

## Programme Specification

### BSc (Hons) Biological Sciences

(Degree apprenticeship)

<i>School:</i>	Science, Technology and Health
<i>Subject area:</i>	Biomedical Science
<i>Entry from academic year:</i>	2022-23
<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>	N/A
<i>Exit awards:</i>	Certificate of Higher Education Biological Sciences Diploma of Higher Education Biological Sciences BSc (Ord) Biological Sciences
<i>UCAS code / GTTR / other:</i>	
<i>Joint Honours combinations:</i>	Not applicable
<i>QAA subject benchmark statement(s):</i>	Biosciences (2015) and the Level 6 degree apprenticeship in Laboratory Science (Life Sciences) standard
<i>Mode/s of study:</i>	Non-standard period of study as follows: <ul style="list-style-type: none"><li>• full-time normally for 4 years</li></ul>
<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

The degree apprenticeship in Biological Sciences provides a multidisciplinary approach to the study of human biology. 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 biological research to develop new diagnostic procedures as well as future scientific strategies, in the context of their own laboratory discipline.

As a graduate from this degree apprenticeship in Biological Sciences, 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 laboratory-based or non-laboratory based scientist in the Pharmaceutical or Biotechnology Industry and other related industries or academic research. Your degree apprenticeship provides a qualification to enhance 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 degree apprenticeship in Biological Sciences programme has been mapped to both the QAA benchmark statement for Biosciences and the Level 6 degree apprenticeship in Laboratory Science (Life Sciences) standard. This ensures the quality and appropriate content of the programme of study. You will study the modules for the programme whilst enrolled as an apprentice at York St John University in a part time pattern, based on 20% 'off the job' model, to be agreed with your company laboratory and work based supervisor / manager.

For this 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 supported open learning activities and extensive laboratory experience in the workplace. You will also have online learning activities both within modules and also as part of extra-curricular self-development, which you will record in an electronic portfolio that can be presented to current employers. In addition, embedded professional development and reflective practice, an individual level 6 research project (and written report) and relevant work-related laboratory experience plus completion of your vocational competence evaluation log 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 several modules. The degree apprenticeship in Biological Sciences 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 and will be further enhanced by the work-based learning and log book completion that you will also undertake during your studies. You will complete two gateway assessments as part of your degree apprenticeship, facilitated in the workplace laboratory. Once you have completed all modules (360 credits), you will also undertake a work based end point assessment (EPA) which will take place during the last 3 months of the apprenticeship and will comprise of a review of behaviours evaluation log; a presentation of a workplace synoptic project; a vocational competence discussion and a scenario case study.

## Admissions criteria

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

- Typically, candidates will have 5 GCSE's at grade C or above, including English, maths and a science subject and hold relevant level 3 qualifications providing the appropriate number of UCAS points for entry to a level 6 Higher Education programme.
- Other relevant or prior experience may also be considered as an alternative.

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.yorks.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 [Recognition of prior learning \(RPL\)](#). 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 Biological Sciences 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, core discipline specific skills and research skills and understanding in Biological Sciences as defined in the curriculum to reflect the Subject Benchmark Statement for Biosciences.
- Develop personal transferable skills which enhance your employability and / or aptitude for further education.
- Provide an apprenticeship route that enables you to gain a degree level qualification, following successful completion of all modules, gateway assessments and end point assessment. \*
- Provide a supportive and structured environment in which you are encouraged to develop the independent study skills required for lifelong learning.

\* *The gateway assessments are coordinated between the University and the workplace during the apprenticeship. The end point assessment with an external assessor will take place normally within 3 months of your completion of the programme modules.*

## 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 Biological Sciences 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 Biological Sciences
- 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

## **Level 5**

- 5.1 Explain the well-established principles of Biological Sciences and critically analyse how those principles have developed.
- 5.2 Evaluate and discuss 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 critical and analytical thinking and problem solving skills.

## **Level 6**

- 6.1 Source and interpret scholarly research, in order to critically evaluate key aspects of Biological Sciences.
- 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.

## **Programme structure**

You will study the modules over a four year period and will split some Level 4 and Level 5 modules over the first 2 years of study. Your second and third year of study will involve the Level 5 and 6 modules.

The curriculum is designed to enable you to develop the necessary level of knowledge of Biological Sciences suitable for a career as a scientist. 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.

