



# UNIVERSITY OF LINCOLN

## Programme Specification

Title:

### Biomedical Science

Final Award: **Master of Biosciences (MBio)**

With Exit Awards at:

**Certificate of Higher Education (CertHE)**

**Diploma of Higher Education (DipHE)**

**Bachelor of Science with Honours (BSc (Hons))**

**Master of Biosciences (MBio)**

To be delivered from: 1 Sep 2015

<b>Level</b>	<b>Date</b>
Level 1 or Certificate of Higher Education (CertHE)	2019-20
Level 2 or Diploma of Higher Education (DipHE)	2020-21
Level 3 or Bachelor of Science with Honours (BSc (Hons))	2021-22
Level 4 or Master of Biosciences (MBio)	2022-23

## Table Of Contents

<b>1. Introduction</b> .....	3
<b>2. Basic Programme Data</b> .....	4
<b>3. Programme Description</b> .....	5
3.1 Overview .....	5
3.2 Aims and Objectives .....	5
3.3 Variations to Standard Regulations and Guidance .....	5
<b>4. Programme Outcomes</b> .....	6
4.1 Knowledge and Understanding .....	6
4.2 Subject Specific Intellectual Skills .....	6
4.3 Subject Specific Practical Skills .....	6
4.4 Transferable Skills and Attributes .....	7
<b>5. Learning, Teaching and Assessment Strategies</b> .....	8
5.1. Learning and Teaching Strategy .....	8
5.2. Assessment Strategy .....	10
<b>6. Programme Structure</b> .....	12
<b>Appendix I - Curriculum Map</b> .....	14
<b>Appendix II - Assessment Map</b> .....	20
<b>Appendix III - Benchmark Analysis</b> .....	29
<b>Appendix IV - Benchmark Statements(s)</b> .....	35

## **1. Introduction**

This document describes one of the University of Lincoln's programmes using the protocols required by the UK National Qualifications Framework as defined in the publication *QAA guidelines for preparing programme specifications*.

This programme operates under the policy and regulatory frameworks of the University of Lincoln.

## 2. Basic Programme Data

<b>Final Award:</b>	Master of Biosciences (MBio)
<b>Programme Title:</b>	Biomedical Science
<b>Exit Awards and Titles</b>	Certificate of Higher Education (CertHE) Diploma of Higher Education (DipHE) Bachelor of Science with Honours (BSc (Hons)) Master of Biosciences (MBio)
<b>Subject(s)</b>	Biomedical Sciences
<b>Mode(s) of delivery</b>	Full Time
<b>Is there a Placement or Exchange?</b>	Yes
<b>UCAS code</b>	B941
<b>Awarding Body</b>	University of Lincoln
<b>Campus(es)</b>	Lincoln Campus
<b>School(s)</b>	School of Life Sciences
<b>Programme Leader</b>	Paul Squires (PSquires)
<b>Relevant Subject Benchmark Statements</b>	
<b>Professional, Statutory or Regulatory Body Accreditation</b>	Institute of Biomedical Science (IBMS)
<b>Programme Start Date</b>	2019-20

## **3. Programme Description**

### **3.1 Overview**

The MBio Biomedical Science aims to provide graduates with the academic qualities and understanding of laboratory-based investigation of human health and disease required for registration by the Health Professions Council (HPC) as a Biomedical Scientist after a period of training in an accredited laboratory.

To achieve this, students need to understand how the human body works at a physiological level in terms of the major organ systems, at a cellular level and at a molecular level in terms of the molecules and chemical reactions that make it work. As the course progresses the emphasis shifts to how these systems are altered in disease and how we can use laboratory investigations in the diagnosis and management of disease.

The Institute for Biomedical Science (IBMS) is the associated professional and learned body for Biomedical Scientists and hence accredits appropriate BSc (Honours) Biomedical Science and Applied Biomedical Science degrees.

### **3.2 Aims and Objectives**

In consequence, the educational aims of the MBio Biomedical Science are that the student will:

- Develop a comprehensive knowledge and understanding of the biological factors and processes contributing to human health and disease
- Acquire a detailed knowledge and understanding of the specialist disciplines of biomedical science
- Demonstrate a working knowledge of diverse biomedical laboratory skills
- Analyse, interpret and evaluate biomedical laboratory data
- Attain an in-depth knowledge of basic laboratory instrumentation and principles
- Apply scientific knowledge and understanding to biomedical practice
- Utilise research and technical skills to analyse and interpret results

### **3.3 Variations to Standard Regulations and Guidance**

Yes - see the Approved Variations to the University's Undergraduate Regulations:  
<http://secretariat.blogs.lincoln.ac.uk/university-regulations/>

## 4. Programme Outcomes

Programme-level learning outcomes are identified below.

