TCET/FRM/IP-02/09 Revision: A

Semester Plan
(Theory)

Semester: VII Course: EXTC

Subject: Image and Video Processing Class: BE- B

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1		S1.1	**SOP**	LCD Projector	10/07/17		
2		S1.2	OBE	LCD Projector	10/07/17		
3		S1.3	IVP (Lab)	LCD Projector	11/07/17		
4	1	L1.1	Image acquisition, sampling and quantization	LCD Projector	13/07/17	M1.1	
5	1	L2.1	image resolution, basic relationship between pixels,	LCD Projector	17/07/17	M1.2	
6	1	L1.3	color images, RGB, HSI and other models	LCD Projector	18/07/17	M1.3	
7	3	L3.1	Point Processing: Digital Negative, contrast stretching thresholding, gray level slicing,	LCD Projector	19/07/17	M3.1	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
8	3	L3.2	bit plane slicing, log transform and power law transform	LCD Projector	20/07/17	M3.1	
9	3	L3.3	Neighborhood Processing: Averaging filters, order statistics filters,	LCD Projector	21/07/17	M3.2	
10	3	L3.4	High pass filter and high boost filter	LCD Projector	24/07/17	M3.2	
11	3	L3.5	Zooming- replication and linear interpolation	LCD Projector	25/07/17	M3.3	
12	3	L3.6	1 Dimensional Fourier Transform and 2 Dimensional Fourier Transform	LCD Projector	25/07/17	M3.4	
13	3	L3.7	Freq. Domain DFT for filtering Ideal, Gaussian and Butterworth filter	LCD Projector	26/07/17	M3.5	
14	3	L3.8	Freq. domain analysis LPF and HPF	LCD Projector	31/07/17	M3.6	
15	3	L3.9	Sharpening and homomorphic filter	LCD Projector	01/08/17	M3.7	
16	3	L3.10	Histogram equalization and specification	LCD Projector	01/08/17	M3.8	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
17	3	L3.11	Sums on histogram equalization	LCD Projector	02/08/17	M3.9	
18	2	L2.1	Two dimensional transform DFT	LCD Projector	07/08/17	M2.1	
19	2	L2.2	Discrete cosine transform	LCD Projector	08/08/17	M2.2	
20	2	L2.3	K.L. Transform , Discrete wavelet transform	LCD Projector	08/08/17	M2.3	
21	2	L2.4	Discrete wavelet transform	LCD Projector	09/08/17	M2.4	
22	4	L4.1	Image segmentation and morphology Point , line and edge detection	LCD Projector	14/08/17	M4.1	
23	4	L	Edge linking through graph theriotic techniques	LCD Projector	16/08/17	M4.2	
24	4	L9.1	Thresholding Region based segmentation	LCD Projector	30/08/17	M4.3	
25	4	L9.2	Dilation, Erosion, opening and closing	LCD Projector	04/09/17	M4.4	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
26	4	L9.3	Restoration using Weiner filter and inverse filter	LCD Projector	05/09/17	M4.5	
27	4	L9.4	Morphological operations on images	LCD Projector	05/09/17	M4.6	
28	4	L10.1	Hit and miss transform	LCD Projector	06/09/17	M4.7	
29	4	L10.2	Thinning and thicking	LCD Projector	11/09/17	M4.8	
30	5	L10.3	Boundary extraction on binary images	LCD Projector	12/09/17	M5.1	
31	5	L10.4	Image Restoration Degration model , noise model	LCD Projector	12/09/17	M5.2	
32	5	L11.1	Estimation of degradation function by modelling	LCD Projector	13/09/17	M5.3	
33	6	L11.2	Video formation Perception and representation , Digital video sampling	LCD Projector	12/09/17	M6.1	
34	6	L11.3	Video Frame Classification ITV-RBT 601, Digital video formats	LCD Projector	18/09/17	M6.2	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
35	6	L12.1	Digital Video quality measures	LCD Projector	19/09/17	M6.3	
36	6	L12.2	Principle of color video camera, Digital Video	LCD Projector	19/09/17	M6.4	
37	6	L13.1	Required Sampling rates , sampling in 2 and 3 dimension	LCD Projector	20/09/17	M6.5	
38	6	L13.2	Progressive interlaced scans	LCD Projector	25/09/17	M6.6	
39	7	L13.3	Two Dimensional motion estimation Optical flow – 2D motion vs optical flow	LCD Projector	26/09/17	M7.1	
40	7	L.14.1	Optical flow eqn motion representation motion estimation critera	LCD Projector	26/09/17	M7.2	
41	7	L15.1	Optimization method Regularization using motion smoothing	LCD Projector	03/10/17	M7.3	
42	7	L15.2	Regularization using multiple neighbourhood	LCD Projector	03/10/17	M7.4	
43	7	L15.3	Exhaustive block matching algorithm, Binary feature matching and hierarchical block matching algorithm	LCD Projector	04/10/17	M7.5	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
44	1-7	L15.4	Revision and Doubt solving	LCD Projector	04/10/17	M 1-7	
45	1-7	L15.5	University paper solving	LCD Projector	16/10/17	M1 -7	
Remark:: Course:		Syllabus Coverage:		Practice Session:		Beyond Syllabus:	
No. of (lectures planned)/(lecture taken): (45) / ( )							

Bridge courses Objective: Bridging of gaps with respect to prerequisites and industry skills or to carryout research in signal processing field**. (26 Hrs / Semester / student)**

S.No.	Bridge courses/Technology	Duration (Week/hrs)	Modes of Learning	Recommended Sources
1.	**Prerequisite course:** Signals and Systems (NPTEL Course)	06 Hours	Technology Based learning	Lecture 1 to 6 http://nptel.ac.in/courses/117104074/
2	**Advanced course:** Digital Image Processing of Remote Sensing Data (NPTEL Course)	20 Hours	Technology Based learning	https://onlinecourses.nptel.ac.in/noc17_ce26/preview

Text Books:

1) Gonzales and Woods,Digital Image Processing ,Pearson Education,India,Third Edition,
2) Anil K.Jain Fundamentals of Image Processing ,Prentice Hall of India, First Edition,1989.
3) 3. Murat Tekalp, Digital Video Processing ,"Pearson, 2010

Reference Books:

1) John W. Woods,Multidimensional Signal,Image and Video Processing,Academic Press 2012
2) J.R.Ohm , "Multimedia Communication Technology", Springer Publication.
3) A.I.Bovik, "Handbook on Image and Video Processing", Academic Press.

Digital Reference:

- Wikipedia
- Google

- https://www.coursera.org/learn/digital

Sd/-	Sd/-	Sd/-
(Ms. Aradhana Manekar)	**(Dr. Vinitkumar Dongre)**	**(Dr. R. R. Sedamkar)**
Name & Signature of Faculty	Signature of HOD	Signature of Principal /Dean (Academics)
Date:	Date:	Date:

Note:

1. Plan date and completion date should be in compliance
2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.
3. Planning is to be done for 15 weeks where 1st week will be AOP, 2nd -13th for effective teaching and 14th -15th week for effective university examination oriented teaching, mock practice session and semester consolidation.
4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.
5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.
6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non –digital/ digital sources can be written (if applicable)
7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.