

## Programme Specification

Awarding Body/Institution	Queen Mary, University of London
Teaching Institution	Queen Mary, University of London
Name of Final Award and Programme Title	MSc in Polymer Science and Nanotechnology
Name of Interim Award(s)	PG Certificate / PG Diploma
Duration of Study / Period of Registration	1 calendar year
QM Programme Code / UCAS Code(s)	J5U8
QAA Benchmark Group	Masters degrees
FHEQ Level of Award	Level 7
Programme Accredited by	Institute of Materials, Minerals and Mining
Date Programme Specification Approved	
Responsible School / Institute	School of Engineering & Materials Science

Schools which will also be involved in teaching part of the programme

Institution(s) other than Queen Mary that will provide some teaching for the programme

### Programme Outline

The programme provides an insight into areas of advanced polymer synthesis techniques, manufacturing nanocomposites, and advanced characterization tools. It is interdisciplinary in nature and involves a combination of theoretical and practical approaches. Taught modules concentrate on advanced nanomaterials topics and the research project provides an intellectual challenge and thus enables the student to demonstrate creativity and initiative and, where appropriate, forms a foundation for doctoral study.

### Aims of the Programme

The overall aims of the programme are:

- to provide a polymer science education of a standard recognised to be amongst the highest in UK institutions
- to take a multi-disciplinary approach to the elements of polymer science and nanotechnology, including molecular design
- to educate our students in the scientific and mathematical principles underpinning polymer science
- to enable all our students to achieve their academic potential by providing a stimulating, friendly and supportive environment

## Programme Title: MSc in Polymer Science and Nanotechnology

- to offer challenging programmes which provide our graduates with a clear pathway to Chartered Engineering status
- to prepare our graduates with discipline-specific knowledge and transferable skills that will equip them for employment and continued professional development through self-learning.

Specific aims include:

- analytical, creative, organisational, practical and communication skills,
- problem-recognition and solving abilities
- competence in discipline-specific topics which contribute to the solution of problems applied to polymer science
- an appreciation of how theoretical and practical approaches can be synthesized to arrive at optimal solutions
- an appreciation of the financial context of the development of new materials and products
- an understanding of the relationship between their discipline and social, economic and environmental issues and constraints
- an appreciation of the relative merits of a proposed solution,
- the detailed skills needed to undertake a research, development or design project in depth, understanding the technical, financial and time limitations.

This programme aspires to produce the type of highly skilled, motivated, creative and team-work oriented graduates which the related industry needs.

### What Will You Be Expected to Achieve?

Students who complete this programme will be trained to work in the dental materials industry, in dental materials research and development. Students returning to an academic environment will be trained to provide up-to-date knowledge for teaching of dental materials to clinical dental students or dental technology students in dental schools. In addition students will have been given an ideal preparation for undertaking a PhD in a related discipline.

Academic Content:	
A 1	have acquired a body of contemporary factual knowledge incorporating the fundamentals of Polymer Science and, as appropriate, recognise the application of this to Polymer Science
A 2	have acquired sufficient knowledge of fundamentals of Polymer Science principles as applied to realistic polymer related applications
A 3	have an understanding of the fundamental physical concepts of core technologies so that the limitation of the experimental, mathematical and computational techniques available are fully recognised
A 4	have a detailed understanding on polymer synthesis and processing techniques that are applied in various nanotechnological applications

Disciplinary Skills - able to:	
B 1	Apply scientific principles to a range of polymer related applications
B 2	Demonstrate sufficient fundamental scientific and materials science principles to be able to work with polymer science related problems and projects
B 3	Appreciate the wider multidisciplinary scientific and materials science context and its underlying principles
B 4	Appreciate the social, environmental, ethical economic and commercial considerations affecting their engineering judgement

Attributes:	
C 1	Develop presentation skills
C 2	Have good numerical skills
C 3	Be able to manage their time efficiently
C 4	Develop significant team working skills
C 5	Develop good analytical and experimental skills

### How Will You Learn?

Through a wide range of different interactions including lectures, tutorials, laboratory classes, exercise classes and project supervisions. It is expected that the programme will demand between 1800 and 2000 hours in total to complete. About 10% of this time will be in scheduled lectures. A significant amount of independent personal study is anticipated as part of this degree.