Refer to *Appendix I – Curriculum Map* for details of how outcomes are deployed across the programme.

### 4.1 Knowledge and Understanding

On successful completion of this programme a student will have knowledge and understanding of:

- 1 The anatomical, physiological, cellular and molecular structure, function and regulation of the human body in health
- 2 The various diverse cellular, molecular and genetic factors, processes and mechanisms underpinning the pathogenesis of human diseases
- 3 How to utilise the scientific knowledge and principles, analytical and technical skills of biomedical laboratory practice underpinning the diagnosis of human diseases
- 4 How to appraise the complex multi-disciplinary nature, complementary instrumentation elements, health & safety and quality assurance of biomedical laboratory practice
- 5 How to apply the models, approaches and concepts of differential and laboratory biomedical diagnosis of human diseases
- 6 How to employ the theoretical arguments and paradigms as well as the quantitative and qualitative methodologies in biomedical research
- 7 The scientific rationale and practical applications of the specialist biomedical subjects and the contemporary issues at the forefront of laboratory medicine
- 8 How to evaluate the ethical and social considerations, public health prevention and screening applications of specific specialist biomedical subjects
- 9 How to apply the strategy, design, process and implementation skills of biomedical laboratory practice and research at the interface between biological and medical sciences

### 4.2 Subject Specific Intellectual Skills

On successful completion of this programme a student will be able to:

- 10 Integrate theory and practice
- 11 Synthesise information/data from a variety of sources
- 12 Formulate and test hypotheses
- 13 Analyse, interpret and critically evaluate research data and/or evidence based practice
- 14 Utilise problem solving skills and/or risk assessment systems
- 15 Design a process and/or system to meet a need
- 16 Plan, conduct and/or report on an investigation

### 4.3 Subject Specific Practical Skills

On successful completion of this programme a student will be able to:

- 17 Apply laboratory techniques such as analytical and/or microscopic analysis
- 18 Work safely and effectively in laboratories
- 19 Demonstrate competence in handling and statistical analysis of data gained from practical work
- 29 Develop knowledge of research planning, logistics and constraints
- 30 Demonstrate a breadth of advanced laboratory, field and analytical skills

#### **4.4 Transferable Skills and Attributes**

On successful completion of this programme a student will be able to:

- 20 Work effectively in a team
- 21 Structure and communicate ideas effectively by written and/or verbal means
- 22 Gather and evaluate relevant information/data from appropriate manual and/or electronic sources
- 23 Manage time, resources and task to deadlines
- 24 Negotiate informally with peers and/or professionals
- 25 Apply numerical and statistical techniques of analysis
- 26 Demonstrate self-awareness and confidence in skills transferable to the workplace
- 27 Articulate opinions and formulate arguments effectively
- 28 Use IT to store, retrieve and produce material
- 31 Enhance employability skills for a variety of professional and research sectors
- 32 Work effectively independently

For details of each module contributing to the programme, please consult the module specification document.

## 5. Learning, Teaching and Assessment Strategies

### 5.1. Learning and Teaching Strategy

The teaching and learning strategy adopted within the MBio Biomedical Science are according to the University's stated mission and the objectives of the programme. This mission provides for an educational environment dedicated to lifelong learning, and the employability of its graduates. Our aim is to develop a confident as well as a knowledgeable graduate. Hence, the teaching, learning and assessment are progressive throughout the programme to encourage transition from dependent into independent learning so that the students become increasingly responsible for their own learning as the programme advances. The section below indicates how the programme embraces the philosophy of "Student as Producer"

Discovery: Student as Producer

Problem – based learning (PBL):

At level 1, students will research problems/case studies chosen from a suggested list, in groups of 3-4 and present their findings to a group of their peers and a tutor. Presentation may be via powerpoint, poster or web based such as a wiki. Module staff will provide guidance and support. This will be further developed at level 2 with more emphasis on individual presentations and reports and more challenging problems. At level 3 the students will work more autonomously and present their findings in written format.

Enquiry – based learning (EBL):

At level 1, students will research topics chosen from a suggested list, either singly or in groups of 3-4. They will decide which aspects to focus on based on a suggested generic structure. They may present their findings to a group of their peers and a tutor. Presentation may be via powerpoint, poster or web based such as a wiki, or they may write an individual report. Module staff will provide guidance and support. This will be further developed at level 2 with more emphasis on individual presentations and reports and more challenging problems. At level 3 the students will work more autonomously and negotiate topics with module staff that are relevant to the content.

