

**EE6402****REAL-TIME DSP DESIGN AND APPLICATIONS**

Acad Unit: 3  
Pre-requisite: Nil  
Effective: Academic Year 2013-2014  
Last update: January 2013

**LEARNING OBJECTIVE**

This course presents the basics of real-time signal processing using general purpose DSP and VLSI architecture. The concept of real-time processing would be emphasised in the course. Various software and hardware architectures and approaches for processing signals in real time would be discussed. Optimum general purpose DSP and VLSI system design and the trade-offs would be elaborated.

**CONTENT**

Digital Filter Implementation Issues. Advanced Arithmetic Techniques for Hardware. Architecture for General Purpose Digital Signal Processor. Peripherals for DSP Applications. Design and Development Tools for DSP Processors. Introduction to VLSI. Algorithms and Architecture for VLSI.

**LAB DESCRIPTION (if applicable)**

Nil

**LEARNING OUTCOME**

The student would understand the need of different architecture for implementing hardware systems for real-time processing. Techniques for designing systems to achieve required throughput using general purpose DSP and VLSI architecture would be acquired. In particular, basic skills required for developing and debugging of software algorithms and hardware architecture for system design would be achieved. These skills are useful in real-time system design in industrial applications.

**STUDENT ASSESSMENT**

Continuous Assessment	30%
Final Examination	70%

**TEXTBOOKS**

1. Kuo S M, Gan W S, Digital Signal Processors: architectures, implementations, and applications, Prentice Hall, 2005.
2. K. K. Parhi, VLSI Digital Signal Processing Systems: Design and Implementation, John Wiley, 1999.

**REFERENCES**

1. Richard G. Lyons, Understanding Digital Signal Processing, Prentice Hall, 2010.