

CSCE 611: Advanced Digital Design

- **Credit Hours:** 3 hours
- **Contact Hours:** 3 lecture hours
- **Instructor:** Dr. Jason Bakos
- **Required Textbooks:** None.
- **Bulletin Description:** Design techniques for logic systems; emphasis on higher-level CAD tools such as hardware description languages and functional modeling.
- **Prerequisites:** CSCE 212
- **Required Course** in CE and **Selected Elective** in CIS, CS
- **Course Outcomes:** Students will be able to:
 1. HDL design: Design large-scale digital systems using VHDL
 2. Simulation and verification: Perform behavioral verification using test benches and simulation
 3. Microarchitecture design: Design a pipelined microprocessor that implements the MIPS instruction set
 4. Interconnect design: Design a system bus architecture with CPU, memory, and I/O interfaces
 5. Logic synthesis: Synthesize, place-and-route, and implement a computer system on a programmable hardware platform

- **Student Outcomes addressed by course**

Program	Student Outcomes Addressed
Computer Engineering	1, 2, 6
Computer Information Systems	N/A
Computer Science	N/A

- **Topics covered**

1. VHDL digital design flow
2. Design methodologies and techniques
3. Microarchitecture design
4. Test bench design
5. Memory models
6. Bus and interface design