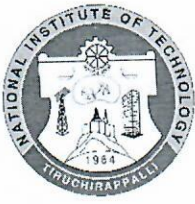




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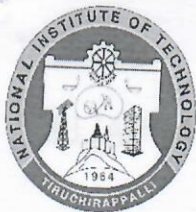
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	M. Tech., Communication Systems-2 nd Semester - 1 st year		
Course Title	Digital signal and Image Processing Laboratory		
Course Code	EC610	No. of Credits	2
Course Code of Pre-requisite subject(s)	-		
Session	January 2020	Section (if, applicable)	
Name of Faculty	Dr. Varun P. Gopi	Department	ECE
Email	varun@nitt.edu	Telephone No.	+91-9995114547
Name of Course Coordinator(s) (if, applicable)	Dr. Varun P. Gopi		
E-mail	varun@nitt.edu	Telephone No.	+91-9995114547
Course Type	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
Tentative list of experiments-			
Text books-			
1. J.G.Proakis, M. Salehi, "Advanced Digital Signal Processing", McGraw –Hill, 1992. 2. S.Haykin, "Adaptive Filter Theory (3/e)", Prentice- Hall, 1996 3. D.G.Manolakis, V. K. Ingle, and S. M. Kogon, "Statistical and Adaptive Signal Processing", McGraw-Hill, 2005 4. R. C.Gonzalez, R.E.Woods, "Digital Image processing", Pearson edition, Inc3/e, 2008 5. A.K.Jain, "Fundamentals of Digital Image Processing", PHI, 1995			
COURSE OBJECTIVES			
<input type="checkbox"/> To make the students understand the fundamentals of signal & image processing techniques. <input type="checkbox"/> To train them to apply these to real life project <input type="checkbox"/> To train through experiential learning			
COURSE OUTCOMES (CO)			
Course Outcomes		Aligned Programme Outcomes (PO)	
CO1: To design simple adaptive filters		1, 2, 3	
CO2: To study the performance of periodogram power spectrum estimator		1, 2, 3	



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CO3: To study basic image processing transforms		1, 2, 3	
CO4: To study basic image processing techniques to improve the quality of image		1, 2, 3	
COURSE PLAN – PART II			
COURSE OVERVIEW			
The course will focus on the digital signal & image processing. It will cover basic adaptive filters, application of signal processing in communication. basic image transforms, enhancement techniques.			
COURSE TEACHING AND LEARNING ACTIVITIES			
Sl.No.	Week	Topic	Mode of Delivery
1.	1	Generation of spatially correlated multivariate Gaussian process with desired mean vector and the required co-variance matrix	C&T, PPT, group discussion, peer learning, experiential Learning
2.	2	Forward linear predictor and backward linear predictor	
3.	3	Design and Realization of the adaptive filter using LMS algorithm and RLS algorithm	
4.	4	Noise cancellation using Winner filter and adaptive filter	
5.	5	Performance study of periodogram power spectrum estimator and modified periodogram estimator	
6	6	Nonparametric and methods of power spectrum estimator (Bartlett's and Welch's methods)	
7	7	Quadrature –mirror filter	
8	8	Representation of the 2D image signal as the linear combinations of PCA (Eigen faces)	
9	9	Basic image transforms	
10	10	Image compression using discrete cosine transformation (DCT) & Discrete Wavelet Transmission (DWT)	
11	11	Basic Image denoising methods	



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12	12	Morphological Operations - erosion, dilation	
13	13	Morphological Operations - opening, closing	
14	14	Image restoration using inverse and wiener filtering	
15	15	Basic Image classification methods	

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	I (Close book)	3 rd Week of Feb. 2019	60 Minutes	20
2	II (Project)	4 th Week of March 2019	-	20
3	III (Close book- Quiz)	1 st week of April 2019	20 minutes	10
4	IV (Continuous evaluation and Record)	NA	-	20
CPA	Compensation Assessment*	3 rd Week of April 2019	60 Minutes	20
5	Final Assessment *	4 th Week of April 2019	180 Minutes	30

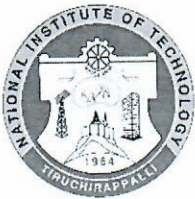
*mandatory; refer to guidelines on page 4

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback from the students during class committee meetings.

Anonymous feedback through questionnaire.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)



MODE OF CORRESPONDENCE (email/ phone etc)

1. All the students are advised to check their mail IDs regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information Regarding this course) will be intimated in Class or mail.

COMPENSATION ASSESSMENT POLICY

- a. Compensation exam can only be conducted if the reason is genuine, e.g. unavoidable medical emergency.
 - b. The candidates are requested to intimate well in time and they need to produce proof for the same
 - c. The application should come through HoD/Class Chairperson
- A maximum of 10% shall be allowed under On Duty (OD) Category.
- Students with lesser than 65% attendance will be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY AND PLAGIARISM

- ❖ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- ❖ Zero marks to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- ❖ The departmental disciplinary committee including the course faculty member, PAC chairperson and HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programs.

ADDITIONAL INFORMATION

FOR APPROVAL

Course Faculty CC-Chairperson..... HOD.....

Dr. V. Anandh. K. K. K.

(Dr. B. Rebekka)



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Guidelines:

- a. The number of assessments for a course shall range from 4 to 6.
- b. Every course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c. One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered. Details of compensation assessment to be specified by faculty.
- d. The passing minimum shall be as per the regulations.
- e. Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f. Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g. Necessary care shall be taken to ensure that the course plan is reasonable and is objective.