Analog CMOS/VLSI Design
(Undergraduate EEL 4935, Graduate EEE 5357 or EEL 6935, and online sections available)

- Analog CMOS/VLSI is the essential ingredient for sensor chips, digital cameras, communication and networking chips, security chips, and very importantly biomedical chips.

- The ultimate dream of microelectronics/nanoelectronics and microelectromechanical/nanoelectromechanical systems engineers is the realization of ‘System on a Chip’, both 2-D and 3-D, that would include sensing, **analog processing** and digital processing – all in a single chip.

- The students will learn the modeling and design approaches for analog CMOS VLSI circuits and devices, as well as their key applications. Simulations through HSPICE, PSPICE and/or ADS are included.

  Note: A detailed syllabus will be provided in the course

- **Some application areas**
  - Biomedical systems
  - Sensors including bio-sensors
  - Optical systems, including digital cameras
  - Wireless communications
  - MEMS systems
  - Power systems, power grid electronics
  - Security systems

![Digital camera pixel cross-section](image)

![A bio-SOC](image)