CTC 218 – Digital Logic Design

California State University Dominguez Hills
Department of Computer Science and Technology
Fall 2016

Instructor	Malcolm McCullough	**E-Mail**	mmccullough@csudh.edu
Classroom	SCC-800	**Class Time**	TuTh 4:00-5:15 PM
Office	SAC-1115 or TTh SCC-800	**Office Hours**	MW:11:00-13:00 & TTh:15:00-16:00

COURSE DESCRIPTION:
This course provides students with a basic understanding of digital devise and circuit fundamentals. The students should be able to analyze and design both combinational and sequential circuits after completing this course.

PRE-REQUISITE: Consent of Instructor.

TEXTBOOKS

[Recommended]:
Fundamentals of Digital Logic and Microcontrollers, 6th Edition, M. Rafiquzzaman, ISBN: 978-1-118-85579-9

[Required]:
Lessons in Electric Circuits Vol. IV - Digital (http://www.allaboutcircuits.com/textbook/digital/)

COURSE GOALS:
This course will be aimed towards introducing students to digital systems and circuit fundamentals.
- Students will be able to analyze and design both combinatorial and sequential circuits after completing this course..
- Students should be able to understand how to analyze/design combinatorial circuits, and simplifying them using Karnaugh maps.
- Students will learn the concepts of flip-flops, state and state transitions for analysis and design of sequential circuits.

COURSE OUTCOMES:
Upon completion of the course the students will be able to:
- Understand how to develop smaller logical components into larger digital systems.
- Digital representation and arithmetic operations in different numerical bases (2, 4, 8, 10, 16).
- Encode/decode binary code into hexadecimal, symbols, and numbers.
- Evaluate and simplify logical functions using Boolean algebra.
- Add/subtract using 2's complement
- Represent logical functions into Canonical forms, and logical circuits using AND, OR, NOT, XOR, NAND, NOR logic gates.
- Analyze and design modular combinatorial logic circuits containing decoders, multiplexers, demultiplexers, 7-segment display decoders and adders.

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AMERICANS WITH DISABILITIES ACT
CSUDH adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with temporary and permanent disabilities. If you have a disability that may adversely affect your work in this class, I encourage you to register with Disabled Student Services (DSS) and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the DSS. For information call (310) 243-3660 or to use the Telecommunications Device for the Deaf, call (310) 243-2028 or goto: http://www4.csudh.edu/dss/

COMPUTER INFORMATION LITERACY EXPECTATIONS
It is expected that students will:

1. *Use Microsoft Word for word processing unless otherwise approved by the instructor,*
2. *Be familiar with using email as a communication tool and check your official campus email account at least every other day;*
3. *Be able to access websites and online course materials which may require Flash and other plug-ins;*
4. *Use the library databases to find articles, journals, books, databases and other materials;*
5. *Be able to create an effective PowerPoint presentation;*
6. *Be able to record audio (ideally video) to share with the instructor via the web; and*
7. *Have regular access to a computer and internet access for the term of this course.*

ACADEMIC INTEGRITY
Academic integrity is of central importance in this and every other course at CSUDH. You are obliged to consult the appropriate sections of the University Catalog and obey all rules and regulations imposed by the University relevant to its lawful missions, processes, and functions. ***All work turned in by a student for a grade must be the students' own work.*** Plagiarism and cheating (e.g. stealing or copying the work of others and turning it in as your own) will not be tolerated, and will be dealt with according to University policy. The consequences for being caught plagiarizing or cheating range from a minimum of a zero grade for the work you plagiarized or cheated on, to being dropped from the course.

BEHAVIORAL STANDARDS
Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. The instructor may require a student responsible for disruptive behavior to leave class pending discussion and resolution of the problem and may also report a disruptive student to the Student Affairs Office (WH A-410, 310-243-3784) for disciplinary action.

COURSE POLICIES:

- Deliverables (Class Assignments, Projects) submitted late are not accepted without obtaining instructors permission prior to due date.
- Deliverables (Class Assignment, Projects) not submitted before the end of the final class will earn 0%.
- Any exceptional, non-academic circumstances need to be discussed with the instructor as soon as they arise, prior to the due date of the deliverable. At the time of the discussion, NO make-up work will be assigned.

The instructor reserves the right not to award credit for deliverables that are incomplete. Partial credit is awarded at the instructor's discretion, and only for work that merits such an award. Assignments that are incomplete or incongruous with the specifications may be returned to the student.

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EXAMs: There will be three exams. The first exams will be given during the 5th week, the second exam will be given during the 10th week and the final exam will be given on the date posted in the final examination schedule printed in the campus Class Schedule. The exams will be closed book/notes and include material from the book and lectures. Students are responsible for the any and all materials that will be presented in lecture and textbook. No makeup or early exams will be administered; unless there are serious, unforeseen, and unavoidable circumstances and the student notifies the instructor as soon as possible.

ASSIGNMENTS:
There will be multiple assigned during the semester. They will be announced in class (and posted on blackboard). All assignments must be handed in on the date due at the beginning of lecture (no late work). The computer-print out homework is preferable, but hand-written is also acceptable if writing is legible. All assignments **must include in the upper left hand corner, the course name, assignment/project name/number, section number, and name of student.**

GRADES:
The following grading scale will be used:

Score	Grade	Score	Grade
91-100	A	90	A-
89	B+	81-88	B
80	B-	79	C+
71-78	C	70	C-
69	D+	64-69	D
0-63	F		

GRADING:
The weighting of the coursework is listed below:

Exam One	**20%**
Exam Two	**20%**
Final Exam	**20%**
Assignments/Quizzes	**40%**

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TOPIC OUTLINE (Will be conducted according the following. However, the schedule of the topics schedule or timetable will vary)

Tentative Course Schedule

Week #	Topic	Reading Assignment		Assignments
		Fundamentals of Digital Logic	**All About Circuits**	
Week 1	Course Introduction & Requirements/ Overview of References, Blackboard / Introduction to Digital Logic	Chapter 1 & 2	Chapter 1	TBA
Week 2	Boolean and Combinatorial Systems	Chapter 1 & 2	Chapter 2	TBA
Week 3	Boolean and Combinatorial Systems	Chapter 1 & 2	Chapter 2	TBA
Week 4	Analysis of Gate Networks	Chapter 3	Chapter 1-3	TBA
Week 5	**Exam One**	Chapter 1-3	Chapter 1-3	
Week 6	Two-Level Gate Networks - minterms	Chapter 3	Chapter 7	TBA
Week 7	Two-Level Gate Networks: 2 & 3 var Karnaugh maps	Chapter 3	Chapter 7	TBA
Week 8	Two-Level Gate Networks: 4 var Karnaugh maps	Chapter 3	Chapter 3	TBA
Week 9	Multi-Level Gate Networks: decoders/encoders/multiplexers	Chapter 3	Chapter 7	TBA
Week 10	**Exam Two**	Chapter 3	Chapter 3, 7, & 8	
Week 11	Arithmetic Combinational Modules	Chapter 5	Chapter 16	TBA
Week 12	Sequential Systems:	Chapter 4	Chapter 9	TBA
Week 13	Sequential Systems: Latches	Chapter 4	Chapter 9	TBA
Week 14	Sequential Networks Flip-Flops	Chapter 5	Chapter 10	TBA
Week 15	Combinational Modules	Chapter 5	Chapter 11	TBA
Week 16	**Final Exam**	**The Final Exam: 5 & 4**	**The Final Exam: 9, 10, 11, & 16**	