

## Programme Specification

### BSc (Hons) Biomedical Science

<i>School:</i>	Science, Technology and Health
<i>Subject area:</i>	Biomedical Science
<i>Entry from academic year:</i>	2020-21
<i>in the month(s) of:</i>	September
<i>Awarding institution:</i>	York St John University
<i>Teaching institution:</i>	York St John University
<i>Delivery location:</i>	York St John University
<i>Programme/s accredited by:</i>	Institute of Biomedical Science Royal Society of Biology
<i>Exit awards:</i>	Certificate of Higher Education Biological Sciences Diploma of Higher Education Biological Sciences BSc (Ord) Biological Sciences BSc (Hons) Biological Sciences
<i>UCAS code / GTTR / other:</i>	7Y63
<i>Joint Honours combinations:</i>	Not applicable
<i>QAA subject benchmark statement(s):</i>	Biomedical Science (2015)
<i>Mode/s of study:</i>	<a href="#">Undergraduate periods of study</a> <sup>1</sup> for full-time / part-time
<i>Language of study:</i>	English
<i>Paired with foundation year</i>	No
<i>Study abroad opportunities:</i>	No
<i>Placement year opportunity:</i>	No

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## Introduction and special features

### Introduction

Biomedical Science provides a multidisciplinary approach to the study of human disease. It encompasses the causes of disease and the effects of disease on the normal structure and functions of the human body. It also provides an understanding of the scientific basis for the laboratory investigation, diagnosis, monitoring and treatment of disease. Graduates gain an understanding of biomedical science research to develop new diagnostic procedures as well as new therapeutic intervention strategies.

As a graduate from a degree programme accredited by the Institute of Biomedical Science (IBMS) you will have a broad-based scientific education coupled with relevant and current technical skills necessary for laboratory work. This broad-based education provides the foundation for a wide-range of scientific careers, including as a Biomedical Scientist in a hospital environment (following successful completion of the IBMS Registration Training Portfolio for the Certificate of Competence). The IBMS Registration Training Portfolio must be completed in an IBMS accredited laboratory during a placement taken between Level 5 and 6 (see the Programme Specification for Biomedical Science (with placement)) or following graduation from this programme. Successful completion of the IBMS Registration Training Portfolio allows you to register with the Health and Care Professions Council as a Biomedical Scientist. You may also wish to pursue a different laboratory-based or non-laboratory based scientist in the Pharmaceutical or Biotechnology Industry and

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<sup>1</sup> The standard period of study will apply unless otherwise stated

other related industries, academic research or teaching. Your degree provides a qualification necessary to start your professional career however, you will need to continue to develop skills throughout your working life. This programme couples a scientific education with the development of the skills necessary for lifelong learning.

### **Special features**

The Biomedical Science programme is externally accredited by the professional body, the Institute of Biomedical Science (IBMS). All students will register for the Biomedical Science degree programme and will have the opportunity to transfer to the award title of Biomedical Science (with placement) during Level 5 of study. You will be eligible to apply for year-long NHS or industry placements during Level 5 of the Biomedical Science programme. Applicants will be offered placements after detailed consideration of each individual application, academic performance in Level 4 and 5, selection process by the Placement Tutor involving practitioners / industrial colleagues plus an interview with their chosen placement provider. If successful, you will then transfer to the 'Biomedical Science (with placement)' degree programme at the end of Level 5.

This enables you to apply to the Health and Care Professions Council (HCPC) to register as a Biomedical Scientist following graduation with the honours degree and following successful completion of laboratory experience and the IBMS Registration Training Portfolio. Non IBMS-accredited degree courses do not facilitate this career, as all trainee Biomedical Scientists must have completed the bespoke curriculum required by the IBMS in order to practice. Other non-accredited Biomedical Science programmes may have similar content, but their graduates will require 'top-up' modules in addition to completion of the IBMS Registration Training Portfolio in order to undertake a career as a registered Biomedical Scientist.

