Module Title **Applied Image Processing and Machine Vision** **Keywords** Image processing, image analysis, image manipulation, and motion tracking	Reference CM4011 SCQF SCQF Level 10 SCQF Points 15 ECTS Points 7.5 Created December 2002 Approved December 2002 Amended September 2012 Version No. 4

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

CM2015 Object Oriented Software Development.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

The students will develop understanding of image processing and analysis concepts, methodologies and algorithmic tools with emphasis on building practical and real-time machine vision systems. Image segmentation and feature extraction.
Machine Learning Techniques.
Tracking and motion.

Indicative Student Workload

Contact Hours	Full Time
Assessment	20
Laboratories	36
Lectures	12
Directed Study	
Coursework preparation	24
Private Study	
Private Study	58

Mode of Delivery

Key concepts are introduced and illustrated through the medium of

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1. Describe and critically evaluate a range of image processing techniques.
2. Describe and critically evaluate a range of techniques and concepts underlying image analysis and features extraction.
3. Investigate, describe and critically evaluate concepts of Machine Learning, image similarity matching and multi-resolution image analysis.
4. Apply the relevant underlying concepts and principles to building an intelligent machine vision system.

Indicative Module Content

Introduction to image formats, sampling enhancement and manipulation.
Convolution and image filtering.
Geometric Operations, Spatial and Frequency domain.

lectures. Tutorials assist with assimilation and understanding of material, and laboratory sessions offer appropriate tools and programming environments to develop proficiency in applying the techniques in practical situations.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3
Component 2	4

Component 2 - Coursework

Component 1 - Closed book examination

Indicative Bibliography

1. GONZALEZ et al. 2007. Digital Image Processing. 3rd Ed. Prentice Hall.
2. PEREZ, J., 2013.Image processing with Imagj. Packt Publishing.