Birmingham City University
Faculty of Technology, Engineering and the Environment

Postgraduate Programme

Programme Specification

MSc Digital Broadcast Technology

Date of Course Approval/Review	Version Number	Version Date
25 June 2013	2.0	25 June 2013

CONTENTS

Definitive Documents and Version Control

This document has a version number and reference date in the footer.

The process leading to the introduction of new courses, major changes to courses, and minor changes to courses and modules follows the appropriate formal procedure as described in the Faculty's Academic Procedures and Quality Manual.

On the front sheet of this document, the date of course approval/review refers to the most recent full approval/review event. If later, the version date will be that of the most recent subsequent event at which formal consideration was given to course changes.

Further details about the course and document development may be obtained from minutes of the approval or minor changes board. A history of the document since the last full approval/review event is summarised in the table below and further information relating to past versions can be obtained from the Faculty Office.

Version	Event	Date of event	Authorised by
1.0	Approval meeting	18 March 2013	Dean of Faculty
	Approval meeting - conditions		Panel Chair

Programme Specification
MSc Digital Broadcast Technology

Date of Publication to Students: TBC

NOTE: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes advantage of the learning opportunities that are provided. More detail on the specific learning outcomes, indicative content and the teaching, learning and assessment methods of each module can be found (1) at https://mytid.bcu.ac.uk/, (2) in the Module Specifications and (3) in the Student Handbook.

The accuracy of the information contained in this document is reviewed by the University and may be checked within independent review processes undertaken by the Quality Assurance Agency.

Awarding Institution / Body:	Birmingham City University
Teaching Institution:	Birmingham City University
Interim Awards and Final Award:	Postgraduate Certificate Postgraduate Diploma Master of Science
Programme Title:	MSc Digital Broadcast Technology
Main fields of Study:	*Digital broadcast technologies including computing, networking and production workflow*
Modes of Study:	MSc Digital Broadcast Technology is delivered as a full time and part time programme of study. Supporting materials are available via a virtual learning environment and individual module websites.
Language of Study:	English
UCAS Code:	N/A
JACS Code:	

Professional Status of the programme (if applicable):

The Faculty will seek accreditation of the programme by the Institution of Engineering and Technology as satisfying the academic requirements for C Eng status.

Relevant subject benchmark statements and other external reference points used to inform programme outcomes:

The FEHQ Master's degree characteristics, (September 2009) and the QAA framework for higher education qualifications in England, Wales and Northern Ireland, (August 2008) at level 7 have been consulted in the development of this programme.

http://www.qaa.ac.uk/academicinfrastructure/benchmark/default.asp

http://www.qaa.ac.uk/standardsandquality/credit/

Programme philosophy

Broadcast technologies are continually evolving and converging with other information and media distribution formats, including the web, games and virtual environments. The UK has traditionally a recognised high calibre in the TV production and technology industries. This course aims to capitalise and maintain the UK expertise in this area, along with the requirement to continually evolve the delivery of technology in this rapidly changing area.

The course is designed both to prepare recent graduates for a technical/commercial career and to provide a route to the specialisation needed for a research career. It should also be suitable for past graduates of internet and communications related courses who may have worked for several years and wish to update their knowledge at the forefront of the discipline.

The study programme is designed to enable students to acquire and develop a thorough technical and theoretical understanding focusing on vocational and practical skills directly relevant to industry. Alongside the development of technical and analytical skills, students will also develop team and professional development skills through group work, peer review and reflective evaluation and consideration of legal and ethical issues.

The course addresses broadcast technology in four main themes, and is designed to be delivered either as a stand-alone course or as part of a Skillset configuration. There is also a Research Methods module as described below.

The Web technologies theme coveres web-based technologies including essential architectures and security, protocols and standards. The theme then expands the concepts to more advanced architectures and technologies required for industrial web-based media.

A Media Distribution Architectures theme covers network architectures and solutions and their developments in the broadcast media industry.

