**University of Huddersfield**

**Programme Specification**

## *This document does not form part of the student contract*

|  |  |  |
| --- | --- | --- |
| **1.** | **Awarding institution** | University of Huddersfield |
| **2.** | **Teaching institution** | University of Huddersfield |
| **3.** | **School and Department** | Applied Sciences  Department of Biological and Geographical Sciences |
| **4.** | **Course accredited by** | Royal Society of Biology |
| **5.** | **Mode of Delivery** | Full-time/sandwich |
| **6.** | **Final Award** | BSc(Hons) |
| **7.** | **Course Title** | Biological Sciences/with Supervised Work Experience  Biological Sciences with Supervised Research Placement |
| **8.** | **UCAS Code** | C100  TBC |
| **9.** | **Subject benchmark statement** | Biosciences October 2019 |
| **10.** | **Date of Programme Specification Approval** | January 2019 Revised June 2020 |

**11. Educational Aims of the Courses**

The aims are:

* To develop creativity and innovation.
* To provide a structured, progressive and thematic training in areas of biological sciences, which will provide students with knowledge and understanding appropriate for subject-specific graduate employment.
* To prepare graduates for careers with a wide variety of employers such as, bioscience, biotechnology and healthcare industries (including commerce), education, environment and conservation consultancies or projects, government agencies, charity-funded research laboratories and institutes and commercial organisations by delivering a curriculum that is relevant to the needs of society.
* To develop key transferable skills to prepare students for more general graduate employment.
* To develop the intellectual and practical skills necessary for progression to postgraduate research and training.
* To develop the key numeracy and numeric skills to interpret and evaluate complex data.
* To encourage academic curiosity which will prepare students for lifelong learning by challenging the students’ attitudes and approaches to learning in order to enable them to fulfil their potential.
* To offer a range of core and some optional modules which allow students to specialise in particular areas of the biological sciences.
* To offer all students the opportunity to conduct a substantial research project.
* To contribute to the University’s commitment to widening access by recruiting students of different ethnic origins and with a wide variety of educational backgrounds and to accommodate a spectrum of abilities and prior knowledge.
* To contribute to the University’s and Schools commitment to the principles of sustainability.
* To operate within a caring and supportive environment in which students can develop confidence in their own abilities.

**12. Intended Learning Outcomes**

The learning outcomes for this programme have been developed in the light of the Quality Assurance Agency for Higher Education Biosciences subject benchmark statements (2019) and the UK Quality Code for Higher Education (2018). The benchmark statement for the Biosciences has been a key reference point.

***Knowledge and Understanding***

On completing their course students will acquire detailed knowledge and understanding of:

1. the complexity and diversity of life processes at the molecular, cellular, and organismal level;
2. how evolutionary concepts explain biological phenomena from natural selection and environmental adaptation through to microbial resistance;
3. core principles uniting the diversity of life, including understanding of the biological, geochemical and physical processes that determine how life on Earth functions;
4. the ecological value of the planet’s flora and fauna;
5. fundamental concepts of the following: cell biology, genetics, molecular biology, immunology, chemistry, human and other animal physiology, pathology in genetic, chronic and/or infectious diseases, biochemistry and biophysics, medical microbiology, environmental microbiology, community and behavioural ecology, biogeography and the effects of human impact upon life on earth (past, present, prospectively), conservation management;
6. relevant terminology and nomenclature within the biosciences;
7. in-depth knowledge from specialisms in subject areas outlined in A5;
8. recent developments in chosen specialisms;
9. ethical and moral questions raised by aspects of their subject and have had the opportunity to discuss these questions.

Students will also:

1. be capable of carrying out an independent piece of research on a topic related to their subject;
2. have acquired sufficient knowledge and personal awareness to be able to make an informed choice of future career;

Students in the “with Research Placement” course will also:

1. have an advanced knowledge and skills to carry out independent research projects

***Professional/practical skills***

On completing their course students will:

1. have a broad range of basic laboratory skills, which can be executed safely and competently;
2. have a range of more complex laboratory skills appropriate to their chosen subject specialisms, understanding the need for risk assessments and list appropriate safety precautions associated with practical/project work;
3. be able to record, process and interpret analytical/field data using appropriate statistical techniques;
4. be able to write technical reports on data collected in the lab/field;
5. be able to prepare and deliver technical presentations using different media either as individuals or with peers;
6. be able to independently design simple experiments and test hypotheses;
7. be able to synthesise and critically evaluate information from a variety of sources, correctly reference source material and avoid plagiarism;
8. have the confidence to apply knowledge to the learning of new techniques or in new situations;

***Transferable/Key Skills***

On completing their course students will:

1. be autonomous/independent learners;
2. be experienced in the various methods of obtaining information;
3. have learnt the importance of good record keeping in field and/or laboratory conditions;
4. be able to present scientific data, precisely, concisely and accurately;
5. be able to understand, analyse and interpret data and other forms of information;
6. be aware of the uncertainty inherent in scientific knowledge;
7. be able to communicate and explain scientific ideas and concepts to specialists and non-specialists;
8. have the ability to design and prepare project proposals with an understanding of intellectual property (as well as project management and budgets);
9. be able to work independently or as part of a team and negotiate team responsibility and evaluate team work via peer assessment;
10. be able to use relevant Information Technology;
11. be aware of and have the ability to consider issues around quality, ethics and risk;
12. be able to manage and organise their workload to maximum effectiveness.

**13. Course Structures and Requirements, Levels, Modules, Credits and Awards**

**13.1** Comprehensive documentation giving module details, course structure and related matters is available online.

The course is studied over three years with an option to extend this by a further year through undertaking a supervised placement. This year may be in a work based environment (SSB3001). Students undertaking the Advanced Accredited degree take the Supervised Research module, SSB3003.The placement is regarded as especially valuable but it is recognised that it will not be suitable for all students and students can also opt for a full time three-year route. Study is undertaken at three levels, one for each year of University-based study. The course is based on six 20-credit modules per year, with the exception of the Final Year, which includes the 40-credit Research Project.

