Programme Information		
Programme Title	Programme Code	HECoS Code
BSc Biomedical Technology Ventures	B800	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
BSc	3 Academic Years	Full-time	Annually in October	180	360
DipHE*	N/A	N/A	N/A	120	240
CertHE*	N/A	N/A	N/A	60	120
The DipHE and CertHE are exit awards only and not available for entry. You must apply to and join the BSc in the first instance					

Ownership			
Awarding Institution	Imperial College London	Faculty	Faculty of Engineering
Teaching Institution	Imperial College London	Department	Bioengineering
Associateship	City and Guilds Association (TBD)	Main Location(s) of Study	South Kensington Campus & White City Campus
External Reference			
Relevant QAA Benchmark Statement(s) and/or other external reference points		Engineering and Business and Management UK-SPEC	
FHEQ Level		BSc Level 6 DipHE Level 5 CertHE Level 4	
EHEA Level		1st 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 Ben Almquist
Student cohorts covered by specification	2025-26 entry
Date of introduction of programme	October 22
Date of programme specification/revision	March 24

Programme Overview

The Biomedical Technology Ventures BSc is set against the backdrop of an increasing demand for medical devices and growth of the healthcare industry. In this programme, we will guide you in developing an entrepreneurial-mindset. You will be equipped with the skills to identify opportunities for improving human healthcare through the application of technology, to seek and to achieve transfer of ideas and technology to meet those gaps through entrepreneurship.

This programme will take a strong engineering approach to understanding and solving biomedical problems, and taps into a growing ecosystem of start-ups in the medical device industry. It is also fuelled by a clear demand from investors, and also requirements for the regulatory side of the industry.

You will develop strengths in working collaboratively at the boundaries of different subjects, because of the interdisciplinary nature of your training, and will have the opportunity to work with students from other undergraduate programmes in the department on joint projects in year three.

In all years, you will take compulsory modules, some of which will be shared students on other undergraduate programmes in the Department. This includes modules in mathematics, physiology, computer programming, mechanics and fluids, and biological modelling. Course content has been designed to ensure you will have the necessary core knowledge to enable you to interact with our engineering students effectively in subsequent later years of your programme.

Alongside a breadth of engineering and biomedical engineering knowledge, you will gain insight into the medical device industry, particularly with regard to the entrepreneurial pathway to a career. This strength is inherited from the very successful Medical Device Entrepreneurship MRes degree programme. The unique nature of this course in targeting both a need, and a specific type of entrepreneurial candidate recognises Imperial's strengths in the areas of medical device development, the very recent, real and sustained challenge of medical device diagnostics and the global challenges of today: health and well-being agenda, personalised medicine, and the creation of new biomedical technology industries.

Where the programme differs substantially from our other courses is in a greater emphasis on the business and management content, manifesting itself as a greater ratio of business-oriented courses to either engineering or the medical sciences. In your second year you will complete an internship in a healthcare-related industry, a hospital setting or a University laboratory. This will be an opportunity to gain hands-on experience and apply your engineering and entrepreneurial skills in a real-world setting. From January to June of the third year, you will spend a significant amount of time on your final year group project. This culmination of your studies will be an opportunity for you to establish or contribute to new biomedical ventures that are timely, address a healthcare need, and potentially translate ideas, knowledge or new science into societal impact through new ventures.

Learning Outcomes

The following Learning Outcomes are in line with FHEQ levels 4-6.

The Learning Outcomes are categorised into the following groups:

- **Knowledge and Understanding [KU]**
- **Intellectual Abilities [IA]**
- **Practical and Transferable skills [PT]**

The curriculum is designed in such a way as to build in complexity year on year. In your first year you will be introduced to foundational topics. These topics will be revisited as you progress through the programme in more

technical depth and with increased breadth of content. This will require a greater level of understanding and intellectual enquiry from you at each stage of the programme. You will also be supported in developing your practical and transferable skills as you progress through this programme. This is indicated by your ability to take a greater level of responsibility for both group and individual outputs and by showing increasing ability in a leadership role.

Upon successful completion of the BSc Biomedical Technology Ventures programme you will be able to:

[KU1] Describe and explain the underlying scientific principles, engineering, mathematics, laboratory and practical skills and computational tools that underpin Biomedical Engineering, with an emphasis on devices.

