DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE PLAN

Department : COMPUTER SCIENCE
Subject : CSE 320– DIGITAL IMAGE PROCESSING (ELECTIVE)
Semester & branch : VI CSE
Name of the faculty : P. C. Siddalingaswamy
No of contact hours/week : 04

Assignment portion	
Assignment no.	Topics
1	L1-L8
2	L9-L16
3	L17-L24
4	L25-L32
5	L33-L40
Test portion	
Test no.	Topics
1	L1-L20
2	L21-L40

Submitted by:

P. C. Siddalingaswamy

(Signature of the faculty)
Date:

Approved by:

(Signature of HOD)
Date:

Lecture No.	Topic to be covered
1	Introduction to Digital Image Processing
2	Applications of Image Processing
3	Fundamental steps in Digital Image Processing
4	Elements of Visual Perception
5	Image Sampling and Quantization
6	Relationship between Pixels
7	Basic Intensity Transformations
8	Histogram Equalization
9	Histogram Specification
10	Using Histogram Statistics for Image Enhancement
11	Mechanics of Spatial Filtering
12	Smoothing Spatial Filters
13	Sharpening Spatial Filters
14	Combining Enhancement Methods (Examples)
15	Frequency Domain- Discrete Fourier Transform
16	Properties of 2D DFT
17	Smoothing in Frequency Domain
18	Sharpening in Frequency Domain
19	Homomorphic and Selective Filtering
20	DFT Implementation
21	Image Segmentation Fundamentals

22	Point and Line Detection
23	Edge Models
24	Hough Transform
25	Canny Edge detection
26	Thresholding
27	Otsu's Method of Thresholding
28	Other Thresholding techniques
29	Region Based Segmentation
30	Watershed Transformation
31	Morphological Image Processing
32	Dilation Erosion
33	Opening Closing
34	Basic Morphological Algorithms
35	Basic Morphological Algorithms – contd.
36	Gray Scale Transformation
37	Morphological Reconstruction
38	Fundamentals Of Image Compression
39	Huffman Coding
40	Arithmetic & Runlength Coding
41	LZW Coding
42	Block Transform Coding
43	A model of Image degradation/restoration process
44	Restoration in The Presence of Noise-Spatial Filtering

45	Adaptive Filters
46	Periodic Noise Reduction by Frequency Domain Filtering
47	Inverse filtering
48	Minimum Mean square error Filtering

Text Books:

1. Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing", Third Edition, Pearson Education.
2. Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Processing Using MATLAB", Second Edition, McGrawHill Publication.

Reference Books:

1. Milan Sonka, Vaclav Hlavac, Roger Boyle, "Digital Image Processing and Computer Vision", India Edition, Cengage Learning.
2. Relevant research papers from the journals.