



## Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from The University of Sheffield

1	<b>Programme Title</b>	Biomedical Science
2	<b>Programme Code</b>	BMSU02 / BISU05 (BSc) BMSU07 / BISU06 (MBioMedSci) BMSU22 (BSc Year Abroad) BMSU23 / BISU07 (BSc Industrial Placement Year) BMSU24 / BISU08 (MBioMedSci Industrial Placement Year) BMSU25 / BISU09 (BSc Foundation, covers years 2 to 4)
3	<b>JACS Code</b>	B900 (BSc) B909 (MBioMedSci) B901 (BSc Year Abroad) B902 (BSc Industrial Placement Year) B911 (MBioMedSci Industrial Placement Year) B905 (BSc Foundation, covers years 2 to 4)
4	<b>Level of Study</b>	Undergraduate
5a	<b>Final Qualification</b>	Bachelor of Science with Honours (BSc Hons) / Master of Biomedical Sciences (MBioMedSci)
5b	<b>QAA FHEQ Level</b>	Honours (BSc); Masters (MBioMedSci)
6a	<b>Intermediate Qualification(s)</b>	None
7	<b>Teaching Institution</b> (if not Sheffield)	Not applicable
8	<b>Faculty</b>	Science
9	<b>Department</b>	School of Biosciences
10	<b>Other Departments providing credit bearing modules for the programme</b>	Psychology, Medical School
11	<b>Mode(s) of Attendance</b>	Full-time
12	<b>Duration of the Programme</b>	BMSU02 / BISU05 - 3 years BMSU07 / BISU06 - 4 years BMSU22 - 4 years BMSU23 / BISU07 - 4 years BMSU24 / BISU08 - 5 years BMSU25 / BISU09 - 4 years
13	<b>Accrediting Professional or Statutory Body</b>	None
14	<b>Date of production/revision</b>	January 2022, March 2023

### 15. Background to the programme and subject area

The Biomedical Sciences are concerned with the understanding of our bodies and our ability to control them, including the way in which we interpret and manage disease. Breakthroughs in biomedical sciences now regularly feature in the news, from radical new treatments for cancer patients to controversial advances in reproductive technologies. Over the last twenty years, research into the human genome and molecular processes have revolutionised our understanding of biological systems. Staff at Sheffield are involved at the cutting edge of these exciting developments, and this is reflected in the structure and content of our degree programmes.

The degree in Biomedical Science is aimed at students with a strong interest in modern biology, who aim to study at the forefront of the discipline. It will provide a sound background to the subject as well as opportunities to work with world-class scientists conducting research into the normal and abnormal development and function of various cells, systems and individuals.

We are one of the largest in the UK devoted to the study of Biomedical Science and have been graded excellent in both teaching and research. Located in a central position within the University campus we offer excellent teaching and research facilities.

Our degrees are modular, with a common first year. In second year students a core including an advanced skills block, Pharmacology and Molecular Cell Biology. Students can focus in Physiology and/or developmental biology, and have 40 credits of optional modules. In third / fourth years there is further specialisation, with core and optional modules. This allows flexibility and the opportunity for specialisation as the student's knowledge and interest develops. We work particularly closely with the School of Medicine. There are opportunities for study abroad or industrial placements on three of our five degree programmes. These opportunities allow students to take a year away from study in Sheffield to pursue either study at an approved university overseas (including Australia, America, Singapore and others) or working on a year-long placement in an area of industry relevant to their studies.

Many Biomedical Science students are employed in biomedical research, biotechnology and pharmaceutical industries. Others choose further study such as medicine, veterinary science, dietetics, physiotherapy, and teaching. Our graduates' general understanding of contemporary biology is also in demand in fields such as patenting and the Scientific Civil Service and their wider 'graduate skills' make them successful in areas as diverse as journalism, medical sales, the software sector, management and administration; some have set-up their own businesses.

Further information about the programme may be found at: <https://www.sheffield.ac.uk/biosciences>

## 16. Programme aims

For all its programmes the School aims to:

- develop in students an independence of thought, intellectual curiosity and critical approach to evidence, theories and concepts;
- encourage an understanding of, and commitment to, life-long learning;
- provide stimulating and enjoyable teaching that is informed by the research and scholarship of its staff;
- develop a broad understanding of biomedical science;
- provide a supportive environment for students and access to specialist central services as required;
- prepare students for postgraduate work and/or a professional career in biology or biology related areas;
- develop a more detailed and critical understanding of selected areas in biology;
- develop in students a range of programme-specific and transferable skills appropriate to employment both within and outside of biology;
- develop research skills through engagement with a research project.