[KU2] Describe and explain the core concepts, principles and theories of medical science, business entrepreneurship and engineering.

[KU3] Gives examples of innovative and creative solutions applied to healthcare problems and quality-of-life issues, and their translation through entrepreneurship.

[KU4] Recognise and explain the need for a high level of professional and ethical conduct in engineering, based on a knowledge of professional codes of conduct and how ethical dilemmas can arise.

[IA1] Apply a wide range of scientific, engineering and business principles, tools and notations proficiently

[IA2] Apply technical knowledge and understanding of scientific, engineering and business principles to the design of medical devices and biotechnology related to medicine and healthcare.

[IA2] Extract pertinent data and critically evaluate scientific, technical and business literature.

PT1] Plan and safely execute experiments in diverse types of laboratories.

[PT2] Demonstrate leadership, teamwork and communication skills.

[PT3] Exercise judgement in a range of situations and accept accountability for achieving personal and/or group outcomes.

Upon successful completion of the DipHE Biomedical Technology Ventures programme you will be able to:

[KU1] Describe and explain the underlying scientific principles, engineering, mathematics, laboratory and practical skills and computational tools that underpin Biomedical Engineering, with an emphasis on devices.

[KU2] Describe and explain the core concepts, principles and theories of medical science, business entrepreneurship and engineering.

[KU3] Gives examples of innovative and creative solutions applied to healthcare problems and quality-of-life issues, and their translation through entrepreneurship.

[KU4] Recognise and explain the need for a high level of professional and ethical conduct in engineering.

[IA1] Apply a range of scientific, engineering and business principles, tools and notations proficiently

[IA2] Apply technical knowledge and understanding of scientific, engineering and business principles to the design of medical devices and biotechnology related to medicine and healthcare.

[IA3] Extract pertinent data and critically evaluate scientific, technical and business literature.

PT1] Plan and safely execute experiments in a defined range of laboratories.

[PT2] Demonstrate leadership, teamwork and communication skills.

[PT3] Accept accountability for achieving personal and/or group outcomes.

Upon successful completion of the CertHE Biomedical Technology Ventures programme you will be able to:

[KU1] Describe and explain some of the underlying scientific principles, engineering, mathematics, laboratory and practical skills and computational tools that underpin Biomedical Engineering, with an emphasis on devices.

[KU2] Describe and explain the basic concepts, principles and theories of medical science, business entrepreneurship and engineering.

[KU3] Gives examples of solutions applied to healthcare problems and quality-of-life issues, and their translation through entrepreneurship.

[KU4] Recognise and explain the need for a high level of professional and ethical conduct in engineering.

[IA1] Apply a range of scientific, engineering and business principles, tools and notations.

[IA2] Apply technical knowledge and understanding of scientific, engineering and business principles to solve defined problems related to medical devices and biotechnology.

PT1] Safely execute experiments in a defined range of laboratories.

[PT2] Demonstrate teamwork and communication skills.

[PT3] Accept responsibility for outputs.

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial degree programme. The Graduate Attributes are available at: www.imperial.ac.uk/about/education/our-graduates/

Entry Requirements	
Academic Requirement	**A-levels** **Minimum entry standards** Our minimum entry standard for entry is **A*AA overall**, to include: • A* in Mathematics • A in Physics, Chemistry or Biology • A in another science subject, or in Business Studies, Economics, Computer Science, Design and Technology or Further Mathematics General Studies and Critical Thinking are **not** accepted. **International Baccalaureate** **Minimum entry standards** Our minimum entry standard for entry is **39 points overall**, to include: • 6 in Mathematics* at higher level • 6 in Physics/Chemistry/Biology at higher level • 6 in a further science subject at higher level, or one other subject at higher level selected from: Business Studies, Computer Science, Economics, Design and Technology or Further Mathematics.
Non-academic Requirements	N/A
English Language Requirement	Higher requirement (UG) IELTS score of 7.0 overall (minimum 6.5 in all elements)
Admissions Test/Interview	Selected applicants are invited to an interview day online. This usually involves an introduction talk about the department, followed by group activities and individual interviews. Further information on the interview process can be found here: Interview Guidance.

The programme's competency standards documents is available from the department.

