California State University, San Bernardino
CSE 3100 – 01, 02 – Digital Logic
SYLLABUS

Spring 2022

*** Important***: This class, lecture and lab, is designated as in-person. Per University's directive, it will start as online until February 18, 2022. The lecture and lab will be conducted asynchronously during this period. Please do not show up in person during this period. In-person lectures and labs for this class will resume on Wednesday February 23, unless a new directive specifies otherwise. I will keep you informed. References in the syllabus that imply in-person presence are not applicable for the online period; they are applicable when we resume in-person instruction.

Instructor: Professor Taline Georgiou

Class meeting time and place: **Lecture**: 9:00 AM to 10:15 AM Tu-Th, Room: CGI 110
Lab: 10:30 AM - 11:45 AM Tu-Th, JB 356

Labs: Labs make up 25% of the final grade. Labs and lab instructions will be posted on Canvas. During the online period, labs are to be done individually. For the in-person labs, will be conducted in groups of 3 students.

Catalog Description: Diodes and transistors, Boolean algebra and logic simplification, design and analysis of combinational and sequential circuits, memory elements, counters, introduction to hardware description language and FPGA programming.

Prerequisites: CSE 2010 and MATH 2720.

Classroom safety (May be updated if and when new University policies are put in place.)

- Students must wear appropriate face coverings while indoors and those without will be asked to return upon obtaining one. Limited exceptions can be obtained by contacting the Office of Services for Students with Disabilities.

- Students unwilling to wear a mask will be asked to leave immediately and appropriate security protocol (including class cancellation) may occur at the discretion of the faculty, who may then assign additional work due to non-compliance.

- Students who are positive or are exhibiting COVID-like symptoms, must leave the space immediately and faculty will follow up regarding make-up work and accommodations at a later time.

Student Learning Outcomes: This course introduces the principles of Digital Logic Design, that is the analysis and synthesis of various building blocks that exist in computers, starting from the abstraction level of binary states (0's and 1's). Specifically the objectives of the course are:

- To know number systems
- To know boolean algebra. Truth tables, canonical and standard forms, logic gates, gate level minimization, Karnaugh Maps

- To design and analyze combinational circuits. The outputs of such circuits are completely defined by their corresponding inputs. Adders, encoders, decoders, multiplexers
- To design and analyze sequential circuits. The outputs of such circuits depend on the internal states, as well as on the inputs. Latches, Flip-flops, registers, ripple counters, counters
- To design circuits using Verilog.
- To program, analyze and use programmable components. RAM components, array logic, PLA, PAL, sequential programmable devices

Slack: Students are encouraged to ask and respond to any questions on Slack by posting on the "General"channel. More information on Slack will be provided on Canvas and/or via email.

Email: tgeorgio@csusb.edu. The best way to reach me is via private message on Slack. If email is used, in the subject you must indicate **Course number and section**.

Office: JB 538, **Phone:** 909-537-5411

Office Hours: 12:30 PM - 2:00 PM M-W and by appointment. All office hours during the online period will be conducted via Slack, email, or Zoom. All Zoom meetings must be initiated by the student via Slack (private message) or email in advance.

Learning Management System: Canvas. For technical support, please contact the Technology Support Center, tickets@csusb.edu or 909-537-7677.

Textbook (Required): *Digital Design* With an introduction to the Verilog HDL,VHDL, and System Verilog; 6th Edition, M. Morris Mano and Michael D. Ciletti, Prentice-Hall, 2017, ISBN: 9780134549897

Midterm Exam: Tuesday, March 15, 9:00 AM – 10:15 AM. No make ups.

Final Exam: Thursday, May 19, 9:00 AM – 11:00 AM. No make ups.

Grading: Assignments 20%, Labs 25%, Midterm 25%, Final 30%

Grade Scale:	A	93 – 100	C	73 – 76
	A-	90 – 93	C-	70 – 73
	B+	86 – 90	D+	66 – 70
	B	83 – 86	D	63 – 66
	B-	80 – 83	D-	60 – 63
	C+	76 – 80	F	00 – 60

Attendance: It is expected that the student will attend all lectures. The student is responsible for all material covered in class, and also for all announcements made therein. Attending and participating during lectures and labs is important to understand the material.

Assignments: Homework/Quizzes (to be specified shortly, pending grader availability)

Grading questions: All questions regarding a grade must be made within 7 calendar days from the day the grades have been posted on Canvas. After that, the grade will be fixed and will not change.

Inclusion, diversity, and equity This class is committed to uphold the values of inclusion, diversity, and equity in all their forms. The students should be able to freely participate in the class without obstacles or fear, regardless of their background. The class is to be a welcoming environment. In particular,

bullying will not be tolerated. If any problem arises, students should report it to the instructor as soon as possible.

Academic honesty: According to the CSUSB Catalog of Programs, plagiarism and cheating may result in penalties up to and including expulsion. Students are allowed and encouraged to discuss the material related to assignments, however writing down the solutions must be done individually. Exchanging solutions or parts of solutions is not allowed. When it comes to the attention of a student that possibly dishonest behavior took place, he or she should report it to the instructor. At the very least cheating on an assignment will result in a grade of zero.

Disabilities: If you are in need of an accommodation for a disability in order to participate in this class, please contact the instructor and the Services to Students with Disabilities at UH-183, (909) 537-5238. It is the student's responsibility to seek academic accommodations for a verified disability in a timely manner.

University policies: The student is referred to "Academic Regulations and Procedures" in the CSUSB Bulletin of Courses for the university's policies on course withdrawal, cheating, and plagiarism.

Copyright of materials: All materials posted on Canvas and elsewhere are copyright of the Instructor, the Publisher, and/or others. They are strictly for the student's educational use in this class, and it is prohibited to be posted on the internet, to be shared with others, or used in any other way.

Outline of Course: (Approximate and subject to change)

Week	Topic
1	Chap. 1, *Digital Systems and Binary Numbers,* Sect. 1-1 to 1-9
2, 3	Chap. 2, *Boolean Algebra & Logic Gates,* Sect. 2-1 to 2-9
4, 5	Chap. 3, *Gate-Level Minimization,* Sect. 3-1 to 3-9
6, 7	Chap. 4, *Combinational Logic,* Sect. 4-1 to 4-12
8	**Midterm Exam: Tuesday, March 15, 9:00 AM – 10:15 AM**. No make ups.
8,9	Chap. 5, *Synchronous Sequential Logic,* Sect. 5-1 to 5-8
10	**Spring Break**
11, 12	Chap. 6, *Registers and Counters,* Sect 6-1 to 6-2
13, 14	Chap. 6, Sect. 6-3 to 6-6
15, 16	Chap. 7, *Memory and Programmable Logic,* Sect. 7-1 to 7-8
	Final Exam: Thursday, May 19, 9:00 AM – 11:00 AM. No make ups.