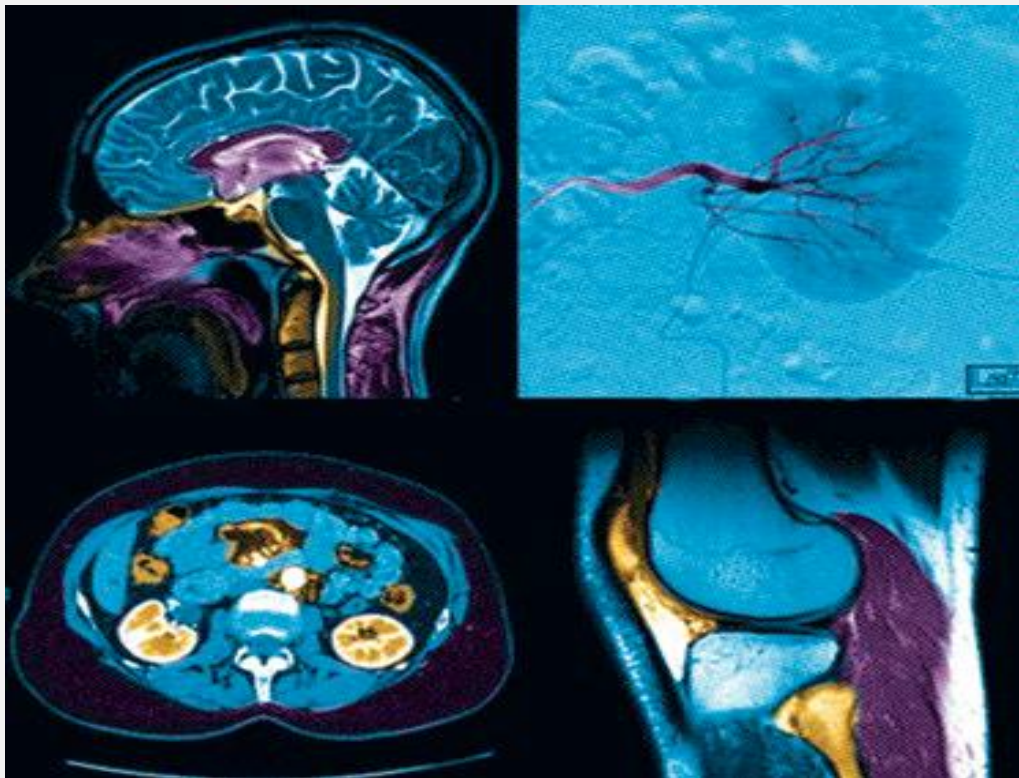


APPLICATION HANDBOOK

CLINICAL RADIOLOGY



PG Cert
PG Dip
MSc Clinical Radiology

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Introduction

This course aims to provide advanced professional education for Clinical Radiologists. The goal is to train students to be the high achieving consultants and clinical leaders of the future by providing a blend of clinical knowledge with learning in the three key professional domains of Research, Leadership and Communication & Learning, along with the development of research and publishing skills.

The course has been specifically designed in collaboration with the HEKSS School of Radiology and is intended to help meet the training requirements of trainees in Clinical Radiology. The structure of the course has been designed to integrate seamlessly with the HEKSS Radiology Training Programme and the FRCR exam.

The Postgraduate Certificate, Postgraduate Diploma and Masters are all taught at Postgraduate (M) level and will be awarded on gaining 60, 120 and 180 credits respectively.

This course is jointly validated by the University of Brighton and University of Sussex.

Aims and Learning Outcomes for the Course

Aims

This course has been set up with the ultimate aim of producing high quality Clinical Radiology consultants, capable of meeting the challenges of this dynamic and rapidly evolving specialty.

Radiology trainees are required to assimilate a large body of knowledge with which they will have been previously unfamiliar over a relatively short timescale, including detailed knowledge of imaging physics and anatomy as well as the full spectrum of disease processes and associated imaging features. This knowledge is examined rigorously through the FRCR exam, which proves a frequent stumbling block for trainees. The three clinical modules of the course (Imaging Physics and Anatomy, Musculoskeletal and Neurological Imaging and Oncological Imaging) will provide you with a thorough grounding in these essential areas of knowledge.

The RCR Clinical Radiology curriculum places increasing weight on generic professional skills but these do not always receive sufficient focus in everyday radiology training. Furthermore, despite the rapid advances being made in imaging technology, the number of radiologists actively engaged in high quality research remains small, a deficiency which has again been recognized by the RCR. The three professional modules of the course (Research Methods and Critical Appraisal, Communication, Learning and Teaching in Health and Social Care, and Leadership and Change Management in Clinical Services) will develop your skills in the key domains of research, leadership and teaching. Finally, the dissertation component of the MSc provides you with the opportunity to undertake a supervised, high quality piece of research in your chosen subspecialty area.

