

BSc Biochemistry with Management with a Year in Industry/Research

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	Biochemistry with Management with a Year in Industry/Research		
Award(s)	BSc		
Programme Code	C7NA		
Associateship	Associateship of the Royal College of Science (ARCS)		
Awarding Institution	Imperial College London		
Teaching Institution	Imperial College London		
Faculty	Faculty of Natural Sciences		
	Imperial College Business School		
Department	Department of Life Sciences		
	Imperial College Business School		
Main Location of Study	South Kensington Campus		
Mode and Period of Study	5 academic years full-time		
Cohort Entry Points	Annually in October		
Relevant QAA Benchmark Statement(s) and/or other external reference points	Biosciences		
	General Business and Management		
Total Credits	ECTS:	300	CATS: 600
FHEQ Level	Level 6		
EHEA Level	1 st cycle		
External Accrerator(s)	AMBA Accreditation received: 1987 Accreditation renewal: 2013 EQUIS Accreditation received: 2006		

	Accreditation renewal: 2015 AACSB International Accreditation received: 2012 Accreditation renewal: 2018
Specification Details	
Student cohorts covered by specification	2017/18 entry
Person responsible for the specification	Dr Huw Williams (Life Sciences)
	Ms Veronica Russell (Business School)
Date of introduction of programme	
Date of programme specification/revision	August 2017
Programme Overview	
<p>The BSc Biochemistry with Management with a Year in Industry/Research programme is a five-year degree.</p> <p>In the first two years students will tackle core subjects to ensure that they receive a solid grounding in fundamentals.</p> <p>In the third year students will undertake an industrial/research placement.</p> <p>Students will then specialise in the fourth year, making their choice from a wide range of options and research projects.</p> <p>The fifth year will be spent in the Imperial College Business School. This year aims to prepare students for a career in business management, management services or management consultancy in the private or public sectors in the UK, Europe or worldwide.</p> <p>Our biochemistry and biotechnology courses contain topics covering all aspects of the applied biochemistry and the biotechnology industry, such as intellectual property and patents, commercialising technology, and entrepreneurship, with lectures and case studies from biotechnology business leaders and academics.</p>	
Learning Outcomes	
<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>	
<p>Knowledge and Understanding of:</p> <ul style="list-style-type: none"> • Biological chemistry; molecular biology and genetics; cell biology; protein and enzyme structure and function; (Year 1) • Genes and genomics; macromolecular structure and function; integrative cell biology; (Year 2) • Advanced knowledge and understanding of three specialist modules; (Year 3) • The management of innovation in a modern organisation including the implications of technology 	

- The roles and behaviour of people working in organisations;
- The key issues in contemporary human resource management and an appreciation of the theory and research which underpins these issues;
- The strategic decisions faced by the top management team of an organisation;
- The operations and control of projects, production and service activities;
- The techniques of financial and managerial accounting and their relevance to the broader issues of management decision-making and control;
- A theoretical framework for analysing key financial markets and an understanding of how they interact with the key decisions of firms;
- The business and economic environment including the ways in which the government responds and shapes the economic environment and how this can be anticipated;
- The key marketing concepts and principles of marketing analysis;
- The management problems that are either unique to international business or arise in particular complex or acute forms in business that span national boundaries;
- The issues associated with evaluating the viability of new technologies, new products or services in the fields of medicine and science.

Intellectual Skills (thinking) skills - able to:

- Analyse and solve biochemistry-based problems;
- Integrate and evaluate information;
- Formulate and test hypotheses using appropriate experimental design and statistical analysis of data;
- Plan, conduct and write-up a programme of original research;
- Analyse, interpret and evaluate new and/or abstract data and situations without guidance;
- Use a wide range of appropriate techniques and transform data and concepts into novel solutions;
- Read, interpret and analyse published accounts and to evaluate the well-being and potential of a company using ratio analysis;
- Anticipate likely changes in policy and economic conditions given the current economic and political environment.

