

MIDWESTERN STATE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE
CMPS 2084: Introduction to Computer Architecture
Spring semester 2019

Instructor: Dr. Nelson L. Passos
Office: Bolin Science Hall 126B
Office phone: 397-4129
E-mail: nelson.passos@mwsu.edu
Webpage: cs.mwsu.edu/~passos
Office Hours: TR 9:30 – noon, 3:30 – 4:00 pm
WF 9:00 – 11:00 am
Class Hours: TR 2:00 pm - BO 320
W 1:00 pm - BO 109

Course Description:

Study of the functions and logical relationships of digital computer components, including the central processing unit, different levels of memory, control signals, bus systems, data channels, input/output devices, instruction set architecture and Assembly programming language. Also discussed are memory addressing techniques, data representation and more advanced topics as pipelined, superscalar, and RISC processors.

Prerequisites:

Minimum grade of C in CMPS 1044
All CS students must have an e-mail address registered at the CS department.

Text book online:

1. Sign in or create an account at learn.zybooks.com (or get it from bookstore)
2. Enter zyBook code **MWSUCMPS2084PassosSpring2019**
3. Subscribe. A subscription will last until May 24, 2019.

Grading:

Tests and Final Exam:	20 % (each, include lecture and lab material)
Assignments (online textbook):	10 %
Lab Assignments:	15 % (include lecture and lab material)
Project:	10 %
Class Participation:	5 %

Final grading letter:

90 to 100 pts = A, 80 to 89.99 pts = B, 70 to 79.99 pts = C, 60 to 69.99 pts = D, other = F

Additional and important information:

All students should refer to the current MSU Students Handbook and Activities Calendar for university policies related to class attendance, academic dishonesty, students responsibilities, rights and activities.

Disability needs: Inform the instructor if you are a student with a disability and need accommodations for this class.

Cell phones, etc.: Use of any electronic device is not allowed in the classroom. Exceptions must be approved by the instructor.

Student drops: If you wish to drop this course you must first contact your instructor. All students-initiated drops must be processed by **March 25, 2019**.

Attendance: **Students are expected to attend all meetings of the classes in which they are enrolled.** Attendance is rewarded by the participation points in the grading criteria. More than 3 lab absences will imply an F in the class.

Campus Carry: Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at <https://mwsu.edu/campus-carry/rules-policies>.

Assignments: Assignments will be made as scheduled and are expected to be completed by the specified due date. Grades will be given to the assignments handed in on time. Late assignments will not be accepted. Any assignment turned in after the due date or not done will be graded zero points. Students in this course must demonstrate their competency in fundamentals math skills through homework assignments and tests.

Assistance: Please contact your instructor for extra help during this course. This includes class material clarification, expected absences from class due to any personal problem, etc.

Academic Honesty: The Department of Computer Science had adopted the following policy related to cheating (academic misconduct). The policy will be applied to all instances of cheating on assignments and exams as determined by the instructor of the course.

- 1st instance of cheating in a course: The student will be assigned a non-replaceable grade of zero for the assignment, project or exam. In addition, the student will receive a one-letter grade reduction in course.
- 2nd instance of cheating in a course: The student will receive a grade of F in course & immediately be removed from course.

All instances of cheating will be reported to the Department Chair and, in the case of graduate students, to the Department Graduate Coordinator.

Testing Process

The Department of Computer Science has adopted the following policy related to testing:

- All bags, purses, electronics (turned off), books, etc. will be placed in the front of the room during exams, or in an area designated by the instructor.
- Unless otherwise announced by the instructor, nothing is allowed on the desk but pen/pencil/eraser and test papers.
- No student is allowed to leave the room during an exam and return

RECORDING OF CLASS LECTURES: Permission must be requested in writing & obtained from the instructor before recording of class lectures. If permission is granted, the recording may only be used by the student making the recording. Recordings may NOT be posted on any internet source without written permission of the instructor. Failure to adhere to the policy may result in removal from the course with a grade of F or other appropriate punishment.

Grades will be posted on D2L! Grading system will be discussed in class.

Tentative agenda:

Jan 15-	Introduction – binary numbers
Jan 16-	LAB 1 - CPU registers, DOS operating system
Jan 17-	Negative numbers
Jan 22-	Binary addition/subtraction
Jan 23-	LAB 2 - Binary numbers
Jan 24-	Introduction to computer architecture, cache, pipeline
Jan 29-	Computer evolution
Jan 30-	LAB 3 - Binary numbers, ASCII code
Jan 31-	Computer performance Textbook Assignment # 1 due
Feb 5-	ARM 8 Instruction set overview
Feb 6-	LAB 4 - Addressing memory, simple arithmetic
Feb 7-	ARM operands and instructions Textbook Assignment # 2 due
Feb 12-	ARM logical operations and decisions
Feb 13-	LAB 5 - Arithmetic operations, conditional jump, flags
Feb 14-	ARM procedures Textbook Assignment # 3 due
Feb 19-	ARM addressing
Feb 20-	LAB 6 - Conditional jumps, loops
Feb 21-	ARM compilation and example
Feb 26-	Introduction to memory/storage
Feb 27-	LAB 6a - review
Feb 28-	Test # 1
Mar 5-	Test review - Project assignment
Mar 6-	LAB 7 - Procedures
Mar 7-	Disk technology
Mar 12-	Cache memory
Mar 13-	LAB 8 - Procedures and stacks
Mar 14-	Cache memory address mapping Textbook Assignment # 4 due
Mar 19-21	Spring Break
Mar 26-	Error correction introduction
Mar 27-	LAB 9 - Boolean operations
Mar 28-	Error correction hamming code
Apr 2-	RAID
Apr 3-	LAB 10 - Bit manipulation
Apr 4-	Virtual Memory Textbook Assignment # 5 due
Apr 9-	Virtual Memory - paging
Apr 10-	LAB 11 - Arrays and strings
Apr 11-	Virtual Memory - segmentation Textbook Assignment # 6 due
Apr 16-	Replacement algorithms
Apr 17-	LAB 12a - Programming practice
Apr 18-	Easter Break
Apr 23-	ARM and I7 examples
Apr 24-	LAB 12b - Programming practice
Apr 25-	Test # 2
Apr 30-	Introduction to parallel processors
May 1-	LAB 13 Final review
May 2-	Multithreading
May 9-	Finals (Thursday, 1:00 pm)