EC-409C	DSP PROCESSORS (ELECTIVE - V)	L	T	P	C
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COURSE OBJECTIVES:

1. To introduce features and applications of DSP processors.
2. To introduce architecture of TMS320C6x and addressing modes of processors.
3. To introduce the instruction description and assembler directives of processors.
4. To introduce the programming of DSP processors.
5. To demonstrate the usefulness of the adaptive filters and learn techniques of code optimization.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. understand DSP processor and its features and applications and to understand data representation in DSP Processors.
2. understand DSP processor addressing modes, registers.
3. understand DSP processor instructions.
4. understand programming concept of DSP Processors.
5. understand different adaptive filters and code optimization techniques.

UNIT I *Text Book - 1* **(12)**

Digital signal processing and DSP systems, comparison between general purpose processors and DSP processors, examples of DSP processors, motivation for the specialized processors, Data representations and arithmetic: Fixed-point numbers and arithmetic, Floating point arithmetic, Fixed - point verses Floating - point format, Finite - word length effects.

UNIT II *Text Book - 2* **(11)**

Key features of TMS320C6713 processor, TMS320C6x Architecture, Functional Units, Fetch and Execute Packets, Pipelining, Registers, Addressing modes of 6713: Linear and Circular Addressing.

UNIT III *Text Book - 2* **(12)**

Instruction Set of the C6x Processor : Assembly Code Format, Types of Instructions, Assembler Directives, Timers, Interrupts, Interrupt Control Registers, Interrupt Acknowledgment.

UNIT IV *Text Book - 2* **(10)**

Multichannel Buffered Serial Ports, Direct memory access, Memory considerations, Code improvement, Constraints, Programming TMS32OC6713 processor for linear and circular convolution.

UNIT V *Text Book - 2* **(10)**

Adaptive Filters : Introduction, Adaptive Structures, Adaptive Linear Combiner, Performance Function Searching for the Minimum,Code Optimization: Introduction to optimization, Optimization Steps, Procedure for Code Optimization, Software Pipelining for Code Optimization, and Execution Cycles for Different Optimization Schemes.

LEARNING RESOURCES:

TEXT BOOK(s):

1. Kuo, Woon Seng Gan - Digital Signal Processors: Architectures, Implementations, and Applications, Pearson education,2005.
2. DSK Rulph Chassaing - Digital Signal Processing and Applications with the C6713 and C6416, A. JOHN WILEY & SONS, INC., Publication,2005.

REFERENCE BOOK(s):

1. Phil Lapsly, Jeff Bier, Amit Sheham - DSP processor fundamentals and architectures and features, S Chand & Co. New Delhi,2000.
2. John G Ackenhhusin - Realtime signal processing, Printice Hall of India, 1999.

WEB RESOURCES:

http://nptel.iitm.ac.in/courses/