

# DSP Processors and Architectures

B.E. Sem. VIII [ETRX]

(Elective – III)

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## EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral	–	–
Oral Exam	–	25
Term Work	–	25

## SYLLABUS

- **Objective** : The DSP algorithms are better implemented on DSP processors having specially tailored architectures. It is therefore essential for a DSP systems designer to understand these processors and apply them in system design.
  - **Pre-requisite** : Fundamentals of Discrete time signal processing
- 1. Fundamentals of Programmable DSPs**  
Multiplier and Multiplier accumulator, Modified Bus Structures and Memory access in P-DSPs, Multiple access memory , Multi-ported memory , VLIW architecture, Pipelining , Special Addressing modes in P-DSPs , On chip Peripherals, Computational accuracy in DSP processor
  - 2. ADSP Processors**  
Architecture of ADSP-21XX and ADSP-210XX series of DSP processors.
  - 3. TMS320C5X Processor**  
Architecture, Assembly language syntax, Addressing modes Assembly language Instructions - Pipeline structure, Operation Block Diagram of DSP starter kit Application Programs for processing real time signals.
  - 4. Programmable Digital Signal Processors**  
Data Addressing modes of TMS320C54XX DSPs, Data Addressing modes of TMS320C54XX Processors, Memory space of TMS320C54XX Processors, Program Control,, On-Chip peripherals, Interrupts of TMS320C54XX processors, Pipeline Operation of TMS320C54XX Processors
  - 5. Advanced Processors**  
Code Composer studio -Architecture of TMS320C6X -architecture of Motorola DSP563XX – Comparison of the features of DSP family processors.
  - 6. Implementation of Basic DSP Algorithms**  
An FFT Algorithm for DFT Computation, Computation of signal spectrum, FIR Filters, IIR Filters, interpolation Filters, Decimation filters, Adaptive Filters

**Reference Books :**

1. Digital Signal Processors, Architecture, Programming (*B. Venkata Ramani and M. Bhaskar*) TMH, 2004.
2. DSP Implementation using DSP microprocessor with Examples from TMS32C54XX (*Avtar Singh, S.Srinivasan*) Thamson 2004
3. Digital Signal Processing A Practical approach (*E.C.Ifeachor and B.W Jervis*) Pearson Publication
4. Digital signal processing (*Salivahanan. Ganapriya*) TMH ,second Edition
5. DSP Processor Fundamentals, Architectures & Features (*Lapsley et al*) S. Chand & Co, 2000.
6. Digital signal processing (*Jonathen Stein*) John Wiley 2005
7. Digital Signal Processing (*S.K. Mitra*) Tata McGraw-Hill Publication, 2001

