

Programme Specification

Programme title: **BSc (Hons) Healthcare Science (Life Sciences) with Genetics**
BSc (Hons) Healthcare Science (Life Sciences) with Blood Science
BSc (Hons) Healthcare Science (Life Sciences) with Cellular Science
BSc (Hons) Healthcare Science (Life Sciences) with Infection Science

Academic Year:	2018/19
Degree Awarding Body:	University of Bradford
Final and interim award(s):	BSc(Honours) [Framework for Higher Education Qualifications (FHEQ) level 6] BSc [Framework for Higher Education Qualifications (FHEQ) level 6] Diploma of Higher Education [Framework for Higher Education Qualifications (FHEQ) level 5] Certificate of Higher Education [Framework for Higher Education Qualifications (FHEQ) level 4]
Programme accredited by:	Institute of Biomedical Science (IBMS)* National School of Health Care Science (NSHCS) on behalf of Health Education England (HEE)* Health and Care Professions Council (HCPC)*
Programme approved by:	
Programme duration:	5 Years Part Time (apprenticeship)
QAA Subject benchmark statement(s):	Biomedical Science (2015)
Date of Senate Approval:	
Date last confirmed and/or minor modification approved by Faculty Board	March 2018

Introduction/Background

Healthcare Scientists and Biomedical Scientists play an essential role in the National Health Service. Encompassing 51 disciplines, the Healthcare Science (HCS) workforce is at the heart of safe and effective patient care; the workforce is central to high quality care for all and provides expert diagnostic advice and laboratory investigation for the treatment of patients and prevention of disease. The Department of Health (DoH), under the auspices of 'Modernising Scientific Careers (MSC)', has developed a new flexible career structure for all Healthcare Scientists underpinned by new education and training programmes and a regulatory framework to address the needs of future needs of the NHS. It is envisaged that MSC will enable patients to receive safer care, faster diagnoses closer to home and faster entry to the correct care pathway, and access to up to date innovative scientific services.

The University of Bradford introduced a new full time undergraduate programme in Healthcare Science in line with this initiative in 2010 followed in 2015 by a part-time version of the programme, to allow staff already employed in the NHS to undergo part-time training to up skill by obtaining an equivalent qualification to new graduates. A further government initiative has led to the development of a degree apprenticeship. The degree apprenticeship standard and end-point assessment for Healthcare Science practitioners is now available for delivery. Apprentices will be enrolled on the part-time programme to fulfil the requirements of the DfE.

This part time degree/degree apprenticeship is an 'outward facing' programme which fulfils a need identified by local and national service providers. Students will receive a relevant and contemporary training which will provide them with the appropriate knowledge and skills to enhance their career pathway in the NHS.

This part-time/apprenticeship programme will draw on existing programmes and expertise from the School of Medical Sciences; it will extend the portfolio of Biomedical, Clinical and Healthcare programmes available at The University of Bradford. The curriculum will be identical to that of the full-time programme but delivered over a period of 5 years.

Students will be expected to attend at university one half day or one full day per week. The day will not change mid semester but attendance in semester 1 may be on a different day to semester 2. The timetable will be produced well in advance and sponsoring lab will be informed. Students may also be required to attend on occasional Saturday mornings for lab practicals.

Students should currently be working in an NHS Pathology laboratory and have the full support of their employer to undertake this programme. Students will be expected to carry out work-based learning and competency assessment in the workplace. Some of this work will be carried out during the summer months (semester 3). The Programme involves a multidisciplinary approach to the study of human disease. It encompasses studies of the causes of disease and the effects of disease on the normal structure and functions of the human body and it provides an understanding of the scientific basis for the laboratory investigation, diagnosis, monitoring and treatment of disease. It also develops and applies new technologies that help improve the care of patients.

