

**MRes Structural Molecular Biology**

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	Structural Molecular Biology			
Award(s)	MRes			
Programme Code	C1A2			
Associateship	None			
Awarding Institution	Imperial College London			
Teaching Institution	Imperial College London			
Faculty	Faculty of Natural Sciences			
Department	Department of Life Sciences			
Mode and Period of Study	1 academic year, 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 Degree Characteristics</a>			
Total Credits	ECTS:	90	CATS:	180
<a href="#">FHEQ Level</a>	Level 7			
<a href="#">EHEA Level</a>	2 <sup>nd</sup> cycle			
External Accreditor(s)	None			
<b>Specification Details</b>				
Student cohorts covered by specification	2016/17 entry			
Person responsible for the specification	Morgan Beeby and Alfonso De Simone			
Date of introduction of programme	2003-04			
Date of programme specification/revision	January 2017			

## Description of Programme Contents

In the post-genome era, there is a wealth of information about the genomes of many organisms, including humans.

The next challenge is to assign and understand the functions of the final genome products proteins, in particular to understand at the molecular and biochemical level, the functions of identified disease-linked proteins and proteins that carry out basic life processes.

The requirement for three-dimensional information is an essential part of this process.

With many of the structure determination techniques becoming semi-automatic and routine, there will be a requirement for more broadly trained structural biology researchers who understand the use of complementary techniques for deriving biological function from structure.

It is therefore essential that trained structural biologists in both academia and industry have knowledge and skills in all macromolecular structural determination techniques.

This is an ideal training course for students to pursue further education and gain vital experience for a successful career.

## 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

- Principles of structural molecular biology
- Principles of structural biology techniques
- Importance and fundamentals of quantitative description of biological systems
- Importance and applications of interdisciplinary research
- Computing skills, general and specialised
- Design, execution, and presenting a research project
- Integrate, evaluate, and critically analyse experimental data
- Management and communication skills including problem definition, project design, teamwork, written and oral reports, scientific publications

### Intellectual Skills

- To be able to analyse and solve structural problems
- To be able to integrate and evaluate information
- To be able to formulate and test hypotheses using appropriate experimental design and statistical analysis of data
- To be able to plan, conduct and write-up a programme of original research

### Practical Skills

- Plan and execute safely a series of experiments
- Use laboratory methods to generate data
- Analyse experimental data
- Interpret experimental data

- Prepare technical reports
- Give technical presentations
- Use the scientific literature effectively
- Use computational tools and packages

#### Transferable Skills

- Searching and retrieving information from online databases
- Scientific report writing
- Oral presentation skills
- Poster design and presentation
- Powerpoint – basic, intermediate and advanced
- Basic computing skills – word processing, spreadsheets, graphics, UNIX and Linux operating systems
- Experience in computation and computer graphics
- Experimental design
- The creation, management and exploitation of intellectual property – key issues for scientists
- Commercialization of research
- Time management and personal effectiveness
- Research ethics and responsibility
- An introduction to statistical thinking
- Science and the media

#### Entry Requirements

Academic Requirement	2:1 Honours degree in a science-based subject.
Non-academic Requirements	None
English Language Requirement	<a href="#">Standard requirement</a>

The programme's competency standards document can be found at:  
<http://www.imperial.ac.uk/media/imperial-college/faculty-of-natural-sciences/department-of-life-sciences/public/postgraduate/masters/Life-Sciences-Competence-standards-PG.pdf>

#### Learning & Teaching Strategy

Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> <li>• Class based lectures</li> <li>• Computer lab on experimental data analysis in structural biology</li> </ul>
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> <li>• Training in structural bioinformatics and web tools for the analysis of protein sequences and structures</li> </ul>
Project and Placement Learning Methods	<p>Two individual lab research projects (16 weeks each) providing</p> <ul style="list-style-type: none"> <li>• Laboratory skills</li> <li>• Data analysis skills</li> <li>• Writing skills</li> </ul>

	<ul style="list-style-type: none"> <li>• Presentation skills</li> <li>• One literature dissertation providing</li> <li>• Writing skills</li> </ul>
<b>Assessment Strategy</b>	
Assessment Methods	Assessment on <ul style="list-style-type: none"> <li>• Individual research project reports (three assessments)</li> <li>• Laboratory performance (two assessments)</li> <li>• Oral presentations (two assessments)</li> <li>• Vivas (two assessments)</li> </ul>
<b>Academic Feedback Policy</b>	
Feedback is provided on at the end of each project and includes: <ul style="list-style-type: none"> <li>-writing skills</li> <li>-presentation skills</li> <li>-viva performance</li> <li>-laboratory performance</li> </ul>	
<b>Re-sit Policy</b>	
The College's Policy on Re-sits is available at: <a href="http://www.imperial.ac.uk/registry/exams/resit">www.imperial.ac.uk/registry/exams/resit</a>	
<b>Mitigating Circumstances Policy</b>	
The College's Policy on Mitigating Circumstances is available at: <a href="http://www.imperial.ac.uk/registry/exams">www.imperial.ac.uk/registry/exams</a>	
<b>Assessment Dates &amp; Deadlines</b>	
Written Examinations	N/A
Coursework Assessments	N/A
Project Deadlines	Autumn, spring and summer.
Practical Assessments	N/A
<b>Assessment Structure</b>	
<b>Marking Scheme</b>	
<b>Pass:</b> <ul style="list-style-type: none"> <li>• The Pass Mark is 50%. Students must pass all elements in order to be awarded a degree.</li> </ul> <b>Merit:</b> <ul style="list-style-type: none"> <li>• In order to be awarded a result of merit, a candidate must obtain a mark of 60% or greater in each element.</li> <li>• Where appropriate, a Board of Examiners may award a result of merit where a candidate has achieved an aggregate mark of 60% or greater across the programme as a whole AND has</li> </ul>	

obtained a mark of 60% or greater in each element with the exception of one element AND has obtained a mark of 50% or greater in this latter element.

**Distinction:**

- In order to be awarded a result of distinction, a candidate must obtain a mark of 70% or greater in each element;
- Where appropriate, a Board of Examiners may award a result of distinction where a candidate has achieved an aggregate mark of 70% or greater across the programme as a whole AND has obtained a mark of 70% or greater in each element with the exception of one element AND has obtained a mark of 60% or greater in this latter element.

**Module Weightings**

Module	% Module Weighting
Research Project 1	40%
Literature Dissertation + Research Project 2	60%

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
	Research Project 1	Core	0	1000	0	750	0%	0%	0%	7	40
	Literature review + Research Project 2	Core	0	1250	0	750	0%	0%	0%	7	50

## Supporting Information

The Programme Handbook is available at: <http://www.imperial.ac.uk/life-sciences/postgraduate/masters-courses/mres-in-structural-molecular-biology/>

The Module Handbook is available at: <http://www.imperial.ac.uk/life-sciences/postgraduate/masters-courses/mres-in-structural-molecular-biology/>

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://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>

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

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