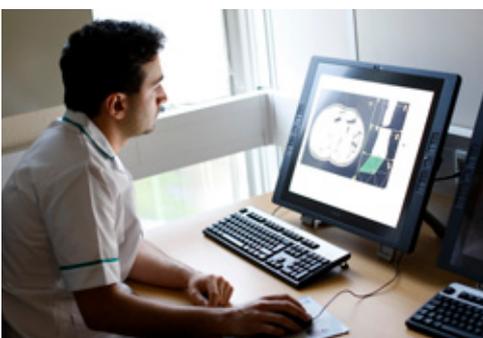
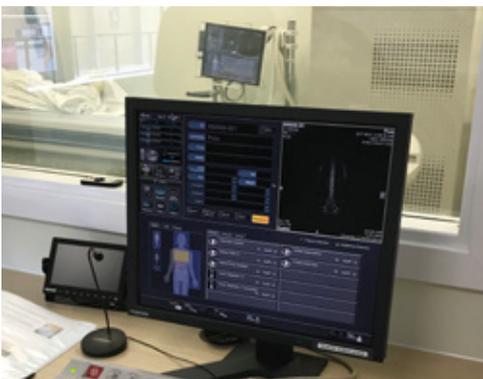


MSc Medical Imaging and Radiation Sciences

Diagnostic Imaging

School of Health and Social Work



MSc Medical Imaging and Radiation Sciences: Diagnostic Imaging

Thank you for your enquiry regarding the MSc Medical Imaging and Radiation Sciences: Diagnostic Imaging programme

Course overview

This well-established Master's degree is designed for radiographers who want to advance their professional practice and obtain an academic qualification. The MSc Medical Imaging and Radiation Sciences programme has four pathways which include

- Diagnostic Imaging
- Diagnostic Ultrasound
- Image Interpretation
- Radiotherapy and Oncology

The Diagnostic Imaging pathway gives you the opportunity to demonstrate development of your critical evaluative and problem solving skills in specialised areas of practice such as magnetic resonance imaging (MRI) and computerised tomography (CT). The programme is designed to enhance your current knowledge and understanding and give you opportunities to challenge and critically evaluate your professional practice.

Professional Accreditation

The MSc Medical Imaging and Radiation Sciences – Diagnostic Imaging programme is endorsed by the College of Radiographers.

Who is it for?

- The course is suitable for radiographers and health care professionals who want to specialise in this area and are interested in advancing their existing skills or acquiring new ones. It is designed to meet your needs whether you are in full or part-time employment.
- You will need to be registered with the Health Care Professions Council (HCPC) or NMC (or equivalent professional registration). If your first language is not English, you will have to provide evidence of IELTS of 7.0 (including 7.0 in the writing component) with no less than 6.5 in every band.

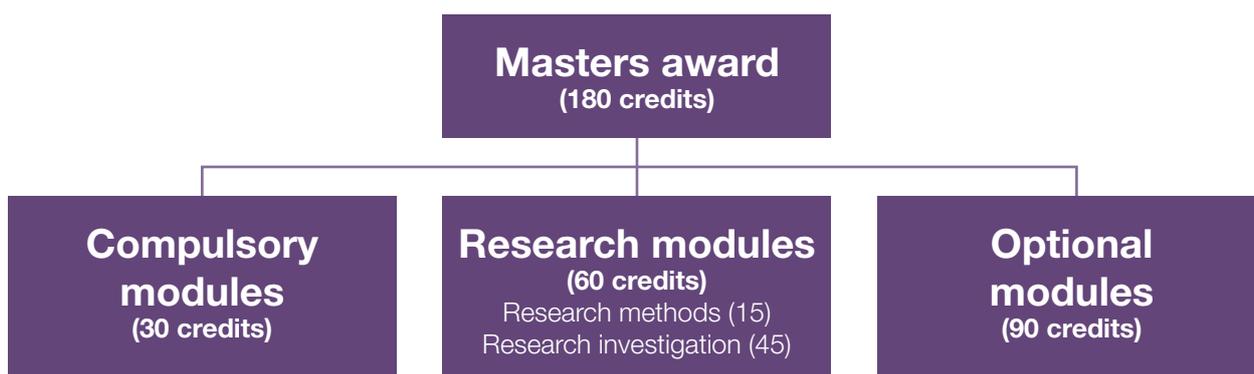
Course structure

The course is flexible and modular allowing you to create a programme of study to meet your personal development and career aspirations. To attain a Master's award you need to complete 180 credits. There are also interim awards available:

