

Programme Information		
Programme Title	Programme Code	HECoS Code
Nanomedicine and Nanodiagnostics	F1U6	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MRes	12 months	Full-time	Annually in October	90	180

Ownership			
Awarding Institution	Imperial College London	Faculty	Faculty of Natural Sciences
Teaching Institution	Imperial College London	Department	Chemistry
Associateship	N/A	Main Location(s) of Study	White City campus

External Reference	
Relevant QAA Benchmark Statement(s) and/or other external reference points	Master's Degree in Chemistry
FHEQ Level	Level 7
EHEA Level	2nd Cycle

External Accreditor(s) (if applicable)			
External Accreditor 1:	N/A		
Accreditation received:	N/A	Accreditation renewal:	N/A

Collaborative Provision			
Collaborative partner	Collaboration type	Agreement effective date	Agreement expiry date
N/A	N/A	N/A	N/A

Specification Details	
Programme Lead	Dr. Nazila Kamaly and Dr. Philip Miller
Student cohorts covered by specification	2024-25 entry
Date of introduction of programme	October 01
Date of programme specification/revision	March 24

Programme Overview

Nanomedicine and nanodiagnostics are at the forefront of modern medicine and healthcare where nanoparticles can offer new avenues for drug delivery and enhance medical imaging modalities and their capabilities. Novel nanomedicine and nanodiagnostics are using more sophisticated chemistries in their design for “triggered” and “stimuli-responsive” drug delivery allowing even greater control for payload release and lowering toxicity as a result. Coupled with these new therapeutics and delivery agents is the exploitation of medical imaging techniques such as magnetic resonance imaging (MRI), positron emission tomography (PET), ultrasound and optical imaging for the early detection of diseased states, enhancing the fundamental understanding molecular processes in living organisms and evaluating of medical treatments. Diagnostic imaging agents essential to these clinical imaging techniques continue to evolve in their targeting precision and accuracy, and will play a crucial future role in non-interventional clinical imaging, precision healthcare and treatment evaluation.

Nanomedicine and nanodiagnostics are timely topics that can address both the educational needs and future challenges in nanomedical science. This MRes programme aims to train postgraduate students in understanding nanoscience and nanotechnology fundamentals as applied to medicine and clinical bioimaging.

The programme is run by the Department of Chemistry. The research element provides physical scientists with the ability to bridge different fields and aims to provide them with the necessary training in order to understand the principles of nanotechnology and its application in medical research and clinical practice.

Learning Outcomes

Upon successful completion of this programme you will be able to:

1. Demonstrate a deep understanding of the core concepts in nanomedicine and nanodiagnostics associated to your chosen research area, with the ability to conceptualise and explore theories, data and methods relevant to the field.
2. Employ research and prototyping techniques, including information retrieval, experimental design and statistics, modelling, sampling, biomolecular and physical/chemical/pharmaceutical/molecular imaging/bioengineering techniques and laboratory safety.
3. Independently evaluate and apply the essential facts, concepts, principles and theories relevant to your research project.
4. Perform research within a multi-disciplinary environment, developing management and communication skills, including in problem definition, project design, decision processes, teamwork, written and oral reports, scientific publications.
5. Critically evaluate your own and others’ work, including an appreciation of novelty and significance.
6. Recognise and critically appraise broader issues in biomedical research including the commercialisation and prototyping of tools and technologies relevant to the research area.
7. Compose and deliver written, oral and visual science communications, which are effective at conveying the message to a variety of audiences.
8. Demonstrate laboratory and/or computational skills required to perform biomedical research and prototyping.
9. Design a novel research project and compose a group project based on a real-life application.
10. Propose tractable research objectives for your research project.

