

## Liverpool John Moores University

Title: IMAGE AND VIDEO PROCESSING  
Status: Definitive  
Code: **7007CCTV** (118651)  
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences  
Teaching School/Faculty: Computing and Mathematical Sciences

Team	Leader
Abir Hussain	Y

**Academic Level:** FHEQ7  
**Credit Value:** 15.00  
**Total Delivered Hours:** 36.00  
**Total Learning Hours:** 150  
**Private Study:** 114

### Delivery Options

Course typically offered: Runs Twice - S1 & S2

Component	Contact Hours
Lecture	12.000
Online	12.000
Tutorial	12.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	A problem solving report (6,000 - 8,000 words).	100.0	

### Aims

*The aim of this module is to introduce the student to the techniques, the algorithms and applications of image analysis and processing.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Explain the basic concepts of image processing and analysis
- 2 Discuss the theory of image fundamentals such as image models, sampling and quantization and pixel rotations.
- 3 Analyze the advantages and disadvantages of image compression techniques
- 4 Discuss the theory and applications of low level and intermediate level image processing.

### Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Problem solving                      1    2    3    4

### Outline Syllabus

*Introduction to image processing and analysis*

*Image formation which include image geometric models, homogenous coordinates and multiple sensor vision*

*Image fundamentals in which the student will study the concept of image sampling, pixel rotations and Fourier analysis.*

*Image compression: Lossy and non-lossy compression.*

*Low level image processing including image enhancement, image restoration and edge detection*

*Intermediate level image processing including feature detection and Hough transform*

### Learning Activities

Theory oriented online lectures on the main concepts of image data processing. Tutorials exercises to aid in the students self-learning of image processing and analysis.

### References

<b>Course Material</b>	Book
<b>Author</b>	Gonzalez R.C. and Woods R.E.
<b>Publishing Year</b>	2007
<b>Title</b>	Digital Image Processing
<b>Subtitle</b>	
<b>Edition</b>	3rd Edition
<b>Publisher</b>	Pearson Education
<b>ISBN</b>	013168728X

<b>Course Material</b>	Book
<b>Author</b>	Jain R., Kasturi R. And Schunck B.

<b>Publishing Year</b>	1995
<b>Title</b>	Machine Vision
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	McGraw Hill
<b>ISBN</b>	

<b>Course Material</b>	Book
<b>Author</b>	Tinku Acharya, Ajoy K. Ray
<b>Publishing Year</b>	2005
<b>Title</b>	Image Processing:
<b>Subtitle</b>	Principles and Applications
<b>Edition</b>	
<b>Publisher</b>	Wiley Interscience
<b>ISBN</b>	

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### Notes

This module will provide students with the main concept of modern digital image processing and analysis.