Overview of what you will learn in CHFEN 5655 & 6655 Silicon Chip Processing

Materials' Properties
- Structure – Metals, Oxides, Semi-conductors
- Electrical Properties – Metals, Oxides, Semi-conductors
- Other Properties – Piezo, magnetic, ferro-electric

Device Physics
- Conductor
- Resistor
- Capacitor
- Diode
- Transistor

Chip Devices
- Structures
  - Memory
  - CPU/Switches

Multi-layer Interconnects
- Structures including barrier layers
- Limits on Computer speed

Chemical Engineering in Processing of Silicon Chips
- Wafer Fabrication
  - Doping Wafers
    - Diffusion
    - Implantation
  - Patterning
    - Spin Coating
    - Photo-resist Development
    - Photo-resist dissolution
    - Etching
    - Deposition
      - Oxides
      - Silicon
      - Metal

What Can Go Wrong?
- Understanding the electrical problem in terms of chip processing.
- Understanding what causes the problem
- Developing a solution to the problem
- Developing a strategy so that the problem will not occur again.