Document:	Computer Organization I Course Administration			
Revised:	**May 4, 2023**			
Course Title:	Computer Organization I			
Course Number:	CMSC 2833			
Section:	CRN 20796, 11:00 – 11:50 a.m. Monday, Wednesday, and Friday. MCS 115			
Instructor:	Dr. Thomas R. Turner; Office: MCS 134; Work Phone: 974-5383, e-mail: trturner@uco.edu			
Office Hours:	**Time**	**Monday**	**Wednesday**	**Friday**
	9:00 – 9:50 a.m.	MCS 134	MCS 134	MCS 134
	4:00 – 5:00 p.m.	MCS 134	MCS 134	
	Please make an appointment to visit me during my office hours.			
Text:	1. Null, Linda and Lobur, Julia *Computer Organization and Architecture 5th Ed.*, Jones & Bartlett Learning, 2019, ISBN 978-1-284-12303-6			
References:	1. Mano, M. Morris and Ciletti, Michael D. *Digital Design, 4th Ed.*; Prentice-Hall/Pearson Education 2007 ISBN 0-13-198924-3 2. Mano, M. Morris and Kime, Charles, R. *Logic and Computer Design Fundamentals* 4th Ed. Pearson Education, Inc. 2008 ISBN: 0-13-198926-X. 3. Tannenbaum, A., *Structured Computer Organization 4th Ed.* Prentice Hall, 1999, ISBN: 0-13-095990-1 4. Fletcher, W. *An Engineering Approach to Digital Design*, Prentice-Hall, Inc. 1980, ISBN: 0-13-277699-5. 5. Stroustrup, B. *The C++ Programming Language* 3rd Ed.; Addison-Wesley 1997 ISBN 0-201-88954-4			
Prerequisites:	1. CMSC 1613, Programming I			
Course due dates:	All assignments, projects, reports and quizzes are due at the beginning of class on the date given in this document unless otherwise specified. Exams that are administered in class are due at the end of the class period.			
Course Scoring:	**Task**	**Date**	**Value**	
	Test 1	***2-20***	**150**	
	Test 2	***4-5***	**150**	
	Final Test	***5-8***	**300**	
	Assignments	Table 2	150	
	Projects	Table 3	100	
	Reports	Table 4	50	
	Total		**900**	
Grading:	**A**: 90% (810-900); **B**: 80-89% (720-809); **C**: 70-79% (630-719); **D**: 60-69% (540-629); **F**: 59% (0-539) and below.			
Notice:	Beepers and cellular phones are prohibited in class.			

Caveat:	This lecture schedule, projects, reports, quizzes, tests, and due dates are all subject to change. Changes are presented in class ***You*** are responsible for the material presented in class.
Class Web Page:	The course administration and assignments can be found on URL **http://www.comsc.uco.edu/~trt/cs2833.html**
Course Directory	The course directory is on the department computer (**cs2.uco.edu**). You can find project test data files in the course directory. **~tt/cs2833/**
Student Disabilities:	Students with disabilities who require accommodations may contact Disability Support Services. **http://bronze.uco.edu/disability_support/**
Absences:	1. A **45-point bonus** is awarded to any student having no recorded absences. The attendance bonus will be denied to any student who is absent for ***any*** reason. The attendance bonus will not be granted to any student having an excused absence. 2. A student may be absent for up to **three (3)** classes without penalty: these three classes are counted as excused absences. No notification or documentation is required except when a test is given. 3. **Fifteen (15)** points will be deducted from the student's final score for the **fourth and every subsequent** class for which the student is recorded absent. A student will be marked absent if the student is not present when roll is called. A student will be marked absent if the student leaves before class is dismissed. 4. A student who is absent on the day of a test will receive a zero on an examination unless written justification is presented to the instructor. Acceptable justification includes university sanctioned travel, military obligation, serious illness or injury, or death or serious illness in the immediate family. Work-related conflicts are not acceptable excuses. 5. Please note that **roll is taken** for those students enrolled in the **Interactive Video** section at the time this class is scheduled to meet on campus. **No recording is available for later viewing.** 6. **All students are required to take examinations on campus in the classroom assigned for this class** on the dates given in the schedule.
Academic Honesty and Collaboration:	Students are encouraged to collaborate. However, each student must make a ***unique*** contribution to any joint effort and that unique contribution must be ***visible*** in the work submitted by the student. You may use the internet to find additional information or solutions related to this course. However, like collaboration, any material, whose origin is the internet, submitted as a requirement of this class, must contain your ***unique*** and ***substantial*** contribution. Partially or completely copied assignments shall be considered a prima facie case for academic dishonesty.

