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, SE in CIS and CS programs
Learning 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 (Program) Outcomes addressed by course (Detailed mappings of these course outcomes to the Student Outcomes of the programs are in the detailed syllabus and the Assessment plan.)

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<tr>
<th>Student Program Outcomes</th>
<th>SOs supported</th>
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<tbody>
<tr>
<td>Computer Engineering</td>
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<td>Computer Information Systems</td>
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<td>Computer Science</td>
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Topics covered and approximate weight:
  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