

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI-620015

Course Code and Name	: EC610 Digital Signal and Image Processing Laboratory
No. of Credits	: 2 Credits
Course Teacher	: P.PALANISAMY A-310, IInd Floor, Admin. Block, ECE Department.
Other Faculty	: Mr.S.Murugesan and Ms.P.Deepthi
Pre-requisite Course	: Knowledge in Signal Processing, Communication Engineering and Image Processing
Laboratory Location	: Second Floor, Silver Jubilee Building (SJB)

COURSE OVERVIEW

The course will teach the students to design/solve/simulation problems in the areas of Signal Processing, Communication and Image Processing in a MATLAB environment. This course will reinforce the knowledge of topics delivered in the pre-requisite courses through design and implementation of real-time algorithms and provide practical experience for the preparation of the project work. Few experiments may be carried out based DSP kits. Each Lab class should conclude in a detailed report. The course will be composed of an Experiment sessions and assignments.

COURSE CONTENT

Experiment and Assignment of the Course will based on the following Topics:

Based on MATLAB:

- (i) Implementation multirate DSP system and its applications
- (ii) Adaptive noise cancellation problem using LMS and RLS algorithm
- (iii) Spectrum Estimation based on non-parametric and Non-parametric methods
- (iv) Estimation of frequencies and noise power in a time domain signal
- (v) Orthogonal Frequency Division Multiplexing (OFDM) system
- (vi) Multiple Input Multiple Output (MIMO) System
- (vii) Study of Image enhancement and denoising problem
- (viii) Image Compression using DCT and wavelet

Based on DSP Kits:

- (i) Design and Implementation of FIR filter
- (ii) Design and Implementation of IIR filter Design
- (iii) Realization of STFT using FFT
- (iv) Realization of FIR Wiener filter

COURSE OBJECTIVES

To develop an intuitive understanding of Signal and Image Processing concepts through practical experience that is sufficient to enable the students to apply signal and image processing concepts to practical problems.

COURSE ASSESSMENT PLAN

Assignments and Report	:	20 Marks
Class Experiment and Reports	:	30 Marks
Viva/Quiz	:	20 Marks
Final Exam	:	30 Marks

(i) Attending all the Assessment given above is MANDATORY for every student

(ii) Schedule for the above assessment will be intimated during lab class or through class committee meeting

- Attendance** : Attendance will be taken in all the Lab class. Every student should maintain minimum 75% physical attendance (on other duty will not be considered) in the lecture hours to attend the end semester examination. Student having attendance less than 75% at the end of the semester will have to RE DO the course.
- Assignment** : Some simulation problems/questions will be given during laboratory class. Submission/demo must be in the following week. Late submission will not be accepted unless convincing reasons are provided, but even then some % of deduction will be applied.
- Grading policy** : **(i)** Grading will be done relatively by taking total marks obtained by the student in all the assessments.
(ii) In order to award passing grade of E, every student is expected to score minimum 40 marks in the total marks and appeared in final exam. Otherwise the student would be declared fail and 'F' grade will be awarded. The student scored F grade can take up only Supplementary Examination.
- Academic Integrity** : In general, the Academic Integrity means that "the students shall not represent the work of others as their own" This policy will be applied to all work submitted for awarding marks. Copying solutions provided by any teacher(s) in previous semesters, or from any text solutions manual, or from students who took the course in previous semesters, or internet will be punished.


EXPECTED COURSE OUTCOMES

By the end of the course, students should be able to:

1. Design and implement a DSP algorithms/systems using MATLAB
2. Implement algorithm for image processing
3. Apply DSP algorithms/systems for real-life problems
4. Understand decimation and interpolation of discrete-time signals and multirate DSP systems

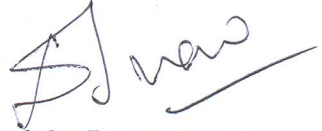
COURSE EXIT SURVEY

Feedback from the students will be obtained as per the institute norms



P.PALANISAMY
COURSE TEACHER

M. A. T. 4/11/2012
Class Committee Chairperson



Head of the Department