

# GUJARAT TECHNOLOGICAL UNIVERSITY

## M. E. in VLSI System Design

### Semester: I

Subject Name: **Advanced Digital Design (Institute Elective – I)**

Subject Code: **714205**

<b>Course Content</b>	<b>Total Hrs</b>
Introduction	3
Sequential Circuit design Design Concepts, Introduction to Logic, Optimized Implementation of Logic Functions, Number Representation and Arithmetic Circuits, Combinational-Circuits Building Blocks, Flip-Flops, Registers, Counters, and Simple Processor, Synchronous Sequential Circuits,	10
Asynchronous Sequential Circuit design:	5
Fault Diagnosis and Testability Algorithms :Digital System Design, Testing of Logic Circuits, Fault, Diagnosis & Algorithms	8
Synchronous Design Using Programmable Devices PLD, CPLD, FPGA	7
System Design using VHDL	05
Computer Aided Design Tools, Transistor Models – Review, Short Channel Devices, Low Power Design Performance, CAD/Design Flow, Regular Circuit Design Structures, ASIC Design Concepts.	10

#### **Laboratory work:**

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

#### **Reference Books:**

1. John Uyemura: Fundamentals of MOS Digital Integrated Circuits; Addison Wesley 1988
2. John Uyemura: Circuit Design for CMOS VLSI; Kluwer Academic Publishers 1992
3. Richard C. Jaeger: Microelectronic Circuit Design; McGraw-Hill
4. Neil Weste and Kamran Eshraghian: Principles of CMOS VLSI Design; Addison Wesley
5. Sung-Mo Kang and Yusuf Leblebici: CMOS Digital Integrated Circuits – Analysis and Design; McGraw-Hill; 1999
6. M. J. S. Smith, Application Specific Integrated Circuits, AW/Person, 1997.