A graduate from this programme will have a broad-based scientific background coupled with technical skills necessary for laboratory work and more detailed knowledge and skills in a chosen specialism. The four pathways are Genetics, Blood Sciences, Cellular Sciences and Infection Sciences will have a strong specialist work-based training element in each year of study which will be integrated with the academic content.

Specifically, the degree programme is designed for graduates to meet the requirements of the Department of Health via the Health Education England (HEE), the Institute of Biomedical Science (IBMS), the Health and Care Professions Council (HCPC) and allow graduates to practice as a Healthcare Science Practitioner/Biomedical Scientist in NHS laboratories and demonstrate that the apprentice meets the outcomes of the HCSP Apprenticeship Standard. *For the purposes of external accreditation website, where reference is made to the BSc (Hons) Healthcare Science part time route, includes accreditation of the apprenticeship mode of delivery. It is anticipated that graduates from this programme will take up positions as HCPC registered Biomedical Scientists in their sponsoring laboratory after graduation. (subject to workforce planning) Even though students specialise in the final year, the generic nature of the registration portfolio will allow graduates to seek employment in any of the pathology disciplines. Alternatively, employment could be found as a laboratory-based or non-laboratory based scientist in the Pharmaceutical, Biotechnology or other related industries, academic research and teaching. In addition, whilst the degree provides a qualification necessary to start a professional career it will be

necessary to continue to develop skills throughout employment. This programme couples a scientific education with the development of the skills necessary for lifelong learning.

The aims and outcome statements and the supporting curriculum have been referenced to the University's Learning and Teaching Strategy (<https://www.bradford.ac.uk/about/media/about/Learning-and-Teaching-Strategy.pdf>), the QAA Subject Benchmark statement for Biomedical Science (<http://www.qaa.ac.uk/crntwork/benchmark>), the Modernising Scientific Careers Curriculum Strategy Group guidelines, the Framework for Higher Education Qualifications (<http://www.qaa.ac.uk/crntwork/ngf/ewni2001/contents.htm>), the IBMS portfolio of competence and HCPC standards.

Programme Aims

The programme is intended to:

- Deliver a programme of study in Healthcare Science for students from diverse cultural and educational backgrounds;
- Allow students to support themselves more effectively by taking a part-time route to an honours degree in Healthcare Science while continuing to work in an NHS laboratory.
- Enhance learning by providing specialist work-based training in all years of the programme;
- Develop subject knowledge and understanding in the core areas of Healthcare Science and the specialised areas of Genetics, Blood Sciences, Cellular Sciences or Infection Sciences to reflect the requirements of the Health Education England and the Subject Benchmark Statement(s);
- Develop an understanding of the organisation and role of the NHS;
- Develop an understanding of pathology and laboratory medicine in patient care including an awareness of the implications of ethnicity, gender as well as social and cultural diversity in health and disease;
- Develop an understanding of how the Healthcare Science workforce contributes to patient pathways relevant to Life Sciences and ensure the needs and wishes of the patient are central to their care;
- Demonstrate attitudes and behaviours essential to providing high quality care;
- Develop core discipline specific skills as outlined in the curriculum to reflect the requirements of Health Education England and the Subject Benchmark Statement(s);
- Develop research skills to reflect the requirements of Health Education England and the Subject Benchmark Statement(s);
- Develop personal transferable skills that enable students to progress successfully in employment, career development and/or further education;
- Provide a Health Education England, IBMS accredited and HCPC approved degree which will allow students to progress to employment as a Healthcare Science Practitioner/Biomedical Scientist in NHS laboratories;
- To enable the student to apply for registration with the Health and Care Professions Council (HCPC) as Biomedical Scientists or any other future protected title that is appropriate to the degree. Registration can be applied for after successful completion of the degree and following completion of the IBMS portfolio. The portfolio provides

evidence of achievement of the HCPC Standards of Proficiency for a Biomedical Scientist and leads to the award of a Certificate of Competence from the IBMS;

- Provide a supportive and structured environment in which students are encouraged to develop the independent study skills required for lifelong learning.

