

Course Information Sheet for entry in 2023-24: MSc in Medical Physics with Radiobiology



About the course

The MSc in Medical Physics with Radiobiology is a one-year, full-time course, designed for individuals interested in a careers in medical physics from either a clinical or academic research perspective, or in professions that require a knowledge of medical physics, such as radiation protection.

The main aim of this course is to discuss how ionising and non-ionising radiation are used in clinical practice, both in the context of radiotherapy and medical imaging. This is combined with principles of radiobiology at molecular and cellular level, to give graduates a better understanding of the effects of radiation than is achieved in other medical physics courses.

The course is based on a series of overarching learning outcomes, which you will be able to demonstrate on completion of your studies:

- Explain the underpinning physics which governs the interactions between ionising radiation and biological tissues
- Critically analyse the effects of ionising radiation on DNA and the associated DNA damage response, with respect to their effects on cell survival
- Critically appraise the irradiation response of cells and tissues, including the factors that modify this response, with respect to how this may affect clinical practice
- Critically discuss the implementation of radiation safety precautions, with respect to the mechanism of damage from radiation exposure, and the legislative requirements which govern radiation protection
- Explain the mechanisms of action of a range both ionising and non-ionising radiation imaging technologies, with respect to their clinical use
- Use fundamental physics of radiation action to analyse the effects of clinical radiotherapy technologies and techniques
- Critically evaluate new developments in ionising and non-ionising imaging, and clinical radiotherapy
- Critically appraise the role of simple and advanced analytical techniques within medical physics research
- Explain and evaluate the research approaches used in applied and translational research within the field of medical physics
- Apply the scientific method to address research questions within the field of medical physics

The Institute of Physics and Engineering in Medicine (IPEM) accredit Master's programs in Medical Physics by means of specific accreditation standards. As this is a brand new course for the 2023/24 academic year it has been awarded provisional accreditation status at this stage. The course will be subject to further inspection for full accreditation once the first cohort of students have completed. Provided full accreditation is granted, students studying this course in the 2023/24 academic year will be eligible to receive the IPEM accredited degree qualification.

Course structure

Online short courses

Most students on this course will have a physics undergraduate degree. Prior to the start of Michaelmas term, you will be signed up to two online, self-paced, short courses which cover all of the basic principles of biology and human anatomy that you will need to get to grips with to help you with the biology elements of the course. You will need to pass a short online test on these concepts part way through the term.

Compulsory modules

You will take eight compulsory modules, which are delivered in two-week blocks, following on from each other.

1. Physics of Radiation Interactions
2. Molecular Radiation Biology
3. Radiobiology of Cells and Tissues
4. Radiation Safety
5. Ionising Radiation Imaging Technologies
6. Non-ionising Radiation Technologies
7. Radiation Therapy Physics
8. Translational Research Methods and Applications

Modules one to four are delivered in Michaelmas term and build a picture of the biological responses to radiation from the sub-atomic level through to the effects on whole tissues, in both tumours and normal tissue, and will link this to radiation protection requirements for both patients and workers.

Modules five to eight are delivered in Hilary term and cover the application of physics in clinical practice across both imaging and radiotherapy. This will include discussion of new and emerging modalities and how these approaches are translated from the lab into clinical practice.

Balance of teaching

You can expect to receive seven to eight lectures and three to four tutorial or practical classes per module. There will also be preparatory reading, independent study tasks, and formative assessments set throughout the course, to be completed in the non-contact hours. Alongside the module specific tutorials, you will also attend a series of compulsory Directors' Tutorials throughout the year. These cover overarching themes such as critiquing a scientific paper, or presentation skills, and help to prepare you for specific assessment methods, including the dissertation.

Supervision

The allocation of graduate supervision is the responsibility of the Department of Oncology and it is not always possible to accommodate the preferences of incoming graduate students to work with a particular member of staff. A supervisor may be found outside the Department of Oncology.

You will be assigned a Director of Studies from the course team, who will help you review your progress, and discuss any concerns you have; your Director of Studies and the course administration team will usually be your first port of call for any queries about your studies. You will also have an advisor at your Oxford college, to whom you can turn if you feel you need to discuss your progress, or anything else pertinent to your study, away from the course team.

