FACULTY OF COMPUTER SCIENCE
Master of Computer Application (Sem-II)
In Effect from Academic Year 2023-24

Branch Name:	MCA
Program Code:	CS201
Course Name:	Image Processing Practical
Course Code:	3CS2010205P
Pre-requisite Course:	Basic knowledge of Computer Graphics is desirable

Course Objectives:

1. Understand basic concepts and methodologies for digital image processing
2. Develop a foundation that can be used as the basis for further study and research in this field
3. Provide understanding of the different types of image representations, enhancing Image characteristics, image filtering, and reducing the effects of noise and blurring

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
-	-	3	3	-	-	25	25	50

LAB/Practical

Sr.No	Practical Exercise
1	**Introduction to MATLAB and Image Processing toolbox [10%]** Digital Image representation using MATLAB, Image I/O and Display, Classes and Image types, M-function programming
2	**Transformations, Histogram Processing and Spatial Filtering [25%]** Intensity transformations functions of MATLAb, Histogram Processing and Function Plotting, Image processing toolbox standard Spatial Filters, Computing and Visualizing the 2-D DFT in MATLAB, High pass (Sharpening) and Low pass (Smoothening) filters I frequency domain
3	**Image Restoration and Compression [25%]** Noise models, Restoration using spatial filtering, Coding redundancy, Spatial redundancy, Irrelevant information, JPEG compression
4	**Color and Morphological Image Processing [20%]** Color Image representation in MATLAB, Converting between Color Spaces, Basics of Color Image Processing, Morphological Image processing: Dilation and erosion, Labeling Connected components ,Gray scale morphology
5	**Image Segmentation and Object Recognition [20%]** Point , line and Edge Detection, Hough Transform, Thrashholding, Region based and Water Shed Transform

List of Reference (Practical) :

1. Digital Image Processing using MATLAB, R.C. Gonzalez and R.E. Woods, Steven L. Eddins McGraw Hill, 2nd Edition

Text Books:

1. Digital Image Processing, R.C. Gonzalez and R.E. Woods, Addition-Wesley (Pearson Education Asia), 3rd Edition.
2. Fundamentals of Digital Image Processing, Anil K. Jain, Prentice-Hall India, 2001.

Reference Books:

1 Digital Image Processing and Analysis, B. Chanda and D. Datta Majumder, Prentice-Hall India, 2001.
2. Digital Image Processing, Madhuri A. Joshi, PHI, 2006.

List of Open Source Software/learning website:

1. https://www.tutorialspoint.com/dip/index.htm
2. https://www.w3schools.com/css/css_image_sprites.asp

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom'sTaxonomyLevel
CLO1	To choose the appropriate data type and data structure for a given problem.	2 Understanding
CLO2	To choose the best algorithm to solve a problem by considering various problem characteristics, such as the data size, the type of operations, etc.	1 Remembering 3 Applying,
CLO3	To create the algorithms and program of various operations on Queues, Stacks, Linked Lists, Trees, Graphs, Sorting, Searching, Hash tables etc.	2 Understanding, 3 Applying,
CLO4	To evaluate algorithms with respect to time and space complexity.	3 Applying, 2 Understanding
CLO3	Learns the fundamentals of image processing. Applies transformations on images.	1 Remembering 3 Applying,
CLO4	Explains image segmentation. Expresses image compression methods. Realizes image recognition process. Recognizes morphological image processing techniques.	4.Analyse 6.Creating

SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

FACULTY OF COMPUTER SCIENCE

Master of Computer Application (Sem-II)

In Effect from Academic Year 2023-24

Mapping of CLOs with Pos & PSOs

Course LearningOutcomes	Program Outcomes(POs)													
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CLO1	**M**	**M**	**L**		M		**L**	M	L	M		**M**	**H**	**M**
CLO2	M	M	H			**M**	M			**H**	L	L	**H**	**M**
CLO3	H	M	H		**M**	**M**		**M**	L	M		H	**L**	**M**
CLO4	M		**H**	**M**	M	**L**	M	**L**	**M**		H	H	H	**M**
CLO5	M		**H**	**L**	M	**L**	M	**L**	**H**		H		H	**M**
CLO6	L		**H**	**M**	M	**L**	M	**L**	**M**		H	H	H	**L**

H:High, M:Medium, L:Low