Programme Learning Outcomes

To be eligible for the non-accredited award of Certificate of Higher Education in Healthcare Science at FHEQ level 4, students will be able to:

- LO1 Discuss and evaluate specialist and core aspects of Healthcare Science (HCS) including Cell Biology, Biochemistry, Anatomy, Physiology, Pathology, Immunology, Microbiology, Epidemiology, Medical Physics and Public Health Medicine/Health Protection;
- LO2 Write scientific reports;
- LO3 Use the range of personal transferable skills including communication, information technology (including the use of the internet and other electronic devices as sources of information and means of communication), team working, negotiating and decision-making skills that are required in a working environment and prepare students for lifelong learning;
- LO4 Employ skills associated with professional and ethical laboratory practice with particular reference to HCS including the ability to undertake risk and CoSHH assessments, evaluate and apply health and safety policies, good laboratory practice and solve problems as well as respond appropriately to The Human Tissue Act 2004, governance, audit and quality control and assurance;

Additionally, to be eligible for a non-accredited award of Diploma of Higher Education in Healthcare Science at FHEQ level 5, students will be able to:

- LO5 Discuss and evaluate the organisation and role of the NHS and Pathology and Laboratory Medicine and the laboratory specialities of genetics, cellular pathology, clinical biochemistry, clinical immunology, haematology and transfusion science, and medical microbiology; demonstrate advanced knowledge and understanding of the chosen specialist area;
- LO6 Select and evaluate experimental and clinical laboratory techniques and be able to apply them to experimental and laboratory investigations;
- LO7 Prepare, process, analyse (including the statistical analysis) and interpret experimental/clinical laboratory data and present data in an appropriate format;

Students will be eligible to exit with a non-accredited award of Ordinary Degree of Bachelor in Healthcare Science if they have successfully completed at least 300 credits. *O denotes Ordinary.

Additionally, to be eligible for the award of Honours Degree of Bachelor at FHEQ level 6, students will be able to:

- LO8 Collect, interpret and critically review scientific literature; *O
- LO9 Apply skills in critical and analytical thinking, use and apply numerical and statistical techniques and use problem solving skills;
- LO10 Discuss and evaluate current research to develop new diagnostic procedures as well as new therapeutic intervention strategies;

LO11 Demonstrate the standards of proficiency required by HEE, IBMS and HCPC by successfully completing specialist work-based training.

LO12 Manage their own learning and undertake autonomous learning. *O

Curriculum

The curriculum is designed to provide a flexible study route permitting the maximum student choice consistent with the requirements of accreditation. The curriculum is designed to enable students to develop the necessary level of knowledge of Biomedical Science suitable for a career as a Biomedical Scientist. In the first and second year of the degree (level 4 and 5), all modules are core to ensure that students have the foundation in Biomedical Science required for further study. At level 4, normal human biology and some microbiology at the level of the molecule, gene, cell, organ and organism will be studied. Laboratory sessions run in conjunction with the theoretical components to allow the opportunity to enhance understanding of particular study topics. Basic laboratory skills and in skills in data handling and interpretation will be introduced. In level students will be introduced to the simulation Lecture Theatre which is used in the Human Physiology module to enhance teaching of basic anatomy and physiology processes. The integration of simulation technology, namely anatomage and to a lesser extent iStan is used to enhance the learning experience.

At level 5, the curriculum continues to concentrate on core areas of Biomedical Science in particular, the laboratory disciplines. Students will start to examine the processes that disrupt normal human biological function and so cause disease and will also explore the methods used to diagnose and treat disease. Again, laboratory sessions will give students the opportunity to enhance their understanding of some topics and will develop further, laboratory skills as well as skills in data handling and interpretation. Students will also be encouraged to develop further, personal transferable skills and reflect on how these prepare for the working environment. Students will be encouraged to self-evaluate their skills and identify and address areas for improvement. Specialist options are chosen towards the end of level 5 to ensure that the choice is informed by experience of all four disciplines and the work placement knowledge and understanding from semester 3, level 4.

