Computer Architecture & VLSI Design

Computer architecture, VLSI and FPGAs are the heart of the Computer Engineering discipline, requiring experience in programming (C, python, perl, matlab), hardware design (VHDL, Verilog), networking and the CAD tools (Cadence, Vivado, Labview) that enable engineers to build and test complex systems including microprocessors, ASICs, embedded microcontrollers, GPUs, IoT etc. Courses are offered that enable students to develop skills in each of these areas, including Hardware-Software Codesign, VLSI design, Computer Architecture, Computer Networking, Hardware-Oriented Security and Trust, VHDL Design with FPGAs and Operating Systems. Students focusing on this important area will find employment at a wide range of companies and government organizations including Intel, Xilinx, IBM, Google, Apple, Sandia National Laboratories, Los Alamos National Laboratories, National Institute of Standards and Technology, Raytheon, Lockheed Martin, Boeing, Northrop Grumman and Honeywell.

Area Chair: Prof. Jim Plusquellic ([website](#))

Faculty Members:

Prof. Marios Pattichis ([website](#))

Prof. Jim Plusquellic ([website](#))

Prof. Payman Zarkesh-Ha ([website](#))

Prof. Lei Yang ([website](#))

Prof. Eirini Eleni Tsiropoulou ([website](#))

Recommended courses:

1. ECE 522 Hardware/Software Codesign with FPGAs
2. ECE 520 VLSI Design
3. ECE 538 Computer Architecture
4. ECE 338/595 VHDL Design with FPGAs
5. ECE 525 Hardware Oriented Security & Trust
6. ECE 540 Advanced Networking Topic
7. ECE 524 Network Economics

Other courses delivered as Special Topics (ECE 595) may become available per semester. Please contact the Area Chair or the faculty members for further information.