

## Programme Specification

### BSc (Hons) Applied Biomedical Science

(Degree apprenticeship)

<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
<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>	Biomedical Science (2019)
<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

This degree apprenticeship in Applied 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. Apprentices will gain an understanding of biomedical science research as well as new therapeutic intervention strategies. As a graduate from this degree apprenticeship accredited by the Institute of Biomedical Science (IBMS) you will have a broad-based scientific education coupled with relevant and current technical skills required in laboratory work.

All apprentices on this programme will be employed in NHS laboratories that have IBMS accreditation and will complete their Applied Biomedical Science programme in four years, by attending University via a 20% off the job pattern. Your degree apprenticeship provides a qualification to enhance your professional career, through completion of the BSc honours degree programme alongside the IBMS Registration Portfolio. You will demonstrate that you meet the Health and Care Professions Council (HCPC) Standards of Proficiency through your successful completion of the IBMS registration portfolio in the integrated placement module.

Before the end of your fourth year of study, your laboratory-based trainer will organise for the verification of the Registration Portfolio to take place. Following successful completion of the IBMS portfolio and your

Level 6 modules, colleagues in Registry at the University will contact the IBMS with a list of names of the apprentices to be awarded the Applied Biomedical Science award. The IBMS Certificate of Competence will then be awarded to you after your final year of study. The IBMS will also notify the Health and Care Professions Council (HCPC) of the names of apprentices that have successfully completed their verification of the Registration Portfolio and the BSc Applied Biomedical Science programme to be admitted to the register as Biomedical Scientists. This will allow you to practice as a Biomedical Science Practitioner in NHS laboratories.

You will need to continue to develop skills throughout your working life. Therefore, this programme couples a scientific education with the development of the skills necessary for lifelong learning.

### **Special features**

This degree apprenticeship in Applied Biomedical Science has been mapped to both the QAA benchmark statement for Biomedical Science (2019) and the Level 6 Healthcare Science Practitioner degree apprenticeship 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 laboratory and work-based supervisor / manager, but primarily based on day release.

For this programme, bespoke laboratory facilities 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 at your end point assessment. In addition, embedded professional development and reflective practice, an individual level 6 research project (and written report) plus completion of your vocational competence evaluation log will integrate your work-based learning. Through your taught modules, 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 Applied Biomedical Science 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 completion of the behaviours evaluation log that you will also undertake during your studies.

Each apprentice will complete an end-point assessment (EPA) prior to completion of the apprenticeship. The EPA is a synoptic assessment that requires apprentices to apply all of the learning and skills developed during the apprenticeship. It consists of three elements which are assessed by an Independent Assessor:

- 1) Readiness for Practice Test (RPT) which is a type of situational judgment test;
- 2) Professional Discussion (PD) based on the apprentice's portfolio or record of evidence, and
- 3) Presentation and Review of the apprentice's research project completed as partial fulfilment of the BSc.

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 [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 Applied Biomedical Science for apprentices 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 work-based practice 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 will be verified before the completion of Level 6 as part of the Applied Biomedical Science degree apprenticeship to allow you to pass the Placement module.*

## **Programme learning outcomes**

Upon successful completion of each level of study, apprentices 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

### **Level 5**

- 5.1 Describe the well-established principles of Biomedical Science 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, and interpret and critically review scientific literature
- 5.5 Prepare, process, analyse (including numerical and statistical analysis) and interpret experimental/clinical laboratory data and present data in an appropriate format; through interpretation and critical review of scientific research literature

### **Placement Module (completion of the IBMS Registration Portfolio)**

- P.1 Demonstrate competency in the standards of proficiency of the Health and Care Professions Council (HCPC), by successful completion of the IBMS Registration Training Portfolio.

### **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. Synthesise complex ideas and 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.

*You will complete the IBMS registration portfolio during your 4 years of study and must be successfully verified in order to graduate with an Applied Biomedical Science award.*

The curriculum is designed to enable you to develop the necessary level of subject knowledge to start your career as a Biomedical 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 develop 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.

