Course Specification

Course Summary Information		
1	**Course Title**	MSc Medical Imaging Technology
2	**Course Code**	PT1541
3	**Awarding Institution**	Birmingham City University
4	**Teaching Institution(s)** (if different from point 3)	N/A
5	**Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable)	N/A

6	**Course Description**
	Course Overview The rapid evolution of medical imaging technology calls for experts to implement optimised imaging techniques and improve patient outcomes. This course aims to prepare students from diverse backgrounds such as engineering, biomedical engineering, or life sciences for a professional career in imaging-related fields in healthcare and research, by providing in-depth knowledge in medical imaging technology and preparing for using technical and engineering skills to improve healthcare delivery. **What's covered in this course?** Our MSc in Medical Imaging Technology combines elements from physics, mathematics, computer science, biomedical engineering, biology/ medicine to help you develop your knowledge, understanding and skills of engineering design, medical imaging technologies and clinical environment. Through internationally recognised researchers, projects, guest lecturers and a strong collaboration with medical imaging technology SMEs / NHS Trust partners, you will develop the skills needed for a career in a medical imaging-related field, research, or technical development. A range of optional modules will be offered so you can gain a greater knowledge in an area of your choosing. This course comprises both a taught component and a research project, giving you the skills and knowledge required to pursue a career in applied medical imaging technology field, medical research, and scientific research or development. Throughout the course, you will complete your Professional Project – an independent piece of research on a topic within medical imaging technology that allows you to demonstrate your knowledge and skills. We build employability into every aspect of our course. Through the course, you will gain a range of transferable skills allowing you to take on a career in a number of sectors, alongside developing an in-depth understanding of your subject. **Where and how will I study?** You will learn within our recently extended City South Campus, located in Edgbaston just five minutes from Birmingham City Centre. Our campus has been recently re-developed and provides access to cutting-edge facilities that will enhance and support your learning during your time here.

	You will experience a mixture of face-to-face and virtual teaching, self-directed study and practice-based lab activities. **Why choose us?** - You will learn in a multidisciplinary environment alongside physicists, engineers, healthcare professionals, clinicians and other professionals from a range of fields. - The course is open to students from a wide range of backgrounds (such as science, engineering, medicine, biology, etc.) - Partnership working with medical technology SME's / NHS Trust partners. - Practitioners alongside the staff from the faculty and wider university involved in the delivery of curriculum. - Careful selection of modules allowing students to cater for future career aspirations. - With ongoing collaborations with partners around the globe, you will have numerous opportunities to undertake School go abroad opportunities.

7	**Course Awards**		
7a	**Name of Final Award**	**Level**	**Credits Awarded**
	MSc Medical Imaging Technology	7	180
7b	**Exit Awards and Credits Awarded**		
	Postgraduate Certificate Engineering Practice and Technical Decision Making for Healthcare	7	60
	Postgraduate Diploma Medical Imaging Technology	7	120

8	**Variation from the University Regulations**
	This course has approved variations to the University's Academic Regulations. These can be accessed via the student contract page: https://www.bcu.ac.uk/student-info/student-contract

9	**Delivery Patterns**		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time	City South	15 months	PT1541

10	**Entry Requirements**
	The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk, or may be found by searching for the course entry profile located on the UCAS website.

11	**Course Aims**
	The course aims to enable students from a diverse background to gain the knowledge and skills to launch or develop their career in imaging-related fields in healthcare and research.
12	**Course Learning Outcomes**
1	Critically apply robust ethical practices in medical engineering and imaging technology to design and justify chosen experimental and analytical approaches to optimise statistical power.
2	Critically apply STEMM principles and practices for technical decision making and problem solving in the field of medical engineering and imaging technology for applications in healthcare.
3	Critically adopt an autonomous approach to one's own learning and continuing professional development.

4	Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional level.
5	Demonstrate a critical awareness of safety principles, risk management and legislative requirements governing best practice in areas of medical engineering and imaging technology for healthcare
6	Demonstrate a systematic understanding of the scientific and technical basis of the major medical imaging modalities.
7	Critically apply a range of information and communications technology skills to relevant scientific tasks in medical imaging technology.
8	Critically evaluate, interpret and or model the experimental data, plan a research programme of work, conduct corresponding experimental and theoretical work with minimum guidance and report the findings.
9	Plan, design, execute and communicate a sustained piece of independent work using appropriate media to communicate the findings.

13	**Level Learning Outcomes**
	Upon completion of the Postgraduate Certificate in Engineering Practice and Technical Decision Making for Healthcare, students will be able to meet:
	Course Learning Outcomes 1-5
	Upon completion of the Postgraduate Diploma in Medical Imaging Technology, students will be able to meet:
	Course Learning Outcomes 1-7
	Upon completion of the MSc in Medical Imaging Technology, students will be able to meet:
	Course Learning Outcomes 1-9