A Production theme explores the technology behind media production, specifically how production workflow is evolving as media becomes less linear and is delivered to the interactive and multi-device viewing public. A necessary element in this theme is asset management and description. The Production Technology module addresses the studio-level technologies.

The Media Technology and Formats theme addresses signal technologies in their acquisition, presentation, compression and encoding in preparation for storage and transmission.

A Research Methods module prepares students for the final semester Masters Project dissertation, completed in the third semester, as well as industry research activities beyond.

The School of Digital Media Technology is well resourced for delivering masters courses in television (and film) technology orientated business and media and provides a stimulating and supportive learning environment. The School is located within the Faculty of Technology, Engineering and the Environment in the campus at Millennium Point in the heart of Birmingham. Millennium Point was built as a focus for science, technology and education within Birmingham and the wider region and provides an excellent context for exploring links between business and technology.

Graduates from the programme should be equipped for a variety of roles associated with web applications and services and may also continue their studies to PhD level.

Indicative Content in each Module/Theme :

Theme 1 - Web Technologies

1.1 Web Technologies [10 Credits]

- Web Standards and protocols
- Client / Server Technology: Browser support, Server technologies, Domain naming and addressing. Internet Protocols, Application Protocols, Security, Database Servers, development libraries, APIs.
- Personalisation architectures and management
- Service Oriented Architectures
- Agents systems
- Future technologies

Theme 2 - Media Distribution Architectures

2.1 Networks Technologies [20 Credits]

- Network Communication: Networks, communication, protocols, IPv4.
- Routing and Packet forwarding: routers, switches, packets, OSPF, network topology.
- LAN Switching and Network Optimisation: VLANs, planning networks, configuring networks, switching.
- Converged Network Optimisation: Quality of Servive, multicasting, converged networks

2.2 Media Solutions and Architectures [20 Credits]

- Headends, Servers (video, EPG, advertising, etc); Middleware; Conditional Access / DRM
- Triple/Multiplay Services
- Cable (Inc DOCSIS, Switched Video Cable), Satellite, Digital Terrestrial TV, Telco IPTV, OTT WebTV, Mobile
- Content Delivery Networks (CDNs) – caches, loading, optimisation, clouds, etc
- User Terminals - Set-Top Boxes, computing platforms, tablets and

phones, architectures
- Personalisation services and data requirements

Theme 3 - Production

3.1 Production Technologies [10 Credits]
- Studio production - chroma keying, etc
- Studio technologies - sound, lighting, camera techniques
- Real Time, mobile (outside) broadcasts
- Health and Safety
- Power Supply and distribution

3.2 Workflow Methods [20 Credits]
- Metadata, Ontologies
- Asset Management; File transformation; taxonomy; content management architecture, DRM
- Interactive, Personalised TV
- Social Network production, user generated content
- Multiscreening

Theme 4 - Media Technology and Formats

4.1 Media Acquisition and Presentation [10 Credits]
- Capture - Cameras, Sensors
- Presentation – monitors and other user interface devices
- Electronics systems - impedance, compatibility, audio and vision mixers

4.2 Compression Encoding [20 Credits]
- Compression - Audio, Image, Video
- Codecs, Containers, Standards (Proprietary, Open)
- Modulation, inc QAM
- Multiplexing, DAB, DVB, DMB
- Object-based media
- 3DTV

Theme 5 – Research Methods

5.1 Research Methods [10 Credits]
- Practical and critical awareness of research method
- Writing for publication and for project analysis
- Preparation for the research and dissertation element of the course

The aims of the programme are to :

1. Provide a stimulating and participative learning experience in a supportive environment that will foster the research and independent study skills required at masters level;

2. Enable students to gain an in-depth knowledge of tools and techniques for creating, developing, implementing and managing broadcast services and businesses.

3. Develop skills and technology expertise in all aspects of media from media acquisition and production; through the signal technology stages and over the architectures for distribution in the highly complex interactive media consumer market.

4. Promote an awareness of professional, legal and ethical considerations.

5. Enable students to research, manage data, communicate effectively and work as part of a team to support career advancement.