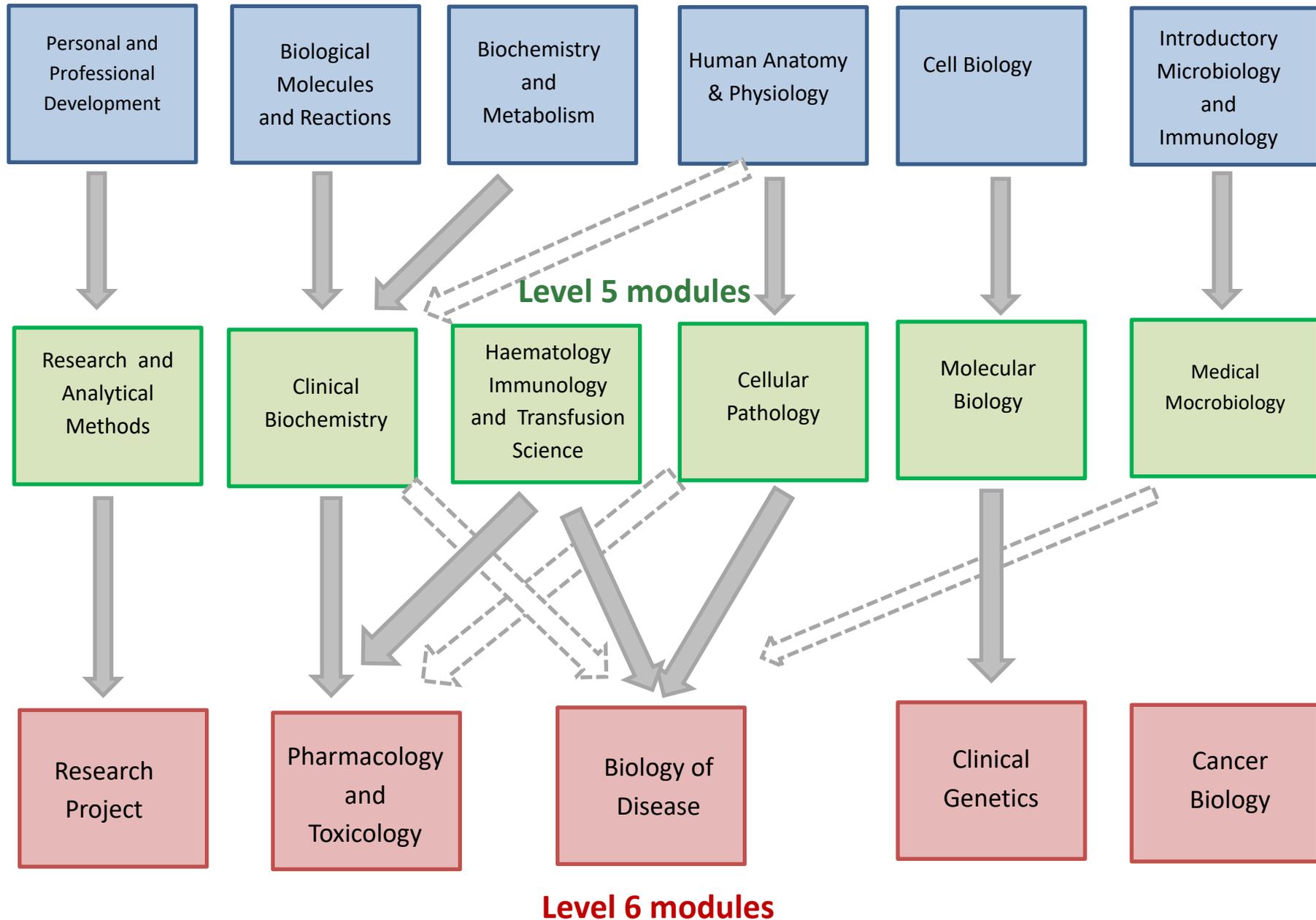
In Level 5, the curriculum continues to concentrate on core areas of Biomedical Science, in particular, the laboratory disciplines. You will start to examine the processes that disrupt normal human biological function and so cause disease. You will also explore the methods used to diagnose and treat 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 *Professional Skills for Biomedical Sciences*, 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 work 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.

## Applied Biomedical Science (apprenticeship route) 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, BIO4005M, BIO5006M, BIO5001M, BIO6005M and BIO6001M will be taught via flipped learning / tutorials outside the normal 24-week semesters).

### 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	20	C	NC
BIO4003M	4	1	Thursday	Biological Molecules and Reactions	20	C	NC
BIO4005M	4	2	Thursday	Biochemistry and Metabolism	20	C	NC
BIO4004M	4	Summer	Flipped learning	Cell Biology	20	C	NC
BIO4006M	4	Summer	Flipped learning	Introduction to Microbiology and Immunology	20	C	NC

### 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>
BIO4002M	4	1&2	Day release / distance learning	Human Anatomy and Physiology	20	C	NC
BIO5003M	5	1	Tuesday	Clinical Biochemistry	20	C	NC
BIO5006M	5	2	Tuesday	Cellular Pathology	20	C	NC
BIO5004M	5	Summer	Flipped learning	Molecular Biology	20	C	NC
BIO5001M	5	Summer	Flipped learning	Research and Analytical Methods	20	C	NC