For our programme, bespoke laboratory facilities have been developed to support extensive laboratory experience in small student groups. Your laboratory competency will be developed from many practical classes plus extensive supported open learning activities. You will also have technology enhanced learning activities both within modules and also as part of extra-curricular self-development, which you will record on an electronic portfolio that can be presented to future employers. In addition, embedded professional development and reflective practice, an individual level 6 research project (and written report) and relevant work-related laboratory experience will enhance your employability. You will develop thorough and detailed knowledge and understanding of the biology of disease at the tissue, cellular and molecular level. You will have collaborative learning experiences at each level of study from academic tutorials, workshops and case studies. In all levels of study, you will have interaction with Biomedical Science practitioners and other professionals from a range of careers and 'live briefs' in the Research Methods and Professional Skills module to develop employability skills. The Biomedical Science degree has also been designed to develop you within the following three themes: Academic development and critical thinking (through learner autonomy, critical thinking, information literacy, research and enquiry); Employability and professionalism (through self-awareness and management, communication, collaboration, life-long learning, professional values, digital literacy); and Inclusivity (through social responsibility, global citizenship and ethics). These themes are developed throughout the programme to prepare you for a variety of careers after graduation.

## Admissions criteria

You must meet the University's general entry criteria for [undergraduate](#)/ study. In addition, you must have:

- A minimum of BCC from A2 subjects to include grade B or above in Biology. Would also be helpful to see Chemistry and other sciences at A2 Level. For applicants who have already achieved their A2s we would consider CCC if all subjects are sciences.
- DMM or higher from a science based BTEC Extended Diploma with a minimum of three Biology specific modules within the overall diploma. Where this is not evidenced an additional A2/AS in Biology may be required.

If your first language is not English, you need to take an IELTS test or an equivalent qualification accepted by the University (see <https://www.yorksj.ac.uk/international/how-to-apply/english-language-requirements/>).

If you do not have traditional qualifications, you may be eligible for entry on the basis of [Accredited Prior \(Experiential\) Learning \(APL/APEL\)](#). We also consider applications for entry with advanced standing.

## Programme aim(s)

The programme is intended to:

- Provide a stimulating and well-informed programme of study in Biomedical Science for students from diverse cultural and educational backgrounds, with embedded small group activities and vocational skills
- Enhance learning by providing you with supported open learning and technology enhanced learning opportunities to suit your interests and/or career aspirations
- Develop subject knowledge and understanding in the core areas of Biomedical Science as defined in the curriculum to reflect the Subject Benchmark Statement; including an ethical awareness of the implications of ethnicity, gender as well as social and cultural diversity in health and disease
- Develop core discipline specific and research skills as outlined in the curriculum to reflect the Subject Benchmark Statement
- Develop personal transferable skills which enhance your employability and / or aptitude for further education
- Provide an IBMS accredited degree that enables you to apply to the Health and Care Professions Council (HCPC) to register as a Biomedical Scientist, following successful completion of laboratory experience and the IBMS Registration Training Portfolio \*
- Provide a supportive and structured environment in which you are encouraged to develop the independent study skills required for lifelong learning

\* *This portfolio can be undertaken during a voluntary placement in an IBMS accredited laboratory between Level 5 and 6, however this is not part of the normal 3 year degree programme. Students who wish to complete such a placement will be required to transfer to the Biomedical Science (with placement) programme after Level 5, if they meet the selection criteria. The Biomedical Science (with placement) programme is available as a full-time programme only and can also include an industrial placement year (this does not allow completion of the IBMS portfolio).*

## Programme learning outcomes

Upon successful completion of the programme students will be able to:

### Level 4

- 4.1 Describe the underlying concepts and principles of core aspects of Biomedical Science including Cell Biology, Genetics, Biochemistry, Molecular Biology, Human Anatomy and Physiology, Immunology, Microbiology
- 4.2 Present, evaluate and interpret qualitative and quantitative data, in order to develop research skills, lines of argument and make sound judgements in accordance with basic theories and concepts of Biomedical Science
- 4.3 Write scientific reports and communicate the results of their study/work accurately and reliably, and with structured and coherent arguments
- 4.4 Demonstrate a range of personal transferable skills including communication, information technology (including the use of databases, statistics and other sources of information and means of communication), team working, negotiating and decision-making skills that are required in a working environment and prepare you for lifelong learning
- 4.5 Demonstrate transferable skills necessary for employment, including personal responsibility; awareness of ethics; health and safety assessments; good laboratory practice and problem solving, quality control and assurance
- 4.6 Demonstrate the acquisition of technical skills and competency in core Biomedical Science laboratory-based techniques