- Postgraduate certificate (PgC) (60 credits)
- Postgraduate diploma (PgD) (120 credits)

The rate and pace of study are up to you. You have up to 6 years to complete your master's course

The Master's degree consists of three elements: compulsory; research and optional modules.



Plan of study

Compulsory modules:

- The compulsory modules comprise 30 credits of Diagnostic Imaging modules. The choice may include one or more modules from Box 1.
- The Independent work based skills modules allow you to gain an in depth understanding of a particular subject area in which you have a specific interest.

Box 1 Diagnostic Imaging modules

Diagnostic Imaging Modules	Credits
MRI Science and Principles	15
CT Science and Principles	15
MRI Applications	15
CT Applications	15
MRI in Practice	15
CT in Practice	15
Independent professional practice	15 or 30
Independent reflection in professional practice 1 and 2	15 or 30
Independent work-based skills 1 and 2 or 3	15 or 30

Research modules:

Research methods can be taken at any stage during your studies. Research Investigation is the dissertation module. It can only be studied on successful completion of Research Methods.

Optional modules:

- The Independent study modules allow you to gain an in depth understanding of a particular subject area in which you have a specific interest.
- A wide range of optional modules allows you to create your own bespoke programme of study. The optional modules can include additional modules from the diagnostic imaging modules (Box 1), optional modules from Box 2, interprofessional modules; School modules, accredited short courses or credits transferred from other institutions.
- Modules may change year on year to reflect new developments or advances in practice.
- Optional modules can be taken in any order.
- It is advisable to consider your choice of optional modules carefully to reflect your personal strengths and potential career aspirations (Box 1 & 2).

Box 2 Optional modules

Area of interest	Relevant modules
Radiography	Sectional anatomy for imaging (15)
	Image Recognition: Brain (CT) (15)
	Image Recognition: Chest Radiography (15)
	Musculoskeletal Image Interpretation (30)
	Principles of Image Reporting (15)
Management	Developing & managing people (15)
	Redesigning services (15)
	Advanced decision making in contemporary healthcare (15)
	Coaching skills for leading (15)
Education	Supporting clinical education (15)
Development	Evidence Based Practice – Distance Learning

Order of modules:

- Modules can be studied in any order
- Research investigation is normally the last module you study.

Diagnostic Imaging Module Outlines

Science and Principles of MRI

Course aims

The aim of this course is to enable you to enhance your knowledge and understanding of the scientific principles and operation of magnetic resonance imaging (MRI) equipment.

Course content

This course explores the scientific principles of MRI.

You will study the concepts and principles of MRI, safety, principles of operation and image quality optimisation.

Students are encouraged to examine the relationships between MRI operating parameters, image quality, scan time and patient bioeffects. A clinical placement in MRI is helpful but not essential.

The course covers the following areas:

- o Historical evolution of MRI

- Magnets, coils and gradients
- Spatial localisation of the image o Image weighting – T1, T2, PD o MRI scanning parameters
- Resonance, nuclear spin states
- Functional imaging, MR angiography o Artifacts in MRI
- Safety aspects of MRI

Teaching is based on a combination of lectures, tutorials, small group seminars/workshops.

Code: 7HSK0101

Academic credits: 15

MRI Applications

Course aims

The aim of the course is to enable students to critically analyse and evaluate the evidence-base and current developments in contemporary and emerging magnetic resonance imaging (MRI) applications in order to develop a deep and systemic understanding of knowledge in this area. Students will be expected to engage with habitual reflection, identifying methodologies and strategies which enable best clinical practice and promote excellence in patient care.

