**Assignments and Participation**
**Class Participation**

You must attend all classes and bring up questions to seek clarification of the material covered in the class. I will pause every 12 - 15 minutes during the class to answer questions from you on the CHAT.

**Punctuality**

It is important that you join the class on time and stay through the class. Take the weekly quiz immediately after the second class of the week and complete it well before the first class during the subsequent week.

**Course Ground Rules**

I emphasize:

1] Participation in the class during lectures is a must to understand the material.

2] You must read the sections of the book I identify prior to each class and come prepared with questions.

3] Learn how to navigate in D2L, and keep abreast of course announcements.

4] Use the assigned university e-mail address rather than a personal e-mail address.

5] Address all technical problems immediately and observe course netiquette at all times.

**Guidelines for Communication**

**EMAIL**

- Always include COMP 3410 in the subject line.
- Remember without facial expressions some comments may be taken the wrong way.
- Be careful in wording your emails. Use of emoticons might be helpful in some cases.
- Use standard fonts.
- Do not send large attachments without permission.
- Special formatting such as centering, audio messages, tables, html, etc. should be avoided unless necessary to complete an assignment or other communication.
• Respect the privacy of other class members

Web Resources

Citation Styles Online opens in new window- Purdue Owl

Plagiarism and Integrity

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly, through participation or assistance, are immediately responsible to the instructor of the class in addition to other possible disciplinary sanctions which may be imposed through the regular institutional disciplinary procedures. Expectations for academic integrity and student conduct are described in detail on the website of the Office of Student Accountability opens in new window. Please read in particular, the section about "Academic Misconduct opens in new window".

Turnitin.com

Your written work will be submitted to Turnitin opens in new window, or a similar electronic detection method, for an evaluation of the originality of your ideas and proper use and attribution of sources. As part of this process, you may be required to submit electronic as well as hard copies of your written work, or be given other instructions to follow. By taking this course, you agree that all assignments may undergo this review process and that the assignment may be included as a source document in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents. Any assignment not submitted according to the procedures given by the instructor may be penalized or may not be accepted at all.”

Library, Tutoring, and Other Resources
• The myMemphis Portal system, eCampus Student tab provides access to University library opens in new window.

• The tutoring link in the course navigation bar provides access to free online tutoring through UpSwing.

• The LinkedIn Learning link in the course navigation bar provides free access to thousands of video tutorials.

• Other support services are available through the Educational Support Program.

Students With Disabilities

Qualified students with disabilities will be provided reasonable and necessary academic accommodations if determined eligible by disability services staff at the University of Memphis. Prior to granting disability accommodations in this course, the instructor must receive written verification of a student's eligibility for specific accommodations from the disability services staff. It is the student's responsibility to initiate contact with Disability Resources for Students opens in new window (DRS) and to follow the established procedures for having the accommodation notice sent to the instructor.

Sexual Misconduct and Domestic Violence Policy

This policy specifically addresses sexual misconduct which includes dating violence, domestic violence, sexual assault, and stalking. The policy establishes procedures for responding to Title IX-related allegations of sexual misconduct. Complaints can be reported to the Office for Institutional Equity (OIE). The OIE office is located in the Administration Building, Room 156. You may contact the OIE by phone at 901.678.2713 or by email at oie@memphis.edu opens in new window. Complaints can be submitted online at File a Complaint opens in new window.

Non-Discrimination and Anti-Harassment Policy
University policy prohibiting discrimination and harassment based on protected characteristics and classes. Complaints of discrimination and harassment can be reported to the Office for Institutional Equity (OIE). You may contact OIE by phone at 901.678.2713 or by email at oie@memphis.edu. The full text of the policy can be found at GE2030 - NONDISCRIMINATION AND ANTI-HARASSMENT opens in new window.

Technology Requirements

The following is a list of the minimum requirements to use our learning management system. Some courses will have more advanced requirements.

- Access to a reliable, high-speed Internet connection (DSL or Cable).
- Test your device to ensure it is compatible with our LMS (Learning Management System) using the System Check Wizard.
- Open PDF files using the free downloadable software at Adobe Acrobat Reader DC.
- Access Flash-based content with Adobe Flash Player opens in new window (free).
- Use Microsoft Office Software for Faculty, Staff, and Students for document creation.
- Play media content with Real Player opens in new window (free). Quick Time opens in new window (free), or Windows Media Player opens in new window (free). (available for students via http://umapps.memphis.edu/)

Syllabus Changes

The instructor reserves the right to make changes as necessary to this syllabus. If changes are necessitated during the term of the course, the instructor will immediately notify students of such changes both by individual email communication and posting both notification and nature of change(s) on the course bulletin board.

Technical Support

Call the Helpdesk: (901) 678-8888