University of the West of England
BRISTOL

PROGRAMME SPECIFICATION

Section 1: Basic Data

Awarding institution/body	University of the West of England, Bristol
Teaching institution	University of the West of England, Bristol
Delivery Location(s)	Frenchay and Glenside campuses
Faculty responsible for programme	Health and Life Sciences
Modular Scheme title	Applied Sciences
Professional Statutory or Regulatory Body Links (type and dates)	Institute of Biomedical Science From 2007
Highest award title	BSc (Hons) Biomedical Science
Default award title	
Interim award titles	BSc Biomedical Science Dip HE Biomedical Science Cert HE Biomedical Science
UWE progression route	N/A
Mode(s) of delivery	Sandwich / Full-time / Part-time
Codes **UCAS code**	**JACS code** C980
ISIS code	**HESA code**
Relevant QAA subject benchmark statements	Biosciences and Biomedical Science
On-going/valid until* (*delete as appropriate/insert end date)	On-going
Valid from (insert date if appropriate)	September 2011

Latest Committee Approval: Quality and Standards Committee **Date:** May 2011

Version Code: 5

Section 2: Educational aims of the programme

The BSc (Hons) Biomedical Sciences programme is designed for students interested in taking a hands-on approach to studying the biology of disease. The programme is within our extensive biomedical science provision with an emphasis on the application of biomedical sciences and provision of a relevant education that affords employment opportunities.

The programme provides:

- opportunities for students from a wide range of backgrounds to develop and realise their potential in a supportive and responsive teaching and learning environment
- added value for learners in their specialised, subject-specific knowledge and transferable skills
- a coherent and flexible programme of study with a variety of attendance modes
- graduates with an accredited degree route suited to the pursuance of a career as a Biomedical Scientist following training at an accredited NHS laboratory, completion of a Registration Training Portfolio, and approval by the Health Professions Council
- a programme responsive to feedback from students, external examiners and other stakeholders as part of quality programme management and enhancement
- appropriate facilities and resources to deliver a quality teaching and learning experience

The programme integrates a wide range of subjects in the study of the biology of disease. The combination of modules offered enables students to understand the science of the causes, diagnosis and treatment of disease while working at the cutting edge of biomedical sciences using state-of-the-art equipment and learning support material.

Section 3: Learning outcomes of the programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas: …

A Knowledge and understanding

Learning outcomes	Teaching, Learning and Assessment Strategies
A Knowledge and understanding of: 1. demonstrate a broad knowledge base with specific areas of deeper understanding relevant to biomedical sciences 2. understand the context of biomedical sciences and their application to practical problems 3. demonstate an understanding of the contribution of research and scholarship in their specialist areas of biomedical sciences	**Teaching/learning methods and strategies:** *Acquisition of knowledge is achieved through a variety of methods including lectures, practicals, seminars, tutorials, case studies project work and a sandwich placement* *Additional support is provided through E-learning including Blackboard/UWEonline and the Profile website that supports placement learning.* *Throughout, the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.* **Assessment:** *Testing of the knowledge base is through assessed laboratory tasks (2), coursework and examinations (1-3). Methods are specified in each module guide and are varied and designed to test the learning outcomes.*

B Intellectual Skills

B Intellectual Skills	**Teaching/learning methods and strategies**
The ability to… 1. Actively question and seek information 2. Compare and contrast information from different sources 3. Critically evaluate information against hypotheses in a range of research scenarios 4. Actively analyse and apply problem-solving strategies 5. Demonstrate independent and self-directed learning	*Intellectual skills are developed through student-centred learning, written assignments, practical work, data handling and interpretation, tutorial and seminar work. The research project is designed to permit students to demonstrate achievement of all the learning outcomes 1-5.* **Assessment** *A variety of assessment methods are employed. Some/all test a learner's ability to demonstrate skills 1-5 etc through examinations but assessment of coursework and practical project work including student oral presentation is the main vehicle for assessment of higher order skills*

