Liverpool John Moores University

Title:	Broadcast Standards
Status:	Definitive
Code:	**5201AMP** (121886)
Version Start Date:	01-08-2021
Owning School/Faculty:	Engineering
Teaching School/Faculty:	Engineering

Team	Leader
Ronan McMahon	Y
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Academic Level:	FHEQ5	**Credit Value:**	20	**Total Delivered Hours:**	46
Total Learning Hours:	200	**Private Study:**	154		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	29.5
Practical	4
Tutorial	10.5

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Signal measurements	50	
Exam	AS2	Examination	50	2

Aims

To explain the nature and composition of primarily baseband broadcast quality signals; to describe the operation of (and standards required for) broadcast equipment to recognised professional industry practice.

Learning Outcomes

After completing the module the student should be able to:

1 Identify and measure parameters of typical examples of broadcast quality signals.
2 Explain the principles of studio and portable equipment and evaluate trade-offs in their selection and operation
3 Analyse the nature of broadcast signals

Learning Outcomes of Assessments

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

Signal measurements	1	
Examination	2	3

Outline Syllabus

Audio signals, transduction and parameters
Alignment and permitted maximum levels, signal decibels, international measurement scales
Phantom power arrangements, patching and connector systems to broadcast standards
Peak vs loudness monitoring, headroom standards, dynamic range compression

Digital audio sampling frequencies, aliasing and filtering, quantisation levels & noise
Inter- and Intra-studio Tx systems (e.g. AES/EBU)
Audio file formats, data rate, bit rate reduction & acceptable contribution delivery standards
Maximum Coding Level and digital headroom

Relationship between video and audio signals
Scanning, resolution, effect of Interlace, flicker, frame rates, shutter speeds, gamma
Blanking, active line, visible lines, synchronisation & framestores
Colour vision and standards, luma & chroma signals
Component and composite signals, terminology, standard test signals, calibration

Digital video signals, (e.g. Rec 601/709), Sampling formats (e.g. 4:2:2) and harmonised sampling frequency, video quantisation levels & noise
DVE, captions, studio & OB layout and operations
Inter- and Intra-studio Tx (e.g. HD-SDI), signal paths: studio to consumer, storage, play-out
Image file formats, data rate, bit rate reduction, concept of asymmetric encoding/decoding & acceptable contribution delivery standards
Networks: What are they? Why do we use them? Packets; addressing; data; capacity; storage; bandwidth; delay; errors/corruption, data loss, QoS, Internet.
Nomenclatures, EBU emission recommendations, acquisition & storage

Learning Activities

Attend all lectures, tutorial and practical sessions.
Engage with on-line learning materials.
Research and produce the output for the practical assignment

Notes

This module provides information on the nature and composition of primarily baseband broadcast quality
signals. It covers the professional operation of broadcast equipment and the standards required by broadcast organisations.