Intended learning outcomes and the means by which they are achieved and demonstrated:

Learning Outcomes

1. Knowledge and Understanding
On completion of the programme, students should be able to:

1. Demonstrate knowledge of advanced theories and concepts relevant to the development and operation of commercial broadcast systems and technologies.
2. Express a detailed understanding of the underpinning tools, technologies and techniques of media formats and methods used in broadcasting systems.
3. Recognise the framework of relevant legal requirements and appropriate professional conduct related to the development and operation of commercial broadcast systems and requirements for media production.

2. Intellectual Skills
On completion of the programme, students should be able to:

1. Apply advanced knowledge, tools and techniques to investigate new and emerging technologies, tools, techniques and processes used in broadcast systems.
2. Assess the evolving market requirements and technical developments arising globally in broadcasting systems, and applying these as a progressive and responsible practicioner with the ability to fulfil clearly defined needs, identifying relevant constraints.
3. Evaluate solutions, strategies and business models for the provision of timely and relevant interactive broadcast media solutions.

3. Practical Skills
On completion of the programme, students should be able to:

1. Synthesise knowledge, concepts and ideas and/or forms of creative expression, to deliver appropriate solutions to problems.
2. Design and develop innovative media services and solutions using appropriate tools and techniques applied at signal level, network level and in production applications.
3. Develop a working solution for the distribution of digital media products, including management of assets.

4. Transferable/Key Skills
On completion of the programme, students should be able to:

1. Schedule and monitor the development of an advanced project through the application of management practices.
2. Demonstrate the ability to work effectively as an independent learner, displaying insight when reflecting on personal and group practice.
3. Access information from a range of sources, appraise its suitability for master's level research, and formulate independent conclusions based on systematic analysis.

Learning teaching, and assessment methods used

Knowledge, understanding and intellectual skills are acquired through a variety of practically based learning and teaching approaches, these may include; formal lectures, interactive tutorial sessions, laboratory sessions, seminars, residential courses and directed independent learning activities.

Analytical skills are developed through coursework tasks that encourage creativity and problem solving using a range of systems and technologies relevant to commercial web service delivery. Group tutorial and practical work is also utilised in the delivery.

Learners are assessed both formatively and summatively by a number of methods. Formative assessment occurs in various ways throughout the programme and involves feedback from peers, tutors and individual reflection. Feedback on work-in-progress is available prior to the submission of summative assessments.
A range of summative assessment methods are employed involving both individual and group assignments; written coursework assignments and practical project work, laboratory sessions, tests and examinations. For the Research Methods module, summative assessment will include Abstract Submission for subsequent review paper to the “Journal of TEE”. This is followed by a full submission of the review paper to the journal; individual journal reviews, and constructive planning on review information. For Rich Internet Applications, students will be required to create an application solution to a brief.

Summative assessment methods for all modules are identified in a module guide and, for coursework, assessment details and criteria are specified in each assignment brief.

Research and independent learning skills are central to the programme and are developed throughout the course. The Learning Centre provides comprehensive internet and text resources and specialist staff to provide tutorial support for skills development.

As well as developing and applying skills through assignment work, approaches to research is emphasised in the second semester through the Research Methods module in preparation for the dissertation. Tutor led study feeds into student led research towards the development submissions mirroring the requirements of academic articles submitted for publication in peer reviewed journals. Independent learning is encouraged through research tasks for assignments and in the requirement to plan work schedules to meet deadlines for coursework submission.

Transferable/key skills are core to the learning strategy of the programme. They are pervasive, and are incorporated into modules and assessments as appropriate, e.g. team-working skills are fostered via group, task-based practical projects. Reflection and self awareness are fostered by keeping logbooks and submitting self evaluation documentation in support of personal performance.

Programme structure and requirements, levels, modules, credits and awards

The MSc programme is normally studied over one year full-time or, for part-time study, two years and four months. Students may, if they wish, move between full and part-time modes of attendance. The academic year is divided into two semesters of approximately 14 weeks each in which taught modules are delivered. These run from September to January and January to May. The Postgraduate Project is normally undertaken in the period May to September for full-time students and May to the following January for part-time students.