The course will therefore equip you with a wide range of clinical and professional knowledge and skills, which will prove invaluable to you in your future consultant career.

Learning Outcomes

PG Cert: Upon successful completion of the programme you will be able to demonstrate a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of Clinical Radiology including:

1. A systematic understanding of the principles of imaging physics and anatomy and the ability to apply these to clinical practice.
2. A systematic understanding of the principles of neuromuscular imaging and the ability to apply these in clinical practice.
3. A systematic understanding of the principles of oncological imaging and the ability to apply these in clinical practice.

PG Dip: Upon successful completion of the programme you will be able to demonstrate the above PLUS:

4. A critical understanding of research methods and critical appraisal along with the ability to critically appraise research approaches and apply appropriate methods in the development of an original research proposal.

5. An advanced level of understanding of communication and teaching in relation to patients and colleagues of all levels, including the ability to communicate conclusions clearly to specialist and non-specialist audiences.
6. An understanding of the organisational and policy context and the drivers for change to enable clinicians to contribute more effectively to improving the design, delivery, outcomes and cost effectiveness of services. This includes demonstrating self-direction and originality in tackling and solving problems, and acting autonomously in planning and implementing tasks at a personal and organisational level.

MSc: Upon successful completion of the programme you will be able to demonstrate the above PLUS:

7. The ability to plan, conduct and report/publish an original research project, developing and testing new hypotheses in their specialist area.

On successful completion of this course students will be able to demonstrate the following skills:

- An ability to access and search different databases and sources of literature and data;
- The analysis and synthesis of data – dealing with complex issues both systematically and creatively;
- The ability to use evidence appropriately to inform clinical practice;
- Professional writing and presentation skills;
- Advanced levels of communications in clinical and non-clinical settings;
- Developing and submitting research proposals;
- Negotiating research ethics and governance procedures;
- The ability to relate clinical knowledge and judgment to organisational settings and priorities.

Entry Requirements

The course is open only to Health Education England (Kent, Surrey, Sussex) Clinical Radiology trainees. (Open to UK and EU applicants who are appointed to a post within HEKSS).

Claims for Recognition of Prior Learning (RPL) will be considered to a maximum of 50% of the total credits permitted .

An Induction Day is scheduled for Tuesday 19th September 2023 for all successful applicants. New students are strongly encouraged to attend. This event will run online via MS Teams.

Structure of Course

There are three mandatory modules for PG Cert Clinical Radiology. These are:

- Imaging Physics and Anatomy (MDM143)
- Musculoskeletal and Neurological Imaging (MDM144)
- Oncological Imaging (MDM145)

There are six mandatory modules for PG Dip Clinical Radiology. These are:

- Imaging Physics and Anatomy (MDM143)
- Musculoskeletal and Neurological Imaging (MDM144)
- Oncological Imaging (MDM145)
- Research Methods and Critical Appraisal (MDM10)
- Communication, Learning and Teaching in Health and Social Care (MDM122)
- Leadership and Change Management in Clinical Services (MDM110)

MSc students also undertake a 12,000-word dissertation plus academic poster to obtain the remaining 60 credits of the 180 credits needed for the award.

The course structure is shown overleaf.

Postgraduate Certificate in Clinical Radiology

Module	Status
MDM143 Imaging Anatomy and Physics PLUS	Mandatory (20 credits)
MDM144 Musculoskeletal and Neurological Imaging PLUS	Mandatory (20 credits)
MDM145 Oncological Imaging	Mandatory (20 credits)

Postgraduate Diploma in Clinical Radiology

Module	Status
MDM143 Imaging Anatomy and Physics PLUS	Mandatory (20 credits)
MDM144 Musculoskeletal and Neurological Imaging PLUS	Mandatory (20 credits)
MDM145 Oncological Imaging PLUS	Mandatory (20 credits)
MDM10 Research Methods and Critical Appraisal PLUS	Mandatory (20 credits)
MDM122 Communication, Learning and Teaching in Health and Social Care PLUS	Mandatory (20 credits)
MDM110 Leadership and Change Management in Clinical Services	Mandatory (20 credits)

MSc Clinical Radiology

Module	Status
Postgraduate Diploma modules PLUS	Mandatory (120 credits)
MDM164 Dissertation (12,000 words plus academic poster)	Mandatory (60 credits)

In some circumstances, PG Dip and MSc students may apply for a Variation of Study. In agreement with the Course Leader another module from the Postgraduate Medicine portfolio may be taken to replace MDM110 or MDM122.

Year 1

The initial focus of all new trainees in Clinical Radiology is on acquiring a grounding in the basic science relevant to medical imaging and the course therefore begins with MDM143, the Imaging Physics and Anatomy module. This is timed such that the module exam is completed shortly before the FRCR Part 1 exam.

