EC311 A1 – Introduction to Logic Design   Spring 2023
A1: T Th 9:00 – 10:45pm, PHO 203

Instructor: Tali Moreshet, PHO 528   Email: talim@bu.edu (with EC311 in the subject line)
   Office hours: Drop-in Mondays noon-1pm and Tuesdays 11-noon, or sign up for an appointment:
   https://calendly.com/talim/advising-office-hours

Graduate Teaching Assistants:
  Alperen Yasar, ayasar@bu.edu, Office hours: Th 4:30-6:30pm,
  Jane Tsui, janetsui@bu.edu, Office hours: M 3-5pm, both in PHO 115

Lab assistants/ Graders: Eric Chen, chene@bu.edu, Chia Jen Cheng, chiajen@bu.edu,
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Course objectives
The class covers the theory and practice of digital hardware design. Students will learn to formulate real world tasks using Boolean algebra and FSM theory, and to apply manual and computer-aided techniques to solve the problems. In addition, they will also learn fundamental circuit design and verification skills using Verilog HDL and FPGAs.

Textbooks
Digital Design, Sixth Edition, Mano and Ciletti, Pearson (5th ed also acceptable, on library reserve).
Starter's Guide to Verilog 2001, Ciletti, Pearson (optional).

Assignments, announcements, course material, updated schedule, and other useful links will be posted on Blackboard (http://learn.bu.edu).

Goals
To provide students with:
- An understanding of the basic tools of logic design
- An understanding of sound design methodologies
- An experience with hardware implementation and the use of CAD tools

Course Outcomes
As an outcome of completing this course, students should be able to:
- Understand the applications of logic design
- Understand abstraction and hierarchy in digital design
- Understand what components are available for logic design
- Understand the use of Boolean algebra in logic analysis and design
- Understand logic minimization criteria and methods for use in design
- Understand the concept of state in digital systems
- Design combinational digital logic systems given specifications
- Design sequential digital logic systems (finite state machines) given specifications
- Implement logic designs in hardware and with CAD tools
- Discover component availability and data using the Internet or other resources

Evaluation

Grading:	Three exams: 70%
	Labs/Project: 20%
	Homework: 10%
Exams:	The first two exams will be during class time, tentatively Feb. 16 and April 4. The third exam will take place during the scheduled final exam timeslot.
Homework:	Homework assignments will be posted on the Blackboard website. Homeworks are to be submitted on Blackboard, as a single pdf file before the specified deadline (typically, in one week by 8pm). Submissions may be typed or scanned, as long as they are legible. There is significant penalty for late homework.
Labs:	Lab assignments will be posted on the Blackboard website. Grades will be assigned by demonstrating the lab, and submitting the Verilog code on Blackboard. Students are expected to attend their scheduled lab section every week, and complete labs outside of lab hours as needed. Request card access to PHO115 through Zaius (http://www.bu.edu/dbin/eng/zaius/).

Course Policies

- **Exam/Home/Lab Grade discussion**: Grade discussion/corrections should be done within one week after the graded exam or homework is distributed. No grade changes will be made after one week.
- **Academic integrity:**
  - The homework and lab assignments must be the result of your individual work. You may discuss the contents and general approach to a problem with your classmates but not the detailed solution. You are expected to formulate your approach and write the solutions of HW/Lab problems by yourself. Copying the solution and/or answer from another student or source is considered cheating. **You may not submit ANY code not written by you.**
  - **You may not collaborate in any way on exams**.
  - Clearly reference any sources you used in your work: books, Internet, and your collaborators!
  - *Boston University's academic code of conduct*, https://www.bu.edu/academics/policies/academic-conduct-code/ will be strictly applied.
- **Copyright:** All class material is copyrighted, and may not be shared publicly online by any means. This includes your own solutions to assignments.

Inclusion: I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Documented Disabilities: If you believe you might have a disability that requires accommodations, requests for accommodations must be made in a timely fashion to Disability & Access Services, 25 Buick St, Suite 300, Boston, MA 02215; 617-353-3658 (Voice/TTY). See established policies and procedures: *http://www.bu.edu/disability/accommodations/*