

**MRes Plastic Electronic Materials**

This document provides a definitive record of the main features of the programme and the learning outcomes that a typical student may reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities provided. This programme specification is intended as a reference point for prospective students, current students, external examiners and academic and support staff involved in delivering the programme and enabling student development and achievement.

**Programme Information**

Programme Title	Plastic Electronic Materials		
Award(s)	MRes		
Programme Code	F3U8	F3U8B [1+3]	
Awarding Institution	Imperial College London		
Teaching Institution	Imperial College London		
Faculty	Faculty of Natural Sciences		
Department	Department of Physics		
Mode and Period of Study	1 academic year (12 months), full-time		
Cohort Entry Points	Annually in October		
Relevant <a href="#">QAA Benchmark Statement(s)</a> and/or other external reference points	<a href="#">Master's Awards in Physics, Astronomy and Astrophysics</a>		
Total Credits	ECTS:	90	CATS: 180
<a href="#">FHEQ Level</a>	Level 7		
<a href="#">EHEA Level</a>	2 <sup>nd</sup> cycle		
<b>Specification Details</b>			
Student cohorts covered by specification	2020-21 entry		
Person responsible for the specification	Dr Piers Barnes		
Date of introduction of programme	October 2009		
Date of programme specification/revision	January 2021		

## Programme Overview

The Department of Physics is leading an interdisciplinary [Centre for Doctoral Training \(CDT\) on Plastic Electronic Materials](#).

The Centre offers a four-year PhD, the first year of which leads to an MRes. Self-funded students may take the MRes by itself as a 12-month full-time course.

There are around 60 hours of experimental courses, workshops in practical techniques and themed research seminars, several given by industrial partners of the CDT. An outreach project, where the work of the MRes students is publicised to a non-specialist audience and there is an extended research project during the spring and summer.

With strong links to industry, other leading academic institutions, and government labs in the UK and overseas, there are plenty of opportunities to engage with external organisations, including collaborative research projects.

## Learning Outcomes

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial College degree programme. The Graduate Attributes are available at: [www.imperial.ac.uk/students/academic-support/graduate-attributes](http://www.imperial.ac.uk/students/academic-support/graduate-attributes)

### Knowledge and Understanding

#### Knowledge and Understanding of:

1. The fundamental laws and principles of the physics and materials science of PEM along with their application (some at the forefront of the discipline).
2. Research skills training which might include, preparation and manipulation of samples; detection and analysis of optical, electronic and other properties; and applying PEM to address problems in other fields (i.e., healthcare).
3. How to use advanced mathematical tools to describe the physical world.
4. How to research and provide lucid and critical summation of the scientific literature in a given topic of study.
5. How to plan, execute and report the results of an extended theoretical and/or experimental project.

### Skills and other Attributes

#### Intellectual Skills:

1. Apply knowledge of physical principles and mathematical techniques to practical problems.
2. Use mathematical techniques to develop and solve physical models of organic light emitting materials.
3. Demonstrate the ability to plan, undertake, and report on a programme of original work; including the planning and development of theoretical and/or computational models of complex structures, properties and processes in organic materials, the analysis and interpretation of experimental results, and validation of the models involved.
4. Research and examine critically the scientific literature.

**Professional Skills Development:**

1. Problem-solving skills;
2. Investigative skills;
3. Communication skills;
4. Analytical skills;
5. IT skills;
6. Personal skills, including team-working.

**Entry Requirements**

Academic Requirement	Normally a 2:1 UK Bachelor's Degree with Honours in physics, chemistry, materials science, electrical engineering, chemical engineering or related disciplines (or a comparable qualification recognised by the College).
English Language Requirement	<a href="#">Standard requirement</a> IELTS score of 6.5 overall (minimum 6.0 in all elements)

The programme's competency standards documents can be found at:  
<http://www.imperial.ac.uk/natural-sciences/departments/physics/students/current-students/taught-postgraduates/>

**Learning & Teaching Strategy**

Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Computer classes</li> <li>• Journal clubs</li> <li>• Seminars</li> <li>• Industrial visits</li> </ul>
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> <li>• Blackboard VLE</li> </ul>
Project and Learning Methods	<ul style="list-style-type: none"> <li>• Supervised project work</li> </ul>

