SUBJECT NO-EC60201, SUBJECT NAME- SEMICONDUCTOR DEVICE MODELING

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Pre-requisites: EC21007Review of semiconductor physics: Quantum foundation, Carrier scattering, high field effects; P- N junction diode modeling: Static model, Large signal model and SPICE models; BJT modeling: Ebers â Moll, Static, large-signal, small- signal models. Gummel - Poon model. Temperature and area effects. Power BJT model, SPICE models, Limitations of GP model; Advanced Bipolar models: VBIC, HICUM and MEXTARM;MOS Transistors: LEVEL 1, LEVEL 2 ,LEVEL 3, BSIM, HISIMVEKV Models, Threshold voltage modeling. Punch through. Carrier velocity modeling. Short channel effects. Channel length modulation. Barrier lowering, Hot carrier effects. Mobility modeling, Model parameters; Analytical and Numerical modeling of BJT and MOS transistors: Introduction to variou