14	**Course Learning, Teaching and Assessment Strategy**
	The learning, teaching and assessment methods that you will encounter on this course are designed to respect the diversity of the learner, enable participation and encourage 100% engagement throughout the course to enhance your experience and employability. **Learning and teaching** A variety of teaching and learning methods will be utilised across all three semesters to allow you to fulfil your potential and learn theoretical aspects of medical imaging technology alongside practical skills. Such methods will include for example a blend of formal lectures (face-to-face and virtual), seminars, group work, key-note lectures, inquiry-based learning and self-directed study. These are accompanied by tutor-led tutorials, laboratory-based practical sessions, and seminars by nationally and internationally known scientists or engineers or clinicians, workshops, problem-solving scenarios, dedicated research project supervision and site-visits. Self-directed learning is also a major component during full-time studies. Teaching and learning is also supported by the use of and engagement with the Birmingham City University virtual learning environment, Moodle as well as secure online communication platforms such as Big Blue Button and MS Teams. **Assessment** Assessments have been designed to be inclusive and varied. Your work will be assessed using a mix of methods depending on the module or area of study and will include assessments such as coursework, examinations and in-person assessment, in additional to a final student led research project.

	Formative learning allows for feedback as part of a continuous process and you will be provided with opportunities for formative learning through for example, seminars, micro teaching sessions, Moodle quizzes and action learning sets. Whilst studying this course, you will receive regular feedback and support. Feedback may take the form of live, in class feedback, in addition to feedback on assessment. All postgraduate level modules are assessed using the postgraduate regulations with a pass mark set at 50%.

15	**Course Requirements**
15a	**<u>Postgraduate Certificate</u>** **PG Cert Engineering Practice and Technical Decision Making for Healthcare (60 credits):** ***In order to be awarded the Postgraduate Certificate, a student must successfully complete all the following CORE modules (totalling 60 credits):***

Module Code	Module Name	Credit Value
ENG7217	Principles of Experimental Design and Ethical Practices in engineering and technology for Medicine	20
TBC	Introduction to STEMM Principles and Practices for Technical Decision Making	20
TBC	Introduction to Modelling and Simulation in MATLAB and Python	20

* STEMM = Science, Technology, Engineering, Mathematics and Medicine.

<u>Postgraduate Diploma</u>

PG Dip Medical Imaging Technology (120 credits):

***In order to be awarded the Postgraduate Diploma, a student must successfully complete all the following CORE modules (totalling 100 credits*)**

Module Code	Module Name	Credit Value
ENG7217	Principles of Experimental Design and Ethical Practices in Engineering and Technology for Medicine	20
TBC	Introduction to STEMM Principles and Practices for Technical Decision Making	20
TBC	Introduction to Modelling and Simulation in MATLAB and Python	20
ENG7221	Medical Imaging Equipment and Healthcare Technology	20
ENG7220	Fundamental principles and applications of Molecular Medical Image Synthesis and Processing	20

In order to complete this award, a student must successfully complete at least 20 credits from the following indicative list of OPTIONAL modules.

Module Code	Module Name	Credit Value
ENG7161	Health Care Technology Management	20
LBR7339	Leadership and Project Management for Health and Healthcare	20
ENG7210	Internet of Things for Healthcare Applications	20

Master of Science

MSc Medical Imaging Technology (180 credits):

In order to be awarded the Master of Science, a student must successfully complete all the following CORE modules (totalling 160 credits)

Module Code	Module Name	Credit Value
ENG7217	Principles of Experimental Design and Ethical practices in Engineering and Technology for Medicine	20
TBC	Introduction to STEMM Principles and Practices for Technical Decision Making	20
TBC	Introduction to Modelling and Simulation in MATLAB and Python	20
ENG7221	Medical Imaging Equipment and Healthcare Technology	20
ENG7220	Fundamental Principles and Applications of Molecular Medical Image Synthesis and Processing	20
ENG7222	Masters Research Project in Medical Engineering & Imaging Technologies	60

In order to complete this award, a student must successfully complete at least 20 credits from the following indicative list of OPTIONAL modules.

Module Code	Module Name	Credit Value
ENG7161	Health Care Technology Management	20
LBR7339	Leadership and Project Management for Health and Healthcare	20
ENG7210	Internet of Things for Healthcare Applications	20

15b	Structure Diagram

Level 7

SEMESTER ONE (January)	
Core Principles of Experimental Design and Ethical Practices in Engineering and Technology for Medicine (20 credits) Introduction to STEMM Principles and Practices for Technical Decision Making (20 credits) Introduction to Modelling and Simulation in MATLAB and Python (20 credits)	

SEMESTER TWO (September)	**SEMESTER THREE (January)**
Core Medical Imaging Equipment and Healthcare Technology (20 credits) Fundamental Principles and Applications of Molecular Medical Image Synthesis and Processing (20 credits)	
Masters Research Project in Medical Engineering & Imaging Technologies (60 credits)	
Optional – One module from those running in either Semester 2 or 3. Health Care Technology Management (20 credits)	Optional Internet of Things for Healthcare Applications (20 Credits) ***or*** Leadership and Project Management for Health and Healthcare (20 credits)

16	Overall Student Workload and Balance of Assessment

Level 7

Workload

14% time spent in timetabled teaching and learning activity

Activity	**Number of Hours**
Scheduled Learning	240
Directed Learning	184
Private Study	1376
Total Hours	1800

Balance of Assessment

Assessment Mode	**Percentage**
Coursework	54%
Exam	23%

In-Person	23%