EE 115A
ASSIGNMENT #2

Due: Thursday, October 20, 2005

Reading:

Sedra and Smith, pp. 235-270.
Skip 4.1.6. This is a circuits class and not a device physics class, so the mathematical I-V derivation is not needed for the class. However, interested readers are encouraged to understand the derivation.
Skip: 4.2.3, 4.2.5, 4.2.6, 4.2.7. Knowledge of second-order effects is not needed for this class, but again, interested readers are encouraged to read the sections.

Problems:

1) Sedra and Smith, 4.6, 4.15, 4.18, 4.33, D4.35*, D4.37, 4.39, 4.44, 4.47.

*Figure E4.12 is on p. 265. Verify results with SPICE simulation.

2) In ≤ 2 sentences, why is the oxide necessary in a MOS device?

3) Sketch the channel profile for an NMOS device when \( V_G = 1 \) V, \( V_D = 0.8 \) V, \( V_S = 0 \) V, and \( V_t = 0.6 \) V. In ≤ 2 sentences, compare the conductivity at the source and drain and explain why they are either the same or different.