All assessments, including examinations, are set and marked by academic staff of the University. Assessment results are considered by the Biology Course Assessment Board (CAB) and the Geographical Sciences (CAB), which includes the staff responsible for delivering the modules and the External Examiners. The Board determines degree classification based on a student’s best 100 credits of performance in Year Two and the Final Year, with the latter weighted by a factor of two.

**13.2 Course Structure**

The course may include a supervised placement year, between Year Two and the Final Year with SSB3001 in a work based environment. RSB Advanced Accredited programmes follow SSB3003 which have course entry pre-requisites and stipulations concerning the nature of the placement, the latter laid out in the module specification.

All modules are Core modules unless listed under ‘Option’ in the Course structure shown below. SFB1010 Research Skills, SIB2001 Research Skills 2 and SHB4001 Research Project are compulsory modules and cannot be condoned.

**Year 1 Full Time - Foundation Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Level** | **Module Code** | **Module Title** | **Credits** | **Module Type** |
| F (FHEQ 4) | SFB1010 | Research Skills | 20 | Compulsory |
| F (FHEQ 4) | SFG1012 | Dynamic Living Systems | 20 | Core |
| F (FHEQ 4) | SFB1003 | Molecular and Cellular Biology | 20 | Core |
| F (FHEQ 4) | SFB1006 | Physiology 1 | 20 | Core |
|  | Pool A **Options**1, 2 | | | |
| F (FHEQ 4)  F (FHEQ 4) | SFB1004  ***OR***  SFB1005 | Biochemistry1  Chemical and Physical Principles of Biology | 20  20 | Optional  Optional |
|  | Pool B Options | | | |
| F (FHEQ 4)  F (FHEQ 4) | SFB1008  ***OR***  SFG1015 | World of Microbes  Global Earth Cycles | 20  20 | Optional  Optional |

11st year students take 1 module each from the Pool A and Pool B options.

2Students with ‘A’ level Chemistry may take SFB1004; students lacking an appropriate background in chemistry will study SFB1005.

**Year 2 Full Time - Intermediate Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Level** | **Module Code** | **Module Title** | **Credits** | **Module Type** |
| I (FHEQ 5) | SIB2001 | Research Skills 2 | 20 | Compulsory |
| I (FHEQ 5) | SIB2003 | Molecular Biology | 20 | Core |
| I (FHEQ 5) | SIB2005 | Genomes and Evolution | 20 | Core |
| I (FHEQ 5) | SIB2006 | Physiology 2 | 20 | Core |
| I (FHEQ 5) | SIG2012 | Ecological Adaptation and Conservation Management | 20 | Core |
|  | **Option** 3 |  |  |  |
| I (FHEQ 5)  I (FHEQ 5) | SIG2015  ***OR***  SIB2002 | Anthropocene  Cell Biology | 20  20 | Optional  Optional |

3Each option is worth 20 credits

**Year 3 Work or Research Placement**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I (FHEQ 5) | SSB3001 | Supervised Work | 120 | Optional |
| I (FHEQ 5) | SSB3003 | Research Experience | 120 | Optional |

**Final Year**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Level** | **Module Code** | **Module Title** | **Credits** | **Module Type** |
| H (FHEQ 6) | SHB4001 | Research Project  *Operation Wallacea or Frontiers Programmes provide additional options for ecology/conservation-minded students* | 40 | Compulsory |
| H (FHEQ 6) | SHB40054 | SHB4005 Genomics | 20 |  |
| H (FHEQ 6) | **Option** (60 credits5  from) | | | |
| H (FHEQ 6) | SHB4012  ***OR***  SHB4019  ***OR***  SHB4003  ***OR***  SHB4007  ***OR***  SHB4006  ***OR***  SHG4012  ***OR***  SHG4016  ***OR***  SHB4020 | Immunology and Infection  Mechanisms and Pathology of Cancer and other Chronic Diseases  Applied Molecular Genetics  Medical Genetics  Advanced Physiology  Conservation Science  Principles and Practice in Geography  Principles and Practice in Life Sciences | 20  20  20  20  20  20  20  20 | Optional  Optional  Optional  Optional  Optional  Optional  Optional  Optional |

4For students preferring a more ecology/environment/biodiversity route, coursework assessment alternative to the biomedically-relevant ‘exome’ theme can be offered.

5Options are each worth 20 credits.

**13.3** **Interim Awards**

Students who are unable, or do not wish, to complete the Honours programme are able to gain named intermediate awards determined by the number and type of credits as follows:

**Certificate of Higher Education**  120 “F” credits

**Diploma of Higher Education** 120 “F” credits + 120 “I” credits

**BSc Biological Sciences** 120 “F” credits + 180 “I”/”H” credits (at least 60 “H” credits)

**14. Teaching, Learning and Assessment**

The course ensures that the intended learning outcomes can be achieved by:

1. providing a coherent education with a high degree of currency in the chosen specialism;
2. delivering a curriculum informed by research and scholarly activity;
3. providing a curriculum delivered by staff who engage in peer observation of teaching and participate in an annual personal development review;
4. including modules on specialist topics relevant to the field;
5. having a flexible structure, which caters for a diversity of abilities;
6. providing experience of carrying out a wide range of data collection procedures using modern analytical equipment;
7. incorporating modules with a variety of types of teaching, learning and assessment;
8. providing modules that encourage students to think and work independently, culminating in a research project in the final year;
9. providing assessments that challenge students and encourage development of core skills;
10. providing assessments that encourage students to work in teams;
11. ensuring the availability of support and guidance throughout the students’ education by allocating a personal tutor to each of them;
12. providing students with comprehensive feedback on their progress throughout their course;
13. developing progressively the students’ personal skills (PDP);
14. providing at all stages of the course a structured and supported process that enables students to reflect upon their learning, performance and achievement, and to plan their personal, educational and career development;
15. offering the opportunity of a year’s work placement;
16. making available expert careers guidance.

