

COURSE TITLE	TE142465: Computer-based Visual Perception Credits: 2 ELECTIVE COURSE
LEARNING OBJECTIVES	Giving knowledge to the students in order to understand the computer-based visual perception system.
COMPETENCY	<ul style="list-style-type: none"> • Students are able to analyze Students are able to analyze the electronic control system. • Students are able to analyze Students are able to design the electronic control system.
SUBJECTS	<ul style="list-style-type: none"> • Image formation and Image Model includes cameras, geometric camera models, geometric camera calibration, color • Early Vision-One Image includes linear filter, edge detection, texture • Early vision-Multiple Images includes geometry of multiple view, stereopsis, affine structure from motion, projective structure from motion • Mid Level Vision includes segmentation by clustering, segmentation by fitting a model, segmentation and fitting using probabilistic methods, tracking with linear dynamic model • High Level Vision includes model-based vision, smooth surfaces and their outlines, range data, finding template using classifiers, recognition by relations between templates; Applications includes case studies for computer-based visual perception.
MAIN REFERENCES	<ul style="list-style-type: none"> • David A. Forsyth & Jean Ponce, <u>Computer Vision: A Modern Approach</u>, Prentice-Hall Inc., 2003. • Linda G. Shapiro, <u>Computer Vision</u>, Prentice-Hall, Inc., 2001. • Mario I. Chacon M., <u>State of the Art in Face Recognition</u>, I-Tech Education and Publishing, 2009.
OPTIONAL REFERENCES	Gary Bradski and Adrian Kaehler, <u>Learning OpenCV: Computer Vision with OpenCV Library</u> , O'Reilly Media, Inc., 2008
PREREQUISITE	-