### Level 5

- 5.1 Explain the well-established principles of Biomedical Science and critically analyse how those principles have developed
- 5.2 Develop technical skills and laboratory competence in the laboratory specialisms of cellular pathology, clinical biochemistry, clinical immunology, clinical genetics and microbiology, plus haematology and transfusion science
- 5.3 Select, evaluate and appraise research, experimental and clinical laboratory techniques and be able to apply them to theoretical, experimental and laboratory investigations
- 5.4 Communicate information in a variety of formats to specialist and non-specialist audiences, through interpretation and critical review of scientific research literature
- 5.5 Prepare, process, analyse (including numerical and statistical analysis) and interpret experimental/clinical laboratory data and present data in an appropriate format; applying creative, critical and analytical thinking to tackle and solve problems
- 5.6 Develop entrepreneurial skills and team-working through creative thinking and applying new and interesting approaches to a problem or situation.

### Level 6

- 6.1 Source and interpret scholarly research, in order to critically evaluate key aspects of Biomedical Science
- 6.2 Generate and critically analyse complex data and synthesise complex ideas to develop advanced techniques at the forefront of Biomedical Science, using current research in the discipline, as demonstrated by the research project
- 6.3 Organise and plan academic and laboratory work; evaluate ethical considerations; make use of scholarly reviews and primary sources and undertake autonomous learning
- 6.4 Demonstrate autonomous data interpretation and the acquisition of advanced technical skills, by independent analysis and evaluation
- 6.5 Apply and evaluate empirical knowledge, entrepreneurial skills and creative problem solving appropriate to Biomedical Science.
- 6.6 Manage and reflect critically upon own learning.

## Programme structure

The curriculum is designed to enable you to develop the necessary level of knowledge of Biomedical Science suitable for a career as a Biomedical Scientist or as a scientist in one of the many other professions that you can choose to follow. In Level 4, you will study normal human biology plus some microbiology and immunology at the level of the molecule, gene, cell, organ and organism. Laboratory sessions, run in conjunction with the theoretical components, will give you the opportunity to enhance your understanding of particular topics. You will be introduced to basic laboratory skills, alongside qualitative and quantitative data handling / interpretation. You will also develop your key skills during Level 4 and you will start to develop a progress file. You will be encouraged to develop a reflective attitude to your learning and develop numerical, written and oral communication, IT and group working skills.