**15. Support for Students and their Learning**

**15.1** Support for students undertaking the courses operates at University, School and Course level as follows:

**15.2 University Level**

Central to the provision of student support are **Student Services**. The range of services they offer include:

## 15.2.2 Wellbeing and Disability Services

* [Counselling](http://www.hud.ac.uk/wellbeing/studentcounselling/)
* [Back on Track](http://www.hud.ac.uk/wellbeing/back-on-track/)
* [Disability Services](http://www.hud.ac.uk/disability-services/)
* [Drop in (Counselling and Wellbeing)](http://www.hud.ac.uk/wellbeing/)
* [The Faith Centre](http://www.hud.ac.uk/faith-centre/)
* [Getting help](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/)
* [Group workshops and courses](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/groupworkshops/)
* [Hate Crime Reporting Centre](http://www.hud.ac.uk/wellbeing/hatecrimereporting/)
* Help for suspended students
* [Self help](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/selfhelp/)
* [Student parents](http://www.hud.ac.uk/wellbeing/studentparents/)
* [Student wellbeing](http://www.hud.ac.uk/wellbeing/)
* [Welfare support](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/studentwelfare/)
* [University Health Centre](http://www.universityhealthhuddersfield.co.uk/)
* Big White Wall

More information on the range of student services can be found on their website at: <http://students.hud.ac.uk/wellbeing-disability-services/disabilityservices>

**15.2.3 Careers and Employability Service**

[Careers and Employability Service](https://students.hud.ac.uk/opportunities/careers/) including Jobshop

An integral part of the students’ Personal development and careers support is provided by the University’s Global Professional Award (GPA). This CMI accredited course runs alongside the academic modules and integrates aspects of well-being, career planning and global awareness.

**15.2.4 The Student Finance Office** provides:

* Information and guidance regarding possible sources of funding for all courses in the University.
* Budgeting advice to discuss a variety of options and strategies in order to manage on a budget.
* Facilities for the billing and payment of income to be collected by the University.
* Debt advice via personal and confidential sessions is available from trained staff along with mediation and resolution.
* Further information can be found on their website at: <http://www.hud.ac.uk/students/finance>

**15.2.5** **Computing services** provide induction and ongoing support for all students. More information on the range of computing services can be found on their website at:

<http://students.hud.ac.uk/it/>

**15.2.6 Library** **Services** provide induction and ongoing support for all students. More information on the range of library services can be found on their website at: <http://www.hud.ac.uk/library/>

**15.2.7** [**Students’ Union**](https://www.huddersfield.su/)

**15.2.8** [**International Office**](https://www.hud.ac.uk/international/)provides help and support for all overseas students

**15.2.9** [**Accommodation**](https://www.hud.ac.uk/uni-life/accommodation/)

**15.2.10** [**Sports facilities**](https://sport.hud.ac.uk/)

**15.3 School Level**

The School of Applied Sciences provides additional student support using a variety of approaches:

* + 1. **Induction Week**
    2. **Personal Academic Tutor (PAT)** assigned to each student who maintains regular contact with the student throughout each academic session, especially at key times of the year for Personal Development Planning (PDP)
    3. **PDP** meetings
    4. **Support and Guidance Officers** work with the University Student Support systems to provide pastoral support as required.
    5. **School Student Support Office** (Room JPGS/25) for course enquiries.
    6. **Academic Skills tutors** can give one to one support to students requiring help with study skills.
    7. Student attendance is monitored in accordance with the University regulations.
    8. Modern, purpose-built suites of chemistry and biology laboratories with technical support for students.
    9. Two suites of networked PC laboratories which host specialist software.

**15.4 Course Level**

At course level support is provided by:

15.4.1 **Flying Start,** a key part of all Biology courses. This is a short and intensive induction programme of lectures, laboratory practicals, problem solving sessions, group work and social activities with several objectives and aims: to build the student community by building social cohesion within the cohort and by meeting with all members of staff within the Department; to familiarize the students with good laboratory practice, local H&S procedures and build responsibility within the cohort; to demonstrate learning strategy and build clear expectations of rigour and self-discipline amongst the cohort particularly with respect to independent study, library use and problem solving individually and in set groups. The programme also covers key elements of biodiversity and the concept of evolution by natural selection through a tutorial and problem solving session involving small group work, library research and then feedback from the groups on a specific problem in biodiversity and evolution.

* + 1. Aacademic mentoring
    2. Year/Module Tutors available to help with module-specific academic issues
    3. Supporting documentation is provided online in the form of Course Handbooks, Module Handbooks, and Programme and Module specifications.
    4. [Brightspace](https://brightspace.hud.ac.uk/d2l/login) virtual learning environment.

**15.4.7** Student e-mail and access to teaching staff including the Head of Department, Course Leader and Year Tutors.

**15.4.8** Supervised Work Experience (SWE) -Students who take the optional SWE year are supported by the SWE Tutor and the Placement and Outreach Administrator. Guidance in the preparation of CVs, letters of application and interview techniques is available. Students are supervised by visits during the placement period. The Department of Biological Sciences has a long tradition of support for placing SWE students with major employers. These include The Wellcome Trust at The Sanger Institute, Astra Zeneca Pharmaceuticals, Syngenta, Avecia, GlaxoWellcome, Pfizer, EliLily, Covance, Anthony Nolan Bone Marrow Trust the LIGHT and LIMM Institutes at Leeds and internal placements at the University of Huddersfield.

