## ECE 3401 / CSE 3302 / ECE 6095 Spring 2020

## **Digital Systems Design**

Tues/Thurs 12:30pm-1:45pm WebEx: https://uconn-cmr.webex.com/meet/omk12001 Meeting Number: 316271782 Join by phone: +1-415-655-0002 US Toll

*Course Description: Three Credits. Prerequisite: CSE 2300.* Design and evaluation of control and data structures for digital systems. Hardware design languages are used to describe and design alternative register transfer level architectures and control units with a micro-programming emphasis. Consideration of computer architecture, memories, digital interfacing timing and synchronization, and microprocessor systems.

Course Website: http://www.engr.uconn.edu/~omer.khan/courses/ece3401\_s20/index.html

**Instructor**: Professor Omer Khan (khan@uconn.edu) Office Hours: Online via WebEx or Zoom preferably during 11am-Noon on Tue/Thu (make appointment via email)

**TA:** Mohsin Shan (mohsin.shan@uconn.edu) Office Hours: Online via WebEx or Zoom (make appointment via email)

**Textbook (supplemental to lectures):** Available through UConn Bookstore Digital Systems Design Using VHDL by Charles H. Roth, Jr. and Lizy Kurian John, 3<sup>rd</sup> Edition

## Software Tools:

This course has a programming component using VHDL software tool-chain. Assignments will include designing and simulating hardware design modules using VHDL. The software is available via UConn AnyWare (Skybox). You can also download Xilinx WebPack using guidelines from https://khan.engr.uconn.edu/courses/ece3401 s20/pas/toolchain guide.pdf

UG Grading Policy*: Programming Assignments (3)	45%
Homework Assignments (~7 to 8)	35%
Midterm Exam #1	20%
<b>GRAD Grading Policy</b> *: Programming Assignments (3)	30%
Homework Assignments (~7 to 8)	20%
Midterm Exam #1	20%
Project	30%

\* You must submit all programming assignments. Late assignments will not be accepted. A final letter grade will be assigned using a grade curve.

## **Tentative Schedule:**

Logic Design Techniques and Hardware Description Language VHDL: Design Modeling, Simulation, Synthesis, and Verification State Machine (SM) Charts Microprogramming High Level Design Example of a Microcontroller Memory Design High Level Synthesis (HLS) Programmable Logic Devices Timing Synchronous and Computer-aided Design Verification and Testing of Digital Designs