EE 720 reading guides.

Johns & Martin textbook:

1.1 Model the diode behavior as simply as possible, usually in the reverse bias region. In this region, model the pn junction as a constant capacitance per unit area. The area is layout dependent, and the capacitance quantity will be used in RC time constant calculations.

1.2 is a key section on MOS transistor behavior. We'll only use transistors that are made as a pair of back to back diodes, which includes MOS and Bipolar.

1.3 expands on details in 1.2, we typically won't include these details in the average performance amplifiers in this course.

1.4 We will look at bipolar circuits if there is enough time before the midterm. There are standard methods of swapping bipolar transistors with MOS transistors in the same amplifier block. Bipolar has some advantages and disadvantages vs. MOS for analog amplifiers. One main advantage of BJTs is higher transconductance for the same bias current (typically).

1.5 and 1.6 Focus is on MOS and diode model equations.

1.7 Appendix is treated like 1.3 above.

Chapter 3 – Focus on common source analysis, since the main behavior of a differential pair is like that of a common source amplifier.

3.1, 3.2, 3.8, and 3.11 (common source) are the main sections.
3.12 Common source spice simulations.

Many of the concepts in chps. 1 and 3 of the textbook are nicely (sometimes better) discussed in the Sedra/Smith undergrad electronics book in the following sections ($4^{th}$ edition).

5.1, 5.2 MOSFET basics
Some of 5.4, MOS circuits at DC.
5.5 MOSFET as an amplifier is a key section.
5.6 Biasing in MOS amps – we will use IC type bias circuits, eg. Current mirrors.
5.7 Mainly 5.7.1, the common source amplifier.
5.8 CMOS digitial inverter is useful both for digital and analog.
5.10 MOS capacitances and high frequency transistor models.
6.6 MOS differential amplifiers.
7.4 High frequency response of common source and common emitter amplifiers. This is an example of how MOS and BJT transistors are interchangeable.