UNIVERSITY of BRADFORD

Faculty of Life Sciences

BSc (Hons) Biomedical Science Programme Specification

Academic Year:	2020-21
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)
Programme duration:	3 years – full-time
UCAS code:	C900
QAA Subject benchmark statement(s):	Biomedical Science (2015)
Date last confirmed and/or minor modification approved by Faculty Board	October 2020

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

Biomedical Science is a key healthcare science involving 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. Graduates will also be familiar with biomedical science research and the development of new diagnostic procedures, as well as new therapeutic intervention strategies.

Those graduating from a degree programme accredited by the Institute of Biomedical Science (IBMS) will have a broad-based scientific education coupled with 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 (after successful completion of the IBMS portfolio of competence in an accredited laboratory placement and registration with the Health and Care Professions Council after graduation), as a laboratory-based or non-laboratory based scientist in the Pharmaceutical Industry and other related industries, academic research and teaching.

However, whilst the degree provides a qualification necessary to start a professional career, graduates will need to continue to develop skills throughout their working life. This programme couples a scientific education with the development of the skills necessary for lifelong learning.

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

Programme Aims

The programme is intended to:

- deliver a programme of study in Biomedical Science for students from diverse cultural and educational backgrounds;
- enhance learning by providing a choice of study options to suit students' interests and/or career aspirations;
- develop subject knowledge and understanding in the core and optional areas of Biomedical Science as defined in the curriculum to reflect the Subject Benchmark Statement; including an awareness of the implications of ethnicity, gender as well as social and cultural diversity in health and disease;
- develop core discipline specific skills as outlined in the curriculum to reflect the Subject Benchmark Statement;
- develop research skills to reflect the Subject Benchmark Statement and prepare students for postgraduate study;
- develop personal transferable skills that enable students to move successfully into employment or further education;
- provide an accredited degree which meets the requirements of the IBMS that can enable students to apply to register with the HCPC as a Biomedical Scientist (after completing the IBMS certificate of competence portfolio);
- 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 award of Certificate of Higher Education at FHEQ level 4, students will be able to:

PLO 1 Demonstrate knowledge of the underlying concepts and principles of core aspects of Biomedical Science including Cell Biology, Genetics, Biochemistry, Molecular Biology, Physiology, Pathology, Microbiology

PLO 2 Provide evidence of an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of their subject(s) of study

PLO 3 Write scientific reports and communicate the results of their study/work accurately and reliably, and with structured and coherent arguments;

PLO 4 Use a 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 them for lifelong learning;

PLO 5 Undertake further training and develop new skills within a structured and managed environment and develop transferable skills necessary for employment, including personal responsibility and undertake risk and control of substances hazardous to health assessments, evaluate and apply health and safety policies, good laboratory practice and solve problems as well as appreciate the importance of The Human Tissue Act 2004, governance, audit and quality control and assurance.

Additionally, to be eligible for the award of Diploma of Higher Education at FHEQ level 5, students will be able to:

PLO 6 Demonstrate knowledge and critical understanding of the well-established principles of Biomedical Science, and of the way in which those principles have developed

PLO 7 Evaluate and discuss the laboratory specialities of Cellular Pathology, Clinical Biochemistry, Clinical Immunology, Clinical Genetics, Haematology and Transfusion Science, and Medical Microbiology;

PLO 8 Select, evaluate and appraise experimental and clinical laboratory techniques and be able to apply them to experimental and laboratory investigations;

PLO 9 Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and interpret and critically review scientific literature;

PLO 10 Prepare, process, analyse (including numerical and statistical analysis) and interpret experimental/clinical laboratory data and present data in an appropriate format; applying skills in critical and analytical thinking and problem-solving skills.

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

PLO 11 Demonstrate a systematic understanding of key aspects of Biomedical Science, including acquisition of coherent and detailed knowledge, informed by current research-led aspects of a discipline;

PLO 12 Demonstrate an ability to manage their own learning, and to make use of scholarly reviews and primary sources and undertake autonomous learning.

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

PLO 13 Devise and sustain arguments, and/or solve problems, using ideas and techniques at the forefront of Biomedical Science to describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline.

Curriculum

The curriculum is designed to provide a study route which permits 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 or as a scientist in one of the many other professions that our graduates choose to follow. In the first and second year of the degree (levels 4 and 5), all modules are core to ensure that students have the foundation in Biomedical Science required for further study.

Stage 1

At Stage 1, students will study normal human biology at the level of the molecule, gene, cell, organ and organism and introductory microbiology. Laboratory sessions run in conjunction with the theoretical components will give the opportunity for students to enhance their understanding of particular study topics. Students will be introduced to basic laboratory skills and skills for data handling and interpretation. Students will also develop other key skills, including essay writing and study skills during Level 4, and will start to build a progress file. Students will be supported to develop a reflective attitude to learning and develop numerical, written and oral communication, IT and group working skills.