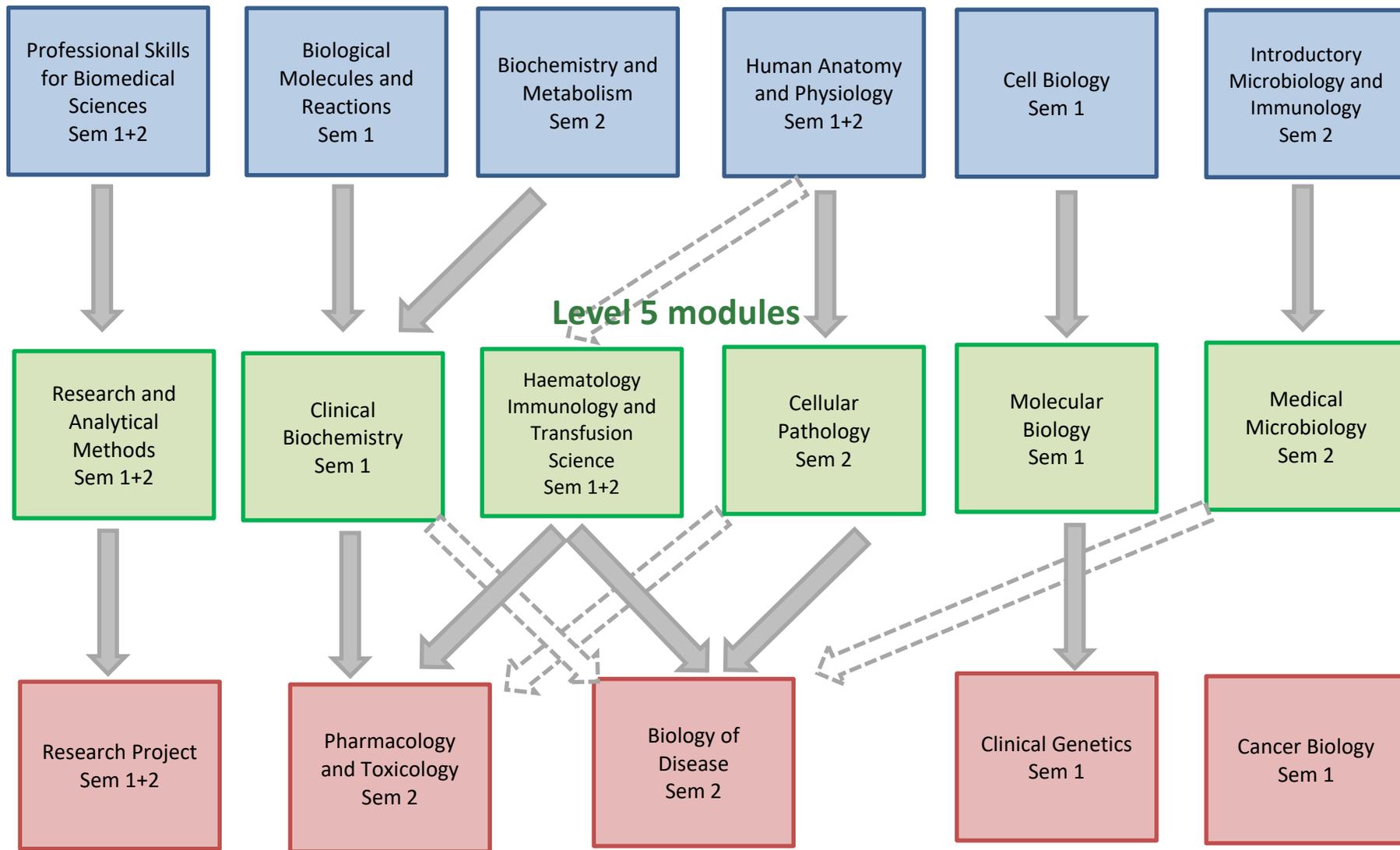
In Level 5, the curriculum continues to concentrate on core areas of Biomedical Science, in particular, the laboratory disciplines. You will start to examine the processes that disrupt normal human biological function and so cause disease. You will also explore the methods used to diagnose and treat disease. You will also develop personal transferable skills and reflect on how these will prepare you for the working environment. You will be encouraged to self-evaluate your skills and identify and address areas for improvement. In Level 5 you will increase your depth of knowledge and laboratory and data handling skills and will develop autonomy in your learning by producing individual and group work and take increasing responsibility for achieving the learning outcomes of your modules and level of study. Case studies and workshop material in Level 5 provides an opportunity for interaction with each other, discussion, debate and assimilation of ideas.

In Level 6 the curriculum continues to allow you to develop your knowledge and understanding of human disease and you will study in depth a range of current research informed topics in Biomedical Science. You will gain an appreciation of: the pathogenic mechanisms (endogenous and exogenous) associated with the development, progression, manifestation and complications of disease in human beings; a range of diseases which affect particular organs/tissues and the accompanying changes in biochemistry, morphology and physiology, both locally and systemically; the laboratory diagnosis and management of a range of human diseases.

Ethics / COSHH, health and safety training and Good Laboratory Practice are addressed throughout the programme in the BIO4001M *Personal and Professional Development*, BIO5001M *Research and Analytical Methods* and BIO6001M *Research Project* modules. A *viva voce* in BIO5001M *Research and Analytical Methods* and BIO6005M *Pharmacology and Toxicology* modules prepare you for analogous situations after graduation, in either further study or in job interviews. You will also be given "live briefs" to work on and then discuss with visiting practitioners and lecturers to gain insight into real life issues and work-based learning in a variety of employment settings and develop your own professional standards.

You will also continue to reflect upon ways to improve your own learning and performance and to develop autonomous learning skills. Laboratory sessions along with the research project will allow you to improve your data handling and critical interpretation skills and increase the autonomy with which you can apply them. You will be expected to take increasing responsibility for your own learning, organisation and planning of academic and laboratory work, as well as group and individual outcomes. Throughout the curriculum you will have the opportunity to develop the skills associated with biomedical laboratory practice, professional standards and the importance of quality control and quality assurance.

