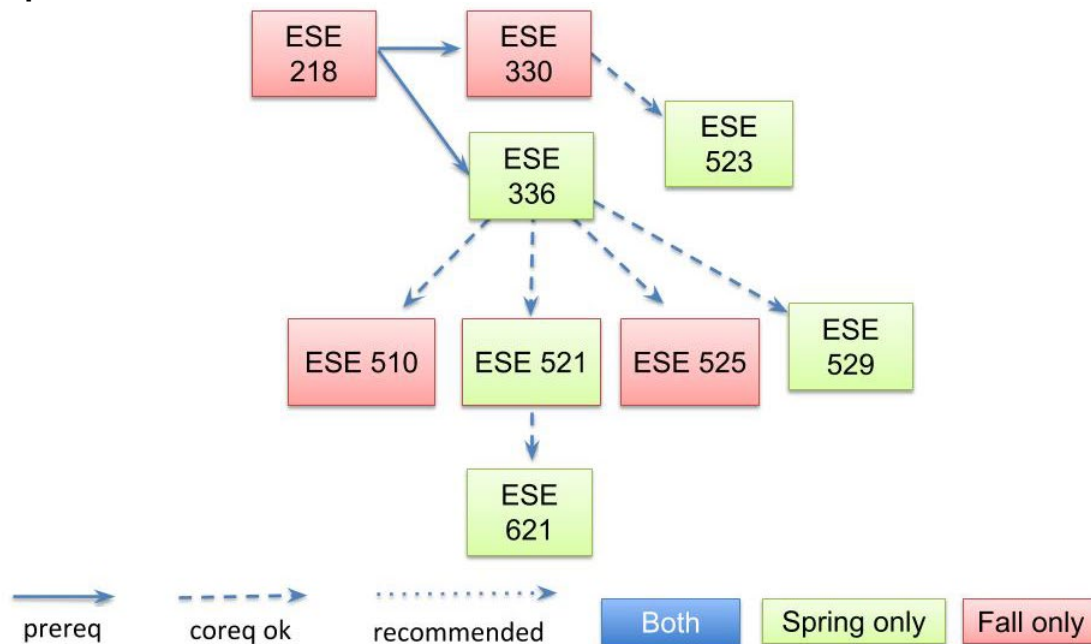


EE Concentration: Microsystems and Nanotechnology

Requirements: Complete ESE336

Choose 3 Electives: ESE 330, ESE 510, ESE 521, ESE 525, ESE 529, ESE 621

Requirement Flow:



Impact: Underpinning computers, smartphones, IoT nodes, and the navigation units of autonomous vehicles are the transistors, memory elements, sensors, displays, and wireless interfaces upon which these electronic systems are constructed. *Microsystems and nanotechnology devices bridge between the digital and physical worlds*, routing the electronic charges that perform computation, converting sensory inputs from the physical world (e.g. sound, movement) into electronic signals, and translating between voltages & currents and the specific electromagnetic waves that wirelessly carry information to and from our smartphones. Coming advances in computing, self-driving vehicles, wireless data rates (i.e. 5G), and the IoT are all critically dependent on innovations in microsystems and nanotechnologies.

Description: The EE concentration in Microsystems and Nanotechnology provides students with a fundamental knowledge of how transistor, semiconductor, photonic, and electromechanical devices operate and are fabricated. The elective courses allow students to specialize and gain a deeper understanding in specific areas such as electromagnetics and antennas, microelectromechanical systems (MEMS), deeply scaled CMOS, next generation transistor technologies, quantum principles and devices, and nanoscience.

Sample industries and companies:

- Semiconductor Devices and Fabrication: Intel, Global Foundries, Samsung, Applied Materials, Jazz, Micron
- RF and Wireless: Apple, Samsung, Broadcom, Qorvo, SKYWORKS, Intel, TDK
- Sensors: BOSCH, TI, TDK, Analog Devices, STMicroelectronics

Sample job titles:

- Electronics, Process, RF Hardware, MEMS/Sensor Device Engineer

Graduate research in: Semiconductor devices and fabrication, RF devices, electromagnetics and antennas, MEMS