C Subject, Professional and Practical Skills

C Subject/Professional/Practical Skills	**Teaching/learning methods and strategies**
The ability to… 1. Critically observe, analyses and evaluate information arising from a wide range of sources 2. Apply practical approaches to the study of selective aspects of biomedical sciences and demonstrate an awareness of safety and good laboratory practice. 3. Communicate effectively scientifc data and concepts 4. Develop discipline-specific interests by specialising within the programme in relation to subject and/or career aspiration 5. Demonstrate an understanding of the research process through the execution of a research project	Skills 1-4 are acquired and developed in a coordinated and progressive way throughout the levels of the programme through lectures, tutorials, case studies, practical and project work. At level 1 attention is focussed on the acquisition of basic skills and safe working practices through prescribed exercises, while at level 2 more advanced techniques and open ended practical work are introduced. Professional skills are acquired during an optional sandwich placement between levels 2 and 3. At level 3 the research project is pivotal to the acquisition and consolidation of skills 1-5. **Assessment** *Skills 1, 2, 3 and 4 are primarily assessed through practical reports, coursework and research projects – proposal, oral presentation and report. Additionally, skill 5 is assessed in the research project.*

D Transferable Skills and other attributes

D Transferable skills and other attributes The ability to… 1. Communicate effectively and appropriately using a variety of methods 2. Critically analyse data arising from various means of biological inquiry 3. Undertake active learning and development 4. Apply information management skills 5. Practice effective time management 6. Evaluate performance of self and others	**Teaching/learning methods and strategies** *Skills are developed throughout all the compulsory and core modules and in particular the spine of experimental design, data analysis and research project modules. The skills are further developed throughout the programme via case studies, practicals, tutorials and coursework assignments and the optional placement.* **Assessment** *A range of assessment strategies are used including essay, practical report, group work, case study, oral presentation, literature review and critique as well as the research project*

Section 4: Programme structure FULL TIME / SANDWICH / PART TIME ROUTES

BSc (Hons) Biomedical Sciences (FT/SW) C980

Level 1: six 20 credit modules

Interim award: **Certificate of Higher Education** 120 credits

Intro to Biology of Disease **USSJKT-20-1**	Human Anatomy & Physiology **USSJJL-20-1**	Cell Biology & Biochemistry **USSJJM-20-1**	Scientific & Analytical Skills **USSJR6-20-1**	Genetics & Evolution **USSJJN-20-1**	Intro to Microbiology **USSJSF-20-1**

Level 2: six 20 credit modules

Interim award: **Diploma of Higher Education** 240 credits

Human Physiology **USSJ4F-20-2**	Experimental Design & Analysis **USSJ4D-20-2**	Immunology & Disease **USSJ4E-20-2**	Studies in the Biology of Disease **USSJV6-20-2**		
Drugs and Disease **USSJ4V-20-2**	Human Biochemistry & Nutrition **USSJKS-20-2**	Molecular *Genetics* **USSJ4C-20-2**	Biology of Micro Organisms **USSJ4G-20-2**	Medicinal Chemistry **USSJ8A-20-2**	Applied Genetics **USSJ4Y-20-2**

Level 3: one 40 credit and four 20 credit modules **Degree with Honours** 360 Credits

Project **USSJ73-40-3**					
Clinical Biochemistry **USSJ5E-20-3**	Haematology & Transfusion **USSJJT-20-3**	Immunology **USSJ5D-20-3**	Medical Microbiology **USSJN3-20-3**	Cellular Pathology **USSJ5F-20-3**	
Antimicrobial Agents **USSJ5S-20-3**	Applied Pharmacology **USSJJR-20-3**	Sports Physiology **USSJ57-20-3**	Pathophysiology of Brain & Body **USSJJQ-20-3**	Cancer Biology & Genetics **USSJJU-20-3**	Medical Genetics **USSJ5V-20-3** From 2013/14 onwards
Applied Genomics **USSJJV-20-3**	Molecular & Microbial Biotechnology **USSJJW-20-3**	Metals & Living Systems **USSJGP-20-3**	Gene Expression & Cellular Regulation **USSJJS-20-3**	Professional Practice **USSJFL-20-3** Taken during placement year	Reproductive Science **USSJSB-20-3** From 2013/14 onwards

Compulsory | **OPTIONS** Min of 1 (Level 2) Min of 1 (Level 3) | **CORE** Min of 2 (level 3)

BSc (Hons) Biomedical Sciences (PT) C980

Students who are employed in hospital laboratories may study the programme on a part time basis. In the first year they have the option of taking a 40-credit Concurrent Experiential Learning module which recognises the learning they are gaining in the work place enabling them to complete level-1 in one academic year.