The MBioMedSci extends and enhances the BSc, aiming to:

- provide an extended laboratory-based research project;
- provide advanced training in research skills.

The Year Abroad also enhances the BSc, and aims to:

- enhance understanding in biology related areas, including those lying outside of BMS;
- provide an opportunity to study areas outside of biomedical science such as business and management.

The Industrial Placement Year enhances both the BSc and MBioMedSci, and aims to:

- enhance knowledge of cutting edge techniques used in biomedical science research, data analysis and presentation skills, scientific writing and communication, experimental and project design (lab based placements);
- develop an understanding of, for example, marketing, finance, project management (non-lab based projects);
- enhance and embed key employment skills such as team work, communication, time management.

## 17. Programme learning outcomes

**Knowledge and understanding: students completing either Bachelors or Masters course will have knowledge and understanding of:**

<b>K1</b>	biological processes, systems and mechanisms including the terminology and language of biomedical science.
<b>K2</b>	research techniques and methods in biomedical science, including how these are used to advance biological knowledge.

<b>K3</b>	a range of presentation methods, including numerical, graphical, written, oral and digital media approaches.
<b>K4</b>	retrieval and evaluation of scientific information.
<b>K5</b>	ethical issues and the impact of biomedical science on society, health and economic prosperity.

<b>In addition, MBioMedSci students will have:</b>	
<b>K6</b>	a detailed knowledge of the topic studied for their research project.
<b>K7</b>	an enhanced knowledge of the process of research and its relationship to application for research funding.
<b>In addition, industrial placement year students will have:</b>	
<b>K8</b>	recognition of the importance of graduate skills in the work environment.
<b>K9</b>	a knowledge of the processes required in the work environment.

<b>Skills and other attributes:</b>	
<b>S1</b>	retrieve and analyse, evaluate and summarise scientific information.
<b>S2</b>	utilise a range of practical techniques and apply these to experimental research.
<b>S3</b>	collect, record, analyse and evaluate laboratory data in a critical, reliable and objective manner.
<b>S4</b>	evaluate uncertainty in biological information and the importance of this in drawing conclusions from data.
<b>S5</b>	work effectively as an individual and as part of a team.
<b>S6</b>	present information in a manner appropriate to the audience and in a critical and informative manner.
<b>S7</b>	identify how the wider university experience is applied to career development
<b>S8</b>	analyse the impact of biomedical science on society, health and economic prosperity.
<b>In addition, MBioMedSci students will be able to:</b>	
<b>S9</b>	apply more advanced research techniques to experimental research.
<b>S10</b>	Identify and explain more advanced issues around the ethics of biomedical research
<b>In addition, industrial placement year students will be able to:</b>	
<b>S11</b>	for lab-based placements demonstrate an awareness of cutting-edge techniques used in biomedical science research, data analysis and presentation skills, scientific writing and communication, experimental and project design (lab based placements).
<b>S12</b>	for non-lab-based placements demonstrate an awareness of graduate skills in, for example, presentation, writing, teamworking, working to deadlines, time management, in areas such as (but not limited to) marketing, finance, project management.

## 18. Teaching, learning and assessment

Development of the learning outcomes is promoted through the following teaching and learning methods:

LEARNING OUTCOME (abbreviated - see Section 17 for full text)	Teaching and Learning					Assessment methods			
	Lectures	Seminars	Tutorials	Laboratory classes	Individual project (Levels 3 and 4)	Written examinations	Coursework: essays, data handling, digital media project, oral presentations	Laboratory reports & individual project	Self / peer assessment*
K1	√		√	√	√	√	√	√	√
K2	√		√	√	√	√	√	√	√
K3		√	√	√	√	√	√	√	√
K4	√		√	√	√		√	√	√
K5	√		√		√		√	√	√
In addition, for MBiomedSci students:									
K6					√		√	√	√
K7		√			√	√	√	√	√
In addition, year in industry students will have:									
K8							√		√
K9							√		√
S1	√		√		√	√	√	√	√
S2				√	√			√	√
S3		√	√	√	√	√	√	√	√
S4		√	√	√	√	√	√	√	√
S5		√	√	√	√		√	√	√
S6		√	√		√		√	√	√
S7	√	√	√				√		√
S8	√		√		√		√	√	√
In addition, for MBiomedSci students									
S9					√			√	√
S10	√	√			√		√	√	√
In addition, year in industry students will have:									
S11							√		√
S12							√		√

\*students are encouraged and expected to continually review and reflect on their performance. Self and peer assessment is included here for completeness, although it is generally designed to aid students' learning rather than to contribute to the final degree classification.

**Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:**

	Types of assessment (approximate %)			
	Level 1	Level 2*	Level 3*	Level 4
Written examinations	75%	59-75%	42%	10%
Anatomy based spotter examinations	NA	0-16%	NA	NA
Project work, laboratory reports and other on-going assessment	25%	25%	58%	90%

\* These figures are approximate as they depend on the choice of modules made by each individual

## 19. Reference points

**The learning outcomes have been developed to reflect the following points of reference:**

### External:

Subject Benchmark Statements

<http://www.qaa.ac.uk/AssuringStandardsAndQuality/subject-guidance/Pages/Subject-benchmark-statements.aspx>

Framework for Higher Education Qualifications (2017)

<http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/The-framework-for-higher-education-qualifications-in-England-Wales-and-Northern-Ireland.aspx>

### Internal:

University Vision and Strategic Plan

<https://www.sheffield.ac.uk/vision>

University of Sheffield Widening Participation Strategy <https://www.sheffield.ac.uk/outreach>

Departmental Research Interests (<http://www.shef.ac.uk/bms>)

External Examiners

Student representatives of the staff-student committee

## 20. Programme structure and regulations

The programme is modular and offered as full-time study only. Students register for either:

1. a three-year BSc,
2. a four year MBioMedSci,
3. a four year BSc with either Year Abroad or an Industrial Placement Year,
4. a five year MBioMedSci with an Industrial Placement Year,
5. a four year BSc with an initial foundation year.

Transfers between programmes are possible subject to academic performance, whether places are available (Year Abroad) and the timing of the transfer request from the student.

Students who fail to meet academic checkpoints in B909, B901 and B911 will be required to transfer to the appropriate degree programmes as stated in the regulations. Students who fail to obtain industrial placements will be required to transfer to either B900 or B909.

All students register for modules to a total value of 120 credits in each year of study.

In Level 1 core (compulsory) modules to the value of 100 credits are taken. The remaining 20 credits can be taken across the School of Biosciences, or outside of the School (subject to approval and timetable constraints). At Level 2 students take core topics to the value of 60 credits, ensuring they have a solid background in the areas covered in subsequent years. Of the remaining 60 optional credits, 20 credits must be taken in Physiology or Developmental Biology. For the final 40 credits, 20 must be taken in BMS

modules and up to 20 credits may be taken across the School of Biosciences or outside the School (subject to approval and timetable constraints). In Level 3, students have 50 credits of core modules based around a capstone project (30 credits) and dissertation (20 credits). Students can choose to take one of four routes: the *Developmental and Cell Biology* route, the *Neuroscience* route, the *Physiology with Pharmacology* route and the *Stem Cell* route. For each route there are recommended lecture-based modules. Students can choose 50 credits of lecture-based modules from BMS. Choice is also permitted from a small set of non-BMS lecture modules in the School of Biosciences, Medical School and Department of Psychology. The final 20 credits students is chosen from a range of BMS based practical modules. The core curriculum approach in Levels 1 and 2 ensures that all students within the Department of Biomedical Science have the appropriate background for their preferred specialization at level 3. This gives a good deal of flexibility of choice at Level 3. The only exception is that those students who have not completed Level 2 anatomy (either BMS246 or BMS228) cannot take the Forensic Anatomy, as this contains advanced anatomical dissection. Students who graduate with a BSc degree have their final degree classification calculated as one third from their Level 2 marks and two thirds from Level 3 marks.

Students who wish to progress to Level 4 (MBioMedSci students only) must achieve a weighted mean grade of 59.5 or above at Level 2 and a grade of 64.5 or above in the Advanced Skills in Biomedical Science module. Students who do not meet the academic requirement move to the BSc. At Level 4 core modules to the value of 120 credits are taken, including a laboratory-based research module to the value of 60 credits, two 15 / 30 credit modules in research training and a 15 credit module in Ethics and Public Understanding of Science. MBioMedSci graduates have their final degree classification calculated as 20% from their Level 2 marks, 40% from Level 3 marks and 40% from Level 4 marks.