Learning & Teaching Approach

Scheduled Learning & Teaching

You will be taught through a combination of lectures, study groups and tutorials, laboratories and computing labs, guest lectures and presentations. Study groups and tutorials will enable you to discuss and develop your understanding of topics covered in lectures whilst in smaller groups of around 30 students. Dry laboratories in electrical, mechanical and bioengineering will allow you to develop practical skills and gain experience in the application of the theory discussed in lectures and study groups. Wet laboratories will allow you to develop an understanding of how to handle biological and chemical materials. Computing labs will support the maths and computational content of the course. In laboratories you will work in pairs or trios.

The Virtual Learning Environment Blackboard will be used as a repository for teaching materials including recordings of all lectures, lecture notes and problem sheets. Learning technologies will be used to support teaching activities including in-class polling with Mentimeter, online self-diagnostic quizzes and online class forums.

At the end of the second year of the programme, following the exam period you will undertake a summer internship. This will comprise of a period of a minimum of 6 weeks but can be longer and may extend beyond the end of the summer term. The internship will be in a healthcare-related industry, a hospital setting or a University laboratory. During this internship you will have the opportunity to gain hands-on experience of development and/or commercial environments. Throughout the internship you will be supported by an academic supervisor who will monitor your progress through regular meetings.

Independent Learning

You are expected to spend significant time on independent study outside of face to face contact time. From our experience students that undertake independent learning have improved academic performance, increased motivation and confidence in themselves and their abilities. By undertaking independent learning you are also preparing yourself for professional practice where it is expected that you will manage your own continued professional development. Independent learning activities that you will be expected to undertake will typically include accessing online resources, completing problem sheets, reading journal articles and books, undertaking research in the library, reviewing lecture notes and watching lecture recordings, working on individual and group projects, working on coursework assignments and revising for exams.

Bioengineering uses flipped teaching for some modules, meaning that you need to actively engage with on-line eModules ahead of attending timetabled sessions. This independent learning is followed by sessions led by the lecturer where all students work in small groups to apply that knowledge to more practical examples. This helps you to further consolidate and enhance your understanding of the topics you study and allows us the time to focus on more challenging concepts in the taught sessions.

Independent learning does not mean isolated learning and we encourage you to make use of the academic support available to you at all stages of the programme. Your personal tutor, the module leaders, graduate teaching assistants and project supervisors are all available to provide guidance on academic topics. Regular drop-in hours for modules are held by all academics and are open to students who would like to discuss topics in smaller groups and 1-to-1 settings. For specialist support on topics such as literature searches and referencing you can also seek support from the library service.

Design Projects

A key part of this programme is a serial of project-based learning activities throughout the three years.
In these projects, you will work individually and/or in a small group to design, make and test a solution to a bioengineering problem. These projects will allow you to develop professional engineering skills and appreciate the subtleties of working in a team. You will also be given support in managing a team and giving effective feedback to others, which includes training and practice with the process of peer review which will form part of the assessment for these projects. For the process of peer review each member of a team is asked to provide relative effort marks for their team members via an anonymous on-line form. We guide you through this process, including an early practice run to ensure that this is fair and informative.

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 1500 hours per year.

Typically, in the first two years you will spend around 25% of your time on lectures, seminars and other scheduled activity (around 400 hours) and around 75% of your time on independent study (around 1100 hours).

In the third year, you will spend less time in scheduled activity (around 250 hours) with the reminder in independent study, a significant proportion of which will be the 3rd year group project.

Assessment Strategy

Assessment Methods

A variety of assessment methods will be used to test your understanding. Assessments are grouped as formative and summative.

Formative assessments do not contribute to the module mark but provide information on your progress as an individual and in the context of the class. This allows you to learn by using your new skills to solve problems and receive feedback on your performance to guide your future learning. This supports you to achieve a better performance in the summative assessments which do count towards your module marks. Formative assessments also provide feedback to the teaching staff which allow us to adapt our teaching.

Summative assessments are used to assess your learning against the intended module learning outcomes and contribute towards your achievement of the programme learning outcomes, detailed above. There is summative assessment during and/or at the end of each module and these assessments will contribute towards your mark for each year.