Level 1: one 40 credit and four 20 credit modules

Interim award: **Certificate of Higher Education** 120 credits

Cell Biology & Biochemistry	Genetics & Evolution	Intro to Biology of Disease	Intro to Microbiology	Concurrent Experiential Learning
USSJJM-20-1	**USSJJN-20-1**	**USSJKT-20-1**	**USSJSF-20-1**	**USSJNE-40-1**

Level 2 and Level 3 as per Full-time / Sandwich routes

ENTRY ↓	**level 1**	**Compulsory modules** Full time, sandwich and part time routes • USSJKT-20-1 Intro to Biology of Disease • USSJSF-20-1 Intro to Microbiology • USSJJN-20-1 Genetics and Evolution • USSJJM-20-1 Cell Biology and Biochemistry Full time and sandwich routes • USSJR6-20-1 Scientific and Analytical Skills • USSJJL-20-1 Human Anatomy and Physiology Part time route • USSJNE-40-1 Concurrent Experiential Learning		**Interim Award: Cert HE Biomedical Science** • Credit requirements 120 (of which 100 are level 1 or above)

<table>
<tr>
<td rowspan="2">level 2</td>
<td>Compulsory modules

• USSJ4F-20-2 Human Physiology
• USSJ4D-20-2 Experimental Design & Analysis
• USSJ4E-20-2 Immunology & Disease</td>
<td rowspan="2">Optional modules</td>
<td rowspan="2">Interim Award:
Dip HE Biomedical Science

• Credit requirements: 240 (of which not less than 100 are level 2 or above and 120 are at level 1 or above)</td>
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<tr>
<td>Core modules

Minimum of 1 from
• USSJV6-20-2 Studies in the Biology of Disease
• USS JNB-20-2 Molecular Aspects of Life

Minimum of 1 from
• USSJ4Y-20-2 Applied Genetics
• USSJ4C-20-2 Molecular Genetics
• USSJKS-20-2 Human Biochemistry & Nutrition
• USS J4G-20-2 Biology of Micro-organisms
• USSJ4V-20-2 Drugs & Disease
• USSJ8A-20-2 Medicinal Chemistry</td>
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Year out

The sandwich year allows students to gain valuable work experience and training in pharmaceutical or health care industry, government laboratories, and various university research centres. Many students choose to spend their sandwich year overseas. Students undertaking placements within accredited hospital pathology departments will transfer onto the BSc (Hons) Applied Biomedical Science (Clinical) route and commence a formal course of training enabling them to apply to the Health Professions Council for registration as a Biomedical Scientist after graduation. Students applying for placements in the NHS will be subject to CRB checks and compliance with the service's health requirements.

Optional modules

- USSJFL-20-3 Professional Practice Module

level 3	**Compulsory modules** • USSJ73-40-3 Project **Core modules** Minimum of 2 from • USSJ5E-20-3 Clinical Biochemistry • USSJJT-20-3 Haematology & Transfusion • USSJ5D-20-3 Immunology • USSJN3-20-3 Medical Microbiology • USSJ5F-20-3 Cellular Pathology Minimum of 1 from • USSJ5S-20-3 Antimicrobial Agents • USSJJR-20-3 Applied Pharmacology • USSJ57-20-3 Sports Physiology • USSJJQ-20-3 Pathophysiology of Brain & Body • USSJJU-20-3 Cancer Biology & Genetics • USSJ5V-20-3 Medical Genetics • USSJJV-20-3 Applied Genomics • USSJJW-20-3 Molecular & Microbial Biotechnology • USSJJS-20-3 Gene Expression & Cellular Regulation • USSJGP-20-3 Metals & Living Systems • USSJFL-20-3 Professional Practice Module • USSJSB-20-3 Reproductive Science	**Optional modules** • Approved module from the Faculty scheme	**Interim Award:** BSc Biomedical Science **Credit requirements** 300 credits, at level 0 or above of which not less than 280 are at level 1 or above, not less than 60 are at level 2 or above and not less than 60 are at level 3 or above. 360 credits at level 0 or above of which not less than 340 are at level 1 or above, not less than 200 are at level 2 or above and not less than 100 at level 3 or above. **Target/Highest Award:** BSc (Hons) Biomedical Science **Credit requirements** 360 credits at level 0 or above of which not less than 340 are at level 1 or above, not less than 200 are at level 2 or above and not less than 100 at level 3 or above.

→ GRADUATION

Section 5: Entry requirements

Admission into the Healthcare Science Programme will be administered within the Undergraduate Programmes in the Faculty of Health & Life Sciences.