Towards the end of Year 1, students will take MDM144, the Musculoskeletal and Neurological Imaging module, acquiring knowledge essential not only for the FRCR 2A exam but also for the commencement of on call duties which usually start at this stage of training.

Year 2

The second year will commence with the third clinical module, MDM145 Oncological Imaging, following which students will normally undertake the MDM10 Research Methods & Critical Appraisal module during the second part of the year.

Year 3

During the third year of the course, students will undertake the final two professional modules - MDM122 Communication, Learning and Teaching in Health and Social Care and MDM110 Leadership and Change Management in Clinical Services.

Years 4-5

Trainees will by now have chosen their area(s) of subspecialty interest and will undertake their dissertation project to complete the MSc.

Module Descriptions

Imaging Physics and Anatomy (MDM143)

This module aims to develop a systematic approach of participants to the understanding and working with all imaging modalities in terms of the applied physics and anatomy. It also imparts how different imaging modalities present normal and pathological structures.

By the end of the module you will be able to show:

- An advanced understanding of physics and as applied to modern imaging modalities
- A systematic knowledge and understanding of the principles of working with the different imaging modalities used in modern medical practice
- The ability to apply advanced anatomical theory to imaging techniques and the interpretation of images
- An understanding of how different imaging modalities display normal anatomical features
- Acquired knowledge to a level commensurate with Part 1 FRCR

Musculoskeletal and Neurological Imaging (MDM144)

This module aims to give an in-depth understanding of the radiological aspects of musculoskeletal and neurological disease. The content will include a broad spectrum of disease processes and their findings using all relevant imaging modalities. The module will equip participants with an approach to the diagnosis of musculoskeletal and neurological pathologies on imaging and will impart how different imaging modalities present normal and pathological structures.

On successful completion of this module you will be able to:

- Demonstrate a comprehensive understanding of the use of different imaging modalities for musculoskeletal and neurological pathologies
- Formulate a differential diagnosis of common musculoskeletal and neurological imaging presentations in a systematic and critical manner
- Demonstrate advanced knowledge and understanding of the acute and non-acute neurological disease from a diagnostic perspective
- Demonstrate advanced knowledge and understanding of the acute and non-acute musculoskeletal disease from a diagnostic perspective

Oncological Imaging (MDM145)

This module aims to develop a working knowledge of cancer as a disease process, allowing participants to apply this to better understand the implications of oncological imaging. It will

explore how imaging impacts on the patient's cancer journey from first diagnosis to terminal care.

The module will enable participants to analyse specific topics such as state of the art imaging in particular tumours. It will also focus on issues pertinent to cancer imagers such as team working and communication issues in an imaging setting. There will be opportunity for debate around contentious issues such as the growing cost of cancer healthcare and cancer screening programmes.

On successful completion of this module you will be able to:

- Understand the essential genetics and epidemiology of cancers
- Understand how we reach a cancer diagnosis, stage and assess response
- Explain the various cancer therapies and when they are utilised
- Describe the complications of cancer therapy and their imaging findings
- Understand the role of imagers in cancer care
- Describe how to communicate effectively with cancer patients

Research Methods and Critical Appraisal (MDM10)

The module aims to provide you with an understanding of how to use evidence in their specialist area. It aims to provide you with an understanding of research methods in health and social care and the ability to relate appropriate methods to research questions. You will be equipped to search and critically review the literature, to develop and justify a research proposal, and to anticipate potential ethical issues in research proposals.

On successful completion of this well-established module you will be able to:

- demonstrate a critical understanding and evaluation of major research designs and their relative strengths and limitations
- systematically develop and justify a chosen research approach and methodology to investigate a specific topic within their subject
- produce a research proposal which demonstrates appreciation of scientific methods appropriate to their specialist area
- critically appraise a variety of research papers across a range of study designs

- carry out an appropriate, rigorous review of the literature
- be aware of ethical and governance issues in research

Communication, Learning and Teaching in Health and Social Care (MDM122)

This module aims to facilitate your development as communicators and educators, promoting the development of knowledge, skills, attitudes and practices of a competent clinical practitioner.

On successful completion of this module you should be able to:

- Identify and comprehend the similarities and differences between patient- and learner- centred values in practice
- Understand the factors which may enhance or impede effective communication between professionals and patients/clients
- Critically reflect on different communication and learning styles and skills
- Critically evaluate different theories of learning and relate these to their own philosophy of learning
- Critically appraise a range of teaching interventions
- Plan and design appropriate communication and learning interventions for patients/clients or learners under their supervision
- Critically analyse the nature of multi-professional and inter-professional communication and learning
- Critically evaluate their own performance as communicators and supporters of learners
- Identify their personal teaching and learning styles and developmental needs as a teacher and communicator

Leadership and Change Management in Clinical Services (MDM110)

This module aims to provide an overarching understanding of the organisational context for change in health & care service settings to enable managers, practitioners and professionals to contribute more effectively to leading and improving the design of service models and new organisational bodies, and to the delivery, cost effectiveness and outcomes of services.