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial degree programme. The Graduate Attributes are available at:

<https://www.imperial.ac.uk/about/education/our-graduates/>

Entry Requirements

Academic Requirement	<p>The minimum requirement is normally a 2:1 UK Bachelor’s Degree with Honours in a physical science or engineering based subject (or a comparable qualification recognised by the university). Applicants with at least 50% physical sciences content in Life Sciences/Biomedical degrees may be considered.</p> <p>For further information on entry requirements, please go to PG: www.imperial.ac.uk/study/pg/apply/requirements/pgacademic</p>
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Non-academic Requirements	None
English Language Requirement	Standard requirement (PG) Please check for other Accepted English Qualifications
Admissions Test/Interview	Shortlisted candidates will be invited for interview in person or online.
The programme's competency standards documents can be found at: https://www.imperial.ac.uk/chemistry/postgraduate/mres/	
Learning & Teaching Approach	
Learning and Teaching Delivery Methods	
<p>The MRes programme aims to teach the practice of science with the learning and teaching strategy being constructively aligned with the knowledge, skills and abilities required by professional scientists in academia, government, industries, and NGOs.</p> <p>Most of the weighting in the MRes programme is focussed on the research component- a proposal writing exercise and the research project – which reflect the major activities undertaken by modern scientists. In addition, the taught component exposes you to fields outside your immediate project area, including generic research skills at the interface of physical and biological sciences and the entrepreneurial skills of designing an actual research and biotech pitch for commercialisation of nanomedicines and nanodiagnostics.</p> <p>Across the programme, a range of teaching methods are used including seminars, lectures, workshops, facility tours and online material. It may be possible for projects to be carried out partly or wholly at an external organisation and requests will be considered on a case by case basis.</p>	
Overall Workload	
<p>Your overall workload consists of face-to-face sessions and independent learning. While your actual contact hours may vary according to the optional modules you choose to study, the following gives an indication of how much time you will need to allocate to different activities at each level of the programme. At Imperial, each ECTS credit taken equates to an expected total study time of 25 hours. Therefore, the expected total study time is 2250 hours per year comprising approximately 125 hours for the Nanomedicine module, 125 hours for the Molecular Imaging module, 125 hours for the Bench-to-Bedside group project, 125 hours for the Nanodiagnostics Poster module, 250 hours of planning and designing the research project guided by your supervisors, and 1500 hours of individual research project work.</p>	
Assessment Strategy	
Assessment Methods	
<p>The assessment methods in this MRes are designed to evaluate your appropriate acquisition of specific skills and knowledge necessary for careers in nanomedicine and nanodiagnostics research and associated professional paths. These assessments align with intended learning outcomes as indicated in brackets)</p> <p>The Nanomedicine and Molecular Imaging modules assess your fundamental knowledge and understanding of these topics through written exams (Learning Outcomes 1 and 6). The Research Proposal module will assess your aptitude to critically analyse published scientific literature, plan the work packages necessary to complete the research project, and consider commercial and societal aspects, through writing a manuscript and giving an oral presentation (Learning Outcomes 1-7 and 9-10). The Nanodiagnostics Poster module will assess your skills in communicating complex ideas through the preparation of a scientific poster (Learning Outcomes 1, 2, and 7-10). The Bench-to-bedside group project tests your ability to translate nanomedicine or nanodiagnostics into clinical practice, through oral presentations and written reports (Learning Outcomes 1, 2, 3, and 6-8).</p> <p>The Research Project will be assessed through a manuscript, oral examination, and presentation. These will evaluate your scientific understanding, your knowledge and understanding of the relevant literature, methodology and research outcomes, and the ability to communicate research effectively to a diverse audience and answer questions on your project (Learning Outcomes 1-8 and 10).</p>	
Academic Feedback Policy	

With the exception of the major research project module you will receive feedback within 2 week of submission and where this is not possible students will be advised. This feedback should inform learning and performance in subsequent modules.

Imperial's Policy on Academic Feedback and guidance on issuing provisional marks to students is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Re-sit Policy

Imperial's Policy on Re-sits is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Mitigating Circumstances Policy

Imperial's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Additional Programme Costs

This section should outline any additional costs relevant to this programme which are not included in students' tuition fees.

