**Designing common emitter amplifiers**

Set Vcc

Establish hFE

Need to establish Ic and Rc and Q-point/load line

Depends on the signal output current/voltage requirements

Small Rc for large output and vice versa. Ic max is estabished by Vcc and Rc which establishes the load line and thus the Q-point Vce. The Q-point needs to be such as to swing the required output voltage.

Establish Vce = ½ Vcc

Ic max = (Vcc – VRE)/Rc

Ic Q = 0.5 \* Ic max

Rc = Vce/Ic max

Establish VRE = 0.1\*Vcc for adequate stability.

RE = VRE/Ic max

Ib = Ic Q/hFE

Vb = VRE + 0.6V for Si transistors (0.2 for Ge)

The following assumes voltage divider biassing. R1 from Vcc to base. R2 is base resistor. Establish voltage divider bleed current = 10 \* Ib. (Now with voltage divider biasing, hFE appears not to be important).