Course content

The course covers the clinical considerations and applications of a range of MRI procedures. Students are encouraged to apply the technical principles of MRI to meet the clinical situation, maximising scan quality and providing images to enable a satisfactory diagnosis. Taught content will adapt to changes in MRI practice but will typically include MRI of the brain and spine, musculoskeletal system and trunk with further consideration of imaging in the context of oncology. Patient care, which is fundamental to all radiographic practice, will be explored in the context of MRI procedures.

Applications of MRI in current clinical practice will be discussed. Optimum scanning protocols and techniques demonstrating relevant pathology to enhance the quality of the scan procedure and methods of improving patient outcomes will be discussed. Students will study both normal and abnormal image appearances with discussion of relevant common pathologies. Typical disease presentations are covered. There is also consideration of the use of contrast enhancement, safety and risk effect, alternative imaging investigations, referral pathways, and diagnostic effectiveness and image quality issues.

Code: 7HSK0103

Academic credits: 15

Science and Principles of CT

Course aims

The aim of this course is to enable you to enhance your knowledge and understanding of the scientific principles and operation of Computed Tomography (CT) equipment.

Course content

This course explores the scientific principles of Computed Tomography (CT).

You will study the concepts and principles of CT, safety, principles of operation and the associated risks and benefits.

Students are encouraged to examine the relationships between CT operating parameters, image quality, scan time and radiation dose. A clinical placement in CT is helpful but not essential.

The course covers the following areas:

- o Evolution of CT

- Data acquisition
- CT image reconstruction o Image manipulation
- CT scanning parameters
- Dose reduction methods in CT o Artifacts in CT
- Safety aspects of CT

Teaching is based on a combination of lectures, tutorials, small group seminars/workshops.

Code: 7HSK0102

Academic credits: 15

CT Applications

Course aims

The aim of the course is to enable students to critically analyse and evaluate the evidence-base and current developments in contemporary and emerging Computed Tomography (CT) applications in order to develop a deep and systemic understanding of knowledge in this area. Students will be expected to engage with habitual reflection,

identifying methodologies and strategies which enable best clinical practice and promote excellence in patient care.

Course content

The course covers the clinical considerations and applications of a range of CT procedures. Students are encouraged to apply the technical principles of CT to meet the clinical situation, maximising scan quality and providing images to enable a satisfactory diagnosis. Taught content will adapt to changes in CT practice but will typically include CT angiography, CT in oncology, CT in acute and emergency situations and the use of CT in current practice. Patient care, which is fundamental to all radiographic practice, will be explored in the context of CT procedures.

Applications of CT in current clinical practice will be discussed. Optimum scanning protocols and techniques demonstrating relevant pathology to enhance the quality of the scan procedure and methods of improving patient outcomes will be discussed. Students will study both normal and abnormal image appearances with discussion of relevant common pathologies. Typical disease presentations are covered. There is also consideration of the use of contrast enhancement, safety and risk effect, alternative imaging investigations, referral pathways, and diagnostic effectiveness and image quality issues.

Code: 7HSK0104

Academic credits: 15

MRI in Practice

Course aims

This course aims to facilitate practitioners to enhance their own knowledge, understanding and skills required to undertake MRI in current practice within the clinical environment.

Students will be required to demonstrate initiative, originality, self-direction and reflection in problem solving and to practice with autonomy demonstrating a high level of personal and professional responsibility in the field of MRI.

Students will be expected to promote a patient-centred approach to MRI in practice within an inter-professional framework that values each individual and is committed to enhancing the quality of the patient experience and improving patient outcomes.

Course content

Students will be expected to analyse, discuss and evaluate their own practice in the field of MRI. A self-directed portfolio containing reflective, problem solving and evidence-based tasks in order to enhance professional development will be the main focus of this course. Indicative content will include MRI technique, safety, patient care, ethical and legal aspects, guidelines, quality, learning and teaching in the MRI clinical environment.

Code: 7HSK0105

Academic credits: 15

CT in Practice

Course aims

This course aims to facilitate practitioners to enhance their own knowledge, understanding and skills required to undertake CT in current practice within the clinical environment.

