COMPUTER ENGINEERING (CPEN)

CPEN 2301 Computers & Programming II 3 Credits
Department: College of Engineering
This course is a follow-up of ECEN 1301, introducing additional topics in digital computer principles, program organization, algorithm development, and implementation using high-level languages, such as C/C++ and/or Python.

CPEN 3320 Computer Networks 3 Credits
Department: College of Engineering
This course introduces students to computer network architectures and their widely used core protocols: TCP/IP protocol suites. Topics include IP addressing, IP routing, TCP/IP connection, data flow, and reliable transfer for the Internet.

CPEN 3330 Operating Systems 3 Credits
Department: College of Engineering
An introduction to modern operating system design and implementation. The course will cover the major components of most operating systems. This discussion will cover the tradeoffs that can be made between performance and functionality during the design and implementation of an operating system. Topics include process management, memory management, file systems, and operating system support for distributed systems.

CPEN 3340 Digital Integrated Circuits 3 Credits
Department: College of Engineering
This course will provide students with in-depth analysis and design capability required for state-of-the-art low-power and high-performance digital integrated circuits. Topics include the physics of operation and terminal I-V behavior of MOS devices, design and fabrication of the basic CMOS inverter and logic gates, static and dynamic circuits, pass-transistor logic, scaling-induced challenges, interconnect design, and VLSI testing basics.

CPEN 3451 Digital System Design II 4 Credits
Department: College of Engineering
This a follow-up course to ECEN 3431 introducing more topics in Digital System Design including Verilog Hardware Description Language. The course provides a solid background in the use and application of Verilog HDL to digital hardware design. The course starts with the basic concepts of hardware description, then tackles structural, dataflow, and behavioral modeling in Verilog. Switch level modeling, timing analysis, and UDPs are also covered. Finally, the basics of all programmable logic devices and details of synthesis, mapping, and routing to FPGAs are studied.

CPEN 4314 Fundamentals of Digital Signal Processing 3 Credits
Department: College of Engineering
This course introduces the fundamentals of Digital Signal Processing. Topics include Discrete Fourier and z-Transforms, and digital filters analysis, design, implementation, and coefficient scaling and quantization.