**Course Description:** Three Credits. Prerequisite: CSE 2300W. 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.

**Instructor:** Professor Omer Khan  
Office: ITEB 447  
Email: khan@uconn.edu  
Office Hours: by appointment via email and mostly available Tu 3:15-5pm ITEB 138  
Course Website: http://www.engr.uconn.edu/~omer.khan/courses/ece3401_s16/index.html

**TA:** Farrukh Hijaz  
Email: farrukh.hijaz@uconn.edu  
Office Hours: Tu 3:15-5pm ITEB 138 (http://ets.engr.uconn.edu/learning-centers/)

**Textbook:** Available through UConn Co-op  
Digital Systems Design Using VHDL by Charles H. Roth, Jr. and Lizy Kurian John, 2nd Edition

**Software Tools:**  
This course has a lab component using VHDL and software tool-chains. Assignments will include designing and simulating some functional modules by using VHDL.

ECS learning center lab in ITEB 138 has machines with the required software. We have reserved this room from 3:15-5pm on Tuesdays. A TA and/or the instructor will be present during this time slot.

**Grading Policy:**  
- Homework: 10%  
- Lab Assignments: 30%  
- Midterm Exam #1: 15% (tentative: early Mar)  
- Midterm Exam #2: 15% (tentative: early Apr)  
- Final Exam: 30%

**Rules:**  
Participation in lab assignments is required to get a passing grade for the course.  
Late assignments will not be accepted. We will check assignments for academic dishonesty.  
Please turn off all electronics during classes, including laptops, tablets, phones etc.

**Tentative Schedule:**  
- Logic Design Techniques and Hardware Description Language  
- VHDL: Design Modeling, Simulation, Synthesis, and Verification  
- State Machine (SM) Charts  
- Microprogramming  
- Memory Modeling  
- Additional Topics in VHDL  
- High Level Design Examples including Design of a Microcontroller  
- Programmable Logic Devices (time permitting)