**ECE 3200 Digital Circuits**

**Catalog Description**

**ECE 3200 Digital Circuits (4)**

Introduce combinational logic and sequential logic designs, and microprocessors. Cover digital concepts, number systems, operations, and codes, logic gates, Boolean algebra and logic simplification, combinational logic and its functions, flip-flops and related devices, counters, shift registers, memory and storage, concepts of microprocessors, assembly language, computers, and buses.

**Prerequisite:** ECE 2070 and ECE 3070.

**Prerequisite by topic:**

Basic Programming Skill

Electric Circuits

Electronics

Analog Circuits

**Units and Contact Time:** 4 semester units: 3 units lecture (150 minutes), 1 unit lab (150 minutes).

**Type:** Required for CE and EE. Selected elective for CS.

**Required Textbook:**

Digital Fundamentals (Tenth Edition). Thomas L. Floyd. Prentice Hall. ISBN-10: 0132359235 | ISBN-13: 978-0132359238. This book is available in the CSUB Bookstore and at retail and Internet bookstores.

**Recommended Textbook and Other Supplemental Materials:**

Additional material will be provided by the instructor.

**Coordinator(s)**

Wei Li

**Student Learning Outcomes**

This course covers the following ACM/IEEE Body of Knowledge student learning outcomes:

CE-DIG: Digital Logic

CE-CAO: Computer Architecture and Organization

ABET Outcome Coverage

The course maps to the following performance indicators for Computer Science (CAC/ABET) and Computer Engineering (EAC/ABET) and Electrical Engineering (EAC/ABET):

1. Analyze a problem, and identify and define the computing requirements and specifications appropriate to its solution (CAC 3b and EAC 3b).
2. Write a professional project report that presents the outcomes of the project and present these findings to the class (CAC 3i and EAC 3g).

3. Use modern engineering tools such as Multisim, ELVIS++ Bread Board, and Virtual Digital Instruments, to complete the assigned project (EAC 3k)

**Lecture Topics and Rough Schedule**

Week 01 Introductory Digital Concepts

Week 02 Number Systems, Operations, and Codes

Week 03 Logic Gates

Week 04 Boolean Algebra and DeMorgen Theory

Week 05 Logic Simplification, SOP Form, and Karnaugh Maps

Week 06 Combinational Logic Design

Week 07 Functions of Combinational Logic

Week 08 Flip-Flops and Related Devices

Week 09 Counters

Week 10 Sequential Logic Design

Week 11 Shift Registers

Week 12 Memory and Storage

Week 13 Introduction to Microprocessors

Week 14 Buses

Week 15 Assembly Language and Computers

**Grading Policy**

 A 93%

A- 90%

 B+ 87%

 Lab/Hw Assignments ....35% B 83%

 Midterm 1 ......................20% B- 80%

 Midterm 2 ......................20% C+ 77%

 Final Project....................25% C 73%

 C- 70%

 D+ 67%

 D 63%

 D- 60%

 F below 60%

**Prepared By**

Wei Li on June 9, 2014

**Approval**

Approved by CEE/CS Department on July 30, 2014

**Effective Fall 2016**