**COURSE TOPICS**

**EEE 530: Advanced Silicon Processing**

**Prerequisites:** Introductory course on semiconductor processing such as EEE 435 Microelectronics or similar practical or course experience. Knowledge of device operation such as EEE 436 Solid State Devices or similar device course.

**Catalog Course Description:** Thin films, CVD, oxidation, diffusion, ion-implantation for VLSI, metallization, silicides, advanced lithography, dry etching, rapid thermal processing.

**Course Topics:**

The ground rules - Performance, Price and Physics

Device scaling

ICs as systems

Economics of fabrication

Silicon - physical and electrical characteristics

Device sub-structures and interfaces

MOS transistor operation

Unit processes

Unit process steps – goals and strategies

Surfaces, cleaning and yield

Diffusion

Oxidation

LPCVD

Ion processes, implantation

Dry etch

Sputtering

Interconnect

CMP and wafer finishing

Resist properties

Exposure tools

Process control

Whole processes

Process architecture and simulation

Base CMOS process flow

Parameter extraction

NVM

DRAM

BiCMOS

Limits

Physical limitations in small devices

Process technologies for the 10nm regime