**16. Criteria for Admission**

**16.1** The University of Huddersfield seeks and encourages applicants in order to widen participation, improve access and apply the principles of equal opportunities. We provide support for applicants who require additional assistance in order to select the right course of study and make a successful transition to studying at University. We encourage local, national and international applications. Further information for International Students can be found on: <http://www.hud.ac.uk/international>

If you were educated outside the UK, you are required to have International English Language Testing System (IELTS) at a score of 6.0 with a minimum score of 6.0 in writing and a minimum of 5.5 in any single component. If you have alternative qualifications or do not meet the IELTS requirement we also offer a range of [Pre-Sessional English Programmes.](http://www.hud.ac.uk/international/pre-sessionalenglishprogramme/)

**16.2** The University provides opportunities for the accreditation of prior learning (APL) as stated at the following link: <https://www.hud.ac.uk/policies/registry/awards-taught/section-c/>

**16.3** The University’s general minimum entry requirements are specified in Section D of the Regulations for Awardswhich can be found on the University website as follows: <https://www.hud.ac.uk/policies/registry/awards-taught/section-d/>

**16.4** Every person who applies for this course and meets the minimum entry requirement – regardless of any disability – will be given the same opportunity in the selection process. General advice and information regarding disability and the support the University can give can be found by contacting student services as follows:

Telephone**:** 01484 472675

Email: [disability@hud.ac.uk](mailto:disability@hud.ac.uk)

Further information is available at their website at:

<http://students.hud.ac.uk/wellbeing-disability-services/disabilityservices>

Further advice on the specific skills and abilities needed to successfully undertake this course can be found by visiting the University website at <http://www.hud.ac.uk/courses/> and by contacting the admissions tutor.

* 1. Specific entry requirements and admission criteria for the courses are detailed below:

Entry requirements for this course are normally one of the following:

* 112 UCAS tariff points from a combination of Level 3 qualifications including at least a

grade C in two relevant science A-Levels (*e.g.* Biology plus chemistry, physics, mathematics, psychology, geography).

* DMM in BTEC Level 3 Extended Diploma in Applied Science. Alternatively, a BTEC Health and Social Care is acceptable but must be accompanied by another Science A-Level at grade C or above.
* Access to Higher Education Diploma with 45 Level 3 credits at Merit or above to include modules in relevant science subjects.
* International Baccalaureate with an overall score of 31 points to include modules in relevant science subjects.
* Successful completion of the University of Huddersfield Science Extended degree course.
* Applications are also welcomed from mature candidates capable of benefiting from the course.

Full details of entry requirements are given in the University prospectus and on the web site.

**17. Methods for Evaluating and Improving the Quality and Standards of Teaching and Learning**

**17.1 University:** The methods for the validation and annual evaluation of courses, including those validated by external bodies, and for the review of teaching and research and of academic support services are specified in the University’s; Quality Assurance Procedures for Taught Courses and Research Awards which can be found on the University website as follows:

<https://www.hud.ac.uk/policies/registry/qa-procedures/>

**17.1.1 Periodic reviews**

**17.1.2 External examiner system**

**17.1.3 University Teaching and Learning Committee**

**17.1.4 Mechanisms for student feedback** (including independent student satisfaction survey)

**17.1.5 Institutional staff development courses**

**17.2** **School:** Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:

* Course and module reviews (student evaluations and staff report)
* Annual course evaluation report prepared by the Course Leader and considered by Course Committee and School Annual Evaluation Committee
* Peer observation of teaching
* External Examiners' reports
* PSRB requirements

**17.2.1 Committees with responsibility for monitoring and evaluating quality and standards**

* Student Panel
* Course Committee
* School of Applied Sciences Teaching and Learning Committee
* School of Applied Sciences Annual Evaluation Committee
* Course Assessment Board
* Annual Evaluation Committee - All forms of feedback, including a review of progression and completion rates are included in the annual course monitoring report. This is considered through the process of annual evaluation of courses and enables areas of weakness to be identified and clear action plans to be determined and monitored. The School has introduced a rigorous module review process that is undertaken by Year Tutors prior to annual evaluation to ensure necessary changes to modules can be implemented immediately. In addition to the annual monitoring processes the University organises a quinquennial review at school level.

**17.2.2 Mechanisms for gaining student feedback on the quality of teaching and their learning experience**

Student Feedback is an integral part of course evaluation and improvement. Students provide feedback through a variety of means including:

* Module and course evaluation questionnaires
* Student representation on Course Committee
* Student Panel.

**17.2.3 Employer Feedback** is sought through feedback questionnaires involving employers of our graduates and through monitoring from placement providers.

* + 1. **External Examiners** provide evaluation of the standards achieved by the students. The course team is required to formally respond to comments raised by External Examiners and to report on progress made in addressing any areas on concern.

**17.2.5 Staff development priorities include:**

* Staff Personal Development Review
* Updating professional developments
* Regular course meetings and annual review and planning for subsequent academic year.

**18. Regulation of Assessment**

**18.1** University awards are regulated by the Regulations for Awards on the University website as follows: <https://www.hud.ac.uk/policies/registry/awards-taught/> and the Regulations for Taught Students, procedures and forms can be accessed on the University website as follows:

<https://www.hud.ac.uk/registry/current-students/taughtstudents/>

The minimum pass mark for each module is 40%.

An overview of assessment details and procedures is provided in the Course Handbook.

To qualify for the award of Honours students must be credited with 360 credits and complete all the requirements of the course. Only the marks from the second and third year will contribute to the final classification of degree.

The marks for each module are weighted according to the credit rating. Third year marks contribute two thirds of the overall performance.

**18.2 Role of External Examiners**

External Examiners are appointed by the University Learning and Teaching Committee. The role of the External Examiner is that of moderator. In order to do this they:

* approve examination papers
* review coursework and examination scripts
* interview borderline candidates for award
* attend the Course Assessment Board.

