Op amps are everywhere in practical circuits: (e.g., for solid-state guitar amplifiers, instrumentation, measurement tools, etc.)

Op amps that can be used to build practical board-level circuits are often implemented via bipolar junction transistor technology.
Op Amps Are Everywhere

- e.g., the 741 op amp, which has been a workhorse instrumentation op amp for decades

Today, application specific integrated circuits (ASICs) for mixed analog/digital signal applications (e.g., A/D converters) utilize many op amps on the die level. Such ASICs generally utilize CMOS op amps.
Op Amps Are Everywhere

- Below: bandgap reference using a CMOS op amp

- Again, this course will focus mainly on the innards of op amps
- Focus: CMOS, with some BJT coverage so you can work with practical board-level circuits, as well
- The first step towards analyzing and designing op amps is to understand the transistor technologies upon which they are based