On successful completion of this module you will be able to demonstrate:

- A systematic and critical understanding of public service reform theory, policy and current context
- A critical awareness of, and ability to think reflectively about, how to initiate, lead and manage changing and improving services, with an emphasis on using research to inform change goals and drive up outcomes
- The ability to critically appraise different service delivery and management models from independent and public sector settings, understanding complexity theory, whole system leadership, and evaluation and selection of different approaches to the change process in health & care settings
- A critical awareness of strategic planning, market development and financial management, in order to communicate vision and define key priorities
- A deep critical understanding of the theory and practice of leadership
- A critical awareness of and ability to think reflectively on the principles, objectives and effectiveness of governance, and how accountability supports the delivery of quality services
- An ability to assimilate, synthesise and critically appraise relevant aspects of leadership for service transformation, and present these both orally and in written form to different audiences

Dissertation (MDM164)

The Dissertation module is designed to allow you the opportunity to engage in a rigorous piece of personal and independent research arising out of your programme of study and allied to your professional field, and to present your findings through a dissertation (12,000 words). You are expected to present and publish the results of your dissertation project, where possible.

On successful completion of this module you will be able to demonstrate:

- Clear aims appropriate to a master's level dissertation and to their professional situation
- High levels of autonomy and responsibility in planning and executing research

- The ability to present and justify a well-structured research question, at the forefront of their specialty
- Extensive knowledge of and justification for the appropriate choice of methodology
- Comprehensive understanding of, justification for, and application of the methods relevant to the chosen methodology
- Evaluation and management of confounding, bias, chance and measures of association (quantitative study)
- Issues of truthfulness and verifiability (qualitative study)
- The ability to analyse critically and interpret the results and findings of their study in the context of existing literature
- Critical awareness of the limitations of the study and the impact of these on the results
- Appropriate knowledge of, and conformity with ethical and governance requirements both in planning and execution of the study
- A depth of knowledge in the field of study appropriate for master's level
- Critical evaluation of the implications of their research for future practice and research
- Awareness of current problems and/or new insights at the forefront of their academic discipline, field of study, or area of professional practice

The Dissertation

The Dissertation is for students studying for the MSc award. In order to be able to progress to Dissertation level you must first have a proposal agreed.

It is important to start thinking about your dissertation as early as possible. You are advised to attend a Dissertation Day prior to submitting your Dissertation proposal - these are scheduled a few times each year and dates can be found on the main timetable.

You will be able to choose a Dissertation that is relevant to your professional interests and practice but will need to focus on issues relating to Clinical Radiology. Your choice of topic must be discussed with the Course Leader and then approved by the DME Dissertation Panel

after a formal submission of your proposal to the Panel. Once your Dissertation has been approved, you will be assigned a Dissertation Supervisor. Other regulatory requirements can be found in the dissertation handbook.

Timetable

Please contact the Course Coordinator for timetable details. Module dates for the next academic year are also available online from the summer at: [Single modules - BSMS](#)

Fees

For fee information, please see the website: [Clinical Radiology - BSMS](#)

In case of queries, please contact: fees@brighton.ac.uk.

Teaching Staff

Academic staff from the Brighton and Sussex Medical School and Brighton and Sussex University Hospitals are involved in the provision of teaching in a modular format at Masters (M) level. Specialist teaching is provided by consultants, specialists and other clinical staff from Trusts and organisations in and around the region. The extensive contribution of expert practitioners to the teaching of the modules is a distinctive feature of courses at BSMS.

Teaching and Learning Methods

As with all Master's courses, there is a considerable degree of independent study. Teaching methods encompass lectures, whole group discussions, small group discussions, critical appraisal workshops and individual tutorials. Maintaining employment throughout the course ensures the transfer of knowledge and skills from the course into the workplace.

Assessment

Modules are usually assessed by unseen written examinations (clinical modules) or 3,000 or 4,000 word written assignments which are centred on case studies or a relevant topic chosen by the student and agreed with the module leader.

Teaching Sites

All modules are taught predominantly at the University of Brighton Falmer campus and occasionally at the University of Sussex campus. Some modules may be delivered online.

[Falmer campus \(brighton.ac.uk\)](http://brighton.ac.uk)

[Campus map : Our campus : About us : University of Sussex](#)

How to Apply

Please apply online via the following link: [Clinical Radiology - BSMS](#)

And Finally ...

If you have any further questions, please contact the Course Coordinator at the email address given on the cover page of this handbook.