Students will be required to demonstrate initiative, originality, self-direction and reflection in problem solving and to practice with autonomy demonstrating a high level of personal and professional responsibility in the field of CT.

Students will be expected to promote a patient-centred approach to CT in practice within an inter-professional framework that values each individual and is committed to enhancing the quality of the patient experience and improving patient outcomes.

Course content

Students will be expected to analyse, discuss and evaluate their own practice in the field of CT. A self-directed portfolio containing reflective, problem solving and evidence-based tasks in order to enhance professional development will be the main focus of this course. Indicative content will include CT technique, safety, patient care, ethical and legal aspects, guidelines, quality, learning and teaching in the CT clinical environment.

Code: 7HSK0106

Academic credits: 15



Independent Professional Study 1 and 2

(for Dieticians, Therapeutic and Diagnostic Radiographers, Paramedics and Physiotherapists)

Code: 7HSK0210 (Level 7)

Academic credits: 15

Code: 7HSK0211 (Level 7)

Academic credits: 30

These Independent professional study courses are designed for health professionals who want to gain an in depth understanding of a particular subject area, in which they have a specific interest.

Course content

The aims of these courses are to enable you to:

- Undertake an area of study of your own choice, which will inform and be of benefit to developing your professional practice
- Further develop intellectual skills thereby stimulating your commitment to personal and professional development and enhancement of profession related subject knowledge.
- In these courses you develop with guidance from an academic tutor an individually tailored outcomes-based programme of study.
- The topic chosen will be relevant to your professional practice.
- The choice of topic and learning outcomes will be the subject of negotiation between you and your supervisor.
- A blended approach to the facilitation of your development will be taken and may include e-learning opportunities.

Independent Reflection in Professional Practice 1 and 2

Code: 7HEP1049 (Level 7)

Academic credits: 15

Code: 7HEP1050 (Level 7)

Academic credits: 30

These Independent reflection in professional practice 1 and 2 courses are designed for health professionals who want to reflect on an aspect of their day to day professional practice. If you wish to study this as part of a postgraduate award, normally a degree or equivalent, is required.

Course content

The aims of these courses are to enable you to:

- Undertake an area of study of your own choice, which will inform and be of benefit to developing your professional practice
- Enhance clinical effectiveness through analysis of evidence and reflection on professional practice.
- In these courses you are expected to provide evidence of evaluated professional practice over the period of the course.
- You will be facilitated to use the learning gained from your professional activities as a basis to gain academic credit.

Independent Work Based Skills 1, 2 and 3

Code: 7HEP1047/7HEP1048 (Level 7)

Code: 7HSK0062 (Level 7)

Academic credits: 15

Academic credits: 30

These Independent Work Based skills 1, 2 and 3 courses are designed for health professionals who want to gain specific skills for the competent performance of a prescribed area of clinical practice.

A clinical placement in the area appropriate to your practice is required in order to take this course. If you wish to undertake this as part of a postgraduate award, normally a degree or equivalent is required.

Course content

The aims of these courses are to enable you to:

Undertake an area of study of your own choice, which will inform and be of benefit to developing your professional practice. Gain clinical and evaluative skills for the competent performance of a prescribed area of clinical practice relevant to service needs. These courses enable you to develop skills in a particular area of practice as identified by the individual and line manager where relevant.

The area of skills development will be of benefit to developing your chosen area of professional practice.

The choice of topic and learning outcomes will be the subject of negotiation between you and your supervisor.



Optional Diagnostic Imaging modules

Sectional Anatomy for Imaging

Course aims

The aim of this course is to enable you to gain a deep and systematic understanding of the multiplanar radiological sectional anatomy of the human body, in order to inform and enhance your health care working practice.

Course content

This course explores the radiological sectional anatomical appearances and relationships of the human body in health and disease.

You will study using a regional approach to adult multiplanar human anatomy, making use of normal and abnormal images to illustrate typical appearances in health and disease. Fetal, obstetric and developmental anatomy is not included.

