

## Chem 431 Chapter 5 Study Questions (Pages to read: 110-123)

- How do we define “signal-to-noise” ratio and how is it measured?
- What do the following terms mean?
  - Thermal (Johnson) noise
  - Shot noise
  - Flicker noise
  - Environmental noise
- How do the following hardware methods reduce noise?
  - Grounding and shielding
  - Difference and instrumentation amplifiers
  - Analog filtering
  - Modulation
- How do the following software methods enhance S/N?
  - Ensemble averaging
  - Boxcar averaging
  - Digital filtering

Chapter-end problems: 1,2,6,7,8,10,11,12