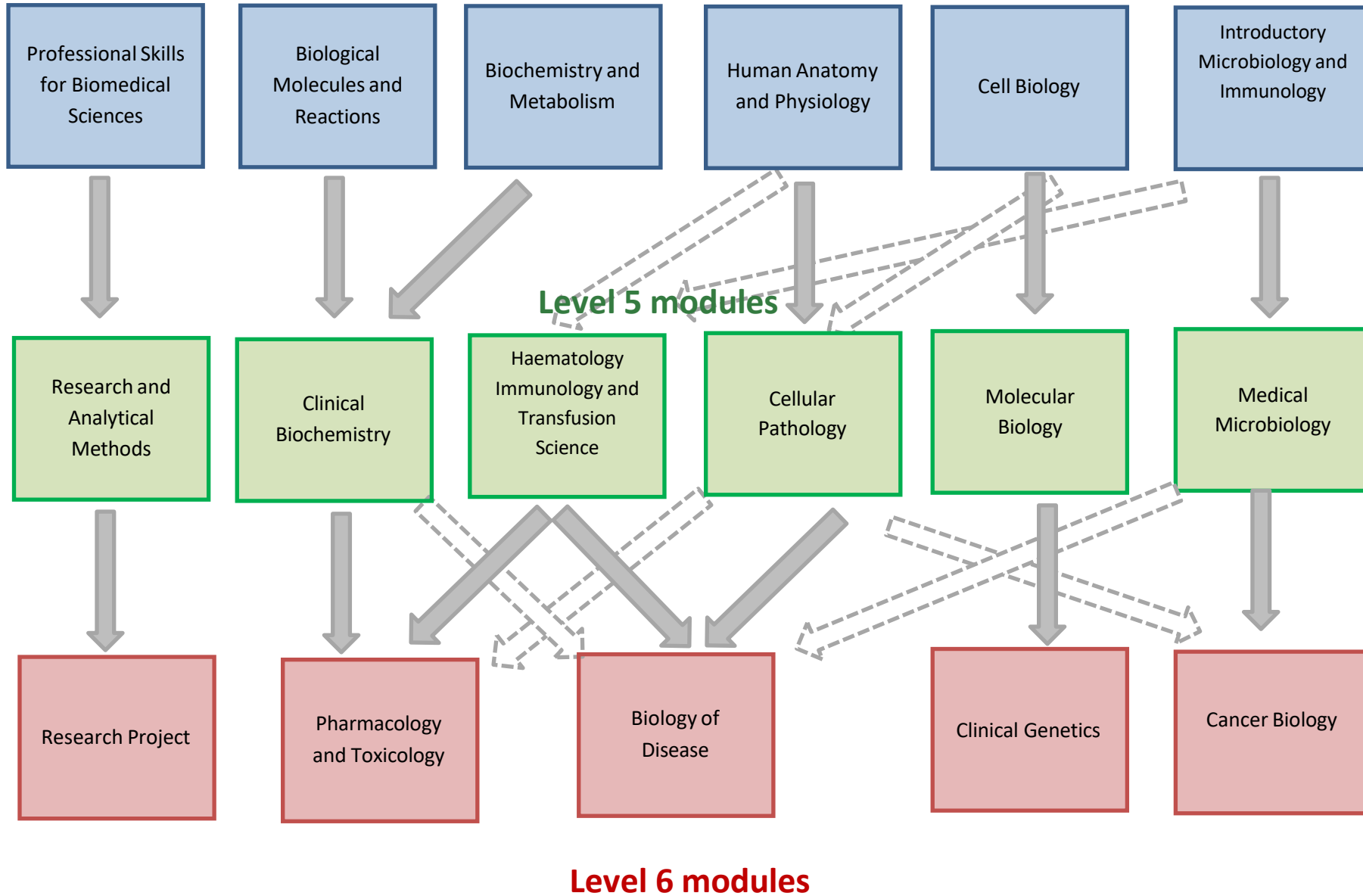
In Level 5, the curriculum will examine the processes that disrupt normal human biological function and so cause disease. You will also explore the methods used to diagnose and treat disease. You will also develop personal transferable skills and reflect on how these will prepare you for the working 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 Biological Sciences. 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 BIO6000M *Research Project* modules and through the work placed logbook. A *viva voce* in BIO5001M *Research and Analytical Methods* and BIO6005M *Pharmacology and Toxicology* modules prepare you for analogous situations, including the end point assessment. 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



## Modules for the Programme

All modules are compulsory.

(Modules BIO4001M, BIO4002M, BIO5004M and BIO6003M are to be taught via bespoke learning or tutorials on campus days and modules BIO4004M, BIO4006M, BIO5006M, BIO5001M, BIO6005M and BIO6000M will be taught via flipped learning / tutorials outside the normal 24 week semesters).

