

**SRM UNIVERSITY, DELHI-NCR, SONEPAT, HARAYANA.
FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

Teaching Learning Evaluation Plan

Subject Code :	21CS3023	Subject Name :	Digital Image Processing
Year/ Semester :	3rd / 5th	Branch :	CSE
Course Incharge :	Dr Ruchi	Designation :	Associate Professor

Unit	Lecture Schedule	Topics	Pedagogy	Learning Outcome	Activity
I	1-3	Digital Image processing - Introduction, its origin, fundamental steps, components	Presentation, Questioning	LO1	Discussion
	4-8	Visual perception, Perspective Projection. Light and EM spectrum. Image sensing and acquisition	Presentation, Analytic Process	LO1	Discussion
	9-12	Image sampling. Quantization – its methods and steps. Relationship between pixels.	Presentation, Distributed Practices	LO1	Discussion Quiz
II	13-15	IMAGE ENHANCEMENT Spatial Domain: Gray level transformation - its method and types. Histogram processing – intro and application.	Presentation, Analytic Process	LO2	Discussion & Assignment
	16	Arithmetic & Logic operations in 2D domain, Correlation and Convolution	Presentation, Questioning	LO2	Discussion
	17-20	Filtering techniques in 2D: Spatial filtering, Smoothing filters, Sharpening filters	Presentation, Analytic Process	LO2	Discussion
	21,22	Frequency Domain: 2D sampling, Fourier transform	Presentation, Analytic Process	LO2	Discussion
	23	Filtering techniques: sharpening filters, Homographic filtering	Presentation, Distributed Practices	LO2	Discussion
	24	smoothing frequency, domain filters	Presentation, Analytic Process, Questioning	LO2	PPT Assignment
III	25,26	IMAGE RESTORATION: Introduction, Model of Image degradation, restoration process	Presentation, Analytic Process	LO3	Discussion
	27,28	Noise characterization and Noise models	Presentation, Questioning	LO3	Discussion

	29	Mean filters & adaptive filters	Presentation, Analytic Process	LO3	Discussion
	30-32	Band reject, band pass, notch and optimum notch filters	Presentation, Questioning, Distributed Practices	LO3	Discussion
	33	Linear, position invariant degradations	Presentation, Analytic Process	LO3	Discussion
	35-36	Establishing degradation functions, Inverse filtering, Geometric mean filters, Restoration from projections	Presentation, Analytic Process	LO3	Discussion
IV	37-38	IMAGE COMPRESSION: Introduction, Fundamentals, and Image compression models	Presentation, Analytic Process, Questioning, Distributed Practices	LO4	Discussion
	39	Types of Redundancies	Presentation, Analytic Process, Questioning, Distributed Practices	LO4	Discussion
	40-43	Information theory: error free compression: variable length, LZW, and Bitplane	Presentation, Analytic Process, Questioning, Distributed Practices	LO4	PPT Discussion
	44-45	Lossless predictive coding; Lossy compression, Lossy predictive	Presentation, Analytic Process, Questioning, Distributed Practices	LO4	Discussion
	46,48	transform coding and wavelet coding	Presentation, Analytic Process, Questioning, Distributed Practices	LO4	Discussion
	49	Image compression standards	Presentation, Analytic Process	LO4	Discussion
V	50-52	IMAGE SEGMENTATION: introduction, Detection of discontinuities	Analytic Process, Questioning, Distributed Practices	LO5	Discussion

	53	Edge linking & Boundary detection, Thresholding, Region based segmentation	Analytic Process, Questioning, Classroom	LO5	Discussion
	54,55	Representation & Description: Chain codes, Polygonal approximations	Analytic Process, Questioning, Classroom	LO5	Discussion
	56-58	Signatures, Boundary segments, Skeletons, Boundary Descriptors and Regional descriptors	Analytic Process, Questioning, Classroom	LO5	Discussion
	59,60	Research Activities and hands-on experience to solve complex real-world problems using any image processing library function	Presentation, Analytic Process, Questioning, Distributed Practices	LO5	PPT Assignment