

Programme Information		
Programme Title	Programme Code	HECoS Code
Systems and Synthetic Biology	C1U1	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MRes	1 Calendar Year (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	Life Sciences
Associateship	N/A	Main Location(s) of Study	South Kensington Campus

External Reference	
Relevant <a href="#">QAA Benchmark Statement(s)</a> and/or other external reference points	NA
<a href="#">FHEQ Level</a>	7
<a href="#">EHEA Level</a>	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. James Murray
Student cohorts covered by specification	2022-23 entry
Date of introduction of programme	October 08
Date of programme specification/revision	October 22

## Programme Overview

The course provides graduate students from life sciences, engineering and physical sciences with a platform to overcome traditional barriers to work collaboratively on the 'big problems' and applications in synthetic and systems biology. You will gain intensive hands-on experience in a combination of experimental biology and modelling in order to understand, predict and redesign biological pathways. The taught elements of the course include introductory lectures and practicals that cover essentials for both life and physical scientists, as well as material on experimental systems biology, theoretical systems biology, synthetic biology, and advanced technologies. This material will be taught in the context of Responsible research and innovation (RRI). In addition to conventional lectures, the course requires active engagement by students through activities including practicals, bench work, case studies, proposal writing, and an eight-month interdisciplinary research project. There are no exams, the course is assessed through coursework and project work.

## Learning Outcomes

As a graduate of this course you will be able to:

1. Explain, interpret and evaluate information on core and specialised concepts in theoretical and experimental systems and synthetic biology.
2. Learn independently and evaluate the scientific literature.
3. Communicate effectively through oral presentations and written reports.
5. Apply an industry standard programming language (e.g. Python) to scientific problems
6. Formulate and test hypotheses using appropriate experimental design and statistical analysis of data.
7. Plan and execute safely a series of experiments or computations.
8. Use laboratory methods or computer-based tools to generate data;
9. Integrate and evaluate scientific results.
10. Write a scientific report on your own programme of original research
11. Manage resources and time for a research project.

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)

## Entry Requirements

Academic Requirement	Normally a 2.1 UK Bachelor's Degree with Honours in a Physical, Engineering, Mathematical, or Life/Biomedical sciences-based subject (or a comparable qualification recognised by the College).  A-level mathematics or equivalent is also normally required.  For further information on entry requirements, please go to <a href="http://www.imperial.ac.uk/study/pg/apply/requirements/pgacademic">www.imperial.ac.uk/study/pg/apply/requirements/pgacademic</a>
Non-academic Requirements	N/A
English Language Requirement	<a href="#">Higher requirement (PG)</a> Please check for other <a href="#">Accepted English Qualifications</a>

Admissions Test/Interview	We may interview some applicants. We will usually ask the applicant to talk about a project they have worked on, and discuss a paper in systems & synthetic biology which they will have been able to study in advance. No admissions tests. For candidates who are not interviewed decisions are made on the basis of CV, references and personal statement.
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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 Approach

The MRes in Systems & Synthetic Biology comprises two modules on Systems Biology and Synthetic Biology in the Autumn Term, and an extended research project for the final two terms. Over the course of the year you will experience a range of learning and teaching methods, including lectures, seminars, group work exercises, workshops, and computer and laboratory practicals. The maximum class size is expected to be around 35 students. Laboratory practicals will be in pairs or small groups. The projects are individual.

### Overall Workload

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, subject to reasonable adjustments.

In the first term you will spend around 20% of your time in lectures, seminars and similar, and around 10% of the time on practicals. The remainder of the time will be spent doing group work or individual study. The second and third terms are spent on an individual research project.

### Assessment Strategy

#### Assessment Methods

The modules (term one) are assessed through coursework, including practical write-ups, essays and presentations. The project (terms two and three) is assessed on the performance in the lab, the written report and mock grant proposal, and the oral examination. See individual Module specification documents for details.

#### Academic Feedback Policy

Coursework is double-marked and comments by the markers annotated directly on the papers (electronically for submissions on blackboard). A summary of the feedback (with tick boxes indicating relative attainment on key dimensions) will be completed, and an indicative grade will be given (actual marks will not be communicated to the students). These papers will then be returned to the students as soon as possible and within two weeks of submission.

Staff-student meetings are held termly to communicate general feedback between student representatives and the course directors. Additional meetings are held to provide general feedback and guidance e.g. on mock grant proposal and project selection.

Dissertations are usually marked by the primary supervisor and secondary supervisor and an independent assessor, who provide feedback electronically that is returned to students after the final examiners meeting.

The College'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/](http://www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/)

Re-sit Policy
The College's Policy on Re-sits is available at: <a href="http://www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/">www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/</a>
Mitigating Circumstances Policy
The College's Policy on Mitigating Circumstances is available at: <a href="http://www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/">www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/</a>

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
N/A	N/A	N/A

**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 Structure<sup>1</sup>****Year 1 – FHEQ Level 7**  
**Students study all core modules.**

Code	Module Title	Core/ Elective	Group	Term	Credits
LIFE70038	Systems Biology	Core		1	15
LIFE70039	Synthetic Biology	Core		1	15
LIFE70040	Research Project in Systems and Synthetic Biology	Core		2,3	60
Credit Total					90

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<sup>1</sup> **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 at level 7 or above of which no more than 15 credits may be from credit level 6;
2. and no more than 15 credits as a Compensated Pass;
3. met any specific requirements for an award as outlined in the approved programme specification for that award.

### **Classification of Postgraduate Taught Awards**

The College 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%.
  - a. For a Masters, students must normally achieve a distinction (70.00%) mark in the dissertation or designated final major project (as designated in the programme specification) in order to be awarded a distinction.
  - b. For a Masters, students must normally achieve a minimum of a merit (60.00%) mark in the dissertation or designated final major project (as designated in the programme specification) in order to be awarded a merit
  - c. Modules taken at level 6 as part of the programme specification for a named postgraduate award will contribute to the determination of pass, merit or distinction for any taught postgraduate award and are included in the calculation of the overall weighted average.

## Programme Specific Regulations

N/A

## Supporting Information

The Programme Handbook is available at: <https://www.imperial.ac.uk/study/pg/life-sciences/systems-synthetic-biology-mres/>

The Module Handbook is available at: <https://www.imperial.ac.uk/study/pg/life-sciences/systems-synthetic-biology-mres/>

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: [www.imperial.ac.uk/about/governance/academic-governance/regulations](http://www.imperial.ac.uk/about/governance/academic-governance/regulations)

Imperial College 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 the College's Centenary, 8th July 2007, established the College 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/](http://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/](http://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 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 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.

## Modifications

Description	Approved	Date	Paper Reference
Curriculum Review	Programmes Committee	22/03/22	PC.2021.70