



Unit Title	Fundamentals of Electronic Communications
FHEQ Level	4
Unit Code	DTT18103
Credit Value	30
Unit Type	Compulsory: Taught

Learning Hours			
Staff – Student Contact Hours		Independent Study Hours	
Classes	45	Independent Study	90
Supervised access to resources	45	Preparation for Assessment	90
	(90)	Unsupervised Access to Resources	30
Total			300

Unit Description

This unit is designed to introduce you to the fundamental importance of electronics in communication systems including the television industry. You will gain an understanding of the basic principles that can be applied to past, present and future end-to-end communication systems. This unit helps to develop your choice of specialisation or generalisation of knowledge in television technology through a communications topic and choice of electronics project. You will attend seminars on specific topics related to television technology. In addition to the taught topics, a significant amount of time is related to practical and creative electronics labs to allow students to design, build and test electronic circuits, for example lighting with LEDs.

The Five Principles underpin the Mindsets and Skillsets Manifesto and are the foundation upon which all course curriculum frameworks and unit specifications are based. The relevant Principles as stated below have been mapped against the Learning Outcomes relevant to each course unit and at each level (see Programme Specifications for full description of the Five Principles):

1. Cultivate / Where the individual thrives.
2. Collaborate / Where disciplines evolve.
3. Integrate / Where education engages industry.
4. Advocate / Where purpose meets practice.
5. Originate / creativity meets technology.

Unit Indicative Content

- Overview of the history and development of electronic communications
- Introduction to electronic communication principles
- Concepts of energy and converting from sound and light to electronic signals
- Introduction to optical communication principles
- Application of electronic and optical communications to television broadcasting

- Application of electronic and acoustics
- Different types of signals (analogue, digital, opto-electronic, RF, electrical)
- Understanding electronics and optics through simple electronics projects
- Creation of simple circuit schematics and circuit design
- Measuring and testing electronic signals and circuits
- The relationship of software to electronic systems
- Writing technical reports

Unit Aims

1. To provide a deep understanding of technology used in television broadcasting (course aim)
2. To develop diagnostic and problem solving skills in a technology context (course aim)
3. To understand fundamental aspects of electronic signals as applied to television
4. To apply fundamental aspects of electronics to simple electronic practical projects
5. To distinguish between analogue, digital, electrical, optical, and RF signals communications

Unit Learning Outcomes

LO1: **Research/Inspiration**

Demonstrate your capacity for technical and data information gathering techniques using a wide range of sources, providing visual, contextual and industry case-study research as appropriate.

Based on **ORIGINATE** principle.

LO3: **Development/Prototyping**

Demonstrate a range of test and measurement solutions, informed by knowledge of the principles of the engineering process.

Based on **INTEGRATE** principle.

LO4: **(Pre) Production**

Identify, select and apply an appropriate selection of processes, components and methods that inform engineering and academic practice.

Based on **COLLABORATE** principle.

Learning and Teaching Methods

- Project briefings – in order to prepare students for the aims, content, delivery, learning outcomes, and assessments
- Seminars
- Practical sessions (taught electronics workshops)
- Practical sessions (unsupervised access to individual or small group electronics)

project)

- VLE activities
- Individual and small group work
- Autonomous study
- Continual individual and small group formative feedback
- Summative assessment at end of unit that demonstrates degree to which learning outcomes have been met

Assessment methods and tasks

Brief description of assessment methods

Assessment tasks	Weighting (%) (one grade or multi-grade unit)
1. Written Report on a selected electronic communications topic. (1000 words)	50%
2. Lab Report on a selected electronics project. (1000 words)	50%

Indicative Assessment Criteria

Assessment criteria are the basis on which the judgment of the adequacy of the work is made. A more detailed assessment criteria will be specified in the brief.

Assessment 1 is a 1000 word report of a selected electronic communications process. The report will be assessed through the following criteria:

1. Demonstrate acquired knowledge of general electronic communications processes. **LO4**
2. Demonstrate understanding of the application of chosen specific electronic communications processes to broadcast television systems. **LO3**
3. Evidence that processes have been analysed and summarised through the use of student's created graphics and tables. **LO3**
4. Evidence of sources of information and data that was used to create graphics and tables. **LO1**

Assessment 2 is a Lab Report based upon your selected electronics project. The demonstration will be assessed through the following criteria:

1. Evidence of the identification and selection process of components and devices in relation to chosen project. **LO4**
2. Explanation of the design and construction methodologies for constructing of project. **LO4**
3. Evidence of analysis of expected results and outcomes, and where appropriate explain deviation from expectations. **LO3**
4. Demonstrate straightforward explanations of appropriate underlying principles relevant to project. **LO1**

Essential Reading list

1. Basic Electronics Tutorials, 2011 [Internet]. Available from WWW: <<http://www.electronics-tutorials.ws/>> [Accessed August 2016]
2. Bishop, O. (4th Edition, 2011) Electronics: Circuits and Systems, Oxford: Newnes.
3. Dueck, R. (International Edition, 2011) Project Lead the Way: Digital Electronics, New York: Cengage Learning.
4. Floyd, T. (11th Edition. 2015) Digital Fundamentals, London: Pearson Education.
5. Horowitz and Hill. (3rd Edition, 2015) The Art of Electronics, Cambridge University Press.
6. Robertson, C.R. (3rd Edition, 2008) Fundamental Electrical and Electronic Principles, Oxford: Newnes

URLs

1. <https://logic.ly/>
2. <http://icircuitapp.com/>
3. <https://uk.rs-online.com>