

Teaching Plan

COURSE TITLE	: Image Processing and Computer Vision
LECTURER	Dr. Rohollah Moosavi Tayebi
COURSE CODE	: 5010
CREDIT	: 3
CONTACT HOURS	: 48 hours per semester
PREREQUISITE	: None
LEARNING OUTCOME	: At the end of this course, student are able to: <ol style="list-style-type: none">1. Identification techniques in terms of criticizing the strength and relevance in image processing and computer vision applications.2. Recommend the optimum detection techniques in terms of fitness and strength in image processing and computer vision applications.3. Building an image processing and computer vision system.
SINOPSIS	: This course covers the discussion on components of image processing. The ways to analyze and making decision in solving the problems related to computer vision are also discussed.

CONTENTS

CONTACT HOUR

LECTURE	: <ol style="list-style-type: none">1. Formation of 2D and 3D Vision<ul style="list-style-type: none">- Geometry and Performance of an image- Projective transformation- Camera System tools- 2D Model- 3D Model- Representation of 2D and 3D images- Matching of 2D and 3D images2. Digital Image Processing<ul style="list-style-type: none">- Mission and image analysis- Filtering and image enhancement- Image Processing low-level matching3. The concept of pattern recognition<ul style="list-style-type: none">- Model for the classification- Delegation of the feature vector- Structural approach	<ol style="list-style-type: none">636
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- Statistical approach	
- Synthetic approach	
- Artificial intelligence approach	
4. Image segmentation	6
- Identify areas	
- Delegation of the	
- To identify the contours	
5. Distortion and Interference in the Image	6
- The model and type of disturbance in the image	
- Make an interruption in the test image	
- Generate random numbers in normal distribution	
- Programming techniques in Computer Vision	
6. Color and Shadow	6
- Color model	
- Histogram color	
- Color Segmentation	
- shadow	
7. Texture	3
- Textur and cell text	
- Size texture	
- Segmentation texture	
8. 2D image motion	6
- The application of motion	
- Computing the motion vector	
9. Computer Vision Applications	6
- Research in computer vision	
- Computer vision applications	
Total	48

EVALUATION	:	Coursework	40%
		Final Exam	60%

- REFERENCES** :
1. Rafael C. Gonzalez & Richard E. Woods, *Digital Image Processing*
 2. Bradski, G. & Kaehler, A. *Learning OpenCV: Computer Vision with the OpenCV Library*. Sebastopol: O'Reilly Media.
 3. Cyganek, B. & Siebert, J.P. *An Introduction to 3D Computer Vision Techniques and Algorithms*. West Sussex: Wiley.
 4. Sonka, M., Hlavac, V. & Boyle, R. *Image Processing, Analysis and Machine Vision*. Pacific Grove: Brooks/Cole Publishing Company.