Table 1. Lecture Schedule

Lecture	Date	Topic	Reference
1	1-18	Course administration 1.1 Overview 1.2 The Main Components of a Computer 1.3 An Example System 1.4 Standards Organizations 1.5 Historical Development	Lecture 0 Lecture 1 Lecture 2 Lecture 3 Lecture 4 Lecture 5
2	1-20	1.6 The Computer Level Hierarchy 1.7 Cloud Computing 1.8 The Von Neumann Model 1.9 Non-Von Neumann Models 1.10 Parallel Processors and Parallel Computing 1.11 Parallelism: Enabler of Machine Intelligence	Lecture 6 Lecture 7 Lecture 8 Lecture 9 Lecture 10 Lecture 11
3	1-23	2.1 Data Representation in Computer Systems 2.2 Positional Numbering Systems 2.3 Converting Between Bases	Lecture 12 Lecture 13 Lecture 14
4	1-25	2.4 Signed Integer Representation **Submit Assignment a01**	Lecture 15
5	1-27	2.5 Floating-Point Representation 2.6 Character Codes	Lecture 16 Lecture 17
6	1-30	2.7 Error Detection and Correction Project p01 overview **No Class – UCO Closed**	Lecture 18 Lecture 19
7	2-1	3.1 Introduction 3.2 BOOLEAN ALGEBRA 3.2.1 Boolean Expression **No Class – UCO Closed**	Lecture 20 Lecture 21 Lecture 22

Table 1. Lecture Schedule (continued)			
Lecture	**Date**	**Topic**	**Reference**
8	2-3	3.2.2 Boolean Identities 3.2.3 Simplification of Boolean Expressions **Submit Assignment a02**	Lecture 23 Lecture 24
9	2-6	3.2.4 Complements 3.2.5 Representing Boolean Functions	Lecture 25 Lecture 26
10	2-8	3.3 LOGIC GATES 3.3.1 Symbols for Logic Gates 3.3.2 Universal Gates 3.3.3 Multiple Input Gates	Lecture 27 Lecture 28 Lecture 29 Lecture 30
11	2-10	3.4 KARNAUGH MAPS 3.4.2 Description of Kmaps and Terminology 3.4.3 Kmap Simplification for Two Variables **Submit Project p01**	Lecture 31 Lecture 32 Lecture 33
12	2-13	3.4.4 Kmap Simplification for Three Variables 3.4.5 Kmap Simplification for Four Variables	Lecture 34 Lecture 35
13	2-15	3.4.6 Don't Care Conditions 3.4.7 Summary	Lecture 36 Lecture 37
14	2-17	3.5 DIGITAL COMPONENTS 3.5.1 Digital Circuits and their Relationship to Boolean Algebra 3.5.2 Integrated Circuits 3.5.3 Putting It All Together: From Problem Description to Circuit **Submit Assignment a03**	Lecture 38 Lecture 39 Lecture 40 Lecture 41
15	***2-20***	***Test 1***	***Chapters 1 – 2***
16	2-22	Test 1 Reprise	
17	2-24	3.6 COMBINATIONAL CIRCUITS 3.6.1 Basic Concepts 3.6.2 Examples of Typical Combinational Circuit	Lecture 42 Lecture 43 Lecture 44
18	2-27	3.6.2.1 Half-Adder 3.6.2.2 Full-Adder 3.6.2.3 Ripple-Carry Adder	Lecture 45 Lecture 46 Lecture 47
19	3-1	3.6.2.4 Decoders 3.6.2.5 Multiplexers	Lecture 48 Lecture 49
20	3-3	3.6.2.6 Parity Checker 3.6.2.7 4-Bit Shifter	Lecture 50 Lecture 51
21	3-6	3.6.2.8 2-Bit ALU 3.6.2.9 2-Bit Multiplier **Submit Assignment a04**	Lecture 52 Lecture 53
22	3-8	3.7 SEQUENTIAL CIRCUITS 3.7.1 Basic Concepts 3.7.2 Clocks	Lecture 54 Lecture 55 Lecture 56

