

Liverpool John Moores University

Title: DIGITAL AV SIGNALS AND COMPRESSION
Status: Definitive
Code: **6039TECH** (105434)
Version Start Date: 01-08-2011

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Tony Moore	Y

Academic Level: FHEQ6
Credit Value: 24.00
Total Delivered Hours: 87.00
Total Learning Hours: 240
Private Study: 153

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	48.000
Practical	12.000
Tutorial	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	60.0	3.00
Technology	AS2	Assignment	20.0	
Practice	AS3	Studio Activity	20.0	

Aims

To understand the principles behind the handling, processing, recording and bit-rate reduction of digital video and audio signals.

Learning Outcomes

After completing the module the student should be able to:

- 1 Discuss the ways in which digital audio signals are handled and manipulated in audio processing systems
- 2 Explain digital audio and video interfaces and recording principles.
- 3 Use the multi-dimensional view of video to investigate coding systems and video standards
- 4 Explain the role of various compression techniques in systems such as MPEG
- 5 Demonstrate how various video operations are carried out
- 6 Analyse the colorimetric properties of a light source
- 7 Connect up a TV studio and carry out live operations

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5
Assignment	6				
Studio Activity	7				

Outline Syllabus

Digital audio: sampling, quantising, SNR, digital representation, headroom, operations.

Digital audio interfaces, AES/EBU interface: digital recording principles.

The exploitation of masking in digital bit-rate systems such as Minidisc.

Consideration of the TV signal in 2 and 3 dimensions; Clean PAL encoding and decoding; properties of HDTV systems.

Intermediate analogue systems: PAL Plus, MAC and satellite broadcasting.

Digital video standards and interfaces.

Principles of video compression systems: prediction, quantisation, the DCT, variable length coding, motion compensation.

MPEG coding: pictures re-ordering, packaging the signals.

Digital TV terrestrial transmission (COFDM) and satellite transmission

Principles of colorimetry

Studio connections, operations and setting up.

Learning Activities

A series of lectures, tutorials and practicals.

References

Course Material	Book
Author	Watkinson, J.

Publishing Year	2000
Title	The Art of Digital Video
Subtitle	
Edition	3rd ed
Publisher	Focal Press
ISBN	978-0240515861

Course Material	Book
Author	Watkinson,J
Publishing Year	2004
Title	The Art of Digital Audio
Subtitle	
Edition	
Publisher	Focal Press
ISBN	0240515862

Course Material	Book
Author	Pohlmann, K.,
Publishing Year	2000
Title	Principles of Digital Audio
Subtitle	
Edition	4th ed
Publisher	McGraw-Hill Education
ISBN	0071348190

Notes

This module deals with the nature of digital audio and video signals, and their use in the broadcast and audio video industries.