Module Template for New and Revised Modules[1]

Module Code	EEU44C08
Module Name	Digital Image and Video Processing
ECTS Weighting[2]	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Prof. François Pitié
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: LO1. describe the elements of current media formats; LO2. describe the building blocks of compression systems and select processing modules to enable efficient compression; LO3. use Matlab to perform fundamental image processing applications such as image filtering; LO4. use Matlab to perform video processing applications such motion estimation; **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced
Module Content	The Digital Image and Video Processing module develops the concepts learned in Signal Processing and Information Theory and applies them to images and video. Image and Video Processing is the basis of all digital media technology and is an active area of research over a wide range of applications such as Compression and Medical Image Analysis. The course features an introduction to digital image/video processing algorithms that form the core of digital media technology. There is a particular emphasis placed on the issues pertaining to the coding (compression) of both images and videos. At the end of this module students should have a basic knowledge of JPEG, MPEGx, Motion Estimation and other well-established image/video processing applications. The students should also be able to implement and test the algorithms in software.

[1] An Introduction to Module Design from AISHE provides a great deal of information on designing and re-designing modules.
[2] TEP Glossary

Teaching and Learning Methods

The teaching strategy for this module is a mixture of lectures, problem-solving laboratories and interactive class demonstrations.

There are 4 assignments to be undertaken throughout the course that complement the material covered in the lectures and are designed to deepen understanding of the course material. The assignments are MATLAB based.

All lecture material can be accessed online and lectures are recorded and posted on YouTube.

Assessment Details[3]
Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Examination	2h Written Exam	all	75%	n/a
Lab Projects	Written report based on lab sessions	All	25%	3,6,10,12

Reassessment Requirements

Examination (2 hours, 100%)

Contact Hours and Indicative Student Workload[3]

Contact hours: 55
Independent Study (preparation for course and review of materials): 58
Independent Study (preparation for assessment, incl. completion of assessment): 12

Recommended Reading List

• Digital Image Processing. Gonzalez and Woods. Prentice Hall (a good general purpose image processing text book)
• JPEG: Still Image Processing Standard. Pennebaker and Mitchell. Van Nostrand Reinhold. (a reference for JPEG)
• Digital Video: An Introduction to MPEG2. Haskell, Puri and Netravali. Chapman and Hall (a reference for MPEG2)
• Two Dimensional Image Processing, J Lim, Prentice Hall (for 2D signal processing)

Module Pre-requisite

EEU33C01 (Signals and Systems)

Module Co-requisite

[3] TEP Guidelines on Workload and Assessment

Module Website	https://github.com/frcs/EE4C08
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No.
Module Approval Date	
Approved by	
Academic Start Year	
Academic Year of Date	September 2023