**19. Indicators of Quality and Standards**

* Reports of validation panels
* Periodic Review
* Subject Review
* Annual course review
* External examiners’ reports
* Qualifications and experience of staff
* Recognition of BSc(Hons) suite of courses by RSB for accredited status

# Appendix 1 Mapping of Course learning outcomes to modules

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Learning Outcome** | SFB1010 | SFG1012 | SFB1003 | SFB1004 | SFB1005 | SFB1006 | SFB1008 | SFG1015 | SIB2001 | SIG2015 | SIB2002 | SIB2003 | SIB2005 | SIB2006 | SIG2012 |  |
| A1 |  | X | X | X |  | X | X |  |  |  | X | X | X | X | X | A.1 |
| A2 |  | X | X |  |  | X | X |  |  |  | X | X | X | X | X | A.2 |
| A3 |  | X |  | X | X | X | X | X |  |  | X | X | X |  | X | A.3 |
| A4 |  | X |  |  |  |  | X |  |  |  |  |  |  |  | X | A.4 |
| A5 |  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | A.5 |
| A6 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | A.6 |
| A7 | X |  |  |  |  |  |  |  |  |  | X | X | X | X | X | A.7 |
| A8 | X |  |  |  |  |  | X | X | X | X |  |  |  |  |  | A.8 |
| A9 | X |  |  |  |  |  |  | X | X | X |  |  |  |  | X | A.9 |
| A10 | X |  |  |  | X |  |  |  | X | X |  |  |  |  | X | A.10 |
| A11 | X | X |  |  |  |  |  | X | X | X |  |  |  |  | X | A.11 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| B1 |  | X | X | X | X | X | X | X | X |  | X | X |  | X | X | B1 |
| B2 |  |  |  |  |  |  |  |  | X |  | X | X | X | X | X | B2 |
| B3 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | B3 |
| B4 |  | X | X | X | X | X | X | X | X |  | X | X | X | X | X | B4 |
| B5 | X |  |  |  |  |  |  |  | X | X |  |  |  |  |  | B5 |
| B6 |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | B6 |
| B7 | X | X |  |  |  |  |  | X | X | X | X | X | X | X | X | B7 |
| B8 | X |  |  |  |  |  |  |  | X | X |  |  |  |  | X | B8 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| C1 | X |  |  |  |  |  |  |  | X | X |  |  |  |  |  | C1 |
| C2 | X |  |  |  |  |  |  |  | X | X |  |  |  |  | X | C2 |
| C3 |  | X | X | X | X | X | X | X | X |  | X | X | X | X | X | C3 |
| C4 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | C4 |
| C5 |  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | C5 |
| C6 | X |  |  |  |  |  |  |  | X | X |  |  |  |  |  | C6 |
| C7 | X | X | X | X | X | X | X | X | X | X |  |  |  |  |  | C7 |
| C8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C8 |
| C9 | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | C9 |
| C10 |  |  |  |  |  |  |  | X |  |  |  |  |  |  | X | C10 |
| C11 |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  | C11 |
| C12 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | C12 |

**Appendix 1 Mapping of Course learning outcomes to modules (continued)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Learning Outcome** | SHB4001 | SHB4005 | SHb4012 | SHB4019 | SHB4003 | SHB4006 | SHB4007 | SHG4012 | SHG4016 | SHB4020 |  |  |
| A.1 |  | X | X | X | X | X |  |  | X | X |  | A.1 |
| A.2 |  | X | X |  | X | X | X |  | X | X |  | A.2 |
| A.3 |  |  |  |  | X |  | X |  | X | X |  | A.3 |
| A.4 |  |  |  |  |  |  |  |  | X | X |  | A.4 |
| A.5 |  | X | X | X | X | X | X | X |  |  |  | A.5 |
| A.6 | X | X | X | X | X | X | X |  |  |  |  | A.6 |
| A.7 | X | X | X | X | X | X | X | X | X | X |  | A.7 |
| A.8 | X | X | X | X | X | X | X | X | X | X |  | A.8 |
| A.9 | X | X | X | X | X |  | X | X | X | X |  | A.9 |
| A.10 | X |  |  |  |  |  |  |  | X | X |  | A.10 |
| A.11 | X |  |  |  |  |  |  | X | X | X |  | A.11 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| B1 | X |  |  | X |  |  |  | X |  |  |  | B1 |
| B2 | X | X |  |  |  |  |  |  | X | X |  | B2 |
| B3 | X | X |  | X |  |  |  | X | X | X |  | B3 |
| B4 | X | X | X |  | X | X | X | X | X | X |  | B4 |
| B5 | X | X |  |  | X | X | X |  | X | X |  | B5 |
| B6 | X |  |  |  |  |  |  |  | X | X |  | B6 |
| B7 | X | X | X | X | X | X | X | X | X | X |  | B7 |
| B8 | X | X |  |  |  |  |  |  | X | X |  | B8 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| C1 | X |  |  |  |  |  |  |  |  |  |  | C1 |
| C2 | X | X | X | X | X | X | X | X | X | X |  | C2 |
| C3 | X | X |  |  |  |  |  | X | X | X |  | C3 |
| C4 | X | X |  |  | X | X | X | X | X | X |  | C4 |
| C5 | X | X | X | X | X | X | X | X | X | X |  | C5 |
| C6 | X | X | X | X | X | X | X | X | X | X |  | C6 |
| C7 | X |  | X | X | X |  |  |  | X | X |  | C7 |
| C8 | X |  |  |  | X |  |  |  |  |  |  | C8 |
| C9 | X |  |  | X |  |  |  | X | X | X |  | C9 |
| C10 | X | X |  |  |  |  | X | X | X | X |  | C10 |
| C11 | X | X |  |  | X |  |  |  | X | X |  | C11 |
| C12 | X | X | X | X | X | X | X | X | X | X |  | C12 |

**\*-** knowledge and personal awareness for careers built up throughout, in PDP in SFB1010, SIB2001, SIG2014 and SHB4001 plus through personal tutorials.

