

# Film and Video Production Technology:

Modules at July 2019 for 2019 entry

NOTE: details and content subject to change in future years

## First Year

### Video Fundamentals

Analogue video • Light and colour • The human visual system • Luminance and gamma • Frame rates and raster scanning • Digital video • Waveform monitors and vectorscopes • Standard video test signals • Monitor line-up • Video signal and the camera • Colour temperature and colour matching • The video signal used in visual effects and editing • Introduction to video formats and codecs • Introduction to UHD, HDR and HFR. • Camera sensors and types of cameras • TV Monitor types • Digital video standards • Video codecs • Video and audio compression • Broadcast transmission • Vision engineering • Picture quality assurance

*Coursework: Lab Experiments; Presentations; Exam*

### Electronics

Equipment test and measurement • Current and voltage definitions • Kirchhoff's laws & Ohm's law • Resistive networks (series & parallel), voltage & current sources • Thevenin & Norton equivalent circuits, current and voltage division, input resistance, output resistance • Capacitance & inductance • AC circuit elements • Alternating current, simple ac steady-state sinusoidal analysis • AC circuit analysis with complex numbers • Time response (natural & step responses) • Frequency response RLC circuits, resonance & Q-factor • Simple filter and band-pass circuits • Use of Bode plots • Electronic circuit construction; familiarisation with electronic components • Use of electronics test and measurement equipment • Introduction to semiconductors • diodes, rectification, power supply design • The bipolar junction transistor • Bias circuits, small signal amplifier operation, power amplifiers • Operational amplifiers: Basic op-amp circuits, adders, differentiators, integrators, comparators, active filters • Circuit diagrams and schematic reading • Practical electronics skills • Component and system level fault finding • Introduction to audio test equipment procedures

*Coursework: Electronics labs experiments and lab report; Electronics practical design; Exam*

### Audio Signal Analysis

• Number systems (decimal, binary, hexadecimal and two's complement) • Complex numbers • Matrices • Differentiation and integration • Fourier series and the Fourier transform • Convolution of two signals • Linear time invariant systems, impulse responses, transfer functions and Bode plots

*Coursework: MATLAB coding; exam*

### The Art of Visual Storytelling

Introduction to screen writing and 3-Act structures • Types of characters and archetypes • Creating visual narratives • Genres – creating moods with lighting, colour, music, locations, tempo/pacing etc. • Camera shots/angles/lenses • Frame composition • Developing storyboards and animatics • Intro to editing • Editing basics and post production

*Coursework: Storyboard; Script and Shot list; Animatic*

## **Audio Engineering and Recording Techniques**

The decibel • Balanced, unbalanced and co-axial circuits • Jackfield wiring schemes and systems diagrams • Microphone operation and design • Sound mixing desks and processing • Audio metering • PCM digital audio • Digital audio interfaces

*Coursework: Essay on small room acoustics; Podcast on recording voiceovers; exam*

## **Computer Systems**

Frequency analysis of digital signals. • Number systems (decimal, binary, hexadecimal and two's complement). • Microprocessor-based computer systems. • Computer-based media and MIDI systems. • Python coding • Storage and interfacing in computer media systems. • Software engineering.

*Coursework: Coding assignments, Exam*

## **Film production**

Roles in TV and Film • Pre-production in practice • Health and safety for filming • Camera sensors and types of cameras • Lenses and apertures • Camera settings such as white balance, shutter speed, format etc, • Lighting design • Sound recording skills • Programme development and the application of storytelling • The application of digital video standards • Logging, Editing basics and post production • Programme critique and critical analysis

*Coursework: Interview with 5 shot rule; Lighting for moods and genres; 2 minute promo video*

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# **Second Year**

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## **Semester 1**

### **Film and Broadcast Technology A**

Analysis of studio systems • Studio talkback set up and use • Video channel • Sound channel • TV comms systems, including radio mics and earpieces, clean feeds and associated technology • Synchronisation and timing • Broadcasting, satellite and radio links, including PSK and QAM • Studio camera systems

*Coursework: TV studio practical challenges; presentations on studio camera advanced functions; exam*

### **Computer Imaging and Systems A**

Computer architecture including 32 bit and 64 bit • CPU, GPU DSP and cloud computing • Requirements of computers for professional video use • software analysis of video files • Wrappers, containers and meta data • Manipulation of video in a computer • Types of drives and storage and their use

