# Analog CMOS/VLSI Design
(G and UG; also on-line)

✦ 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 microeletromechanical/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 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

A bio-SOC
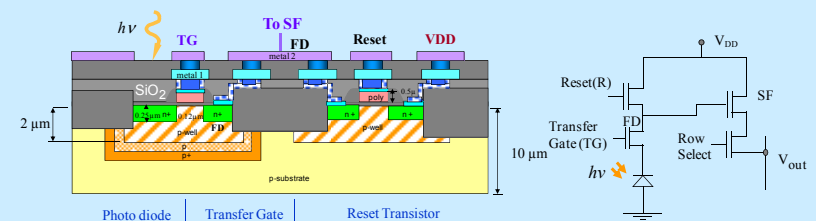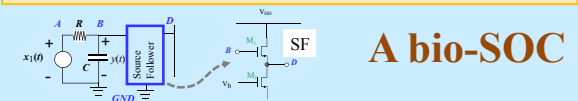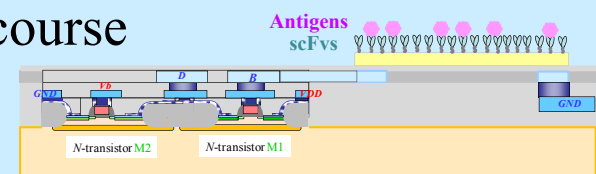
Digital camera pixel cross-section