

Programme Information		
Programme Title	Programme Code	HECoS Code
Applied Biosciences and Biotechnology	C9ABT	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MSc	1 calendar year (12 months)	Full-Time	Annually in October	90	180

All students must apply to and join the MSc.

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 QAA Benchmark Statement(s) and/or other external reference points	N/A
FHEQ 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. Giorgio Gilestro
Student cohorts covered by specification	2022-23 entry
Date of introduction of programme	October 13
Date of programme specification/revision	October 22

Programme Overview	
<p>This course provides an in-depth understanding of the core principles and methodologies underlying modern bioscience research and its exploitation.</p> <p>It aims to equip you with the relevant skills to pursue careers in applied biosciences and biotechnology in the industrial and public sectors in the UK and overseas.</p> <p>It includes both taught and research-based elements encompassing biochemistry, molecular cell biology, systems and synthetic biology, bioinformatics, and entrepreneurship.</p> <p>After completion of compulsory taught modules, you will focus on a specialised dissertation and research projects that are consistent with your interests and career aspirations. The course will also feature non-assessed contents and some elective non-assessed optional components.</p>	
Learning Outcomes	
<p>At the end of the course you will be able to:</p> <ol style="list-style-type: none"> 1. Assess modern approaches and timely challenges in biotechnology and biosciences; 2. Devise innovative and entrepreneurial solutions to current pressing biosciences problems; 3. Evaluate current research in applied bioscience and biotechnology through critiquing published papers; 4. Integrate and evaluate information from a variety of sources, spanning from non-peer reviewed papers on pre-print servers to peer-reviewed literature; 5. Formulate, test, and critique hypotheses; 6. Plan, conduct, and write up technical and non-technical scientific literature; 7. Plan and execute safely an individual research project in the realm of biosciences; 8. Analyse experimental results and determine their strength and validity; 9. Justify methodological and experimental choices related to an individual research project; 10. Successfully communicate advanced scientific knowledge through technical reports and presentations; 11. Develop research skills, including: problem definition, risk evaluation and management, teamwork; 12. Work and communicate effectively as part of a diverse team. 	
<p>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</p>	
Entry Requirements	
Academic Requirement	<p>Normally a 2.1 UK Bachelor's Degree with Honours in Biochemistry, Biology or a related subject (or a comparable qualification recognised by the College).</p> <p>For further information on entry requirements, please go to: www.imperial.ac.uk/study/pg/apply/requirements/pgacademic</p>
Non-academic Requirements	None
English Language Requirement	<p>Standard requirement (PG) Please check for other Accepted English Qualifications</p>
Admissions Test/Interview	There will be no admissions test. Decisions based on CV and personal statement. An interview may be required in some borderline cases
<p>The programme's competency standards documents 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</p>	

Learning & Teaching Approach

Learning and Teaching Delivery Methods

You will be taught with the following approaches. For details see the individual module specifications.

- Laboratory
- Lectures
- Tutorials
- Seminars
- Practical laboratory and computer classes
- Workshops
- Case studies
- Group work exercises
- Formal presentations
- Online lecture material

Computer-based classes

- Individual dissertation exercise
- Individual research project

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 for this 90 ECTS MSc programme is 2250 hours per year, subject to reasonable adjustments.

In the first two terms you will have approximately 180 hours of lectures, with the rest of the time in independent study. In term 3 you will work on the dissertation and project. The dissertation will span a period of 4-5 weeks (depending on the Easter holiday break). The lab-based project will be 15 weeks in the laboratory, with associated write-up time.

Assessment Strategy

Assessment Methods

Work is assessed by a variety of methods including written examinations featuring problem questions and long essays, a 3000-words written dissertation, coursework exercises, oral presentations, an 8000 words research project report, oral examinations.

In particular, the dissertation will cover a topic of your choice in a remit compatible with the course. It will have to be organised and written as if you were to submit it as a review to one of the journals of the "Current Opinion" series. That implies a rather short review paper of no more than 3000 words and no more than 50 carefully selected, recent, references. Current opinion reviews usually feature 1 or 2 original images and often 1 table too. Content-wise, there should be a focus on "current" literature meaning that most of the references should be relatively recent (1-2 years old).

The report should be written in the format of a thesis or dissertation and not in the format of a scientific paper. That means that the following elements should be included in the report in the given order: an abstract describing the aims, main results and conclusions of the project research – usually less than 400 words; a table of contents; an optional list of abbreviations (alternatively: define abbreviation when first met in text); the introduction: should include an in-depth, critical assessment of the research literature on the particular research topic that will identify the gaps in knowledge and identify the questions to be answered or hypotheses to be tested. Some figures can be included in the Introduction but need to be original (i.e. not copied from previous sources); methods: should explain fully the methods used, including reagents, software, protocols, statistical considerations (choice of test, statistical power, etc). The methods should be detailed enough for a reader to be able to reproduce the experiments or analysis; results: will provide a clear narrative of the relevant analyses and will include relevant data to support the conclusions drawn. All figures should have a legend and be fully annotated; discussion: will relate the results to current ideas in the literature and suggest future areas of study; acknowledgements; references (PLoS Biology style. The use of a reference manager is mandatory). It is recommended that about 50% of the report should be devoted to the 'results' section. In doubt, the precise

balance between elements within the report should be discussed with the supervisor. The report must not exceed 8,000 words, excluding figure legends, appendices and references.

The Python coursework is assessed by 2 coding assignments. Each Python assignment will require the development of a short program to analyse biological data or to develop a simple biological model, for example genetic drift. Each assignment would be expected to take approximately 10 hours to complete.

Academic Feedback Policy

Coursework is marked by academic staff and constructive comments by the markers annotated either directly on the papers or in comments boxes on Blackboard (electronically for submissions on blackboard). An indicative grade is given to the students, but 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. Marking is overseen by the course director who ensures consistency and adherence to the marking criteria.

Staff-student meetings are held termly to communicate general feedback between student representatives and the course directors.

Dissertations and research projects are marked by the supervisor and by two independent assessors who provide written feedback on the work. In both cases, the independent assessors also viva the student, giving the student feedback on how the project was presented and how improvements can be made.

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/

Re-sit Policy

The College's Policy on Re-sits is available at: www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/

Mitigating Circumstances Policy

The College's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/

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 Structure¹**Year 1 – FHEQ Level 7**
Students study all core modules.

Code	Module Title	Core/ Compulsory Elective	Group	Term	Credits
LIFE70000	Applied Biosciences	Core		1	15
LIFE70001	Biotechnology	Core		2	15
LIFE70002	Biotechnology Literature Review	Compulsory		2	5
LIFE70007	Tutored Literature Dissertation	Core		3	15
LIFE70003	Research Project	Core		3	40
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

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: TBA
The Module Handbook is available at: TBA
The College 's entry requirements for postgraduate programmes can be found at: www.imperial.ac.uk/study/pg/apply/requirements
The College's Quality & Enhancement Framework is available at: 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
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/
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 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.2021.59