Table 1. Lecture Schedule (continued)			
Lecture	**Date**	**Topic**	**Reference**
23	3-10	3.7.3 Flip-Flops 3.7.3.1 SR Flip-Flop	Lecture 57 Lecture 58
24	3-20	3.7.3.2 JK Flip-Flop 3.7.3.3 D Flip-Flop **Submit Report r01**	Lecture 59 Lecture 60
25	3-22	3.7.3.4 Flip-Flop Design	Lecture 61
26	3-24	3.7.3.5 Flip-Flop Conversion	Lecture 62
27	3-27	3.7.4 Finite State Machines 3.7.4.1 Synchronous Sequential Circuit Design **Submit Assignment a05**	Lecture 63 Lecture 64
28	3-29	3.7.5.6 Analysis of Synchronous Sequential Circuits 3.7.5.7 Step 1. Equations for the Next-State Decoder 3.7.5.8 Step 2. K-Maps for the Next-State Decoder	Lecture 75 Lecture 76 Lecture 77
29	3-31	3.7.5.9 Step 3. The Present-State-Next-State Table 3.7.5.10 Step 4. The State Diagram	Lecture 78 Lecture 79
30	4-3	3.7.5.11 Example Mixed-Type Flip-Flop **Submit Assignment a06**	Lecture 80
31	***4-5***	***Test 2***	***Combinational Logic Flip-Flops***
32	4-7	Test 2 Reprise	
33	4-10	3.7.5.12 Example 4-State Counter 3.7.5.13 Example 8-State Counter 3.7.5.14 Example Serial Subtractor 3.8 DESIGNING CIRCUITS	Lecture 81 Lecture 82 Lecture 83 Lecture 84
34	4-12	4.1 MARIE: An Introduction to a Simple Computer 4.2 CPU Basics and Organization 4.3 The Bus 4.4 Clocks 4.5 The Input/Output Subsystems **Submit Assignment a07**	Lecture 85 Lecture 86 Lecture 87 Lecture 88 Lecture 89
35	4-14	4.6 Memory Organization and Addressing	Lecture 90
36	4-17	4.7 Interrupts 4.8 MARIE	Lecture 91 Lecture 92
37	4-19	4.9 Instructions Processing 4.10 A Simple Program **Submit Assignment a08**	Lecture 93 Lecture 94
38	4-21	4.11 A Discussion on Assemblers 4.12 Extending our Instruction Set	Lecture 95 Lecture 96
39	4-24	Project p02 Overview	Lecture 97

Table 1. Lecture Schedule (continued)			
Lecture	**Date**	**Topic**	**Reference**
40	4-26	4.13 Decoding: Hardwired versus Microprogrammed Control **Submit Assignment a09**	Lecture 98
41	4-28	4.14 Real-World Examples of Computer Architecture **Submit p02**	Lecture 99
42	**5-1**	**Margin** **Submit Assignment a10**	
43	**5-3**	**Margin**	
44	**5-5**	**Summary Score Sheets.**	
45	***5-12***	***Final Exam, 11-12:50 p.m., Monday, May 8, 2023.***	

Table 2. Assignments			
Assignments	**Due**	**Value**	**Description**
a01	***1-25***	**15**	**p. 58 – 60: Exercises 2, 8, 13, 16, 19**
a02	***2-3***	**15**	**p. 123 – 133: Exercises 2, 5, 8, 11, 17,20, 33, 35, 37, 39, 51, 58, 63, 66, 78**
a03	***2-17***	**15**	**p. 205 – 218: Exercises 2, 4, 10, 12, 14, 16, 23, 26, 27, 29, 30, 32, 34, 38, 39**
a04	***3-6***	**15**	**p. 205 – 218: Exercises 41, 46, 49, 52, 55**
a05	***3-27***	**15**	**Course Web Page: 1, 2, 3, 4, 5**
a06	***4-3***	**15**	**Course Web Page: 1, 2, 3, 4, 5**
a07	***4-12***	**15**	**Course Web Page: 1, 2, 3, 4, 5**
a08	***4-19***	**15**	**p. 289 – 298: Exercises 5, 8, 9, 11, 12**
a09	***4-26***	**15**	**p. 289 – 298: Exercises 14, 22, 24, 27, 30**
a10	***5-1***	**15**	**p. 289 – 298: Exercises, 35, 40, 47, 53, 62**
Total		**150**	

Table 3. Projects			
Report	**Due**	**Value**	**Description**
p01	***2-10***	**50**	**Decimal to Foreign Base Conversion**
p02	***4-28***	**50**	**MARIE: Binary Search**
Total		**100**	

Table 4. Reports			
Report	**Due**	**Value**	**Description**
r01	***3-20***	**50**	**Library research report**
Total		**50**	

Assignment	Due	Project	Due	Report	Due	Test	Due
a01	***1-25***	p01	***2-10***	r01	***3-20***	t01	***2-20***
a02	***2-3***	p02	***4-28***			t02	***4-5***
a03	***2-17***					t03	***5-12***
a04	***3-6***						
a05	***3-27***						
a06	***4-3***						
a07	***4-12***						
a08	***4-19***						
a09	***4-26***						
a10	***5-1***						