Stage 1 Modules

FHEQ Level	Module Title	Type	Credit	Study Period	Module Code
4	Developing Professional Skills 1	Core	20	1+2	BIS4003-B
4	Cell and Tissue Biology	Core	20	1	BIS4008-B
4	Human Physiology	Core	20	1+2	BIS4009-B
4	Human Genetics and Developmental Biology	Core	20	2	BIS4010-B
4	Introductory Biochemistry	Core	20	1	BIS4007-B
4	Introductory Microbiology	Core	20	2	BIS4013-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. **This award does not confer eligibility to register with The Institute for Biomedical Science (IBMS).**

Stage 2

At Stage 2, 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. Students will also explore the methods used to diagnose and treat disease. Again, laboratory sessions will provide

the opportunity to enhance understanding of some topics and students will further develop their laboratory skills as well as skills in data handling and interpretation. Students will also be encouraged to develop their personal transferable skills and reflect on how these will prepare them for the working environment. Students will be encouraged to self-evaluate their skills and identify and address areas for improvement. At Stage 2, students will develop their depth of knowledge and laboratory and data handling skills and are encouraged to continue to develop autonomy in their learning by producing individual and group work and developing increasing responsibility for achieving the learning outcomes of their modules and level of study. Students will have opportunities to engage with case studies and workshop material at Stage 2, thus leading to debate and discussion of concepts and facts, and enhancing the assimilation of ideas.

Stage 2 Modules

FHEQ Level	Module Title	Type	Credit	Study Period	Module Code
5	Developing Professional Skills 2	Core	20	1+2	BIS5003-B
5	Immunology, Haematology and Transfusion Science	Core	20	1+2	BIS5012-B
5	Medical Microbiology	Core	20	1	BIS5008-B
5	Clinical and Analytical Biochemistry	Core	20	1	BIS5013-B
5	Molecular Genetics	Core	20	2	BIS5014-B
5	Pathology	Core	20	2	BIS5015-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. **This award does not confer eligibility to register with The Institute for Biomedical Science (IBMS)**

Stage 3

At Stage 3 (the final year of study) the curriculum continues to allow students to develop their knowledge and understanding of human disease and students can choose to study in depth from a range of current research topics in Biomedical Science. Students will continue to reflect upon ways to improve their own learning and performance and to develop autonomous learning skills. Laboratory sessions, along with the research project, will allow students to enhance further their data handling and critical interpretation skills and increase the autonomy with which they can apply them. In addition, students will be encouraged to develop further their numerical, written and oral communication, IT and group working skills. Students will be expected to take increasing responsibility for their own learning as well as group and individual outcomes. Throughout the curriculum students will have the opportunity to develop the skills associated with biomedical laboratory practice including the ability to undertake COSHH and risk assessments and procedures to ensure compliance, and the importance of quality control and quality assurance.

There are five potential pathways in Biomedical Science of which students will choose **one**. These routes involve specialisation in the final year and permit study of Medical Cell Biology (O1), Medical Biochemistry (O2) Cancer Biology (O3), Medical Microbiology (O4), and Haematology (O5). A student's final year project will be associated with their final year option choice. All of these pathways lead to an IBMS accredited degree. The

curriculum may change, subject to the University's programme approval, monitoring and review procedures, as improvements are made each year. More detail, including learning outcomes, is available for each unit in the individual module descriptors.

Stage 3 Modules

FHEQ Level	Module Title	Type	Credits	Study Period	Module Code
6	Biomedical Science Research Project	Core	40	1+2	BIS6026-D
6	Medical Genetics	Core	20	1	BIS6011-B
6	Research Topics 1 in Medical Cell Biology	O1	20	1	BIS6006-B
6	Research Topics 1 in Medical Biochemistry	O2	20	1	BIS6009-B
6	Research Topics 1 in Cancer Biology and Therapeutics	O3	20	1	BIS6007-B
6	Research Topics 1 in Medical Microbiology	O4	20	1	BIS6008-B
6	Research Topics 1 in Haematology and Transfusion Science	O5	20	1	BIS6013-B
6	Biology of Disease	Core	20	2	BIS6012-B
6	Research Topics 2	Core	20	2	BIS6010-B

Students will be eligible to exit with the award of Ordinary Degree of Bachelor if they have successfully completed at least 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.

Upon successful completion of the IBMS accredited BSc Hons degree, graduates will be eligible to complete the IBMS certificate of competence portfolio (whilst in a training position in an accredited laboratory); this then enables them to apply to register with the HCPC as a Biomedical Scientist.

