



National Institute of Technology Meghalaya

An Institute of National Importance

CURRICULUM

Programme	Master of Computer Applications
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Year of Regulation

2024-25

Department	Computer Science and Engineering
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Semester

V

Course Code	Course Name						Pre-Requisite	Credit Structure				Marks Distribution			
								L	T	P	C	Continuous Evaluation	Quiz/ Viva	Total	
CA655	Image Processing Lab							0	0	2	1	70	30	100	
									CO's	Statement			Bloom's Taxonomy		
Course Objectives	To introduce the use of the components of digital image processing fundamentals						Course Outcomes	CA655.1	Able to acquire knowledge about the basic concepts used in Image processing.				Understand		
	To introduce the mathematical foundation related in this domain.							CA655.2	Able to interpret the image processing fundamentals: hardware, software, digitization				Create		
	To introduce ability to apply image processing techniques in both the spatial and frequency (Fourier) domains.							CA655.3	Able to implement various algorithms for various edge detection, feature detection.				Understand		
	To provide an understanding of description and analysis of how digital images are represented, manipulated, encoded and processed.							CA655.4	Able to describe the importance of image segmentation and restoration.				Understand		
								CA655.5	Students will be able to understand the Comparison of various Compression methods.						
COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS O2	PSO3
CA655.1	2	1	1		1					1	1	1	1		1
CA655.2	2	1	1	1	1	1			1				1	1	1
CA655.3	1	1	1	1	1				1				2	2	
CA655.4	2	2	2	2									1	1	1
CA655	1.75	1.25	1.25	1.33	1.00	1.00			1.00	1.00	1.00	1.00	1.25	1.33	1.00

SYLLABUS

No.	Content	Hours	COs
I	Implement and understand image resizing, image type conversion, line profile.	02	CA655.1
II	Implement of image addition, image complement, logical operations (like NOT, OR, AND, XOR) on images, geometric operations.	02	CA655.1
III	Understand histogram operations, contrast stretching, gamma correction on images.	02	CA655.2
IV	Observe various type of noise effect on images.	02	CA655.2
V	Implement different spatial filtering (smoothing & sharpening) techniques.	02	CA655.2
VI	Understand and implement Fast Fourier Transformation (FFT) and frequency domain filtering on images.	04	CA655.4
VII	Understand image restoration and implement the Weiner filter on images.	04	CA655.4
VIII	Understand image segmentation using different edge detection, thresholding techniques.	04	CA655.3
IX	Understand and implement different morphological operation and their applications. Understand colour model s and manipulate colour images.	06	CA655.3
Total Hours		28	

Essential Readings

1. Gonzalez R. C. and Woods R. E, "Digital Image Processing", Pearson Prentice Hall, 3rd edition 2008.
2. Jain A. K., "Fundamentals of Digital Image Processing", PHI.

Supplementary Readings

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1. JOSHI, MADHURI A., " DIGITAL IMAGE PROCESSING : AN ALGORITHMIC APPROACH", 2nd Edition, PHI Learning