**Appendix 2**

**Mapping of Learning Outcomes and Benchmark Statements**

The University of Huddersfield Biological Sciences Programme Specification learning outcomes are matched to the relevant paragraphs of the Bioscience benchmark statements (2019), “4. Graduate and key transferable skills” “5. Core biosciences knowledge, understanding and skills” and “7. Benchmark Standards”. These are reproduced below matched with the learning outcomes for the Biological Sciences course as listed above.

**4 Graduate and key transferable skills**

4.1 The biosciences are subjects that combine scientific rigour with an acceptance of diversity and variability, thus providing very good training for the complexities of the world of employment. Studies in the biosciences encourage an understanding of multi-disciplinarily, an enquiring attitude and an appreciation of complexity. The subject content of individual programmes of study in the biosciences depends on the specific degree being offered and the institutional context. However, it will include the opportunity to develop a range of more generic graduate and transferable skills (detailed in this section) along with core biosciences knowledge, understanding and skills (detailed in Section 5) and specialist, subject specific knowledge, understanding and skills. Whatever the subject, students should expect to be confronted by some of the scientific, moral and ethical questions raised by their study subject, to consider viewpoints other than their own, and to engage in critical assessment and intellectual argument. Biosciences graduates will be comfortable with dealing with uncertainty.

**Intellectual skills**

4.2 Biosciences graduates should be able to:

1. analyse, synthesise and summarise information critically from a variety of sources. **A1-10, B2-8, C1-8, C10-12**
2. consider issues from a number of perspectives and values and arrive at a considered critical judgement stating assumptions and limitations. **A9-11, B8, C4-6, C8, C11**
3. construct grammatically correct documents in an appropriate academic style and format, using and referencing relevant ideas and evidence. **A10, B3-5, B7, C4, C8**
4. understand the importance of academic and research integrity. **A9, B7, C8 C11**

**Analytical and data interpretation skills**

4.3 Biosciences graduates should be able to:

1. receive and respond to a variety of sources of information: textual, numerical, verbal, graphical. **A6, A9-11, B3-B8, C2, C4-8**
2. understand and manipulate numerical data. **A10, B1-8, C3, C5**
3. solve problems by a variety of methods. **A7-A11, B1-8, C2-3, C6, C8-11**
4. determine the validity and rigour of statistical outcomes. **B3-4**

**Communication, presentation and information technology skills**

4.4 Biosciences graduates should be able to:

1. communicate about their subject appropriately to a variety of audiences, including the general public, using a range of formats and approaches and employing appropriate scientific language. **A1-9, B3, B4-5, B7, C3-9**
2. cite and reference work in an appropriate manner, ensuring academic integrity and the avoidance of plagiarism whether intentional or not. **B7, C3-8, C11**
3. use the internet and other electronic sources critically as a means of communication and a source of information. **B1-3, C10**

**Interpersonal and teamwork skills**

4.5 Biosciences graduates should be able to:

1. identify individual and collective goals and responsibilities and perform in a manner appropriate to these roles, in particular those being developed through practical, laboratory and/or field studies. **A9, A11, B1-3, B6, B8, C1, C3, C11**
2. recognise and respect the views and opinions of other team members. **B5, C8-9**
3. use negotiating skills. **B5, B8, C7, C9**
4. evaluate their own performance as an individual and a team member. **A11, B5-6, C1, C8-9, C11-12**
5. evaluate the performance of others. **B5-7, C9**
6. develop an appreciation of the interdisciplinary nature of science and of the validity of different points of view. **A1-10, B1-3, C6-7, C9**

**Personal and professional development skills**

4.6 Biosciences graduates should be able to:

1. develop the skills necessary for independent lifelong learning (for example working independently, time management, organisational, enterprise and knowledge transfer skills). **A11, B3-8, C1-6, C8-12**
2. identify and work towards targets for personal, academic, professional and career development. **C1-2, C8-12**
3. develop an adaptable, flexible and effective approach to study and work. **B7-8, C2-4, C7-9 C11-12**
4. build on knowledge and understanding of the role and impact of intellectual property (IP) within a research environment. **C8**

**5 Core biosciences knowledge, understanding and skills**

**5.1** The range of subject areas covered by individual programmes of study within the biosciences depends on the specific degree title offered. No single degree programme can cover the entirety of the subject, and the rich diversity of curricula provides students with abundant choice.

**5.2** Approaches to study and forms of subject knowledge likely to be common to all biosciences degree programmes include:

1. a broadly based core covering the major elements defined by the particular programme and providing the wider context required for the subject area, together with specialised in-depth study of some aspects of the specialist subject area. Whatever the degree programme, there is a need for an interdisciplinary and multidisciplinary approach in advancing knowledge and understanding of the processes and mechanisms of life, from molecular to cellular, and from organism to ecosystem. **A1-11, B1-3, C1, C6**
2. engagement with the essential facts, major concepts, principles and theories associated with the chosen subject area, including knowledge of the processes and mechanisms that have shaped the natural world in terms, for example, of the spread of time from the geological to the present and of complexity from the environmental to the sub-cellular, including consideration of interactions between living systems and human activities. **A1-5, A7-9, C6**
3. competence in the core experimental and/or survey skills appropriate to the subject under study. **A10, B1-6, B7, C3-5, C7-8, C11**
4. understanding of information and data, and their setting within a theoretical framework, accompanied by critical analysis and assessment to enable understanding of the subject area as a coherent whole **A10, B2-7, C4-9**
5. familiarity with the terminology, nomenclature and classification systems, as appropriate. **A6**
6. practical and theoretical methods of acquiring, interpreting and analysing biological information with a critical understanding of the appropriate contexts for their use through the study of texts, original papers, reports and data sets. **A10-11, B1-7**
7. awareness of the contribution of their subject to the development of knowledge about the diversity of life and its evolution. **A1-4, A7-9, C1, C9**
8. knowledge of a range of communication techniques and methodologies relevant to the particular subject, including data analysis and the use of statistics (where this is appropriate). **B3-8, C3-11**
9. engagement with some of the current developments in the biosciences and their applications, and the philosophical and ethical issues involved. **A8-9, A11, B2, C8**
10. awareness of the contribution of biosciences to policy and other debates and controversies. **A9, C11**
11. understanding of how biosciences knowledge forms the basis for informed concern about the quality and sustainability of life. **A1-4, A9**
12. awareness of the boundaries and limitations of their learning. **A11, B7, C6**
13. awareness of intellectual property (IP) and how scientific advances may be secured and progressed by the application of Intellectual Property Rights (IPRs). **C6,** **C8**
14. an appreciation of how their skills and learning contribute to the many careers to which graduates will be progressing. **A11, C1, C12**

