

Section F *Field-Effect Transistors and Transistor Amplifiers*

Section F1: Introduction & Goals

Last semester, we spent massive quantities of time on the basic semiconductor concepts, as well as the diode and bipolar junction transistor (BJT) and our first integrated circuit, the operational amplifier. Have no fear though; these old friends will show up with new attitudes later this semester. For now, we're going to talk about the other major transistor type – *drum roll please* – the **Field Effect Transistor**, or **FET**.

With this in mind, the goals of this section are to:

- ∅ introduce the FET in many of its incarnations and understand the fundamental differences between BJT and certain FET devices;
- ∅ present the basic physics of the FET, the relationship to semiconductor diode behaviors and the fundamental characteristics and modes of operation for this device;
- ∅ develop analysis techniques (mathematical, graphical and computer simulations) for device operation under a variety of input conditions; and
- ∅ obtain practice in the design of FET amplifiers to satisfy given specifications.