

BME 311

Biomedical Instrumentation I



05 – Operational Amplifier



Faculty of Engineering

Department of Biomedical Engineering

Dr. Mehmet Yüksekaya

Signal amplification and filtering



- Most bioelectric signals are small
 - voltages in micro-volts range
 - currents in pA and nA range
- Small signals require amplification
 - op-amp, resistors and capacitors
 - integrated circuit
- Frequency based information and noise cancelling can be obtained by filtering
 - Passive or active electronic filters.
 - Software based digital filters.

Operational Amplifiers



- an amplifier with high gain and high input impedance (usually with external feedback), used especially in circuits for performing mathematical operations on an input voltage.