**Assessment Strategy**

Assessment Methods	<ul style="list-style-type: none"> <li>• Written examination</li> <li>• Coursework</li> <li>• Written report</li> <li>• Oral presentation</li> <li>• Dissertation</li> </ul>
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**Academic Feedback Policy**

The feedback policy will follow the guidelines of the Department of Physics, where feedback for minor pieces of coursework should be provided to the student within two weeks of the work being submitted. Feedback for major pieces of coursework should be provided within four weeks, though

marks may not be available until after the Board of Examiners meeting.

#### Re-sit Policy

Students will be permitted to retake written examinations on one occasion only. Students will not be permitted to retake practical classes and projects.

#### Mitigating Circumstances Policy

Students may be eligible to apply for mitigation if they have suffered from serious and unforeseen circumstances during the course of their studies that have adversely affected their ability to complete an assessment task and/or their performance in a piece of assessment.

The College's Policy on Mitigating Circumstances is available at:

<https://www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/>

#### Programme Structure

Full-time	Term One	Term Two	Term Three	Term Four
Core Modules	4	2	0	0
Elective Modules	1		0	0
Projects	0	0	1	

#### Assessment Dates & Deadlines

Written Examinations	February
Coursework Assessments	Continuous
Project Deadlines	Mid-September
Practical Assessments	Continuous

#### Assessment Structure

##### Marking Scheme

##### Pass

- The student must achieve an aggregate mark of at least 50% in the two written examinations and achieve a mark of at least 50% in the project (with the report, literature review and presentation marks combined).

##### Merit

- Achieve an aggregate mark of 60% or higher and a mark of 60% or higher for either the written examinations or the project and 50% or higher for the other.

##### Distinction

- Achieve an aggregate mark of 70% or higher and a mark of 70% or higher for either the written examinations or the project and 60% or higher for the other.

<b>Module Weighting</b>	
Module	% Module Weighting
Materials Characterisation	6.8%
Device Physics and Applications	6.8%
Fundamentals of Organic and Inorganic Semiconductors and Optoelectronic Processes	6.8%
Materials Synthesis and Processing	6.8%
Practical Workshops	0% (P/F)
Optional module	0% (P/F)
Literature Review	15%
Research Project	57.8%

Indicative Module List											
Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
PH9.EFOISOP	Fundamentals of Organic and Inorganic Semiconductors and Optoelectronic Processes	Core	15	85	0	100	100%	0%	0%	7	4
PH9.EMSP	Materials Synthesis and Processing	Core	15	85	0	100	100%	0%	0%	7	4
PH9.EMC	Materials Characterisation	Core	15	85	0	100	100%	0%	0%	7	4
PH9.EDPA	Device Physics and Applications	Core	15	85	0	100	100%	0%	0%	7	4
	Practical workshops	Core	20	130	0	150	0%	0%	100%	7	2
	Optional course	Elective	26	24	0	50	0%	0%	100%	7	6
	Literature review	Core	0	250	0	250	0%	100%	0%	7	10
PH9-EPRJ	Independent Research Project	Core	0	1650	0	1650	0%	86.3%	13.7%	7	56

## Supporting Information

The Programme Handbook is available at: <http://www.imperial.ac.uk/plastic-electronics-cdt/postgraduate-training/mres-in-plastic-electronic-materials/>

The Module Handbook is available at: <http://www.imperial.ac.uk/plastic-electronics-cdt/postgraduate-training/mres-in-plastic-electronic-materials/>

The College's entry requirements for postgraduate programmes can be found at: [www.imperial.ac.uk/study/pg/apply/requirements](http://www.imperial.ac.uk/study/pg/apply/requirements)

The College's Quality & Enhancement Framework is available at: [www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance](http://www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance)

The College's Academic and Examination Regulations can be found at: <http://www.imperial.ac.uk/about/governance/academic-governance/regulations/>

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<http://www.imperial.ac.uk/admin-services/secretariat/college-governance/charters/>

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<https://www.officeforstudents.org.uk/>