Course Type	Course Code	Name of Course	L	T	P	Credit
DE	CSD504	Computer Vision	3	0	0	9

Course Objective
To meet the requirement of the current trends in the industry and academic fields pertaining to machine vision
Learning Outcomes
• The students are expected to acquire knowledge and develop expertise

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction, challenges	2	The students would learn about the need, scopes, application areas, role and importance of the subject
2	images and imaging operations in low level vision, edge detection, corner, interest point and invariant feature detection	7	The basic input for the subject comes from the images and the students would acquire the basics of image processing operations with objectives
3	texture analysis, binary shape analysis, boundary pattern analysis,	5	The students will pick up concepts of handling the texture features, shape features, pattern analysis which are basic cues to machine vision related tasks
4	detection of linear, circular and elliptic structures, the generalised Hough transform, pattern matching techniques	5	The students will learn concepts related to detection of linear and curvilinear structures from a scene which constitute the complex structures in natural objects and scenes and need proper interpretation in machine vision tasks
5	object segmentation and shape models, basic classification concepts	8	The students would learn the most difficult task of object detection via segmentation - a mid level processing highly essential for recognition in machine vision
6	the three-dimensional world, invariants and perspective, image transformations and camera calibration and motion	6	The students would learn to handle more practical and more difficult and realistic problems encountered by machine vision in real 3D world
7	real time vision systems, face detection and recognition, surveillance in-vehicle vision systems,	5	In continuation with module 6 the students would learn to deal with more complex systems with more practical problems in vision
8	machine learning and deep learning concepts in vision	4	The students would learn the modern trend in vision related task with the concepts of intelligent processing

Text Books: Text Books:

1. Computer vision by Dana H. Ballard, Christopher M. Brown, Prentice Hall

Reference Books:

1. 3D computer vision: efficient methods and applications by Christian Wohler, Springer Berlin Heidelberg