The course is divided into taught modules of 10 and 20 credits and a Masters project of 60 credits. Students complete 60 credits for Postgraduate Certificate, 120 credits for Postgraduate Diploma and 180 credits for MSc. Each credit represents 10 notional hours of student learning and assessment.

The structure of the course, the module, levels and credit ratings and the awards that can be gained are shown below.

MSc Digital Broadcast Technology

Semester C

60 credits Masters Project PG

Award MSc (180 credits)

Semester B

20 credits 3.2 Workflow Methods PG	10 credits 5.1 Research Methods PG	20 credits 4.2 Compression Encoding PG	10 credits 4.1 Media Acquisition and Presentation PG

Award PgDip (120 credits)

Semester A

10 credits 1.1 Web Technologies PG	10 credits 3.1 Production Technologies PG	20 credits 2.2 Media Solutions and Architectures PG	20 credits 2.1 Networks Technologies PG

Award PgCert (60 credits)

Part-time Route MSc Digital Broadcast Technology

Semester E

60 credits Masters Project PG

Award MSc (180 credits)

Semester D

20 credits 4.2 Compression Encoding PG	10 credits 4.1 Media Acquisition and Presentation PG

Award PgDip (120 credits)

Semester C

20 credits 3.2 Workflow Methods PG	10 credits 5.1 Research Methods

Semester B

20 credits 2.2 Media Solutions and Architectures PG	20 credits 2.1 Networks Technologies PG

Award PgCert (60 credits)

Semester A

10 credits 1.1 Web Technologies PG	10 credits 3.1 Production Technologies PG

Support for Learning including Personal Development Planning (PDP)

Students are encouraged to identify and, with guidance, to reflect on their own learning needs and are offered the following support as appropriate to meet those needs:

- an induction programme dealing with orientation and the dissemination of essential information, including an introduction to PDP;
- a dedicated Learning Centre with open access learning materials, resources and full-time staff specialising in a variety of support areas;
- a Student Course Guide, containing information relating to the University, Faculty, School, course and modules;
- access to administrative staff and to academic staff, including the tutors and Course Director;
- support staff to advise on pastoral and academic issues;
- access to Faculty resources, including a range of IT equipment and the services of, and guidance from, IT support staff;
- access to the University's Student Services, including those offered by the careers service, financial advisers, medical centre, disability service, crèche, counselling service and chaplaincy;
- provision of resources for Professional Development Planning (PDP) to enable reflection on learning, performance and achievement and to plan personal, educational and career development. The university offers a range of on-line courses (http://www.moodle.bcu.ac.uk) to support PDP topics including: Reflection, Career & Employability, Action Planning, Self Awareness and Self Employment.

Criteria for admission

Candidates must satisfy the general admissions requirements of the programme, which are as follows:

Normally applicants are expected to have obtained an honours degree in a relevant technology-related subject, with at least a 2:2 (second class) classification.

International applicants are required to offer equivalent qualifications to the above. The Faculty applies the NARIC guide to determine equivalence.

Alternative entry routes
Students who do not hold the standard entry requirements may be considered for admission provided they can demonstrate that their qualifications and/or industrial experience are equivalent to that attained through the completion of an appropriate honours degree programme.

English Language requirements
International applicants are required to have IELTS overall band of 6.0 or equivalent English language qualification.

Methods for evaluation and enhancement of quality and standards including listening and responding to views of students

The following Faculty committees are involved in evaluation and enhancement of quality, standards and student experience: Board of Studies, Faculty Board and its sub-committees – Learning and Teaching Committee, Academic Standards and Quality Enhancement Committee and Student Experience Committee.

Evaluation processes, in which students are involved, include annual course and module reviews, course review and re-approval events, professional body accreditation visits and external examiner visits. Mechanisms for student input include meetings with course tutors, feedback questionnaires, faculty and university student satisfaction surveys and representation on the committees referred to above.