

EECS 105 SPRING 1999
Lecture Outline
PART I – SEMICONDUCTOR DEVICES FOR IC's

Lecture	Topics	Text	Figs	Equations
1	Semiconductors, doping, carrier concentrations	2.1-2.2	2.1-2.5	2.9-.10, .15, .20, .26, .28
2	Mobility, diffusion, current flow, resistivity, sheet resistance	2.4, 2.61-2.62	2.7-2.8, 2.10, 2.12, 2.20	2.34, 35, 38, 42, 46, 49, 51, 53-56
3	IC Technology and Layout, process variations	2.5, 2.63	2.14-2.23	2.57, 2.69-2.71
4	Basic semiconductor electrostatics, thermal equilibrium fields and carrier distributions	3.1-3	3.1-11	3.1-2, 4-5, 9, 14, 19, 3.21-23, 25, 3.29-34, 45, 50, 52, 56
5	Depletion width and capacitance, MOS example 3.3	3.5-6, 3.71	3.14-22, 3.3A-E	3.63, 79-80, 83, 86,
6	MOS C-V curve, accumulation, depletion, inversion, threshold	3.72, 3.8-9	3.23-3.24, 28-30, 32-34, 37-39	3.88, 3.95, 3.125, 130, 138,162
7	MOS I-V characteristics	4.1-3	4.1-10	4.5, 4.17-18,21
8	MOS small-signal model, CMOS	4.5	4.18-19, 21-25, 27	4.59-64, 67 ,73, 83-84
9	Diode and BJT I-V characteristics	6.1-2, 7.1-2	6.1-6, 6.8, 11,7.1-4	6.1-3, 6.31-32, 7.1-3
10	BJT continued, BJT small-signal model	7.2-3,7.5	7.5-8,16-18, 21	7.12, 7.18, 7.24, 7.48-9, 7.55-57, 7.67, 7.72
11 MT1	Catch-up, review Thursday 2/25 Lectures 1-9			