

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. in VLSI System Design
Semester: I

Subject Name: **Semiconductor Physics (Institute Elective – I)**
Subject Code: **714206**

Sr. No	Course Content	Total Hrs
1.	Introduction	3
2	Basic Semiconductor Physics; Energy Bands and Charge Carriers;	5
3.	MOS Capacitor	8
4	MOSFET and Compound Semiconductor FET and modeling	10
5	Schottky Barriers and Ohmic Contacts, tunneling effect etc.	7
6	Bipolar Junction Transistors and modeling	8
7	Recent Developments in Microelectronic Devices	5

Laboratory work:

It will consist of 10 to 12 experiment based on above syllabus.

Reference Books:

1. S.M. Sze, Modern Semiconductor Device Physics, Wiley, 1998.
2. R. S. Muller and T. I. Kamini, Device Electronics for Integrated Circuits, Second Edition, Wiley, 1986.
3. B.G. Streetman, Solid State Electronics Device, Forth Edition, PH, 1995.
4. D. Foty, MOSFET with SPICE: Principles and Practies, PH, 1997.
5. P. W. Tuinenga, SPICE: A Guide to Circuit Simulation and Analysis Using P-SPICE, Third Edition, PH, 1995.
6. P. Antognetti and G. Massobris, Semiconductor Devices and Modeling with SPICE, Second Edition, MH, 1993.