### How Will You Be Assessed?

The taught modules will be assessed through both coursework and examinations. The details are as outlined in the individual module specifications. The examinations will take place in the standard college examination period in May for taught modules taken in SEMS and in January and June for taught modules taken in the SEMS. The final project thesis will be assessed in September and the student will also complete a presentation as well as an oral examination.

### How is the Programme Structured?

60 credits of taught modules will be taught in the first semester from September until December and a further 60 credits of taught modules will be taught in the second semester from January until April. 30 credits of taught modules will be delivered by SEMS in each semester. Overall 120 credits of taught modules have to be taken. The taught module examinations will take place during the college examination period in May for modules taken in SEMS and in January and June for modules taken in the SEMS.

A 60 credit Polymer Research Project will be completed after the examination period in semester 3 (from June - September). Preparation for this research project will begin in the module on Research Methods taken in the first semester.

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Academic Year of Study 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Research Methods/Experimental Techniques	DENM014	15	7	Compulsory	1	Semester 1
Advanced Structure-Property Relationships in Materials	MTRM065	15	7	Compulsory	1	Semester 1
Environmental Properties of Materials	MTRM040	15	7	Elective	1	Semester 1
Polymer Physics	MTRM798	15	7	Elective	1	Semester 1
Introduction to Law for Science and Engineering	IPLM701P	15	7	Elective	1	Semester 1
Composites	MTRM730	15	7	Elective	1	Semester 2
Advanced Materials Characterization Techniques	MTRM066	15	7	Compulsory	1	Semester 2
Advanced Polymer Synthesis	MTRM797	15	7	Compulsory	1	Semester 2
Manufacturing Processes	MTRM713	15	7	Elective	1	Semester 2
Foundations of Intellectual Property Law and Management	IPLM702P	15	7	Elective	1	Semester 2
Polymer Research Project	MTRM799	60	7	Compulsory	1	Semester 3
Nanotechnology and Nanomedicine	MTRM803	15	7	Elective	1	Semester 1

**What Are the Entry Requirements?**

Students will be admitted typically with:

Undergraduate degree (minimum upper second class honours or equivalent) in materials science, dentistry, dental technology or a related field. IELTS 6.5, or equivalent.

## How Do We Listen and Act on Your Feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between schools/institutes and its students. The committee consists of student representatives from each year in the school/institute together with appropriate representation from staff within the school/institute. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Staff-Student Liaison Committees meet regularly throughout the year.

Each school/institute operates a Learning and Teaching Committee, or equivalent, which advises the School/Institute Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in the committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools/institutes operate an Annual Programme Review of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery; the main document of reference for this process is the Taught Programmes Action Plan (TPAP) which is the summary of the school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the NSS and module evaluations.

## Academic Support

During induction the students will be welcomed to the college by the programme organisers. Early on in the programme the students will select a project supervisor based upon a wide choice of different project areas. This academic will then also act as a personal tutor. Many of the modules are taught to small classes and so a high level of personal support will also be available from the course coordinators in the majority of the taught modules.

## Programme-specific Rules and Facts

The programme follows the standard QMUL guidelines for MSc delivery.

## Specific Support for Disabled Students

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:

- Finding out if you have a specific learning difficulty like dyslexia
- Applying for funding through the Disabled Students' Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (e.g. digital recorders)
- Specialist one-to-one "study skills" tuition
- Ensuring access to course materials in alternative formats (e.g. Braille)
- Providing educational support workers (e.g. note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

## Links With Employers, Placement Opportunities and Transferable Skills

The improvement of existing dental materials and the development of new materials for use in the dental area is an expanding field in the healthcare sector. There are numerous healthcare companies both nationally and internationally dealing specifically with dental materials that are eager to recruit specialist with the necessary combination of skills that our MSc in Dental Materials provide. There are also opportunities for fundamental research both in universities and industry to help bring innovative technologies to life.

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## Programme Specification Approval

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**Person completing Programme Specification**

Remzi Becer

**Person responsible for management of programme**

Remzi Becer

**Date Programme Specification produced/amended  
by School Learning and Teaching Committee**

**Date Programme Specification approved by  
Taught Programmes Board**