PERCEPTION AND COMPUTER VISION

(Honors)

Course Code	20IT6701C	**Year**	IV	**Semester**	I
Course Category	Honors	**Branch**	IT	**Course Type**	Theory
Credits	4	**L-T-P**	4-0-0	**Prerequisites**	
Continuous Internal Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		**Blooms Taxonomy Level**
Upon successful completion of the course, the student will be able to		
CO1	Identify basic concepts, terminology, theories, models, and methods in the field of computer vision	**L2**
CO2	Understand known principles of the human visual system	**L2**
CO3	Apply basic methods of computer vision related to multi-scale representation, edge detection, and detection of other primitives, stereo, motion, and object recognition	**L3**
CO4	Analyze the design of a computer vision system for a specific problem	**L4**
C05	Evaluate the efficiency of computerVision	**L5**

Contribution of Course Outcomes towards the achievement of Program Outcomes & Strength of correlations (H: High, M: Medium, L: Low)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	3				3					3	3	3
CO2	3	3	3				3					3	3	3
CO3	3	3	3				3					3	3	3
CO4	3	3	3				3					3	3	3
CO5	3	3	2				2					2	2	2

Syllabus		
Unit No	**Contents**	**Mapped COs**
I	Introduction, the challenges, images and imaging operations in low-level vision, edge detection, corner, interest point, and invariant feature detection	**CO1**
II	Texture analysis, binary shape analysis, boundary pattern analysis, detection of linear, circular, and elliptic structures, the generalized Hough transform, pattern matching techniques	**CO2**
III	object segmentation and shape models, basic classification concepts, the three-dimensional world, invariants and perspective, image transformations and camera calibration, and motion	**CO3**
IV	Real-time vision systems, face detection, and recognition, surveillance in-vehicle vision systems	**CO4**
V	Machine learning and deep learning concepts in computer vision.	**CO5**

Learning Resources
Text Books
1. Computer vision by Dana H. Ballard, Christopher M. Brown, Prentice Hall 2. 3D computer vision: efficient methods and applications by Christian Wohler, Springer Berlin Heidelberg