Practical skills – able to:

- Plan and execute safely a series of experiments;
- Use laboratory methods to generate data;
- Analyse experimental results and determine their strength and validity;
- Prepare technical reports;
- Give technical presentations;
- Use the scientific literature effectively;
- Use computational tools and packages;
- Give professional presentations;
- Seek, interpret, present and use data effectively in decision-making;
- Produce creative and realistic solutions to complex problems;
- Use a range of different perspectives to analyse an organisation;
- Identify key issues in human resource management and design a recruitment process and conduct a selection interview;
- Communicate competently with numerical data;
- Participate in managerial decision processes where accounting based information is an important input;

- Assess both the technological and market viability of an idea and select the most appropriate route to market;
- Effectively use Information Technology.

Transferable skills – able to:

- Communicate effectively through oral presentations, computer processing and presentations, and written reports;
- Work independently and as part of a team
- Integrate and evaluate information from a variety of sources;
- Use Information and Communications Technology;
- Manage resources and time;
- Learn independently with open-mindedness and critical enquiry;
- Learn effectively for the purpose of continuing professional development.

Entry Requirements

Academic Requirement	Grade Requirement	Normally a minimum AAA overall
	Subject Requirements	A in Chemistry A in another science subject (Biology is preferred but not mandatory) or Mathematics (or a comparable qualification recognised by the College)
	Excluded Subjects	Key Skills Critical Thinking General Studies
International Baccalaureate (IB)	Grade Requirement	Minimum 38 overall
	Subject Requirements	6 in Chemistry at higher level 6 in Biology or Mathematics at higher level (or a comparable qualification recognised by the College)
GCSE Requirements		B in Mathematics, Chemistry and Biology (or Combined Sciences)
English Language Requirement		Higher requirement
Admissions Tests		None
Interview		No
The programme's competency standards documents can be found at: http://www.imperial.ac.uk/students/academic-support/graduate-attributes/		
Non-academic Requirements		None

Offers for our Biochemistry, Biotechnology and Biological Sciences courses are made based on information supplied on the UCAS form. Generally, we do not hold interviews.

English Requirement	Standard requirement IELTS 6.5 with a minimum of 6.0 in each element or equivalent
The programme's competency standards documents can be found at: http://www.imperial.ac.uk/students/academic-support/graduate-attributes/	
Learning & Teaching Strategy	
Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> • Laboratory • Lectures • Tutorials • Seminars • Practical classes and field work • Equipment/technique demonstrations • Workshops • Case studies • Group work exercises • Formal presentations
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> • Computer-based work • Pre-programme VLE modules • On-line discussion forums • On-line lecture materials • Interactive content including video and module quizzes
Project Learning Methods	<ul style="list-style-type: none"> • Group project • Research project/dissertation
Placement Learning Methods	<ul style="list-style-type: none"> • Site visits
Assessment Strategy	
Assessment Methods	<ul style="list-style-type: none"> • Written Examinations • Coursework • Continuous assessments • Multiple Choice Tests • Case Studies Participation • Laboratory write-ups • Essays • Reports • Dissertations • Presentations • Individual research project report • Viva
Academic Feedback Policy	

Coursework feedback is provided by a feedback form attached to items of coursework. Feedback is also provided via Blackboard on automatically-assessed pieces of coursework and on formative MCQ quizzes. Personal tutors hold timetabled tutorials at the start of the academic year to give feedback on examination performance and can be approached by their tutees at any point in the year for further guidance. The undergraduate teaching office repeatedly informs individual staff via email when coursework is due back at the appropriate time. The Director of Undergraduate Studies routinely monitors the quality and quantity of feedback provided on marked coursework. In some instances, generic class feedback is returned to all students via email or a Blackboard announcement once coursework is marked.