*Note: This route is suggested for apprentices who undertake the whole 360 credits. The degree apprenticeship could be modified such that apprentices can use a level 4 apprenticeship achieved elsewhere (if it maps well to the modules delivered in level 4) to complete a shorter version of this programme, for example by entering level 5 of study. All such applications will be assessed on a case by case basis. Each module is currently timetabled on one day of the week and the days indicated are the current day for each module*

### Year 1 – 100 credits

Code	Level	Semester	Day	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	Sem 1 + 2 Thurs	Personal and Professional Development <i>(to include work-based learning / logbook)</i>	20	C	X
BIO4003M	4	1	Thursday	Biological Molecules and Reactions	20	C	X
BIO4005M	4	2	Thursday	Biochemistry and Metabolism	20	C	X
BIO4002M	4	Summer	Flipped Learning	Human Anatomy and Physiology	20	C	X
BIO4006M	4	Summer	Flipped Learning	Introductory Microbiology and Immunology	20	C	X

**Year 2 – 100 credits**

Code	Level	Semester	Day	Title	Credits	Module status	
						compulsory or optional to take <b>C or O</b>	non-compensatable or compensatable <b>NC or X</b>
BIO5001M	5	1	Tuesday	Research and Analytical Methods <i>(to include work-based learning / logbook)</i>	20	C	X
BIO5003M	5	1	Tuesday	Clinical Biochemistry	20	C	X
BIO5006M	5	2	Tuesday	Cellular Pathology	20	C	X
BIO5004M	5	Summer	Day release / flipped learning	Molecular Biology	20	C	X
BIO4004M	4	Summer	Flipped Learning	Cell Biology	20	C	X

*Progression point to Level 5 after 2 years – all Level 4 modules completed*

**Gateway assessment one – 18-20 months after starting the programme**

**Year 3 – 60 credits (+ start of 40 credit research project work split over the summer and Year 4)**

Code	Level	Semester	Day	Title	Credits	Module status	
						compulsory or optional to take <b>C or O</b>	non-compensatable or compensatable <b>NC or X</b>
BIO5005M	5	2	Day release / distance learning	Medical Microbiology	20	C	X
BIO5002M	5	1&2	Friday	Haematology, Immunology and Transfusion Science	20	C	X
BIO6003M	6	Summer	Flipped Learning	Clinical Genetics	20	C	X
BIO6000M	6	Summer before Year 4*	N/A	Research Project (DA) <i>(to include work-based learning / logbook)</i>	40	C	NC

*Progression point end of year 3 when Level 5 completed*

**Start research project preparation / literature reviews in the summer before the final year starts**



## Year 4 – 100 credits

Code	Level	Semester	Day	Title	Credits	Module status	
						compulsory or optional to take <b>C or O</b>	non-compensatable or compensatable <b>NC or X</b>
BIO6000M	6	1&2	N/A	Research Project (DA) <i>(to include work-based learning / logbook)</i>	40	C	NC
BIO6002M	6	1	Thursday / Friday	Cancer Biology	20	C	X
BIO6004M	6	2	Thursday / Friday	Biology of Disease	20	C	X
BIO6005M	6	Summer	Flipped Learning	Pharmacology and Toxicology	20	C	X

*Complete all modules by June and go through exam board – have until October to complete EPA and graduate in November*

The *Research Project* is to be carried out in the workplace. 100 hours to be spent on the laboratory based collection of data to be equivalent to the full time research project at YSJ

### Gateway assessment two

#### End point assessments (EPA) to include:

1. Review of behaviours evaluation log
2. Presentation of a workplace synoptic project
3. A vocational competence discussion
4. Scenario case study

The EPA will cover all elements of the apprenticeship standard and will lead to the graded apprenticeship award and Registered Scientist status.

## 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 laboratory. 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 relevant to the workplace. 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 Laboratory Scientist degree apprenticeship, the assessments change and become more challenging to reflect the increase in your knowledge and abilities. Hence in the first year 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 that are directly transferable to your workplace tasks. In Level 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 research project that is carried out in the workplace provides a major opportunity to demonstrate autonomy in data handling and critical interpretation in a research context. All these assessments 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.

You will undertake two modules per year with the undergraduate Biomedical Science students in addition to your bespoke modules delivered alongside / outside normal semester dates. Flipped learning in these bespoke modules will involve all taught material being provided in advance on the VLE, followed by small group tutorials to go through the content.

## 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.

This programme does not permit the option to study part time to redeem progression failure in level 4 and 5 due to a PSRB requirement

## Internal and external reference points

This programme specification was formulated with reference to:

- [University Mission Statement](#)
- [QAA benchmark statement 2015](#)
- [www.qaa.ac.uk/en/publications/documents/SBS-Biosciences-15.PDF](http://www.qaa.ac.uk/en/publications/documents/SBS-Biosciences-15.PDF)
- Framework for Higher Education Qualifications (updated Oct 2013)
- <http://www.qaa.ac.uk/publications/information-and-guidance/publication?PubID=182#.VIHEUdKDmm4>
- [The Institute for Apprenticeships Laboratory Scientist Degree standards 2018](#)
- <https://www.instituteforapprenticeships.org/apprenticeship-standards/laboratory-scientist-degree/>

The aims and outcome statements have been referenced to the University's Learning and Teaching and Assessment Strategy, the QAA Subject Benchmark statement, the Framework for Higher Education Qualifications (2013) and the [Institute for Apprenticeships Laboratory Scientist Degree standards \(2018\)](#).

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: 16/06/2019; Dec 2019*

*Programme originally approved: 22/05/2019*