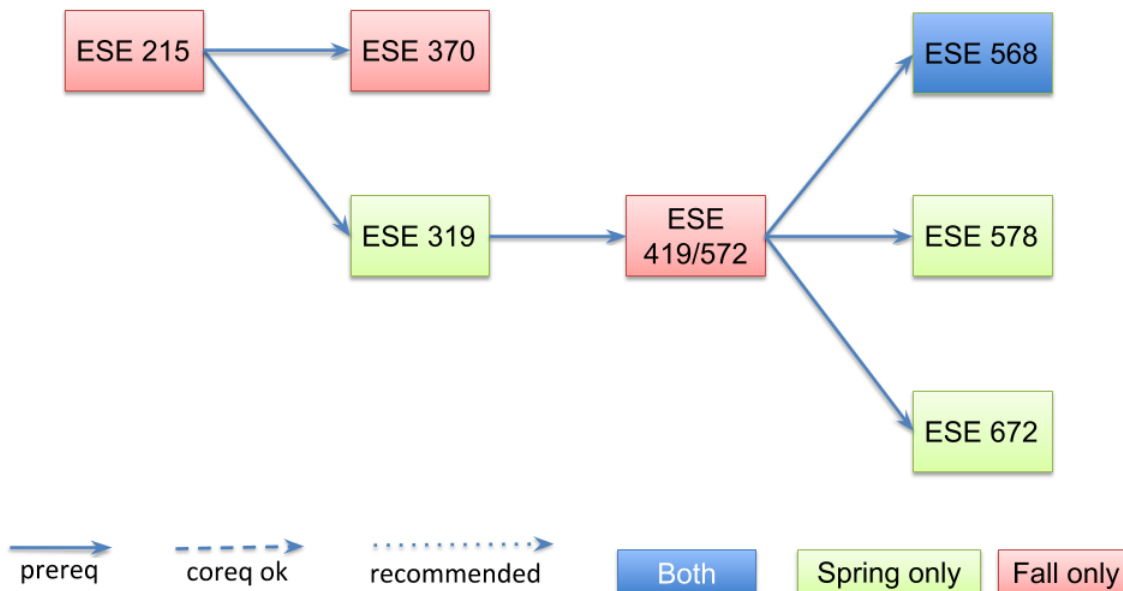


# EE Concentration: Mixed - Signal and RF Integrated Circuits

**Requirements:** Complete ESE319, ESE370, ESE419

Choose One Elective: ESE568, ESE578, ESE672

## Requirement Flow:



**Impact:** Naturally occurring signals are analog in nature, including the potentials in biological and neuronal cells, sound, video, and radar signals. These signals are usually first processed in the analog/RF domain and then converted and processed in the digital domain using mixed-mode circuits. As a result, one finds analog/RF and mixed-mode integrated circuits in just about every gadget we use in our daily life including multiples roles in our smartphones and cars. They are the foundation on which computing, sensing, data transmission & storage, and displays are based. The capability to design custom integrated circuits gives students the opportunity to participate in the ongoing innovation occurring in the growing field of mobile electronics, sensing, IoT, and wireless communication systems.

**Description:** Integrated circuits (ICs) have enabled the rapid development of the mobile communication age. Today's ICs consists of thousands or even millions of transistors which realize innovative analog & digital systems (called mixed-mode). These integrated circuits have unique functionality that opens new application areas including Internet-of-Things (IoT), imaging and sensing, radar, wireless links (such as wifi and 5G cellular and beyond), and medical and biomedical systems. The EE concentration in Analog, Digital and Radio Frequency (RF) IC's will provide the students with a fundamental knowledge in advanced integrated circuits from the transistor up to the circuit level. The elective courses will allow the student to get a deeper understanding of RF and advanced communication systems.

### Sample industries and companies:

- Integrated Circuit Design: Analog Devices, Broadcom, Intel, Samsung, Qualcomm, TI, Xilinx
- Consumer Electronics: Apple, Samsung, NEST, Hewlett Packard
- Automotive and Aerospace: Boeing, Ford, Space-X, Tesla, Waymo
- *Your startup*

### Sample Job Titles:

- Design Engineer, Architect

**Graduate research in:** mixed-mode integrated circuits, mm-wave, RF circuits