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| <b>Course Title</b>  | <b>Digital Signal Processing and Applications</b> |
| <b>Course Code</b>   | <b>ET104</b>                                      |
| <b>Course Credit</b> | Lecture : 3                                       |
|                      | Practical 1                                       |
|                      | Tutorial : 0                                      |
|                      | Total : 4   |

### Course Objective

**The objective of the course is to:**

- Make the student learn the Theory of DSP and design of digital signal processing applications

### Detailed Syllabus

| Sr. No              | Name of chapter & Details  | Hours Allotted |
|---------------------|--|----------------|
| <b>SECTION - I</b>  |  |                |
| 1                   | Fundamentals of Digital Signal Processing ,DFT, IDFT, FFT, Convolution,  | 14             |
| 2                   | FIR and IIR Filter Design, Algorithm implementation using DSP  | 10             |
| <b>SECTION – II</b> |  |                |
| 3                   | Digital Signal Processor Architecture, DSP based software development tools,   | 12             |
| 4                   | Introduction to Multirate Singal Processing, Adaptive Filters, CIC filters, DSP applications, Introduction to Codecs | 12             |

### Instructional Method and Pedagogy:

- Lectures will be conducted with the aid of multi-media projector, black board, Transparencies etc.
- Assignments and Exercise will be given to the students for each unit/topic and will be evaluated at regular interval.
- Surprise tests/Quizzes/Seminar/Tutorials will be conducted.

## **Students Learning Outcomes:**

At the end of the course the students will be able to

- Understand the significance of digital signal processing in the field of computing, telecommunications and multi-media technology.
- Use matlab for analyzing, designing and implementing of Digital signal processing system such as digital filters.
- Specify the "real time" implementation of DSP operations using special purpose fixed point 'DSP microprocessors'.

## **Reference Books:**

1. DSP Fundamentals & Applications by Li Tan Elsevier , Academic Press, 2008
2. DSP A Computer Based Approach by Dr Sanjit Mitra, TMH, 3rd Edition
3. Digital Signal Processors, Architectural Implementations and Applications by Sen M Kuo, Woon Seng Gan. (Pearson Edu.)
4. "Multirate digital signal processing for communication systems", Fredric J. Harris,(PHI)