At level 6 students will continue to develop knowledge and understanding of human disease with additional focus on diagnostic advances within healthcare and will study one of a range of current research topics in Biomedical Science within their specialism (Blood Sciences, Cellular Sciences, Infection Sciences or Genetics) in depth. Students will continue to reflect upon ways to improve their own learning and performance and develop autonomous learning skills through Work Based Learning 3. Laboratory sessions along with the research project (carried out within the workplace and with supervision from both the clinical and University staff teams) allow students to further enhance data handling and critical interpretation skills and increase the autonomy with which they can be applied. In addition, development of further numerical, written and oral communication, IT and group working skills are encouraged. At level 6, new resources have been integrated into the programme to reflect advances in digital learning. As part of the Diagnostic Histopathology module at level 6, anatomical study is enhanced using the Anatomage to present virtual dissection of tissues/organs, as an adjunct to learning in Autopsy and Digital Pathology. The most advanced subject material (state of the art) is taught as part of the module and content is research-led (e.g. imaging and cardiovascular diseases). In addition, students gain experience of the importance of knowledge that is research-led during the production of individual work-based research projects, which are focused on improving current practices in Biomedical Sciences/ Healthcare Science

Stage 1 – All Specialisms

Year	FHEQ Level	Module Title	Type (Core/option/elective)	Credits	Semester (s)	Module Code
1	4	Work based learning and Professional Practice 1	C	20	1-3	BIS4011-B
1	4	Introduction Biochemistry	C	20	1	BIS4007-B
1	4	Introductory Microbiology	C	20	2	BIS4013-B
2	4	Human physiology	C	20	1&2	BIS4009-B
2	4	Cell and Tissue Biology	C	20	1&2	BIS4008-B
2	4	Human Genetics and Developmental Biology	C	20	1&2	BIS4010-B

At the end of stage 1, students will be eligible to exit with the award of Certificate of Higher Education if they have successfully completed at least 120 credits and achieved the award learning outcomes. Alternatively, students may be able to transfer to the Biomedical Science degree.

Stage 2- All Specialisms

Year	FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
3	5	Work-based learning and Professional practice 2 for Healthcare Scientists	C	20	1-3	BIS5016-B
3	5	Clinical and Analytical Biochemistry	C	20	1	BIS5013-B
3	5	Pathology	C	20	2	BIS5015-B
4	5	Medical Microbiology	C	20	1	BIS5008-B
4	5	Immunology, Haematology and Transfusion Science	C	20	1&2	BIS5012-B
4	5	Molecular Genetics	C	20	2	BIS5014-B

At the end of stage 2, students will be eligible to exit with the award of Diploma of Higher Education if they have successfully completed at least 240 credits and achieved the award learning outcomes. Alternatively, students may be able to transfer to the Biomedical Science degree

Stage 3 – Genetics

Year	FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
4	6	Work-based learning and	C	30	1,2&3	BIS6024-C

		Professional Practice 3 for Healthcare Scientists				
5	6	Research Project for Healthcare Science	C	40	1&2	BIS6016-D
5	6	Medical Genetics	C	20	1	BIS6011-B
5	6	Independent Study	C	10	1	BIS6014-A
5	6	Biology of Disease	C	20	2	BIS6012-B

Stage 3 – Blood Science

Year	FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
4	6	Work-based learning and Professional Practice 3 for Healthcare Scientists	C	30	1,2&3	BIS6024-C
5	6	Research Project for Healthcare Science	C	40	1&2	BIS6016-D
5	6	Research Topics 1 in Haematology and Transfusion Science	C	20	1	BIS6013-B
5	6	Diagnostics in Biochemistry and Immunology	C	20	2	BIS6017-B
5	6	Pregnancy and Paediatric Blood Science	C	10	1	BIS6015-A

