Course Objective: To introduce fundamentals of computer vision so that students will understand to program a computer for understanding a scene or features in an image development.

S. NO	Course Outcomes (CO)
CO1	To describe Image Formation Models, Monocular imaging system, Orthographic & Perspective projections.
CO2	To evaluate applications of 2D/3D Vision Filters, Binary Images, Features and Edge Detection
CO3	To describe Image Processing and Feature Extraction concepts
CO4	To analyze motion Estimation, Regularization theory, Optical computation, Stereo Vision

CO5	To investigate Shape Representation Segmentation, Deformable curves and surfaces	
CO6	To explain about Object recognition, describe Hough transforms and other simple object recognition methods	

S. NO	Contents	Contact Hours
UNIT 1	Intorduction to Image Processing and Computer Vision, 2D/3D Vision: Filters, Binary Images, Features, Edge Detection, Texture, Shape, Segmentation, Clustering, Model Fitting, Probabilistic, 3D Vision:Multiview geometry, Stereo, Shape from X, 3D data	**8**
UNIT 2	Image Processing and Feature Extraction: Image representations (continuous and discrete), Linear Filters, Texture, Edge detection.	**6**
UNIT 3	Motion Estimation: Regularization theory, Optical computation, Stereo Vision, Motion estimation, Structure from motion.	**6**
UNIT 4	Shape Representation and Segmentation: Deformable curves and surfaces, Snakes and active contours, Level set representations, Fourier and wavelet descriptors, Medial representations, Multi- resolution analysis.	**8**
UNIT 5	CV Applications: Object recognition: Hough transforms and other simple object recognition methods, Shape correspondence and shape matching, Principal component analysis, Shape priors for recognition	**8**
UNIT6	CV Applications: Pose Estimation, Converting 2D images into 3D models, Image transformation using GANs, Computer Vision for traffic monitoring tools, Medical Image analysis.	**6**
	TOTAL	**42**