The choice of assessment method is largely determined by the learning objectives being assessed and includes:

Assessed Coursework

- Problem sheets
- Laboratory reports – individually or as part of a portfolio.
- Practical demonstrations
- Project reports
- Oral presentations
- Poster presentations
- Academic tutorials

Examinations

- In class progress tests
- Mastery examinations (online/written)
- Written examinations

Mastery examinations are used in some modules to establish that you have understood the key concepts and met the learning outcomes at the minimum level. These exams are typically straight forward, cover the whole module content, and have a required pass mark of 80%. For mastery examinations you may retake the examination up to 3 times, with no penalty if you fail the first attempt. In this way the mastery contributes as a formative assessment to support your educational development.

The design of our programme will allow you to test your understanding of the subject using formative assessments such as problem sheets, on-line diagnostic tests and mock/past examinations before you complete the summative assessments that count towards your final mark.

The table below is indicative of the balance of assessment in the different years of the course.

	Year 1	Year 2	Year 3
Coursework	30 %	30 %	50 %
Examinations	70 %	70 %	50 %

Academic Feedback Policy

Feedback will be provided in one of many formats, including:

- Oral (during or after lectures, personally or as a group feedback session)
- Personal (discussion with academics during office hours, meetings with Personal Tutors)
- Interactive (problem solving with GTAs & study groups, peer feedback)
- Written (solutions/model answers to coursework, notes on submitted reports)
- Online (results of online tests with correct answers provided)
- Self-reflective (personal journals, reflective essays and class discussion)

It is department policy to provide feedback to students within 10 working days of assessment submission. This timeframe may be extended for significantly large assessments or for final examinations. In this case the date when feedback will be available by will be communicated to students.

Individual feedback will not be provided on written examinations. However, feedback on the general performance of the cohort on the exam questions will be given. Numerical results will be published after the meeting of the final Board of Examiners.

Imperial'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

Years 1 and 2

In the absence of approved mitigating circumstances, and following any application of allowed compensation, Year 1 and Year 2 students who have failed modules at first attempt will normally be:

▪ offered a capped in-year re-assessment opportunity of failed modules, if they have passed at least 45 ECTS in that year of programme;

▪ required to retake the year in attendance as if for the first time (can only be offered once), retake the failed modules, or resit the failed modules' assessments in the following year, if they have passed at least 30 ECTS (but fewer than 45) in that year of programme;

▪ required to withdraw from the programme if they have passed fewer than 30 ECTS in that year of programme. At the discretion of the Board of Examiners, an exit award may be offered provided that the students have met the requirements for that award.

Year 3

In the absence of approved mitigating circumstances, and following any application of allowed compensation, Year 3 students who have failed modules at first attempt will normally be:

▪ offered a capped in-year re-assessment opportunity of failed modules if they have passed at least 45 ECTS in that year of the programme;

▪ required to retake the modules they have failed in attendance, or resit the failed modules' assessments next year, if they have passed at least 30 ECTS (but fewer than 45) in that year of the programme;

▪ required to withdraw from the programme if they have passed fewer than 30 ECTS in that year of the programme. At the discretion of the Board of Examiners, an exit award may be offered provided that the students have met the requirements for that award

For non-progressing students after in-year re-assessments have taken place, the Board of Examiners' decisions will be dictated by clauses 11.5 and 11.7 of the Regulations of Taught Programmes of Study.

For students with accepted MCs, in-year uncapped deferrals will be offered to give them the opportunity to progress. The student can choose to take all or some of these during the summer re-assessment period. However, advice will be offered to the student by Board of Examiners, the Director of Teaching, the Academic Tutor and the Student Well-being Adviser.

Imperial's Policy on Re-sits is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/
Mitigating Circumstances Policy
Imperial's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