*Coursework: Coding in C; Programming a video transport stream analyser; exam*

### **Sound in Film and TV**

Sound recording on film location and ADR • Dialogue editing • Foley recording • Film post-production processes and mixing • Music for picture • Tapeless delivery in TV – sound requirements • • Audio-related metadata and audio embedding in the SDI system • Low bit rate coding for audio

*Coursework: Dialogue editing; FX and Foley recording and editing; Final mix; exam*

## **Cinematography**

Cinematography and digital film cameras • Practical camera operations and terminology • Demonstration of a variety of grip equipment • Lighting basics • Lighting for genres • Location and studio-based shoots • Production management • Safety in location and film shoots • Power and lighting • Postproduction workflow • Working and etiquette on a film drama set • The role of the D.I.T (digital imaging technician) • Sound recording for film

*Coursework: Stills inspired by film genres; Lighting; Shoot a provided 2 minute drama script*

## **Professional Training module**

This starts in the second year - Job hunting, interview technique, CV writing. Interviews. Professionalism.

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## Semester 2

### **Film and Broadcast Technology B**

Video over IP in production • Source coding • Channel coding • Hamming code and Shannon Coding • Reed Soloman coding • FEC • Broadcast transmission • OFDM • DAB • Microwave links • QAM • PSK

*Coursework: essay and exam*

### **Computer Imaging and Systems B**

Switchers and routers • Timing requirements for broadcast systems • Firewalls • Ethernet and IP • Asynchronous application of broadcast video • IP/TCP • Wireshark analysis • PTP timing • Second screen interactivity • OTT delivery

*Coursework: Practicals, coding, exam*

### **TV studio practice**

Studio lighting • Studio sound mixing and sound effects • Studio cameras • Production talkback • Scriptwriting for TV • Studio layout and design • Recording formats • Vision mixing • Graphics • VT editing for play-in • Vision engineering • Floor managing • Studio presenters, actors and others • Live studio broadcast

*Coursework: Programme pitch, 10 minute live TV programme*

### **Second Year Portfolio**

Planning, shooting and delivering finished items showing more than one skill. Familiarity with post production compositing, animation and grading software and application • Editing on industry standard software • Graphic and stills manipulation • Delivering a project brief • Copyright • Production management • Health and Safety • Postproduction workflow • Foley and sound mixing delivery • Delivery formats

*Coursework: variety of filming tasks*

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## Professional Training Year

Recent employers include:

CTV outside broadcast, Arena outside broadcasts, ITN, Disney channel, Techex video over IP specialists, Video Europe, One Dash 22 productions (Singapore), Dolby content services, Dolby broadcast, AVMI global AV integrators, Endemol, Shanghai 1LIM1 Studio, Digital Spirit (Bucharest), China Film Group, The Look, Soho.

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## Final Year

### Technical Project or Dissertation (all year)

Major piece of academic written work. To include research seminars / paper presentations.

### Creative Project (all year)

A larger piece of work e.g. 10 minute film, or several examples of other roles, eg titles or sound. Evidence of contribution to other projects in supporting roles.

### Advanced Colour Science

Camera Raw and Log formats • Post production digital pipelines • The digital intermediate • File formats for distribution and mastering • Digital cinema mastering • Film outs and LUTs • Colour space conversion • Gamma and dynamic range • Colour grading

*Coursework: Film workflow and write up*

A choice of either **Visual Narrative Collaborations** or **Screenwriting**,

### Visual Narrative Collaborations

The module provides opportunities for students from a diverse range of programmes including Digital Media Arts, Film and Video, Creative Music Technology, Music, Dance, Theatre, Acting, et al, to work together to create a visual artefact through collaboration. The module includes of commissioning, brainstorming, and project development workshops to enable students to work together in the creation of a Film, Video, Animation, or interactive artwork.

*Coursework: Project Proposal; Creative portfolio*

### Screenwriting

The three- and five-act structures • The Protagonist and their journey • The development of character • Theme, premise and understanding the role of conflict • Openings • Plot and Story • Scene development • Dialogue and description • Feature film • Shorts • TV • Webseries • Pitching

*Coursework: Screenplay; Critical essay*