Department of Mathematics and Computer Science
Adelphi University
Fall 2017

0145-371-001	**Systems I: Computer Organization and Architecture**
	Dr. R. M. Siegfried
	407 Science
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Office Hours	Tu 10AM-12Noon; W 11:00–11:50AM; F 1-2PM
Course Description and Purpose	Learn how primitive computer operations are implemented with gates, flipflops, etc, as well as how to understand claims about computer speed. Topics include design of combinatorial and sequential logic circuits, RISC vs. CISC architectures, microcode, pipelining, parallelism, cache memory.
Gen Ed Learning Goals and Distribution Requirements	None
Course Learning Goals	The student will be able to simplify Boolean expression using Boolean algebra, Karnaugh maps and computer algorithms, design combination and sequential circuits, design basic digital devices such as decoders registers, and design computer components such as ALUs and control units.
Prerequisites	C- or better in CSC 174 and CSC 272
Texts	"Digital Design", 6th ed., M. Morris Mano and Michael D. Ciletti, Prentice-Hall, 2018.
Topics	Introduction
	Number Systems and Arithmetic
	Boolean Algebra
	Boolean Simplification Using Karnaugh Maps
	The Quine McCluskey Algorithm
	Combination Logic
	Synchronous Sequential Logic
	Registers and Counters
	Register Transfer Level
	Subject to Change:
	Hardwired CPU Design
	Microprogrammed CPU Design
	Floating Point Arithmetic
	Pipelining

Assignments   There will be an assignment this semester that may require students to write a program to simplify equations using the Quine McCluskey algorithm. This would require the use of computer with a compiler or interpreter in the high-language procedural or object-oriented language of the student's choice (subject to instructor approval).   This is available on computers on campus, but can be installed on students' own computers if they wish.

Students are expected to turn in assignments in hardcopy; if you wish, you may submit it through Moodle. ***<u>NO ASSIGNMENTS WILL BE ACCEPTED BY E-MAIL.</u>***

Grading   Late penalties may be assessed of 2 points per class after the due date.
The final average will be weighted (based on the following ratio:

Programming Assignments   20%
Midterm Exam   40%
Final Exam   40%

The final average will translate to a letter grade according to the following table:

Final Average	Course Grade
A	90 – 100
A-	87.5 – 89.9
B+	83.3 – 87.4
B	80.0 – 83.2
B-	77.5 – 79.9
C+	73.3 – 77.4
C	70.0 – 73.2
C-	67.5 – 69.9
D+	63.3 – 67.4
D	60.0 – 63.2
F	0.0 – 59.9

Attendance   The following is the Adelphi University General Attendance Policy:
Only students who are registered for courses, and whose name appears on the Official Class Roster may attend courses at the University. Adelphi students make a commitment to be active participants in their educational program; class attendance is an

integral part of this commitment. Attendance requirements for each course will be announced by the faculty member at the beginning of each term. Students are expected to be present promptly at the beginning of each class period, unless prevented by illness or by other compelling cause. In the event of such absence, students may request that faculty members be notified by the Office of Academic Services and Retention. Students are responsible for completing course work missed through absences. Students should wait a reasonable length of time for an instructor in the event that the instructor is delayed.

Additionally, you are also responsible for whatever work is covered in class whether or not you are there. Absence from the final exam will be excused only for a good and well-documented reason. The decision to allow a make-up exam will be made in accordance with the policies of Adelphi University.

NB: I will not be available on Friday, September 22, Friday, October 6 nor Friday, October 13. We will meet on Tuesday, December 5 at our regular meeting time and classroom to make up one of these classes; online class presentations will be available to make up for the others.