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[1]					
Year 1 – FHEQ Level 4 **You will study all compulsory modules**					
Code	Module Title	Core/ Elective/ Compulsory	Group	Term	Credits
BUSI40010	Business Economics*	Compulsory		Autumn	5
BUSI40011	Entrepreneurship online*	Compulsory		Spring	5
BIOE40011	Foundations of Biomedical Engineering*	Compulsory		Autumn	10
BIOE40010	Medical and Biological Science 1	Compulsory		Autumn, Spring	10
BIOE40004	Mathematics 1	Compulsory		Autumn-Spring	10
BIOE40003	Design and Professional Practice 1	Compulsory		Autumn-Summer	5
BIOE40002	Computer Fundamentals and Programming 1	Compulsory		Spring-Summer	10
BIOE40014	Sensors and Actuation	Compulsory		Spring-Summer	5
				Credit Total	60
Year 2 - FHEQ Level 5 (except * which are FHEQ Level 6) **You will study all compulsory modules.**					
Code	Module Title	Core/ Elective/ Compulsory	Group	Term	Credits
BUSI60045	Managing Innovation*	Compulsory		Autumn	5
BIOE50013	Medical Device Entrepreneurship 1	Compulsory		Autumn	5
BIOE50008	Medical Science 2	Compulsory		Autumn	5
BIOE60011	Probability, Statistics and Data Analysis	Compulsory		Autumn	5
BIOE50010	Programming 2	Compulsory		Autumn	5
BIOE50012	An introduction to Biomaterials	Compulsory		Autumn-Spring	7.5
BIOE50006	Mathematics 2	Compulsory		Autumn-Spring	7.5

[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.

BUSI60043	Finance and Financial Management*	Compulsory		Spring	5
BIOE50016	Principles of Design	Compulsory		Spring	5
BIOE50015	BSc Biomedical Technology Ventures Year 2 Summer Internship	Compulsory		Summer	10
				Credit Total	60

Year 3 - FHEQ Level 6 (except * which are FHEQ Level 7)
You will study compulsory and elective modules.

Code	Module Title	Core/ Elective/ Compulsory	Group	Term	Credits
BIOE60022	Digital Healthcare	Compulsory		Autumn	5
BIOE70028	Medical Device Certification	Compulsory		Spring	5
BIOE60023	Medical Device Entrepreneurship 2	Compulsory		Autumn	5
BIOE60029	Principles of Biomedical Imaging	Compulsory		Autumn	5
BUSI60039	Business Strategy	Compulsory		Spring	5
BIOE70022	Industrial Applications of Cellular Engineering*	Compulsory		Spring	5
BIOE60036	BSc Biomedical Technology Ventures Group Project	Compulsory		Autumn-Summer	20
	I-Explore module	Compulsory		Autumn and/or Spring	5
	Bioengineering Elective†	Elective		Autumn and/or Spring	5
				Credit Total	60

†one or more modules may be made available to you from the Department of Bioengineering. Module availability and eligibility may vary, as approved on an annual basis by the Faculty Education Committee.

Progression and Classification

Progression

In order to progress to the next level of study, you must have passed all modules (equivalent to 60 ECTS) in the current level of study at first attempt, at resit or by a compensated pass.

The overall weighted average for each year must be 40.00%, including where a module(s) has been compensated, in order for you to progress to the next year of the programme.

Classification

The marks from modules in each year contribute towards the final degree classification.

In order to be considered for an award, you must have achieved the minimum number of credits at the required levels prescribed for that award and met any programme specific requirements as set out in the Programme Specification.

Your classification will be determined through:

i) Aggregate Module marks for all modules
ii) Year Weightings

For this award, Year One is weighted at 7.50%, Year Two at 35.00% and Year Three at 57.50%.

The university sets the class of undergraduate degree that may be awarded as follows:

i)	First	70.00% or above for the average weighted module results
ii)	Upper Second	60.00% or above for the average weighted module results
iii)	Lower Second	50.00% or above for the average weighted module results
iv)	Third	40.00% or above for the average weighted module results

Programme Specific Regulations

N/A

Supporting Information
The Programme Handbook is available from the department.
The Module Handbook is available from the department.
Imperial's entry requirements for postgraduate programmes can be found at: www.imperial.ac.uk/study/apply/postgraduate-taught/entry-requirements/
Imperial's Quality & Enhancement Framework is available at: www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance
Imperial's Academic and Examination Regulations can be found at: www.imperial.ac.uk/about/governance/academic-governance/regulations
Imperial College London 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 Imperial's Centenary, 8th July 2007, established Imperial as a University with the name and style of "The Imperial College of Science, Technology and Medicine". www.imperial.ac.uk/admin-services/secretariat/university-governance-structure/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 you may reasonably be expected to achieve and demonstrate if you take 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.