The course covers the following areas:

- o Anatomical planes

- Tissue relationships in the sagittal, coronal and axial planes for all adult body regions
- Imaging appearances focusing on CT and MRI, with some reference to PET and ultrasound
- Normal and pathological image appearances

Teaching delivery is online, making use of the managed learning environment (Studynet). StudyNet will be used to facilitate the students' study and communication between the students, and the students and the tutors throughout the course.

Code: 7HSK0107

Academic credits: 15

Image Recognition Chest Radiography

Course aims

The aim of this course is to enable students to enhance their knowledge of the anatomy including normal variants and a range of pathological and traumatic processes, which affect the thoracic cavity. It will also enhance their awareness and recognition of changes in appearance of the chest radiograph.

Course content

The course will provide an overview of the pathophysiological processes that affect the thoracic cavity, with particular emphasis on radiographic appearance. Students will develop critical awareness of patient presentation, which may influence the radiographic appearance. Taught content will provide an emphasis on the radiographic appearances of normal and common conditions that present within the thoracic cavity.

This will be facilitated by blended learning initiatives which will enable the student to enhance their learning within the clinical environment.

Code: 7HSK0099

Academic credits: 15



Image Recognition: Brain CT

Course aims

The aim of this course is to enable students to enhance their knowledge of the anatomy including normal variants and a range of pathological and traumatic processes which affect the cranium and its content. It will also enhance their awareness and recognition of changes in appearance of CT brain images.

Course content

The course will provide an overview of the pathophysiological processes that affect the cranium, with particular emphasis on radiographic appearance. Students will develop critical awareness of patient presentation which may influence the radiographic appearance. Taught content will provide an emphasis on the radiographic appearances of normal and common conditions that present within the cranium.

This will be facilitated by blended learning initiatives which will enable the student to enhance their learning within the clinical environment.

Code: 7HSK0100

Academic credits: 15

Musculoskeletal image interpretation

Course aims

The aims of this course are to enable students to:

- Enhance the knowledge of the anatomy and image recognition of traumatic and pathological processes including common normal variants which affect the musculoskeletal system.
- Provide a patient centred approach to image interpretation within an inter-professional framework that values each individual and is committed to enhancing the quality of the patient outcome.

Course content

This course gives an overview of the processes that affect the musculoskeletal system. The course includes the effect of trauma and pathology on the musculoskeletal system and how these factors affect patient presentation. There will be emphasis on image appearances, to encompass normal, normal variant traumatic and pathological developments. The radiographic practice utilised to achieve the diagnostic image of the musculoskeletal system will be reviewed. Both trauma and a range of pathologies will be investigated.

Code: 7HSK0097

Academic credits: 30



Research Modules

Research Methods

The Research methods course is designed for any health professional who wishes to develop an understanding of the background and philosophies of research paradigms commonly encountered within the healthcare setting.

The course can be taken as a 'stand-alone' for attendance only or used towards a postgraduate qualification.

- The aim of the Research methods course is to make you understand the philosophies of different research methodologies and the application of a range of research techniques.
- It also aims to develop your knowledge and skills required to plan, design, conduct and present research.
- You will participate in examination of qualitative methodologies and critical analysis and evaluation of published literature in order to develop your knowledge and diversify skills.
- You will also construct research questions and design and conduct studies pertinent to the healthcare environment.

Code: 7HSK0065

Academic credits: 15

Research Investigation

This course is for paramedics, physiotherapists, radiographers, radiotherapists, dieticians, sports therapists, osteopaths and sport rehabilitators who have completed master's level research methods and who wish to undertake a piece of original research in order to complete their Master's award.

- You are required to undertake research in a topic area which has been agreed with your supervisor and which is normally in line with the research strategy. It will be important to discuss your research ideas with the relevant programme tutor and profession specific research lead.
- The first phase of the course is to develop a realistic research proposal following a review of the relevant literature. You are then supported through the research process by your supervisor. We support both primary and secondary research activity and students may work on an individual or group project.
- Peer review sessions are held on a regular basis throughout the course of the year. These sessions give students the opportunity to discuss and review each other's research within a supportive academic environment.

Generic research teaching is also provided within the course. Attendance at the peer review sessions is a requirement of the course.