Re-sit Policy

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

Programme Structure

Year One	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	0	2	2		0
Elective Modules	0	0	0	0	0
Projects	0	0	0	0	0
Year Two	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	0	2	2	0	0
Elective Modules	0	0	0	1	0
Projects	0	0	1	0	0
Year Three	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	Year in Industry/ Research				
Elective Modules					
Projects					
Year Four	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	0	0	0	0	0

Elective Modules	0	2	1	0	0
Projects	0	0	1		
Year Five	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	3	5	5	0	0
Elective Modules	0	0	0	0	0
Projects	0	0	1		0
Assessment Dates & Deadlines					
Year One					
Written Examinations		January and June			
Coursework Assessments		Continuous			
Project Deadlines		N/A			
Practical Assessments		Continuous			
Year Two					
Written Examinations		January and June			
Coursework Assessments		Continuous			
Project Deadlines		N/A			
Practical Assessments		Continuous			
Year Three					
Written Examinations		Year in Industry/ Research			
Coursework Assessments					
Project Deadlines					
Practical Assessments					
Year Four					
Written Examinations		January and February			
Coursework Assessments		Continuous			
Project Deadlines		June			
Practical Assessments		Continuous			

Year Five	
Written Examinations	January and April
Coursework Assessments	Continuous
Project Deadlines	May
Practical Assessments	Continuous
Assessment Structure	
Marking Scheme	
<p>Regulation of Assessment</p> <p>Minimum pass mark is 40% overall for each course module, which must include a mark of at least 35% in the coursework component and a mark of at least 35% in the examination.</p> <p>For course modules that include a written examination, coursework typically contributes 20- 25% of the total marks available.</p> <p>Assessment details are provided in the First, Second and Third Year Student Handbooks.</p> <p>The final degree mark is calculated from the mean mark achieved in Years 1, 2, 4 and 5.</p> <p>The year weightings for students admitted in or after October 2013 are 7.1: 21.4: 0: 35.7: 35.7, respectively.</p> <p>The year weightings for students admitted before October 2013 are 5: 25: 0: 35: 35.</p> <p>To qualify for the award of BSc Honours, students must pass all courses.</p> <p>Assessment Rules and Degree Classification:</p> <p>For undergraduate programmes classification of degrees will be according to the following range of marks:</p> <p>First class 70 - 100% Second class (upper division) 60 - 69.9% Second class (lower division) 50 - 59.9% Third class 40 - 49.9% Fail 0-39%</p>	

Module Weightings			
Year	% Year Weighting	Module	% Module Weighting
Year One	7.1%	Molecular Biology	25%
		Proteins and Enzymes	25%
		Biological Chemistry	25%
		Cell Biology	25%
Year Two	21.4%	Genes and Genomics	16.6r%
		Integrative Cell Biology	16.6r%
		Fundamentals of Molecular Biochemistry	16.6r%
		Protein Science	16.6r%
		Tutored Dissertation	11.6r%
		<i>One module from elective group (A)</i>	10%
		<i>One module from elective group (B)</i>	11.6r%
Year Three	0%	Year in Industry/Research	N/A
Year Four	35.7%	<i>EITHER:</i> Laboratory Based Research Project <i>OR</i> Literature Based Dissertation <i>AND</i> Science Communication	35%
		<i>One module from elective group (C)</i>	21.66r%
		<i>One module from elective group (D)</i>	21.66r%
		<i>One module from elective group (E)</i>	21.66r%
Year Five	35.7%	Group Project	25%
		Accounting	7.5%
		Business Economics	7.5%
		Business Strategy	7.5%
		Entrepreneurship	7.5%
		Finance and Financial Management	7.5%
		Global Business Management	7.5%
		Marketing	7.5%
		Organisational Behaviour and Human Resource Management	8.5%

Module Weightings			
Year	% Year Weighting	Module	% Module Weighting
		Innovation Management	7.5%
		Sustainable Business	7.5%

Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
LS1-MB	Molecular Biology	CORE	1	96	279	0	375	75%	10%	15%	4	15.00
LS1-PE	Proteins and Enzymes	CORE	1	65	310	0	375	75%	13%	12%	4	15.00
LS1-BC	Biological Chemistry	CORE	1	74	301	0	375	75%	5%	20%	4	15.00
LS1-CB	Cell Biology	CORE	1	61	314	0	375	75%	8%	17%	4	15.00
LS2-GG	Genes and Genomics	CORE	2	49	201	0	250	75%	7%	18%	5	10.00
LS2-ICB	Integrative Cell Biology	CORE	2	41	209	0	250	75%	0%	25%	5	10.00
LS2-MSF1	Fundamentals of Molecular Biochemistry	CORE	2	56	194	0	250	75%	14%	11%	5	10.00
LS2-MSF2	Protein Science	CORE	2	52	198	0	250	75%	14%	11%	5	10.00
LS2-TDBC	Tutored Dissertation	CORE	2	4	171	0	175	0%	100%	0%	5	7.00
LS2-TB	Topics in Biotechnology	ELECTIVE (A)	2	44	129	0	175	75%	0%	25%	5	7.00
LS2-CCB	Challenges in Cell Biology	ELECTIVE (A)	2	42	133	0	175	75%	12.5%	12.5%	5	7.00
LS2-AMBC	Applied Molecular Biochemistry	ELECTIVE (A)	2	39	136	0	175	75%	0	25%	5	7.00
N/A	Horizons	ELECTIVE (B)	2	Various			150	Various				6.00
N/A	Business for Professional Engineers & Scientists	ELECTIVE (B)	2	Various			150	Various				6.00

Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
N/A	Year in Industry/Research	CORE	3	0	0	1500	1500	0%	100%	0%	6	60.00
LS3-FYRP	Lab Based Research Project	CORE*	4	360	165	0	525	0%	100%	0%	6	21.00
LS3-FYRD	Literature Based Dissertation	CORE*	4	10	315	0	325	0%	100%	0%	6	13.00
LS3-SCICOMM	Science Communication	CORE*	4	31	169	0	200	0%	100%	0%	6	8.00
LS3-ATPMB	Plant Biotechnology and Development	ELECTIVE (C)	4	56	269	0	325	75%	9%	16%	6	13.00
LS3-DRIBS	Damage and Repair in Biological Systems	ELECTIVE (C)	4	58.5	266.5	0	325	75%	17%	8%	6	13.00
LS3-SBDD	Structural Biology & Drug Design	ELECTIVE (C)	4	73	252	0	325	75%	20%	5%	6	13.00
LS3-MM	Medical Microbiology	ELECTIVE (C)	4	52	273	0	325	75%	5%	20%	6	13.00
LS3-SCRA	Stem Cells, Regeneration and Ageing	ELECTIVE (C)	4	50	275	0	325	75%	0%	25%	6	13.00
LS3-NR	Neuroscience Research	ELECTIVE (C)	4	46	279	0	325	75%	5%	20%	6	13.00
LS3-PDB	Principles of Development	ELECTIVE (C)	4	45	280	0	325	75%	20%	5%	6	13.00
LS3-ATII	Advanced Topics in Immunity and Infection	ELECTIVE (D)	4	57	268	0	325	75%	25%	0%	6	13.00
LS3-MPMI	Symbiosis, Plant Immunity and Disease	ELECTIVE (D)	4	48	277	0	325	75%	17.50%	7.50%	6	13.00
LS3-ATPVB	Advanced Topics in Parasitology and Vector Biology	ELECTIVE (D)	4	43.5	281.5	0	325	75%	22%	3%	6	13.00

Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
LS3-ISB	Integrative Systems Biology	ELECTIVE (D)	4	73	252	0	325	75%	5%	20%	6	13.00
LS3-MGE	Mechanisms of Gene Expression	ELECTIVE (D)	4	38	287	0	325	75%	10%	15%	6	13.00
LS3-MNE	Metabolic and Network Engineering	ELECTIVE (C)	4	62	263	0	325	75%	9%	16%	6	13.00
LS3-CANCER	Cancer	ELECTIVE (D)	4	56	269	0	325	75%	5%	20%	6	13.00
LS3-ME	Microbial Ecology	ELECTIVE (D)	4	45	280	0	325	75%	20%	5%	6	13.00
LS3-SB	Synthetic Biology	ELECTIVE (E)	4	52	273	0	325	75%	10%	15%	6	13.00
LS3-BDG	Biodiversity Genomics	ELECTIVE (E)	4	40	285	0	325	75%	10%	15%	6	13.00
LS3-MBBI	Molecular Basis of Bacterial Infection	ELECTIVE (E)	4	53	272	0	325	75%	0%	25%	6	13.00
LS3-BAP	Biotechnology Applications of Proteins	ELECTIVE (E)	4	62	263	0	325	75%	5%	20%	6	13.00
LS3-BIOINF	Bioinformatics	ELECTIVE (E)	4	61	264	0	325	75%	20%	5%	6	13.00
LS3-MG	Medical Glycobiology	ELECTIVE (E)	4	63	262	0	325	75%	16.50%	8.50%	6	13.00
LS3-SN	Systems Neuroscience	ELECTIVE (E)	4	44	281	0	325	75%	12.50%	12.50%	6	13.00
LS3-AI	Advanced Immunology	ELECTIVE (E)	4	54	271	0	325	75%	17.5%	7.5%	6	13.00
LS3-ABECB	Advanced Bacterial and Eukaryotic Cell Biology	ELECTIVE (D)	3	43	282	0	325	75%	15%	10%	6	13.00

Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS0600	Group Project	CORE	5	0	250	0	250	0%	100%	0%	6	10.00
BS0601	Accounting	CORE	5	32	93	0	125	70%	30%	0%	6	5.00
BS0602	Business Economics	CORE	5	27	98	0	125	70%	30%	0%	6	5.00
BS0603	Business Strategy	CORE	5	22	103	0	125	70%	30%	0%	6	5.00
BS0606	Entrepreneurship	CORE	5	22	103	0	125	30%	70%	0%	6	5.00
BS0607	Finance and Financial Management	CORE	5	27	98	0	125	70%	30%	0%	6	5.00
BS0609	Global Business Management	CORE	5	22	103	0	125	70%	30%	0%	6	5.00
BS0611	Marketing	CORE	5	22	103	0	125	70%	30%	0%	6	5.00
BS0612	Organisational Behaviour and Human Resource Management	CORE	5	22	103	0	125	70%	30%	0%	6	5.00
BS0616	Innovation Management	CORE	5	22	103	0	125	60%	20%	20%	6	5.00
BS0618	Sustainable Business	CORE	5	22	103	0	125	70%	30%	0%	6	5.00
BS0693	Accounting Primer	CORE	5	10	15	0	25	N/A				
BS0692	Maths Primer	CORE	5	10	15	0	25	N/A				
BS1314	Study Skills	OPTIONAL	5	10	15	0	25	N/A				

Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS1317	Plagiarism Awareness	CORE	5	10	15	0	25	N/A				

*See Y4 table on page 5 (above).

Supporting Information

The Programme Handbook is available at:

<http://www.imperial.ac.uk/life-sciences/undergraduate/biochemistry-and-biotechnology/>

The Module Handbook is available at:

<http://www.imperial.ac.uk/life-sciences/undergraduate/biochemistry-and-biotechnology/>

The College's entry requirements for undergraduate programmes can be found at:

www.imperial.ac.uk/study/ug/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:

<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".

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

Imperial College London is regulated by the Higher Education Funding Council for England (HEFCE)

<http://www.hefce.ac.uk/reg/register/>

Modifications

Modification	Committee	Date	Paper
Introduce new elective module LS3-AI (Advanced Immunology)	Programmes Committee	25 October 2016	PC.2016.35
Introduce new elective module LS3-DEE (Disease Ecology and Epidemiology)	Programmes Committee	25 October 2016	PC.2016.35
Introduce new elective module LS3-ME (Microbial Ecology)	Programmes Committee	25 October 2016	PC.2016.35
Introduce new elective module LS3-PDB (Principles of Development)	Programmes Committee	25 October 2016	PC.2016.35
Introduce new elective module LS3-ABECB	Departmental Teaching Committee	5 December 2016	
Macromolecules in 3 Dimensions name changed to Structural Biology & Drug Design	Departmental Teaching Committee	5 December 2016	

Suspend new elective module LS3-DEE (Disease Ecology and Epidemiology)	Departmental Teaching Committee	27 September 2017	
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