5 GCSEs at grade C or above including English Language, Mathematics and Double Science/Additional science or equivalent
PLUS
*Tariff points as appropriate for the year of entry (refer to the UWE website) must include Chemistry and/or Biology
OR
Access Diploma: (refer to UWE website for requirements)
OR
European Baccalaureate 68-72 must include Science

*Non standard entry applicants may be considered with a lower tariff point on individual merit.

Section 6: Assessment Regulations

In accordance with current University Academic Regulations and Procedures

Section 7: Student learning: distinctive features and support

A Student Handbook is provided, during Induction to year 1, which includes information on the Faculty, the University, its regulations and procedures. Subsequently, at each level, induction is provided to enable students to plan their study of modules as effectively as possible, a patterned calendar of assessments across the academic year is produced. Detailed information is distributed in guides at the start of each module.

Students are supported during their time at UWE by academic tutors and their student adviser. The 'Graduate Development Programme,' a new initiative being developed as part of the Student Experience programme in response to the needs of students, is a university-wide learning opportunity for students to support their learning, offer guidance for their Personal Development Planning, and enhance their employability. Students will meet programme-specific tutors on a weekly basis throughout their first year and then on a fortnightly basis in their 2nd and final year. For those students who elect to undertake a placement, a placement tutor makes regular, planned visits to provide support and to liaise with supervisors and assessors. Students on placement may take an optional Professional Practice Module which is managed through Profile, an innovative web-based interface designed to support, capture and reward placement learning. The Placements Support Team oversees the optional placement year, as described in section 4.

For all students, access to academic staff and the student advisor is by student e-mail or by personal access, and central University Centre for Student Affairs (CSA) provides support and guidance to students on a wide range of issues. The library at Frenchay campus provides an extensive range of literature for the programme. Students have 24-hour access to computers, and IT support services are available within the Faculty of Health & Life Sciences and from the University's Computing Helpdesk.

The Faculty has a longstanding investment in web-based support for teaching and learning; the provision of supplementary material and access to diagnostic testing of understanding and knowledge is now available through UWE's VLE, UWEonline (Blackboard). The Faculty has a well-equipped range of general laboratories, specialised scientific equipment and specialist facilities appropriate for teaching and research in biosciences, biomedicine, psychology and chemical and physical sciences. Support for laboratory-based scientific inquiry, enabled by this provision is enhanced by the core research methods modules that occur within each year. Students develop a range of key skills required of a scientist, including literature searches, critical review, research methodology, problem-solving, and IT

and communication skills.

Professional Accreditation
The programme is currently accredited by the Institute of Biomedical Sciences (IBMS). Students graduating with Honours are entitled to claim Licentiate Membership of the Institute. Those graduates who subsequently undertake a satisfactory period of specific training enabling then to complete a Registration Training Portfolio are eligible to apply to the Health Professions Council (HPC) for registration as a Biomedical Scientist.

Section 8 Reference points/benchmarks
The mission and vision of the University of the West of England is to

'advance an inclusive, civilised and democratic society and its enrichment through education, consultancy and public service'

The aims of the Department of Applied Sciences and the undergraduate programme in Biomedical Sciences are entirely consistent with this and are firmly set within this context.

- **Qualification descriptors used in the QAA Framework for Higher Education Qualifications**

The learning outcomes for the programme have been developed with reference to the qualification descriptors used in the QAA Framework for Higher Education Qualifications. The learning outcomes for modules at level one and level two have been considered to be consistent with the award of a Certificate in Higher Education and a Diploma in Higher Education, respectively. Graduates of the award will have acquired the knowledge and understanding, and gained the intellectual, subject, professional, practical and transferable skills listed in Section 3.

- **Subject benchmarks**

Biomedical Science - The BSc (Hons) Biomedical Science programme is consistent with the Biomedical Science benchmark with a multi-disciplinary approach. The Basic Knowledge sub-headings within the Biomedicine benchmark are listed as human anatomy and physiology, cell biology, biochemistry, genetics, molecular biology, immunology and microbiology, all of which map to modules in this programme. This provides students with an integrated knowledge of the human body at a physiological, cellular, molecular and genetic level, in both health and disease. .At level 1 modules provide a foundation of generic biomedical content including scientific and analytical skills, biology of disease, biochemistry, microbiology, and genetics. At level 2, there is an element of choice permitted where students can begin to concentrate on areas of interest to their future careers. Students gain an appreciation of biomedical science as a "multidisciplinary approach to the study of human disease" and will also develop "an awareness of the current methods used for the laboratory investigation, diagnosis and monitoring of disease...". Modules build on the level 1 foundations and include Immunology & Disease, Microbiology, Genetics, and Physiology. In the final year, there is a large element of module choice including the specialisms; Cellular Pathology, Clinical Biochemistry, Immunology, Haematology & Transfusion and Medical Microbiology.

