GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Signal Processing and Communication

Semester: I

Subject Name: **Digital Signal Processor Architecture**
Subject Code: **714103**

Sr. No	Course Content
1	**Overview of Digital Signal Processing** Digital signals and operations, Digital systems: LTI systems, Finite-Impulse Response filters, Infinite-Impulse Response filters, Frequency Analysis of signals: Discrete-Time Fourier Transform, Discrete Fourier Transform, Fast Fourier Transform, The z-transform
2	**Digital Signal Processing Systems** Advantages of DSP systems, Characteristics of DSP systems, Classes of DSP applications
3	**Introduction to Programmable DSPs** Multiplier and Multiplier Accumulator (MAC), modified bus structures and memory access schemes in P-DSPs, Multiple Access Memory, VLIW architecture, Pipelining, Special addressing modes in P-DSPs, On-Chip Peripherals
4	**Architecture and Instruction set of TMS320C5X** Introduction, Bus Structure, Central ALU, Auxiliary Register ALU, Index Register, Auxiliary Register ALU, Block Move Address Register, Block repeat registers, parallel logic unit, memory-mapped registers, program controller, flags in status register, on-chip memory, on-chip peripherals, Assembly Language Syntax, Addressing Modes and instructions, pipelining in C5x
5	**Architecture and Instruction set of TMS320C6X** Introduction, TMS320C6X architecture, Functional Units, Pipelining, registers, Addressing Modes and Instruction set, Timers, Interrupts, Multichannel Buffered serial ports
6	**DSP Applications**

Reference Books

1. B. Venkataramani, M. Bhaskar “Digital Signal Processors: Architecture, Programming and Applications”, Tata McGraw-Hill
2. Sen M. Kuo, Woon-Seng S. Gan, “Digital Signal Processors: Architectures, Implementations and Applications”, Pearson Education
3. TMS320C6000 CPU and Instruction Set, SPRU189F, Texas Instruments, Dallas, TX, 2000.

4. Emmanuel C. Ifeachor, Barrie W. Jervis, “Digital Signal Processing: A Practical Approach”, Pearson Education
5. Alan V. Oppenheim, Ronald W. Schafer, “ Discrete-Time Signal Processing”, Pearson Education
6 Keshab K.Parhi, “VLSI Digital Signal Processing Systems”, Wiley Inida