Stage 3 – Cellular Science

Year	FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
4	6	Work-based learning and Professional Practice 3 for Healthcare Scientists	C	30	1,2&3	BIS6024-C
5	6	Research Project for Healthcare Science	C	40	1&2	BIS6016-D
5	6	Clinical Diagnostics in Reproductive Science	C	20	1	BIS6018-B
5	6	Diagnostic Histopathology	C	20	2	BIS6019-B
5	6	Applications of Cytopathology	C	10	1	BIS6020-A

Stage 3 – Infection Science

FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
6	Research Project for Healthcare Science	C	40	1&2	BIS6016-D
6	Infectious Disease: Establishment, Treatment	C	20	2	BIS6021-B

	and Control				
6	Diagnostic Microbiology	C	20	1	BIS6022-B
6	Parasitology and Fungal Infections	C	10	1	BIS6023-A
6	Work-based learning and Professional Practice 3 for Healthcare Scientists	C	30	1,2&3	BIS6024-C

Students will be eligible to exit with the award of Ordinary Degree of Bachelor if they have successfully completed 120 credits in both Level 4 and 5 and 60 credits at level 6 and achieved the award learning outcomes.

Students will be eligible for the award of Honours Degree of Bachelor if they have successfully completed at least 360 credits and achieved the award learning outcomes.

Work Place Training

During the five years of the degree students will access the Department of Health Learning guide. This broadly uses the generic Health and Care Professions Council Standards of Proficiency and HCPC Standards of Conduct, Performance and Ethics, but contextualises these for Healthcare Science. The student will also complete the IBMS registration portfolio during the five years of the degree.

During the workplace training students will also complete work-based learning modules (20 credits in level 4 and 5 and 30 credits in level 6). These will be submitted to the University for marking at the end of stage 3, 4 and 5.

This training will equip students with a wide range of skills that will allow them to contribute to high-quality patient care. Upon successful completion of the programme, the student will be able to fulfil the role of a Healthcare Science Practitioner in the NHS.

In the workplace students will develop a professional relationship between service users and patients where appropriate.

Learning and Teaching Strategy

The learning and teaching strategy takes into consideration the learning outcomes for the programme, progression through stages of study, the nature of topic studied and the need for students to demonstrate greater autonomy in learning as student's progress through the programme.

Formal lectures will facilitate student's acquisition of knowledge and understanding (LO 1, 5, 10) and discipline specific skills (LO 4, 6, 7, and 8). Laboratory sessions run in conjunction with the theoretical components will give students the opportunity to enhance their understanding of particular topics (LO 1, 5, 10). These will also help to develop discipline specific skills (LO 4-9) and personal transferable skills (LO 3, 9 12). Tutorials, workshops and case studies will develop knowledge and understanding (LO 1, 5, 10), discipline specific skills (LO 4, 6, 7, 8) and personal transferable skills (LO 3-9). The discipline specific skills will be further enhanced in the bespoke 10 credit modules in stage 3 (LO 4, 6 and 8). Directed study, involving directed reading of appropriate texts and the preparation of assessed work, is used to develop the majority of learning outcomes (LO 1-12). The significant work-based training allows for the further development of all the learning outcomes (LO 1-12).

Some modules involve small group tasks where students are provided with meaningful activities to enhance learning using collaborative techniques. There is also opportunity for

collaborative learning with a range of healthcare professionals through the work-based learning modules and the work-placement (LO5, LO10)

