Certificate

Silicon Chip Design and Semiconductor Engineering

This program cultivates your expertise in IC design and semiconductor technology, preparing you for roles in top Silicon Valley companies through hands-on training with advanced tools and techniques. The Silicon Chip Design and Semiconductor Engineering program consists of three core courses and two elective courses.

Total Units: 14
Completion Time: 9-12 months (full-time)
Modality: Online, in person, or choose a mix of both.
Special Programs: F-1 Compliant and WIOA/TAA Funding Approved.

*Courses may have prerequisites; review the course page before enrolling. A checkmark indicates the course is typically offered during that term. **

Core Courses

9 Units | Choose 3 Courses

COURSE NAME & NUMBER	UNITS	FALL	WINTER	SPRING	SUMMER
SystemVerilog Assertions and Formal Verification VLSI.X411	3.0		✓		✓
Advanced Verification with SystemVerilog OOP Testbench VLSI.X400	3.0	✓	✓	✓	✓
System and Functional Verification Using UVM (Universal Verification Methodology) | VLSI.X410	3.0	✓	✓	✓	✓
FPGA Application in Autonomous Driving Systems, Introduction VLSI.X416	3.0		✓		✓
Practical DFT Concepts for ASICs, SoC and SiP VLSI.X409	3.0	✓		✓	

Elective Courses

6 Units | Choose 2 Courses

Front-End

COURSE NAME & NUMBER	UNITS	FALL	WINTER	SPRING	SUMMER
Digital Logic Design Using Verilog VLSI.X404	3.0	✓		✓	
IO Concepts and Protocols: PCI Express and Ethernet EMBD.X406	3.0	✓		✓	
Embedded System Hardware Architectures, Introduction EMBD.X415	3.0	✓		✓	
Analog IC Design, Introduction VLSI.X401	3.0		✓		✓
High Speed Interface Techniques VLSI.X405	3.0	✓		✓	
High-Performance Computer Architecture VLSI.X415	3.0		✓		✓
Wireless Infrastructure: from Antenna Design to 5G, Fundamentals EMBD.X419	3.0		✓		✓

Back-End

COURSE NAME & NUMBER	UNITS	FALL	WINTER	SPRING	SUMMER
Introduction to VLSI and ASIC Design VLSI.X403	3.0	✓		✓	
Practical Design with Xilinx FPGAs EMBD.X408	3.0		✓		✓
Physical Design Flow from Netlist to GDSII VLSI.X408	3.0		✓		✓

*Scheduling is subject to change at any time by UCSC Silicon Valley Extension.
Please visit our website for all current course offerings.
FY 2024-2025

Contact Us:
extension@ucsc.edu

ASIC Physical Design, Advanced VLSI.X402	3.0	✓		✓	
Timing Closure in Silicon IC Design VLSI.X414	3.0	✓		✓	
Comprehensive Signal and Power Integrity for High-Speed Digital Systems | EMBD.X400	3.0		✓		✓
High Speed Interface Techniques VLSI.X405	3.0	✓		✓	
Practical Design and Implementation of VLSI Memory Devices VLSI.X417	3.0	✓			
3D IC Packaging and Physical Verification VLSI.X418	3.0		✓		✓

Completion Review

Once all certificate requirements have been met and your final grades are posted, please access your Student Portal to enroll in the "Certificate Completion Fee" to begin the review process. Please allow 4-6 weeks to receive your certificate.

Note: You need a degree in a technical field or equivalent knowledge acquired through training and experience in hardware design and development.