## Biological Sciences Level 4 modules



## Level 6 modules

## Modules for BSc (Hons) Biomedical Science

Code	Level	Semester	Title	Credits	Module status	
					compulsory or optional to take <b>C or O</b>	non-compensatable or compensatable <b>NC or X</b>
BIO4001M	4	1&2	Personal and Professional Development	20	C	NC
BIO4002M	4	1&2	Human Anatomy and Physiology	20	C	NC
BIO4003M	4	1	Biological Molecules and Reactions	20	C	NC
BIO4004M	4	1	Cell Biology	20	C	NC
BIO4005M	4	2	Biochemistry and Metabolism	20	C	NC
BIO4006M	4	2	Introductory Microbiology and Immunology	20	C	NC
BIO5001M	5	1&2	Research and Analytical Methods	20	C	NC
BIO5002M	5	1&2	Haematology, Immunology and Transfusion Science	20	C	NC
BIO5003M	5	1	Clinical Biochemistry	20	C	NC
BIO5004M	5	1	Molecular Biology	20	C	NC
BIO5005M	5	2	Medical Microbiology	20	C	NC
BIO5006M	5	2	Cellular Pathology	20	C	NC
BIO6001M	6	1&2	Research Project	40	C	NC
BIO6002M	6	1	Cancer Biology	20	C	NC
BIO6003M	6	1	Clinical Genetics	20	C	NC
BIO6004M	6	2	Biology of Disease	20	C	NC
BIO6005M	6	2	Pharmacology and Toxicology	20	C	NC

A part time route, where you can study these modules over 6 years is available. Please contact the Subject Director for more information.

See the next page for the modules for BSc (Hons) Biological Science

## Modules for BSc (Hons) Biological Science

Code	Level	Semester	Title	Credits	Module status	
					compulsory or optional to take <b>C or O</b>	non-compensatable or compensatable <b>NC or X</b>
BIO4001M	4	1&2	Personal and Professional Development	20	C	X
BIO4002M	4	1&2	Human Anatomy and Physiology	20	C	X
BIO4003M	4	1	Biological Molecules and Reactions	20	C	X
BIO4004M	4	1	Cell Biology	20	C	X
BIO4005M	4	2	Biochemistry and Metabolism	20	C	X
BIO4006M	4	2	Introductory Microbiology and Immunology	20	C	X
BIO5001M	5	1&2	Research and Analytical Methods	20	C	X
BIO5002M	5	1&2	Haematology, Immunology and Transfusion Science	20	C	X
BIO5003M	5	1	Clinical Biochemistry	20	C	X
BIO5004M	5	1	Molecular Biology	20	C	X
BIO5005M	5	2	Medical Microbiology	20	C	X
BIO5006M	5	2	Cellular Pathology	20	C	X
BIO6001M	6	1&2	Research Project	40	C	NC
BIO6002M	6	1	Cancer Biology	20	C	X
BIO6003M	6	1	Clinical Genetics	20	C	X
BIO6004M	6	2	Biology of Disease	20	C	X
BIO6005M	6	2	Pharmacology and Toxicology	20	C	X

### Learning, teaching and assessment

The teaching, learning and assessment strategy takes into consideration the learning outcomes for the programme, progression through levels of study, the nature of topic studied and the need for you to demonstrate greater autonomy in your learning as you progress through the programme. We believe that our broad portfolio of assessments is a driver for learning, ensures learning outcomes are met, rewards success and provides excellent student feedback.

In each of the modules you will be exposed to a range of learning, teaching and assessment approaches to actively engage you in the ways of thinking and practicing in the discipline of Biomedical Science. Typically within modules, you will be guided through several themes over the course of a semester or year. For example, module BIO4003M *Biological Molecules and Reactions* will consider molecular structure, functional groups and reaction mechanisms over the semester. Your learning in relation to these themes will be facilitated by: lecture / workshop sessions that provide an overview of the theory in the area; give you the opportunity to discuss theory and application to practice and test out your understanding with peers and the tutor and practical sessions to teach you relevant skills and carry out experiments. These core sessions will be supplemented by formative activities in the laboratory to complete related practical tasks, the Virtual Learning Environment where you will complete a self-assessment quiz or piece of reading and revision sessions to discuss your academic development in the topic area.