If the University is closed for more than two days due to an emergency, go the home page for this course site each day for instructions and assignments. Student instructions materials can be found on Moodle and at http://home.adelphi.edu/~siegfried/cs371

Tentative Schedule (**Subject to Change**)

Date	Topic	Assignment due
August 28	An Introduction to Digital Design	
August 30	An Introduction to Digital Design	
September 1	Number Systems and Arithmetic	
September 6	Number Systems and Arithmetic	Assn 1- p. 33-34/1-2, 1-3, 1-4, 1-7, 1-9, 1-10
September 8	Number Systems and Arithmetic	
September 11	Boolean Algebra	
September 13	Boolean Algebra	Assn 2 - p. 32-33/1-12, 1-14, 1-18, 1-22, 1-25
September 15	Boolean Algebra	
September 18	Karnaugh Maps	
September 20	Karnaugh Maps	Assn 3 - p. 69-70/2-1, 2-2, 2-3, 2-8, 2-13, 2-17, 2-18

September 22	***No class – to be made up December 5***	
September 25	Karnaugh Maps	
September 27	The Quine McCluskey Algorithm	
September 29	The Quine McCluskey Algorithm	Assn 4 - p. 118-120/3-1, 3-1, 3-5, 3-15
October 2	The Quine McCluskey Algorithm	
October 4	Combinational Circuits	
October 6	**No class – video presentation on Combinational Circuits**	Assn 5 - p. 119/3-9, 3-10
October 11	Combinational Circuits	
October 13	**No class – video presentation on Sequential Circuits**	
October 16	Sequential Circuits	Assn 6 - 182-183/4-1, 4-4, 4-5, 4-6a
October 18	Review for Midterm Exam	
October 20	Midterm Exam	
October 23	Sequential Circuits	
October 25	Sequential Circuits	Assn 7 - p. 183/4-7a, 4-9, 4-10, 4-11
October 27	Sequential Circuits	
October 30	Sequential Circuits	
November 1	Registers and Counters	Assn 8 - p. 185/4-19a,4-22; p. 246-248/5-6, 5-18
November 3	Registers and Counters	
November 6	Registers and Counters	
November 8	Register Transfer and Microoperations	Assn 9 - p. 119-120(handout)/4-1 p4-3, 4-6, 4-16
November 10	Register Transfer and Microoperations	
November 13	Register Transfer and Microoperations	
November 15	Basic Computer Organization and Design	
November 17	Basic Computer Organization and Design	
November 20	Basic Computer Organization and Design	
November 27	Microprogrammed Control	Assn 10 - p. 167 (Handout)/5-1, p. 168(Handout)/5-9, p. 171/5-21
November 29	Microprogrammed Control	
December 4	Microprogrammed Control	

December 5	Floating Point Data	
December 6	Floating Point Data	Assn 11 - p. 235-236 (Handout)/7-5, 7-14, 7-15
December 8	Pipelining	
December 11	Review for Final Exam	Assn 12 – Working With Floating Point Data
TBA	Final Exam	

Students With Disabilities

If you have a disability that may significantly impact your ability to carry out assigned coursework, please contact the Student Access Office (SAO) at 516-877-3806 or send an email to sao@adelphi.edu. The staff will review your concerns and determine, with you, appropriate and necessary accommodations. Please allow for a reasonable time frame for requesting ASL Interpreters or Transcription Services.

Honor Code

Students enrolled in this course are expected to abide by the Adelphi University Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework by students. Following is excerpted from the Student Honor Code:

The code of academic honesty prohibits behavior, which can broadly be described as lying, cheating, or stealing. Violations of the code of academic honesty will include, but are not limited to, the following:

1. Fabricating data or citations
2. Collaborating in areas prohibited by the professor
3. Unauthorized multiple submission of work
4. Sabotage of others' work, including library vandalism or manipulation
5. Plagiarism: presenting any work as one's own that is not one's own
6. The creation of unfair advantage
7. The facilitation of dishonesty
8. Tampering with or falsifying records
9. Cheating on examinations through the use of written materials or giving or receiving help in any form during the exam, including talking, signals, electronic devices, etc.

Student Course Evaluations

During the last two weeks of the class, you will receive notification, via mail and eCampus, that the course evaluation is available for your input electronically. Availability will end at the start of the final examination period. Your feedback is valuable and I encourage you to respond. Please be assured that your responses are anonymous and the results will not be available to the instructor until after the end of the semester and therefore after course grades have been submitted.

STUDENT ACKNOWLEDGEMENT:

I HAVE RECEIVED AND READ THE SYLLABUS FOR [INSERT COURSE NUMBER AND SECTION].

SIGNED: _____

PRINT NAME:

_____

DATE: _____

Warning – This page must be signed and returned to the instructor to receive a complete grade in this course.