Placement and/or Study Abroad

The University of Bradford is committed to providing students with placements to enhance employability. For this reason, whilst the final year project runs across two semesters, all wet lab work is carried out during an immersive 4-week laboratory placement at the start of semester 2. This allows students to have a more authentic experience of laboratory work and permits them to work autonomously and as a team, whilst under direction from an academic with additional support from technical staff.

This programme provides the option for students to undertake a year-long work placement or period of study abroad between Stages 2 and 3. Students wishing to take this option would suspend their registration with the Programme for the year, then return to complete Stage 3. We also have a range of options for shorter placements and study abroad opportunities during the summer months. Students are assisted in identifying, applying for and securing such opportunities, by both academic and university placement office staff. Placement opportunities and funding options are discussed in detail during Developing Professional Skills 2.

For further information about study abroad opportunities please refer to https://www.bradford.ac.uk/study/abroad/

Learning and Teaching Strategy

The teaching and assessment strategy takes into consideration the learning outcomes for the programme, progression through stages of study, the nature of topics studied and the need for students to demonstrate greater autonomy in their learning as they progress through the programme.

Online learning packages and formal lectures will facilitate acquisition of knowledge and understanding (LO 1) and discipline specific skills (LO 6, 7 and 11). Laboratory sessions run in conjunction with the theoretical components will provide the opportunity to enhance understanding of particular topics (LO 2 - 5). These will also help to develop discipline specific skills (LO 6 and 7) and personal transferable skills (LO 4, 5 and 8). Tutorials, workshops and case studies will develop knowledge and understanding, discipline specific skills and personal transferable skills (LO 9-10). Team based learning is used in molecular genetics and biology of disease to help enhance depth of learning and improve understanding (LO 6, 7, 8 and 13). Discipline specific skills will be further enhanced in the specialist optional modules in the final year (LO 11 and 13). Directed study, involving directed reading of appropriate texts and the preparation of assessed work, is used to develop the majority of learning outcomes (LO 12).

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. Coursework assignments will give students the opportunity to gain experience in report writing and data handling and interpretation. As students 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, report writing, case studies, group work, essays, oral presentations and the project report. The project report provides a major opportunity to demonstrate autonomy in data handling and critical interpretation in a research context.

Formative assessments are embedded at all levels of the programme to allow students to test their knowledge and understanding.

Assessment Regulations

This Programme conforms to the standard University Assessment Regulations which are available online at www.bradford.ac.uk/regulations.

However, there are **three** exception(s) to these regulations as listed below:

- There is no compensation. This means that all modules must be passed at 40% or higher in order to be eligible for a final award of BSc (Hons).
- Referral in BIS5014-B Molecular Genetics is not permitted. This module must be passed at stage 2 of study prior to starting stage 3.

- The Developing Professional Skills 2 module laboratory-based competency test must be passed in order to progress to stage 3 of the programme.

Admission Requirements

We take into consideration a number of factors when assessing your application. It's not just about your grades; we take the time to understand your personal circumstances and make decisions based on your potential to thrive at university and beyond. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The minimum entry requirements for the programme are as follows:

- A typical offer is 112 UCAS points(old tariff: 280 points), which should include either A-level Biology or Chemistry at grade B or above. Please note that where a science A-level is taken, the University will require applicants to pass the practical element (for A levels awarded from August 2017 onwards). Under the points system introduced in 2017, AS levels will be worth 40% of an A Level. GCSE passes should include English, Mathematics and two Sciences at grade C or 4 (equivalents accepted). For applicants on Access Programmes, a typical offer is 122 UCAS tariff points. Applicants must be studying an Access to Higher Education Diploma in a Science subject and achieve a minimum of 12 credits of Biology or Chemistry at Distinction. For BTEC extended diplomas we require DDD in a relevant Science to include six specific units (see website for current list).
- International students should have IELTS 6 (a requirement of the accrediting body - Institute of Biomedical Science) with no sub-test less than 5.0, and have equivalent qualifications to GCSE Grade C or 4 in Science and Maths. Applications are also welcome from mature students (those over 21 years of age on entry) and candidates with non-standard qualifications or who, lacking academic qualifications, have significant relevant experience. On completion of a UCAS form applicants will be invited to the School for an Applicant Experience Day when they will have the opportunity to meet staff, view the facilities and discuss “the Bradford experience” with current students.

The UCAS tariff applicable may vary and is published here:

http://www.bradford.ac.uk/study/courses/info/biomedical-science-bsc-3-years

Please note: This link provides admission information relevant to the current recruitment cycle and therefore may be different to when this document was originally published.

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 BIS4007-B and BIS4013-B	January 2019
3	Change to delivery period for BIS4007-B BIS4008-B, BIS4010-B and BIS4013-B	September 2020
4	Specification reformatted and made accessible	October 2020