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

### 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	NC
BIO5002M	5	1&2	Friday	Haematology, Immunology and Transfusion Science	20	C	NC
BIO6003M	6	Summer	Flipped learning	Clinical Genetics	20	C	NC
BIO6001M	6	Summer before Year 4*	N/A	Research Project		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>
BIO6001M	6	1&2	Workplace	Research Project <i>(to include work-based learning / logbook)</i>	40	C	NC
BIO5007P		Year long	Workplace	Placement Module for Applied Biomedical Science	0	C	NC
BIO6002M	6	1	Thursday / Friday	Cancer Biology	20	C	NC
BIO6004M	6	2	Thursday / Friday	Biology of Disease	20	C	NC
BIO6005M	6	Summer	Day release / flipped learning	Pharmacology and Toxicology	20	C	NC

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. The *Placement Module for Biomedical Science* is also completed in the workplace and is assessed by successful completion and verification of the IBMS Registration Portfolio and must be completed by the end of year 4 of study.

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

Three assessment components are taken on the same day as part of the same assessment event with the same Independent Assessor. Apprentices must achieve a Pass, or better, in each of the three components to successfully complete the EPA. The EPA components are:

- i. a 1 hour written Readiness for Practice Test (RPT) (which is a type of situational judgement test) which is set by the university or the AO;
- ii. a face-to-face Professional Discussion (PD) between the apprentice and a trained Independent Assessor (who has not been involved in the education or training of the apprentice) for the degree model or a trained AO Independent Assessor. The Professional Discussion is based on the apprentice's record of evidence/portfolio (that includes a Competency Log of Skills) and which should take approximately 40 minutes. AOs will provide assessors with guidance on the aims and purpose of the Professional Discussion, how it should be structured, how to prepare a series of questions to assess whether the apprentice has met the Standard, and how to grade the Discussion;
- iii. a research presentation of up to 15 minutes, followed by a 15-minute discussion and review of the presentation content with the Independent Assessor.

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

## 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.

## Workplace Evidence

Evidence of on-programme learning and development should be gathered, usually in a record of evidence or portfolio. Workplace supervisors will be required to support regular, on-programme assessment of the apprentice's development of competency and performance in the workplace, and to ensure that there is full and sufficient evidence of the apprentice's readiness to undertake the EPA.

A variety of assessment instruments are available for workplace assessment, e.g. Direct Observation of Practical Skills (DOPS), Observed Clinical Events (OCE) and Case based Discussions (CBD). It is also recommended that the apprentice engages in reflective writing to describe in their record of evidence/portfolio what they have learned about their personal and professional behaviours and what improvements they have been able to make during their apprenticeship. These reflective pieces are encouraged to promote life-long learning and as preparation activities for the Professional Discussion element of the EPA. Further information on the work-based formative and summative assessment and the underpinning PTP curricula can be found at <https://www.nshcs.hee.nhs.uk/curricula>.

## The End Point Assessment

Apprentices will be eligible to attempt the EPA upon attainment or completion of:

- Level 2 functional skills in English and Mathematics
- a record or portfolio of evidence that documents the assessments and tasks completed to demonstrate that the skills, knowledge and behaviours set out in the Standard have been achieved
- achievement of the BSc (Hons) degree (if a non-integrated degree)

If the apprentice is taking a non-integrated degree the employer, in discussion with the apprentice, will judge when the apprentice has achieved all of the above and is ready to attempt the EPA, using the processes of the appointed Assessment Organisation. The employer may wish to review reports from any trainers/training providers involved in supporting the apprentice throughout the programme to inform their judgment and ensure they are confident in their assessment of the apprentice's readiness to undertake the EPA.

## 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.

## Internal and external reference points

This programme specification was formulated with reference to:

- [https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-biomedical-sciences.pdf?sfvrsn=2bf2c881\\_4](https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-biomedical-sciences.pdf?sfvrsn=2bf2c881_4)
- <https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf>
- <https://www.instituteforapprenticeships.org/apprenticeship-standards/healthcare-science-practitioner-degree/>

The aims and outcome statements have been referenced to the University's Learning and Teaching and Assessment Strategy, the QAA Subject Benchmark statement (2019), the Framework for Higher Education Qualifications (2014) and the <https://www.instituteforapprenticeships.org/apprenticeship-standards/healthcare-science-practitioner-degree/> (2017).

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 Science Technology and Health)
- Module handbooks (School of Science Technology and Health)

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*Date written / revised: 5/12/2019*

*Programme originally approved: May 2022*