In level 4 this will be highly structured, with tasks to 'scaffold' learning and help you make the transition into university, however as your studies progress you will be expected to manage your own learning and undertake independent tasks. In particular you will be encouraged to critically engage with research literature and discuss how evidence can be used to support and develop theory and practice.

Assessment on the programme has been designed to ensure that it supports your learning, in addition to monitoring your skills and understanding. This means that formative assessments are integral to all modules and are designed to engage you with meaningful feedback and develop an ability to self-evaluate, prior to submission of the summative work. As you progress through your Biomedical Science degree, the assessments change and become more challenging to reflect the increase in your knowledge and abilities. Hence in level 4 you will encounter a number of short tests to determine knowledge and practical reports to give you the opportunity to gain experience in report writing, data handling and interpretation and scientific writing. In levels 5 and 6 you will demonstrate increasing skills of analysis, synthesis and criticism through a wide variety of assessment strategies, including written and oral examinations, report writing, case studies, group work, essays, scientific writing, presentations and the research project report. In particular, the project report provides a major opportunity to demonstrate autonomy in data handling and critical interpretation in a research context. All these assessment have been carefully scheduled to ensure they are progressive and well-spaced throughout the programme.

Academic engagement is supported via regular feedback from academic tutors and module leaders, in order to facilitate your development and improve your engagement with your studies. You can discuss suggestions for performance improvement with both academics and peers and the Study Development Team. The use of formal and informal feedback throughout the modules will develop your ability to evaluate your progress and build confidence. The programme design allows you to develop many skills that can be applied to new tasks and situations and helps you to engage with the curriculum. Technical skills will be assessed by a range of laboratory competency-based assessments in addition to the practical classes, data analysis and interpretation and technical badges awarded throughout the programme. Transferable skills will be assessed via a range of assessment types including written and oral communication, group working and problem solving. Details of the specific skills assessment throughout the programme can be found in all module descriptors.

## **Progression and graduation requirements**

The University's general [regulations](#) for undergraduate awards apply to this programme.

Any modules that must be passed for progression or award are indicated in the Programme Structure section as non-compensatable.

In addition, the following programme-specific regulations apply in respect of progression and graduation:

- There is no compensation for the Biomedical Science programme, in accordance with the Institute of Biomedical Science accreditation criteria. Students must demonstrate that they have met the learning outcomes for all core aspects of the Pathology disciplines throughout the degree. This means that 120 credits must be passed at 40 or higher in order to progress between levels and be eligible for a final award of BSc (Hons) Biomedical Science.
- If you have been unsuccessful in a module that is non-compensatable at levels 4 and 5, but you still meet the University's general regulations in respect of progression you may be able to transfer to the BSc (Hons) Biological Sciences and progress to the next of study. If you were to be transferred to this exit award then all modules that were previously NC would now be regarded as compensatable instead, the standard University regulations for awards apply.
- If you have not met the credit requirements for the BSc (Hons) in Biomedical Science but have achieved the regulatory credit requirements for the award of an Honours degree, you are eligible for the award of BSc (Hons) Biological Sciences. If you have met the credit requirements for an Ordinary degree, you are eligible for the award of a BSc (Ord) Biological Sciences.

## Internal and external reference points

This programme specification was formulated with reference to:

- [University mission and values](#)
- [University 2026 Strategy](#)
- [QAA subject benchmark statements](#)
- [Frameworks for Higher Education Qualifications](#)
- HCPC Standards of proficiency for Biomedical scientists (updated on 1/12/14) <http://www.hcpc-uk.org/publications/standards/index.asp?id=40>

The aims and outcome statements have been referenced to the University's Learning and Teaching and Assessment Strategy, the QAA Subject Benchmark statement and IBMS accreditation criteria, the Framework for Higher Education Qualifications (2013) and the Health and Care Professions Council (HCPC) Standards of Proficiency (2014)

Further information on the programme of study may be obtained from:

- Admissions entry profile (Admissions)
- Programme validation document (Registry – Academic Quality Support)
- Regulations (Registry – Academic Quality Support)
- Student programme handbook (School of Health Sciences)
- Module handbooks (School of Health Sciences)

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*Date written / revised: 16/06/19; Dec 2019*

*Programme originally approved: 22/05/19*