**5.3** Students need to recognise that much of what they are taught is contested and provisional, particularly in the light of continuing scientific advances. The graduate attributes developed by those studying biosciences include:

1. an appreciation of the complexity and diversity of life processes through the study of organisms, their molecular, cellular and physiological processes, their genetics and evolution, and the interrelationships between them and their environment. **A1-9**
2. the ability to read and use appropriate literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application. **B6-7, C2-6, C8-9, C11**
3. the capacity to give a clear and accurate account of a subject, marshal arguments in a sophisticated way and engage in debate and dialogue both with specialists and non-specialists, using appropriate scientific language. **B5-7, C7-9**
4. critical and analytical skills including a recognition that statements should be tested and that evidence is subject to assessment and critical evaluation. **C5-6, C11**
5. the ability to employ a variety of methods of study in investigating, recording and analysing material. **B1-3, C1, C2, C12**
6. the ability to think independently, set tasks and solve problems. **B8, C1-12**

**5.4** In addition to the generic graduate and key transferrable skills described in section 4, students also develop specific graduate skills during biosciences degree programmes.

**Intellectual skills**

**5.5** Biosciences graduates should be able to:

1. recognise and apply subject-specific theories, paradigms, concepts or principles (for example the relationship between genes and proteins, or the nature of essential nutrients in microbes, cells, plants and animals). **A1-6**
2. analyse, synthesise and summarise information critically, including published research or reports. **B3-8, C2-8, C10-11**
3. obtain and integrate several lines of subject-specific evidence to formulate and test hypotheses. **B6, C2-6, C8, C11**
4. apply subject knowledge and understanding to address familiar and unfamiliar problems. **B8**
5. recognise the moral and ethical issues of investigations and appreciate the need for ethical standards and professional codes of conduct. **B2, C6, C8, C11**

**Practical skills**

**5.6** Biosciences graduates should be able to:

1. demonstrate competence and progressive development in the basic and core experimental skills appropriate to the programme of study. **B3-7, C4, C7**
2. design, plan, conduct and report on investigations, which may involve primary or secondary data (for example from a survey database). **A10, B6, C6**
3. obtain, record, collate and analyse data using appropriate techniques in the field and/or laboratory, working individually or in a group, as is most appropriate for the subject under study. **B3-5, B7, C3-5, C9**
4. undertake field and/or laboratory investigations of living systems in a responsible, safe and ethical manner. **B2, C11**
5. comply with health and safety policies, Good Laboratory Practice Control of Substances Hazardous to Health assessments recognise and explain the importance of quality control and quality assurance. **B2**
6. recognise and explain the need for procedures for obtaining informed consent and appreciate the underlying ethical issues, including respect for the rights of access, for example, in field work or in order to map the genes of a community, family or group of plants or animals, including humans. **A9, C11**
7. demonstrate an understanding of the ethical and other issues relating to animal welfare. **A9, C11**
8. explain and justify the impact of investigations on the environment, on the organisms or subjects under investigation, and on other stakeholders. **A10, C8**

**Analytical and data interpretation skills**

**5.7** Biosciences graduates should be able to:

1. use and interpret a variety of sources of information: textual, numerical, verbal, graphical. **A6, A9-11, B3-B8, C2, C4-8**
2. carry out sample selection; record and analyse data in the field and/or the laboratory; ensure validity, accuracy, calibration, precision, replicability and highlight uncertainty and possible bias during collection. **B1-4, B6, C3-4**
3. prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programmes for presenting data visually. **B3-5, B7, C3-9**
4. solve problems by the most appropriate method. **B8, C1**

**7. Benchmark standards**

7.1 The range of the biosciences is so wide and the scope of programmes offered by UK higher education providers so different that it is impossible to lay down detailed meaningful standards for all programmes that may be covered by this Subject Benchmark Statement. Three sets of examples of the kind of knowledge and skills that are expected of graduates in different fields of biology have been prepared. *All three examples are addressed within the course design*

7.2 We emphasise that these are examples, not intended to be prescriptive for any student or any programme. They do not cover everything, and many programmes have elements from more than one set and may additionally draw from aspects of the Biomedical Sciences Subject Benchmark Statement.

7.3 The standards required of students for this Subject Benchmark Statement have been divided into two groups.

7.4 The first set describes the transferable and core skills that are expected of all honours graduates in the biosciences. They are not specific for any particular subject.

7.5 The second group of standards is illustrative of specific topics, and involves factual and subject-specific knowledge.

7.6 In each case, the standards are divided into 'threshold' and 'typical'. The threshold level is the essence of the benchmark statement and is achieved by everyone obtaining an honours degree. The typical level is significantly higher and describes the standard that is expected to be achieved by a graduate who has performed well. Typical can be described as somewhere in the middle of the achievement range. Students achieving typical standards would, of course, also have achieved the threshold.

