

# Zagdu Singh Charitable "Trust's (Regd.) THAKUR COLLEGE OF

A - Block, Thakur Educational Campus, Shyamnarayan Thakur Marg, Thakur Village, Kandivali (East), Mumbai - 400 101.



ENGINEERING & TECHNOLOGY

(Approved by AlCTE, Govt. of Maharashtra & Affiliated to University of Mumbai\*)

(Accredited Programmes by National Board of Accreditation, New Delhi\*\*)

\*\*Permanent Affiliated UG Programmes: \*Computer Engineering \* Electronics & Telecommunication Engineering \* Information Technology (w.e.f.: AY. 2015-16 onwards)

\*\*Ist time Accredited UG Programmes: \*Computer Engineering \* Electronics & Telecommunication Engineering \* Information Technology

\*\*2nd time Accredited UG Programmes: \*Computer Engineering \* Electronics & Telecommunication Engineering \* Information Technology \* Electronics Engineering \* Information Engineering \* Informatio

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

## **Semester Plan** (Theory)

Course: EXTC Semester: VII

Subject: Image and Video Processing Class: BE-B

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completi on Date	Resource Book Reference	Remarks	
1		S1.1	SOP	LCD	10/07/17			
,		01.1	<b>30</b> 1	Projector				
2		S1.2	OBE	LCD	10/07/17			
2		31.2	OBE	Projector				
		C4 2	IV/D // sk\	LCD	11/07/17			
3		S1.3	IVP (Lab)	Projector				
4	4	144	Image acquisition, sampling and	LCD	13/07/17	M1.1		
4	1	L1.1	quantization	Projector				
5	1	L2.1	image resolution, basic	LCD	17/07/17	M1 2		
5	1	L2.1	relationship between pixels,	Projector				
	4			color images, RGB, HSI and other	LCD	18/07/17	151.0	
6	1	L1.3	models	Projector		M1.3		
7	3	L3.1	Point Processing: Digital Negative,	LCD	19/07/17	M2 4		
	ა 	LJ.I	contrast stretching thresholding, gray level slicing,	Projector		M3.1		

							Remarks
Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completi on Date	Resource Book Reference	
8	3	L3.2	bit plane slicing, log transform and	LCD	20/07/17		
0	3	L3.2	power law transform	Projector		M3.1	
9	3	L3.3	Neighborhood Processing: Averaging filters, order statistics	LCD	21/07/17	M3.2	
3	3	LU.U	filters,	Projector		1413.2	
10	3	L3.4	High pass filter and high boost filter	LCD	24/07/17	M3.2	
10	3	L3.4	Trigit pass litter and riight boost litter	Projector		1413.2	
11	3	L3.5	Zooming- replication and linear	LCD	25/07/17	M3.3	
	,	L3.3	interpolation	Projector			
12	3	L3.6	Dimensional Fourier Transform     and	LCD	25/07/17	M3.4	
12	3	L3.0	2 Dimensional Fourier Transform	Projector			
13	3	L3.7	Freq. Domain DFT for filtering Ideal, Gaussian	LCD	26/07/17	M3.5	
10	0	20.7	and Butterworth filter	Projector		1413.3	
14	3	L3.8	Freq. domain analysis	LCD	31/07/17	M3.6	
		20.0	LPF and HPF	Projector		1413.0	
15	15 3	2 120	L3.9 Sharpening and homomorphic filter	LCD	01/08/17	M3.7	
	J	20.0	Charponing and nomomorphic filter	Projector		1413.7	
16	3	L3.10	Histogram equalization and	LCD	01/08/17	M3.8	
10	J	20.10	specification	Projector	ctor	W15.8	