During the research project you will be allocated a project supervisor who will be responsible for your supervision and training. This supervisor will usually be from the Department of Oncology or the Oxford University Hospitals NHS Trust. We would recommend arranging meetings with your supervisor on a regular basis, at least every two weeks.

Assessment

Taught modules are assessed by a mixture of submitted coursework, presentations, and timed assessments such as examinations. The taught modules are assessed at the end of the term in which they are delivered. The dissertation is assessed by a written thesis and a poster presentation at the end of the academic year.

You will have the opportunity to submit formative assignments to develop your writing and presenting skills and receive feedback prior to completing your summative assessed work.

Changes to courses

The University will seek to deliver this course in accordance with the description set out above. However, there may be situations in which it is desirable or necessary for the University to make changes in course provision, either before or after registration. These may include significant changes made necessary by a pandemic (including Covid-19), epidemic or local health emergency. For further information, please see the University's Terms and Conditions (<http://www.graduate.ox.ac.uk/terms>) and our page on changes to courses (<http://www.graduate.ox.ac.uk/coursechanges>).

Expected length of course

	Full Time Only
Expected length	1 year

Costs

Annual fees for entry in 2023-24

Fee status	Annual Course fees
Home	£12,510
Overseas	£29,100

Information about course fees

Course fees are payable each year, for the duration of your fee liability (your fee liability is the length of time for which you are required to pay course fees). For courses lasting longer than one year, please be aware that fees will usually increase annually. Information about how much fees and other costs may increase is set out in the University's Terms and Conditions (<http://www.graduate.ox.ac.uk/terms>).

Course fees cover your teaching as well as other academic services and facilities provided to support your studies. Unless specified in the additional cost information (below), course fees do not cover your accommodation, residential costs or other living costs. They also don't cover any additional costs and charges that are outlined in the additional cost information.

Graduate students who have reached the end of their standard period of fee liability may be required to pay a termly University and/or a college continuation charge.

The University continuation charge, per term for entry in 2023-24 is £572, please be aware that this will increase annually. For part-time students, the termly charge will be half of the termly rate payable by full-time students.

If a college continuation charge applies (not applicable for non-matriculated courses) it is likely to be in the region of £100 to £600 per term. Please contact your college for more details.

Additional cost information

There are no compulsory elements of this course that entail additional costs beyond fees and living costs. However, please note that, depending on your choice of research topic and the research required to complete it, you may incur additional expenses, such as travel expenses, research expenses, and field trips. You will need to meet these additional costs, although you may be able to apply for small grants from your department and/or college to help you cover some of these expenses.

Living costs

In addition to your course fees, you will need to ensure that you have adequate funds to support your living costs for the duration of your course.

If you are studying part-time your living costs may vary depending on your personal circumstances but you must still ensure that you will have sufficient funding to meet these costs for the duration of your course.

The likely living costs for 2023-24 are published below. These costs are based on a single, full-time graduate student, with no dependants, living in Oxford. We provide the cost per month so you can multiply up by the number of months you expect to live in Oxford.

Likely living costs for one month

	Lower range	Upper range
Food	£300	£470
Accommodation	£715	£860
Personal items	£180	£305
Social activities	£40	£90
Study costs	£35	£80
Other	£20	£35
Total	£1,290	£1,840

Likely living costs for nine months

	Lower range	Upper range
Food	£2,700	£4,230
Accommodation	£6,435	£7,740
Personal items	£1,620	£2,745
Social activities	£360	£810
Study costs	£315	£720
Other	£180	£315
Total	£11,610	£16,560

Likely living costs for twelve months

	Lower range	Upper range
Food	£3,600	£5,640
Accommodation	£8,580	£10,320
Personal items	£2,160	£3,660
Social activities	£480	£1,080
Study costs	£420	£960
Other	£240	£420
Total	£15,480	£22,080

When planning your finances for any future years of study at Oxford beyond 2023-24, it is suggested that you allow for potential increases in living expenses of 5% or more each year – although this rate may vary significantly depending on how the national economic situation develops.

More information about how these figures have been calculated is available at www.graduate.ox.ac.uk/livingcosts.

Document accessibility

If you require an accessible version of the document please contact Graduate Admissions and Recruitment by email (graduate.admissions@admin.ox.ac.uk) or via the online form (<http://www.graduate.ox.ac.uk/ask>).