Code: 7HSK0063

Academic credits: 45

Examples of study routes

The programme allows students to specialise in CT, MRI or a combination of both. Also the profession specific modules can be combined with other modules such as management to address management and professional needs.

The boxes contain examples of suites of modules that can be taken by students.

Postgraduate Certificate focussing on MRI (60 credits)
MRI Science and Principles (15 credits)
MRI Applications (15 credits)
MRI in Practice (15 credits)
Sectional Anatomy for Imaging (15 credits)

Postgraduate Certificate focussing on CT (60 credits)
CT Science and Principles (15 credits)
CT Applications (15 credits)
CT in Practice (15 credits)
Image Recognition: Brain CT (15 credits)

Postgraduate Diploma combining role specific modules and management modules (120 credits)

MRI Science and Principles (15 credits)

MRI Applications (15 credits)

CT Science and Principles (15 credits)

CT Applications (15 credits)

Developing & managing people (15 credits)

Redesigning services (15 credits)

Advanced decision making in contemporary healthcare (15 credits)

Coaching skills for leading (15 credits)

MSc Diagnostic Imaging (180 credits)

MRI Science and Principles (15 credits)

MRI Applications (15 credits)

MRI in Practice (15 credits)

Sectional Anatomy for Imaging (15 credits)

Independent professional practice 2 (30 credits)

Independent reflection in professional practice 1 (15 credits)

Independent work-based skills 1 (15 credits)

Research Investigation (45 credits)

Research Methods (15 credits)

Application

There are two modes of application:

- Independent – you apply for a single module and are registered as an Independent student on the master's programme. This is a useful approach if you are unsure about applying for a master's course. It will give you an idea of the level of input required and the amount of time involved. You can undertake up to 45 credits as an independent student. If you decide to undertake more credits then you are transferred to the part-time route.
- Postgraduate Diploma/ Masters – you apply for the master's course and are registered as a part-time student. You will need to complete an application form and provide one reference
- On your application form you will need to indicate which module/s you intend to study in your first year. You select subsequent modules you plan to study on a yearly basis by completing a "continuing student" form.

Fees

- The masters course is modular and the fees are payable per module. Some modules are subject to non-standard fees (e.g. ultrasound clinical modules).
- You retain the fee package which you commenced on when you joined the part-time master's course (as long as you do not have a break in study). If you first studied a module as an "independent" student (see section on application) this may mean your fees will increase from your first module.
- For NHS employees, the University works with NHS trusts, Clinical Commissioning Groups (CCGs) and Community Education Provider Networks (CEPNs) across the East of England under the recently configured Sustainability and Transformation Plans and their Local Workforce Advisory Boards' transformational frameworks. It is therefore worth checking with the CPD lead for your Trust as part or all of your fees may be covered.
- If you completed your undergraduate degree at UH, you are entitled to a fee deduction of 20% on all modules.
- A postgraduate loan is available for this course. To be eligible for a loan the course must be completed within three years. Before applying for a loan please contact the programme leader to agree a plan of study. You are also advised to contact funding@herts.ac.uk

What our students say about their experience of learning on the course

Key strengths of the course

- Flexible programme of study which can be tailored to your own needs
- opportunity to share ideas with other health professions in order to develop intellectual abilities and assist in the advancement of health care
- interprofessional learning
- teaching by experienced staff and visiting external specialists
- Enhances career progression - many students have gone on to roles as clinical specialists, team leaders, clinical mentors, lecturers and researchers. Your choice of “optional modules” will be key in facilitating you to maximise your career potential.

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How to apply

To apply for the courses you need to complete a University application form which can be found on go.herts.ac.uk/cpdapply

You can also contact the Health CPD office on **01707 284956** or by email at cpdhealth@herts.ac.uk

We're always happy to answer questions, give advice or arrange a visit.

Course/programme enquiries

For further enquiries about the course contact Louise Smith at l.m.smith@herts.ac.uk or call **+44 (0)1707 281030**

School of Health and Social Work

University of Hertfordshire
Hatfield
Hertfordshire
AL10 9AB

www.herts.ac.uk