Biosciences - By definition, according to the Biosciences Benchmark Statement, the biosciences are "a family of methods and disciplines grouped around the investigation of life processes"; "practical and experimental subjects"; and "subjects that combine scientific rigour with an acceptance of diversity and variability", all of which are fundamental principles for Biomedical Science. The following statement is relevant to this programme: "Studies in the biosciences encourage an understanding of multidisciplinarity, an enquiring attitude and an appreciation of complexity. They require development of competence in team and individual working as well as in numeracy (often including information technology, statistics and bioinformatics). Programmes also develop proficiency in preparing reports in a written format for many different purposes and in delivering presentations".

In relation to the benchmark threshold standard for degree programmes where the study of organisms is key, it is stated that students should be able to: "describe basic organism structure and diversity"; "describe mechanisms for the life processes and appreciate how the physiology of an organism fits it for its environment"; "show an appreciation of the integration of metabolism"; "show knowledge of the basic genetic principles relating to and evolution of the organisms studied"; and "appreciate the importance of the 'behaviour' of the organisms studied". These threshold standards can be met through a range of modules within this programme.

The benchmark typical standard includes students being able to: "critically recount the interactions of structure and metabolic function at cellular and organism levels"; "describe and critically evaluate the evidence for the mechanisms of life processes"; "interpret the significance of internal and external influences on the integration of metabolism for survival and health", "describe and analyse patterns of inheritance and complex genetic interactions"; and "critically assess the contribution of 'behaviour patterns' to survival and success", which likewise map to compulsory modules within this programme.

- **University teaching and learning policies**

In line with the University's teaching and learning policies, this programme takes a student-centred approach to learning by allowing students to take control of aspects of their learning and providing a learning environment that stimulates active participation and engagement in the learning process. The programme seeks to create an environment that stimulates students to take responsibility for aspects of their learning, while lecturers take responsibility for facilitating that learning. Module learning outcomes have been designed to ensure that students meet the overall programme learning outcomes on completion of the programme.

A variety of assessment methods is incorporated within the programme to cater for a diversity of student strengths and abilities. The course team recognises the importance of both summative and formative assessment activity as an integral part of the learning and teaching process. All assessments comply with the University Assessment Policy, Academic Regulations and Procedures and the Workbased Learning Policy
http://www1.uwe.ac.uk/aboutus/policies

- **Staff research projects**

Academic staff who support the programme have specific expertise in their subject area. The modules are strongly underpinned by the research expertise of the programme team. The quality, management and enhancement (QME) of the provision is underpinned by staff development, including research. Staff development includes personal review via the appraisal and development scheme, in-house training and support to attend external courses and conferences. The Faculty is supportive of staff development; each member of staff may call upon funds to support attendance at conferences etc. New academic staff undertake a one-year Professional Development PGCert programme, which is accredited by the Higher Education Academy (HEA).

The majority of staff involved with the programmes are research active and the Faculty strongly supports the research activities, particularly within the Centre for Research in Biosciences (CRIB), which was submitted to RAE2008 in UoA12 – Allied Health Professions and Studies. According to the RAE, UWE has proportionately more internationally excellent research than any other University in the UK. Furthermore, the Times Higher Education RAE ratings placed our Biomedical Science research within the top 10% of University submissions. This highlights the world class research being undertaken in CRIB.

Employer interaction/feedback

The integrated nature of the programme necessitates ongoing and close liaison with employers of Healthcare Scientists. This is extremely important and is achieved in the following ways:

Informal links

A culture of two-way communication exists, and is encouraged, between University academic staff and healthcare practitioners. UWE has representation on the local IBMS Branch Committee and several of the associated discussion groups. These and many other opportunities for sharing ideas and views exist and are actively used to the advantage of all parties. Practitioners are actively involved in the design, delivery and continued development of the Healthcare Science (Life Sciences) programmes. Similarly, service users are consulted on a regular basis to ensure that the programmes deliver training that matches service needs.

Formal links

The Joint Training Officer's Committee monitors and advises on the operation of the Clinical Pathology Accreditation/IBMS accredited training places in accordance with agreed standards and policies. In addition, this committee provides a valuable forum for practitioners' views on the undergraduate provision, and for discussion pertaining to development of the degree programme.