Sr.		Lesson	Topics Planned	Teaching Aids	Planned /Completi	Resource Book	Remarks
No	Module No.	No.	(Technology to be used)	Required	on Date	Reference	
47	3	L3.11	Sums on histogram equalization	LCD Projector	02/08/17	M3.9	
17			<b>G</b> 1				
18	2	L2.1	Two dimensional transform DFT	LCD Projector	07/08/17	M2.1	
				Frojector			
19	2	L2.2	Discrete cosine transform	LCD Projector	08/08/17	M2.2	
				riojecioi			
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	
			Tomit, into and oago dotomon		10/00/17		
23	4	L	Edge linking through graph theriotic techniques	LCD Projector	16/08/17	M4.2	
					30/08/17		
24	4	L9.1	Thresholding Region based segmentation	LCD Projector	30/06/17	M4.3	
					04/09/17		
25	4	L9.2	Dilation, Erosion, opening and closing	LCD Projector		M4.4	

				Tanakina		D	Remarks		
Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completi on Date	Resource Book Reference			
26	4	L9.3	Restoration using Weiner filter and	LCD	05/09/17	M4.5			
20	4	L9.3	inverse filter	Projector		141.5			
27	4	L9.4	Morphological operations on	LCD	05/09/17	M4.6			
21	Ŧ	L9. <del>4</del>	images	Projector		141.0			
28	4	L10.1	Hit and miss transform	LCD	06/09/17	M4.7			
20	4	L10.1	าแ สาด การร แสกรเอกก	Projector		M4.7			
29	4	L10.2	Thinning and thicking	LCD Projector	11/09/17	M4.8			
29	4	L10.2	Trillining and tricking						
30	5	L10.3	Boundary extraction on binary	LCD	12/09/17	M5.1			
30	,	L10.5	images	Projector					
31	5	L10.4	Image Restoration	LCD	12/09/17	M5.2			
31	3	L10.4	Degration model , noise model	Projector					
32	5	L11.1	Estimation of degradation function	LCD	13/09/17	M5.3			
52	3	L11.1	by modelling	Projector		1415.5			
33	6	Video formation L11.2 Perception and representation	144.0	Video formation Perception and representation ,	LCD	12/09/17	M6.1		
33	J	L11.Z	Digital video sampling	Projector		1710.1			
34	6	L11.3	144.0	1112	Video Frame Classification	LCD	18/09/17	M6.2	
J+	J	LII.J	ITV-RBT 601, Digital video formats	Projector		1410.2			

							Remarks
Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completi on Date	Resource Book Reference	
0.5		1.40.4	District Victoria and the second	LCD	19/09/17	Mc2	
35	6	L12.1	Digital Video quality measures	Projector		M6.3	
00		1.40.0	Principle of color video camera,	LCD	19/09/17	McA	
36	6	L12.2	Digital Video	Projector		M6.4	
07		1.40.4	Required Sampling rates ,	LCD	20/09/17	1465	
37	6	L13.1	sampling in 2 and 3 dimension	Projector		M6.5	
				LCD Projector	25/09/17	M6.6	
38	6	L13.2	Progressive interlaced scans				
00	7	1.40.0	Two Dimensional motion estimation	LCD	26/09/17	M7.1	
39	7	L13.3	Optical flow – 2D motion vs optical flow	Projector			
40	7	1 111	Optical flow eqn motion	LCD	26/09/17	M7.0	
40	,	L.14.1	representation motion estimation critera	Projector		M7.2	
44	7	L15.1	Optimization method	LCD	03/10/17	- M7.3	
41	,	L15.1	Regularization using motion smoothing	Projector			
42	7	Regularization using multiple	LCD	03/10/17	D 577 - 4		
42	,	L15.2	neighbourhood	Projector		M7.4	
43	7	Exhaustive block matching algorithm, Binary feature matching	LCD	04/10/17	N7.5		
43	,	L15.3	and hierarchical block matching algorithm	Projector	m7.5	1417.3	

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

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	Technolo gy Based learning	Lecture 1 to 6 http://nptel.ac.in/courses/1 17104074/
2	Advanced course: Digital Image Processing of Remote Sensing Data (NPTEL Course)	20 Hours	Technolo gy Based learning	https://onlinecourses.nptel .ac.in/noc17_ce26/previe w

## **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:

#### Note:

- 1. Plan date and completion date should be in compliance
- 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 1<sup>st</sup> week will be AOP, 2<sup>nd</sup> -13<sup>th</sup> for effective teaching and 14<sup>th</sup> -15<sup>th</sup> 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.