Description	Mandatory/Optional	Approximate cost
Laptop with camera and microphone	Mandatory	£400-600

Important notice: The Programme Specifications are the result of a large curriculum and pedagogy reform implemented by the Department and supported by the Learning and Teaching Strategy of Imperial College London. The modules, structure and assessments presented in this Programme Specification are correct at time of publication but might change as a result of student and staff feedback and the introduction of new or innovative approaches to teaching and learning. You will be consulted and notified in a timely manner of any changes to this document.

Programme Structure¹**Year 1 - FHEQ Level 7****You will study all core modules**

Code	Module Title	Core/ Compulsory/ Elective	Group	Term	Credits
CHEM70059	Nanomedicine	Compulsory	N/A	Autumn	5
CHEM70006	Molecular Imaging	Compulsory	N/A	Autumn	5
CHEM70060	Nanomedicine and Nanodiagnosics Research Proposal	Core	N/A	Autumn	10
CHEM70061	Nanodiagnosics Poster	Compulsory	N/A	Autumn-Spring	5
CHEM70062	Bench-to-Bedside Group Project	Compulsory	N/A	Spring	5
CHEM70068	Nanomedicine and Nanodiagnosics Research Project	Core	N/A	Autumn-Summer	60
Credit Total					90

¹ **Core** modules are those which serve a fundamental role within the curriculum, and for which achievement of the credits for that module is essential for the achievement of the target award. Core modules must therefore be taken and passed in order to achieve that named award. **Compulsory** modules are those which are designated as necessary to be taken as part of the programme syllabus. Compulsory modules can be compensated. **Elective** modules are those which are in the same subject area as the field of study and are offered to students in order to offer an element of choice in the curriculum and from which students are able to select. Elective modules can be compensated.

Progression and Classification

Award of a Postgraduate Degree (including MRes)

To qualify for the award of a postgraduate degree a student must have:

1. accumulated credit to the value of no fewer than 90 credits
2. and no more than 15 credits as a Compensated Pass

Classification of Postgraduate Taught Awards

The university sets the class of Degree that may be awarded as follows:

1. Distinction: The student has achieved an overall weighted average of 70.00% or above across the programme.
2. Merit: The student has achieved an overall weighted average of above 60.00% but less than 70.00%.
3. Pass: The student has achieved an overall weighted average of 50.00% but less than 60.00%.

For a Masters, your classification will be determined through the Programme Overall Weighted Average meeting the threshold for the relevant classification band.

Your degree algorithm provides an appropriate and reliable summary of your performance against the programme learning outcomes. It reflects the design, delivery, and structure of your programme without unduly over-emphasising particular aspects.

Programme Specific Regulations

N/A

Supporting Information
The Programme Handbook is available upon enrolment.
The Module Handbooks are available upon enrolment.
Imperial's entry requirements for postgraduate programmes can be found at: www.imperial.ac.uk/study/pg/apply/requirements
Imperial's Quality & Enhancement Framework is available at: www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance
Imperial's Academic and Examination Regulations can be found at: www.imperial.ac.uk/about/governance/academic-governance/regulations
Imperial College London is an independent corporation whose legal status derives from a Royal Charter granted under Letters Patent in 1907. In 2007 a Supplemental Charter and Statutes was granted by HM Queen Elizabeth II. This Supplemental Charter, which came into force on the date of Imperial's Centenary, 8th July 2007, established Imperial as a University with the name and style of "The Imperial College of Science, Technology and Medicine". www.imperial.ac.uk/admin-services/secretariat/college-governance/charters/
Imperial College London is regulated by the Office for Students (OfS) www.officeforstudents.org.uk/advice-and-guidance/the-register/
This document provides a definitive record of the main features of the programme and the learning outcomes that you may reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities provided. This programme specification is primarily intended as a reference point for prospective and current students, academic and support staff involved in delivering the programme and enabling student development and achievement, for its assessment by internal and external examiners, and in subsequent monitoring and review.