Those students on the BSc with a Year Abroad complete the first two years of the BSc, and then spend a year at another institution. They must achieve a weighted mean grade of 59.5 or above at Levels 1 and 2. Students who do not meet the academic requirement move to the BSc. At the host institution they are required to take at least 50% of their courses in biology related areas, but may also expand and study other subject areas such as management and business (subject to any pre-requisite). They need to pass this year to subsequently be awarded the BSc in Biomedical Science with a year Abroad. However, this year does not contribute to their degree classification.

Those students on the BSc with an Industrial Placement Year complete the first two years and then go out on placement, before returning to complete their final year of academic studies. Placements are not guaranteed as they are awarded on a competitive basis, but help and guidance on applications is provided. Those students on the MBioMedSci with an Industrial Placement Year still need to meet the academic requirements of the standard MBioMedSci. Any student not meeting these drops to either the BSc with an Industrial Placement Year or the BSc (depending on whether a placement has been completed). MBioMedSci students may choose to take their placement year between Levels 2 and 3 or 3 and 4.

Detailed information about the structure of programmes, regulations concerning assessment and progression and descriptions of individual modules are published in the University Calendar available on-line at <http://www.sheffield.ac.uk/calendar/>.

## 21. Student development over the course of study

Level 1	Level 1 gives a broad background to biology, both in theory and in practice. It is intended to take students from A-Level to University level and so there is some repetition of key material as well as the introduction of new topics, new skills and new ways of working. Tutorials are designed to encourage generic skills such as literature searching, critical analysis, data handling, presentation skills and teamwork. By the end of Level 1 students will have a firm foundation for the rest of the programme.
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Level 2	All students entering Level 2 will have a common background and we aim to build on this by providing more detailed experiences of laboratory work and lecture topics. A core 30 credit skills module allows the students to build on key laboratory skills. Additional assessments and the included tutorials permit continued development of generic transferable skills including data analysis, numeric, written, oral presentation and employability. Additional core modules cover Pharmacology (10 credits) and Molecular Cell Biology (20 credits) underpin the content in the rest of Level 2 and 3. Students can start to specialise on Physiology-related or Developmental and Cellular pathways through a 20 credit block which incorporates lectures and practicals. The remaining optional 40 credits allow students to further focus on different aspects of the course such as neuroscience, or stem cells and cancer. Included in the optional units are up to 20 credits of anatomical dissection or other modules offered by the School. Up to 20 credits may be taken outside of the School, subject to approval and timetabling. At the end of level 2 students on B901, B902 and B911 also have the chance to either study abroad or to take a year 'out' gaining subject-related experience by working in industry.
Level 3	By Level 3 students have an understanding of the core knowledge and skills in Biomedical Science and they can choose from a variety of modules depending on their interests and career aspirations. Although the content of each module may differ, all Level 3 lecture modules are based on research currently pursued in the School and all programmes are run by researchers. Because of this we expect more criticality of thought, better understanding of the knowledge-base and more independent learning by the student. However, the first two years have been designed with this in mind and successful students usually appreciate and enjoy this transition to a higher level of work.  At the end of Level 3 students on B911 who have not already taken a placement year do so, gaining subject-related experience by working in industry.
Level 4	Students who choose to study at Level 4 move into a more advanced level of working. Level 4 utilises the knowledge, practical and transferable skills attained during the first 3 Levels and moves them into a research-rich environment where students are expected to be active members of research groups. As such they are independent learners who are confident in their abilities and willing and able to solve problems and to seek help when required. They will also have an understanding of the relevance of their subject to the wider population and its importance to health and economy at the global level, as well as being able to communicate effectively both within and outside their field.

## 22. Criteria for admission to the programme

Detailed information regarding admission to the programme is available at <http://www.shef.ac.uk/prospective> & <https://www.sheffield.ac.uk/prospectus/courseDetails.do?id=B9002016>

## 23. Additional information

The Department supplements its teaching and learning activities with interactive programme materials delivered via a web-based learning environment called MOLE (My On-line Learning Environment).

The students will have the opportunity to attend a lively programme of seminars where internationally renowned scientists present their latest discoveries. There is also a large and active Biomedical Science Society that organises social and academic events throughout the year.

Sheffield combines the advantages of a top quality University, an outstanding Students' Union, a large city and a pleasant location close to the Peak District National Park. The Department of Biomedical Science is one of three biology-based departments at Sheffield and we represent one of the major centres of biological excellence in the UK.

This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at <http://www.shef.ac.uk/ssid>.