Assessment Strategy

The assessment strategy is designed to allow students to demonstrate achievement of the learning outcomes of an individual module appropriate to the level of study and the learning outcomes of the programme. These learning outcomes are consistent with the Framework for Higher Education Qualifications. At level 4, students will be examined, primarily, on the breadth of knowledge via MCQ and short answer examinations (LO 1, 4, 10). Coursework assignments will give students the opportunity to gain experience in report writing and data handling and interpretation (LO 2,7,8). As student's progress through levels 5 and 6, they will have the opportunity to demonstrate increasing skills of analysis, synthesis and criticism through a wide variety of assessment strategies, including written and oral examinations (LO 5,6,7,8, 10), report writing (LO 1-12) group work (LO 5,6,7,8, 4, 8, 10, 12), essays, including a dissertation/ piece of independent study writing (LO 1-6, 8, 10-12), oral presentations (LO 1-5, 10, 8, 9, 12), case studies (LO 1-5, 7, 8, 8, 10, 12) and the project report (LO 1-12). The project report provides a major opportunity to demonstrate autonomy in data handling and critical interpretation in a research context. Student's professional competencies will be assessed primarily in the workplace through the work-based learning modules (LO 11) A memorandum of agreement will outline the responsibilities and accountability for achieving the outcomes and what support and guidance will be provided by the tutors. Successful completion of work-based training and the IBMS portfolio will be a requirement for registration to practice.

Assessment for students on the apprenticeship route includes an integrated employer-led synoptic end point assessment (EPA) which specifically ensures that the Apprenticeship Standard for the HCSP higher degree apprenticeship has been met. The assessment 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,
3. Presentation and Review of the apprentice's research project completed as partial fulfilment of the BSc.

Successful verification of the IBMS registration portfolio will also take place in the final weeks of the degree.

The academic level of knowledge, as well as the skills, knowledge and behavioural outcomes supports registration as a Healthcare Science Practitioner (with the Academy for Healthcare Science) and/or for the Life Sciences PTP, as a Biomedical Scientist (with the Health and Care Professions Council [HCPC]).

Assessment Regulations

This Programme conforms to the standard University Assessment Regulations which are available at the link below

<http://www.bradford.ac.uk/agpo/ordinances-and-regulations/>

However, there are a number of exceptions to these regulations as listed below:

The exceptions are:

1. There is no compensation. This means that all modules must be passed at 40% or higher in order to progress between stages and be eligible for a final award of BSc (Hons).
2. Students will be permitted to undertake a second attempt at the next available opportunity based on the credit attempted at each Board of Examiners. Thus a decision can be made when students do not have a full profile of marks

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

Applicants should currently be working in an NHS Pathology laboratory and have the full support of their employer to undertake this programme.

The **minimum** entry requirements for the programme will be 120 UCAS points (old tariff: 300 points) from a combination of "A" levels one of which should include Biology or Chemistry at A2 at least grade B. Other equivalent vocational qualifications will also be considered as suitable entry requirements (BTEC, NVQ3/4). Applicants should also hold Mathematics and English grade C (level 4) or above at GCSE. All applicants will be interviewed prior to an offer.

There will be some flexibility and applications are also welcome from students who have significant relevant work experience, but who do not meet the standard entry requirements. These applicants may be required to sit an entry assessment prior to any offer being made.

A student who has recently studied a syllabus as part of a previous qualification prior to enrolling on the Part-time HCS degree will be able to have their qualification assessed to identify whether credit can be given for any modules studied. This may mean that a student is not required to take a particular unit of the HCS degree.

The University of Bradford has always welcomed applications from disabled students, and these will be considered on the same academic grounds as are applied to all applicants. Applicants who have some form of disability may wish to contact the programme leader before they apply.

If applicants meet the entry requirements, they will be invited to the Faculty for an interview and will also have an opportunity to meet staff, view the facilities and discuss "the Bradford experience" with current students. Offers will be made subject to a successful interview.

Applications are welcome from students with non-standard qualifications or mature students (those over 21 years of age on entry) with significant relevant experience.

Successful applicants will be expected to undertake Disclosure and Barring Service check (DBS) and appropriate health checks.

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
2	Change to delivery period for BIS4008-B and BIS4010-B in response to Periodic Review outcomes for BSc Biomedical Science	07/03/2018