

CSE 241 Digital Systems Summer 2016

Instructor: Dr. R. Sridhar **E-Mail:** rsridhar@buffalo.edu **Office:** 338K Davis Hall **Phone:** 645-3186

Office Hours: By appointment through email; additional *office hours will be announced in class.*

Class: Monday, Wednesday 2:00pm- 5:15pm; Recitation: 5:15pm – 6:15pm Talbert 103

Description: This is a first course in digital systems fundamentals, which forms the basis of all digital technologies and computer systems. Topics covered include: fundamentals of digital logic, computer arithmetic & Boolean algebra, Karnaugh map simplification, basic components of digital circuits such as logic gates and flip-flops, information representation, design of combinational and sequential circuits, memory and programmable logic devices, CPU organization, arithmetic logic unit & control unit design.

Prerequisites: Sophomore standing in CSE recommended

Textbook:

M. Morris Mano and Michael D. Ciletti, *Digital Design with an Introduction to Verilog HDL*, 5th Edition, Pearson Education, © 2013

References:

Donald D. Givone, *Digital Principles and Design*, McGraw-Hill, 2003

William I. Fletcher, *An Engineering Approach to Digital Design*, Prentice Hall, 1980

Additional references may be cited throughout the semester

Objectives:

The objectives of this course are to introduce *the fundamentals of digital logic design*. At the end of this course, each student should

- understand the fundamentals of Boolean algebra
- be able to design minimized combinational logic circuits using Karnaugh-map simplification
- understand how signed integers are represented in a digital system
- understand how addition and subtraction are performed in hardware
- understand the basic building blocks used in digital system design, such as decoders, encoders, multiplexors, latches, flip-flops, and registers
- be able to design a combinational logic system incorporating the above mentioned building blocks
- be able to design a finite state machine, allowing a real world problem to be solved using hardware

Grading Policy:

Evaluation: Exam #1 - 30 % • Exam #2 - 40 % • Project(s) - 15 % • Homework & Quizzes - 15%

Letter grades will be assigned only at the end of the semester.

Grade Assignment: (Letter grades carry normal numerical values)

(91-100 = A, 89-90 = A-, 87-88 = B+, 81-86 = B, 79-80 = B-, 77-78 = C+, 71-76 = C, 66-70 = C-, 60-65 = D, 1-59 = F). Curving may be applied if deemed appropriate by the instructor.

Completed homework and projects are to be submitted at the *beginning* of the class on the due date.

Late policy: No Late submissions are accepted.

Incompletes:

As per departmental and University policy, Incomplete (I) grades are only given in cases where the student has done satisfactory work, but only lacks one or two assignments/exams because of a type of unexpected emergency or serious illness at the end of the semester. Do not request an "I" grade unless you believe

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that you actually fall into this category, and you are prepared to present evidence. Incompletes are given only in these very rare circumstances.

Academic Dishonesty:

All work submitted for CSE 241 must be your own and must be done on an individual basis. Cheating on homework, a project, or an exam will result in automatic failure of the course.

Computer Usage:

All students are to have an account on the computer science and engineering department's Computing systems. This account will be used for: Projects; Homework assignments; Information will be disseminated via *e-mail* & the CSE 241 web site. Students are expected to check their *e-mail* and the CSE 241 web site regularly.

URL: <http://www.cse.buffalo.edu/~rsridhar/courses/cse241/>

Disabilities: If you have a diagnosed disability (physical, learning, or psychological) that will make it difficult for you to carry out the course work as outlined, or that requires accommodations such as recruiting note-takers, readers, or extended time on exams or assignments, please advise the instructor during the first two days of the course so that we may review possible arrangements for reasonable accommodations. In addition, if you have not yet done so, contact the Office of Disability Services.

Class Participation: Class participation is strongly encouraged. Quizzes may not be announced ahead of time.