**Generic standards, not specific to any particular area Threshold standard**

7.7 On graduating with an honours degree in biosciences, graduates will have the following core knowledge, understanding and skills:

1. experience and competence in a broad range of appropriate practical techniques and skills relevant to the biosciences including data collection, analysis and interpretation of those data, and testing of hypotheses and the ability to place the work in context and to suggest lines of further investigation.
2. the ability to explain biological phenomena at a variety of levels (from molecular to ecological systems) and how evolutionary theory is relevant to their area of study.
3. the ability to plan, execute and present a piece of hypothesis-driven work within a supported framework in which qualities such as time management, problem solving, and independence are evident.
4. the ability to access and evaluate bioscience information from a variety of sources and to communicate the principles both orally and in writing in a way that is organised and topical, and recognises the limits of current hypotheses.
5. an appreciation of ethical issues and how they underpin professional integrity and standards.
6. an appreciation of the impact on society of advances in the biosciences.
7. the ability to record data accurately, and to carry out basic manipulation of data (including qualitative data and statistical analysis, when appropriate).
8. an understanding of the use of bioinformatics approaches in the analysis of large datasets.
9. strategies that enable them to update their knowledge of the biosciences.
10. an awareness of professional standards, including Good Laboratory or data collection, recording and interpretation.

**Typical standard**

7.8 On graduating with an honours degree in biosciences, in addition to demonstrating the core knowledge, understanding and skills specified in the threshold standard, a graduate will be able to:

1. plan, execute and present an independent piece of work, in which qualities such as time management, problem solving and independence are evident, as well as interpretation and critical awareness of the quality of evidence.
2. construct reasoned arguments to support their position on the ethical and social impact of advances in the biosciences.
3. demonstrate a secure and accurate understanding of the explanation of biological phenomena at a variety of levels (from molecular to ecological systems) and explain the relationship of evolutionary theory to their area of study.
4. apply relevant advanced numerical skills to biological data.
5. communicate science to peers and non-scientists.
6. demonstrate well developed strategies for updating, maintaining and enhancing their knowledge of the biosciences, including cross-disciplinary awareness.
7. access bioscience databases and use appropriate selection criteria to mine, manipulate and interpret data.

Through the module combination outlined in this programme specification students studying BSc Biological Sciences will meet all the generic threshold and typical criteria outlined above. Below we concentrate on illustrating how students will meet the subject-specific threshold and typical standards

**Subject-specific standards**

7.9 This section describes subject-specific knowledge and skills that might be expected of graduates in the following broad areas of the biosciences: molecular aspects of biology (including biochemistry), organisms, and ecology and environmental biology.

As is explained above, these are intended to be illustrative rather than definitive and details will depend on the learning outcomes of particular programmes.

**Molecular aspects of biology (including biochemistry)**

**Threshold standard**

7.10 On graduating with an honours degree in biosciences in which the study of molecular aspects of biology (including biochemistry) forms a significant proportion, graduates will be able to:

know and explain the structure and function of various types of cells in unicellular and multicellular organisms, the structure and function of cell membranes, cell

**Appendix 3**

**Course Assessment Board Structure**

|  |  |  |  |
| --- | --- | --- | --- |
| Mode of Study | Course Start Month | Length before Main CAB | Expected Month for Main CAB |
| UGT FT | September | 9 months | June |

Appendix 4 - Assessment schedule, for all modules including optional modules, identifying the final assessment submission point for the course overall

|  |  |  |
| --- | --- | --- |
| **Module** | **Exam** | **Practical or Coursework** |
| SFB1003 | 60% | 40% |
| SFB1004 (option) | 60% | 40% |
| SFB1005 (option) | 60% | 40% |
| SFB1006 | 60% | 40% |
| SFB1008 (option) | 60% | 40% |
| SFB1010 | None | 60% Mathematics and Statistics  30% Report  10% Oral Presentation |
| SFG1012 | 60% | 40% |
| SFG1015 (option) | None | 75% Technical Reports (total of 3)  25% Group Presentation |
|  |  |  |
| SIB2001 | none | 50% Group Work  35% Case Study  7.5% COSHH  7.5% Ethics |
| SIB2002 (option) | 60% | 40% |
| SIB2003 | 60% | 40% |
| SIB2005 | none | 30% Genomics in-class Assessment  30% Phylogenetics in-class Assessment  40% Tree of Life Essay |
| SIB2006 | 60% | 40% |
| SIG2012 | 60% | 40% |
| SIG2015 (option) | 60% | 40% |
|  |  |  |
| SHB4001 | none | 75% Written Report  15% Oral Presentation  10% Supervisor Assessment |
| SHB4003 (option) | 70% | 30% |
| SHB4005 | none | 50% In-class Test  50% Coursework |
| SHB4006 (option) | 70% | 30% |
| SHB4007 (option) | 70% | 30% |
| SHB4012 (option) | 70% | 30% (Poster and Interview) |
| SHB4019 (option) | 70% | 30% (Flyer and Group Presentation) |
| SHB4020 (option) | none | 30% |
| SHG4012 (option) | 70% | 30% |
| SHG4016 (option) | none | 50% Research Paper  50% Presentation (20 min) |

Appendix 5 - PDP mapping

|  |  |  |
| --- | --- | --- |
| **Aspect of PDP** | **Place in the course** | **Evidence** |
| Personal reflection and CV development. | Years 1/2/3 - Personal tutorials.  (SFPT001, SIPT001, SHPT001) | CV  List of Technical Skills (checklist) |
| Personal reflection | Optional SWE/SRE year | Placement log |
| Developing Presentation Skills | SFB1010 (formative and summative individual presentations)  SIB2001 (summative group presentation)  SHB4001 (summative individual presentation) | Feedback on presentations |
| Teamwork | SIB2001 | Learning Outcome -The students will be able to develop their team working skills in diverse teams, appreciate the advantages and difficulties of team-work whilst negotiating with their peers. |
| Various aspects of PDP | Global Professional Award |  |
| Developing Independence/ confidence | SHB4001 | Students reflect upon their personal development, write about their weaknesses, make plans for improvement and identify key skills. There is a particular emphasis on career plans with tutorials on employment and postgraduate study, as well as interview techniques. |