UNIVERSITY OF LIVERPOOL

MSc

Radiation Detection and Measurement for Nuclear Applications

Study mode	Duration	
Part-time	Up to 72 months	Apply by: **15 January 2027** Starts on: **25 January 2027**

About this course

The MSc in Radiation Detection and Measurement for Nuclear Applications will teach you a broad range of detector technologies for measuring ionising radiation that are widely used in nuclear-related industries, equipping you for a career in any industry involving radiation and radiation detectors.

Introduction

Please note, if you're applying for January 2027 entry, your course welcome starts on 25 January 2027. Teaching starts on the 1 February 2027.

Teaching will cover basic radiation principles, the use of detection systems and associated instrumentation applications, and modelling. There's a strong focus on practicals and laboratory-based techniques.

The MSc in Radiation Detection and Measurement for Nuclear Applications will teach you a broad range of detector technologies for measuring ionising radiation that are widely used in nuclear-related industries. It has a strong emphasis on practical laboratory skills using the state-of-the art equipment in our teaching laboratories, complementing the theoretical knowledge and advanced modelling skills you will learn. Many modules are also taken by participants from industry as part of their Continuing Professional Development, so you will

have opportunities to learn first hand about what it's like to work at some of the UK's leading employers in the sector.

The project during the summer will give you a chance to conduct individual open-ended research under expert supervision. You'll be able to carry out the project, often in industry, making you even more employable in sectors such as nuclear power, medicine, environmental protection, oil and mining, and health and safety.

In addition to the fees and funding options outlined for this course, there are currently several bursary schemes available for UK applicants as part of the national nuclear skills agenda. Please contact us for information about these.

Who is this course for?

This course is suitable for students with first degrees in physical sciences and engineering who are looking for a career in sectors such as nuclear-related industries, healthcare, security, radiation protection and environmental monitoring, as well as further study.

What you'll learn

- Advanced laboratory practical skills
- Computer modelling skills
- Theoretical knowledge related to detector technologies used for measuring ionising radiation in a wide range of employment sectors

Back to top

Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

Semester one

The programme consists of a number of one-week basic modules and their associated applied modules, which you can select to best meet your needs.

To gain your MSc qualification you must complete your dissertation and project (these are compulsory) and your chosen modules, totalling 180 credits.

Students who study part-time will complete all the taught modules, then the applied modules, followed by the final dissertation and project.

Modules

Compulsory modules	Credits
STATISTICS, DATA COLLECTION AND ANALYSIS (PHYS811)	15
ALPHA SPECTROMETRY (PHYS806)	15
NEUTRONS: DETECTION AND MODELLING (PHYS807)	15
RADIATION SHIELDING (PHYS820)	15

Programme details and modules listed are illustrative only and subject to change.

Semester two

During Semester two you will start work on your dissertation, PHYS843, which should be submitted before starting work on your project over the summer.

Modules

Compulsory modules	Credits
HIGH RESOLUTION GAMMA SPECTROMETRY (PHYS804)	15
NUCLEAR INSTRUMENTATION (PHYS808)	15
RADIATION PROTECTION AND DOSIMETRY (PHYS810)	15
DISSERTATION FOR THE MSC IN RADIOMETRICS (PHYS843)	15

Programme details and modules listed are illustrative only and subject to change.

Final project

To gain your MSc you will need to complete an extended project for PHYS841 which will mainly be worked on during the summer

Modules

Compulsory modules	Credits
PROJECT (PHYS841)	60

Programme details and modules listed are illustrative only and subject to change.

Teaching and assessment

How you'll learn

You will be taught through a mixture of lectures, practical laboratory work, computer modelling classes, supervised project work and will carry out private study.

How you're assessed

A range of methods will be used for assessments, including exams, coursework essays, computer assignments and practical laboratory work. You will also complete a dissertation and write a report on your project work.

Liverpool Hallmarks

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

Back to top

Careers and employability

This course will equip you with the necessary specific skills for a career in any industry involving radiation and radiation detectors. You will also develop valuable transferrable skills for other industries or to go on to further study.

Previous graduates have begun careers in academia and other research environments, in industry (for example in the nuclear and nuclear related industries), in financial services, health services, the scientific civil service and further education both in the UK and abroad.

Career support from day one to graduation and beyond

Career planning

From education to employment

Networking events

Back to top

Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

Tuition fees

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Part-time place, per year - £7,000

International fees

Part-time place, per year - £16,000

Tuition fees are for the academic year 2026/27.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **Learn more about paying for your studies**.

Additional costs

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This could include buying a laptop, books, or stationery.

Find out more about the additional study costs that may apply to this course.

Back to top

Entry requirements

The qualifications and exam results you'll need to apply for this course.

International qualifications

Select your country or region to view specific entry requirements.

Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

Back to top