Available for employment in the Electronics Sector Worldwide

https://sse.aucegypt.edu/centers-labs/CND/electronics-professional-training

Top Training

- Six-month training, with a Fundamentals module of 3 course and an Advanced module of 3 courses
- Each course 3 months long with two lectures and a three-hour lab per week
- These modules are delivered by industry experts and top professors from around the world (Intel Santa Clara, Bosch Germany, Nortel, Qualcomm(Canada & USA), Siemens(USA & Egypt), University of Edinburgh, Ohio state University, University of Louisiana, MAG Engineering, ...) and top instructors from Egypt
- Top teaching assistants with industry experience and train the trainer experience for the labs.
- Highly selected students from around Egypt (600 selected from 7000 applicants with an acceptance rate of 8% and an average GPA of above 3.5)
- Hands-on experience in the labs with industry-standard CAD tools and measurements/HW implementations on FPGA and analog board.
- Students thoroughly assessed through weekly labs and assignments, midterm exams, and final projects in each subject.

To contact our students, see their evaluations, projects, CVs, schedule interviews, or invite to apply, please press this link.

For further Inquiries or help with forming teams in Egypt, please contact:
cnd_director@aucegypt.edu

For further Information about the topics learned turn the Page

Advanced Module: Analog and RF IC Design Track

The CAD tools trained on include Cadence Virtuoso, Spectre, CST, and Suitera, Siemens's flow (Tanner EDA: S-Edit, L-Edit, W-Edit, Calibre), Questa, and Intel's Quartus.

- Advanced Analog Design

Topics include design, analysis, and verification of schematic and layout of analog circuits including current mirrors, differential amplifiers, and op-amps by utilizing standard design and testing steps for schematic (i.e. testbench, pole splitting, DC, AC, STB, and transient analysis) and layout (i.e. floor planning, fingers, multipliers, matching, latch-up, antenna error, PEX, and post-layout simulations). Moreover, students explore the process of design useful analog circuits such as integrators, differentiators, comparators, precision rectifiers, Schmitt triggers, oscillators, Butterworth and Chebyshev responses of second-order filters including Sallen key, and integrator-based biquads

- Advanced RF Circuit Design

Topics learned: impedance matching, signal propagation, transmission lines, noise analysis and minimization as well as the behavior of RF circuits at different frequencies. One of the goals is to enhance the capability of the design and integration of modern RF circuits blocks including LNAs, mixers, antennae, filters, voltage-controlled oscillators, … etc.

- Advanced Building Blocks

This course provides a deep understanding of fundamental analog circuits and electronic devices. Topics learned include basic circuit analysis techniques, frequency selective circuits, P-N Junction Diodes, Special Purpose Diodes, Bipolar Junction Transistors, Field Effect Transistors, and amplifier circuits. Students utilize Cadence to simulate and understand various passive and active circuits.

Advanced Module: Digital IC Design and Verification Track

The CAD tools trained on include Synopsys's flow (Design Compiler, Formality, Library Manager, ICC2, PrimeTime, VCS, Verdi), Siemens's flow (Tanner EDA: S-Edit, L-Edit, W-Edit, Calibre), Questa, Intel's Quartus, and Cadence's flow.

- Advanced Digital Design

Topics Learned: digital design flow for ASIC including Verilog modelling, synthesis, Boolean minimization, standard-cell libraries, timing optimization, timing models, timing analysis & constraints, Clock Tree Synthesis, placement and routing, Signoff and chip finishing, signal and power integrity issues, and design for testing.

- Digital Testing and Verification

Topics Learned: SystemVerilog concepts such as Data types, Function, Tasks, threads, interprocess communication, Interfaces, randomization, Code Coverage, Functional Coverage and Assertion Based Verification. In addition to OOP and Hierarchal Testbenchs. Also, writing UVM verification projects including components such as transaction, generator, configuration, sequencer, driver, monitor, scoreboard, agent, environment, test. In addition, faults in digital systems, test generation and testable systems, and pattern generation and comparator circuits of the built-in-self-test.

- Advanced Full Custom

Topics learned include design of complex digital circuits such as Pulse Registers, C2MOS Latches, Programmable Logic Array (PLA), Arithmetic Operations Blocks, Memory Design, system interconnect, Clock Generators and System Level Integration and it is emphasizing principles such as power optimization, timing analysis, and signal integrity. Additionally understanding the different design flows such as non-programmable (e.g., ASIC) and programmable design flows.

Fundamental Module

The CAD tools trained on include Siemens's Tanner EDA suite (S-Edit (Schematic Editor), L-Edit (Layout Editor), W-Edit (Waveform Editor), Siemens's Calibre, Cadence Virtuoso, Spectre, Quartus (Intel) and Questa (Siemens)

- Introduction to Digital Design

The Topics include FPGA design flow using synthesis, simulation tools and hardware implementation on FPGA devices like Intel's DE10-Standard and Lattice's ICEstick 40. A thorough understanding of Verilog HDL that enables trainees to develop the required skills for designing a wide range of combinational circuits, sequential circuits, and test benches. Trainees will also gain the skills to analyze Quartus's simulation reports and perform timing analysis, power analysis, and performance analysis to optimize the hardware design.

- Introduction to Silicon Process & VLSI

The course will teach with the characterization of NMOS and PMOS transistors and use them to design and simulate simple integrated circuits, such as inverters, Ring Oscillator, AOI22, adders, combinational and sequential circuits. Additionally generating layout views and verifies it using Design Rule Checking (DRC), Layout versus Schematic (LVS), parasitic extraction (PEX) and post layout simulation.

- Introduction to Analog Electronics

This course provides a deep understanding of fundamental analog circuits and electronic devices. Topics learned include basic circuit analysis techniques, frequency selective circuits, P-N Junction Diodes, Special Purpose Diodes, Bipolar Junction Transistors, Field Effect Transistors, and amplifier circuits. Students utilize Cadence to simulate and understand various passive and active circuits.