Research – based learning (RBL):

At level 1 and 2, students will learn research skills in terms of data collection and analysis. They will also discuss ethical issues and governance of research. At level 2 there will be a focus on preparation to undertake their final year research project. Assessments on other level 1 and 2 modules will develop skills in literature review, generation, interpretation and presentation of laboratory data. They will be directed to additional support in the library and maths/stats support centre.

At level 3 students will undertake a research project where they work with an academic supervisor and technical support usually to generate primary data, in all cases students will carry out individual analysis of either primary or secondary data and present their findings. This may involve working in groups but presentation of data will be individual.

Academic staff will use their research experience to inform their teaching, particularly at level 3.

Technology in Teaching: Digital Scholarship:

Staff use blackboard to post lecture notes, weblinks and video clips to support classroom and laboratory based learning. Electronic communication is widely used to inform students about classes, assessments, marking criteria and module content. Some staff use online submission of work and revision tests via blackboard to aid learning. Wikis have also been used as an assessment tool on some modules.

A facebook group was set up for biomedical science students, initially to facilitate communication with



graduates and applicants. The students have developed this and have their own groups for each level. The programme leader and the student mentors also have access to the group, but it is student led. The students use it to communicate with each other and ask questions about course material. They also post links that they find useful or interesting.

Space and spatiality: Learning Landscapes in HE:

Laboratory space is critical to the teaching of biomedical science and other laboratory based science disciplines. The modern science building has six large teaching well-equipped multi-functional teaching laboratories for analytical and microscopic practical sessions and four small specialist laboratories on the first and second floor for demonstration and preparation in addition to the biomedical teaching and research laboratories on the ground floor. There is a dedicated microbiology lab on the second floor for category 2 microbiology and molecular biology practical classes. The option of visits to local hospital laboratories and museums is used to supplement the formal curriculum and students have had the opportunity for a study visit to labs in Toronto in the past and it is hoped to offer similar opportunities in the future.

Research and Evaluation: Scholarship of Teaching and Learning:

All modules are evaluated using either electronic or paper questionnaires. Module co-ordinators have the discretion to adapt the questions to suit their delivery and content. Some pedagogic research is being developed, involving students and staff. Members of the team reflect on student perception and achievement in terms of progress, classifications and employability both formally and informally and adapt practice and modules accordingly. One of the students, aided by staff members presented a qualitative study on student perceptions of the student as producer project at IBMS congress.

Student Voice: Diversity, Difference and Dissensus:

We currently have a number of mechanisms by which students can make their views heard. In addition to the standard subject committees student reps meet with year tutors informally to discuss issues, or can raise them with their academic tutor or with the programme leader or head of school. They can ask questions about professional issues at the employer liaison committee. We encourage students to engage with the course and wider school and university activities.

Support for research- based teaching and learning through expert engagement with information resources:

All students have a library induction in induction week. The subject librarian has access to several of the blackboard sites including the award sites to facilitate communication with students. Library workshops and updates are posted on these sites and students are encouraged by staff to engage with workshops in the library.

Creating the future: employability, enterprise, postgraduate, beyond employability:

Employability has always been a key factor in our design and delivery. Maintenance of IBMS accreditation is seen as a key part of our employability agenda. Many of our students have gone on to be registered biomedical scientists or work in medical research. This has always been our main focus, but a number of graduates have taken up other employment and we hope to increase the range of transferable and scientific skills to facilitate this further. With this in mind we are looking to further improve the analytical and molecular biology content of the new curriculum. External examiners have identified practical and project work as a strength of our curriculum. Students gain experience of a range of techniques including histology, immunological and microbiology in addition to the analytical and molecular techniques. There are several opportunities for group and collaborative work and to communicate findings in a range of media

For details of each module contributing to the programme, please consult the module specification document.

## 5.2. Assessment Strategy

The assessment strategy adopted within the MBio Biomedical Science includes a range of assessment methods throughout the programme including laboratory exercises or reports, case studies, problem solving exercises, unseen examinations, essays, poster or oral group presentations, short answer and structured questions and project report. The assessment strategy fits with the “Student as Producer” initiative as detailed below.

### Assessment and Feedback: Active Learning in Communities of Practice

Group work and practical classes are used to encourage active learning. Students are given a choice of topics or case studies to explore either individually or in groups. They are linked to assessment using individual and group oral presentations, poster presentations and wiki’s to present their findings. In addition, lab reports, case study reports and project reports are used to assess research skills, critical thinking, data interpretation and presentation and written communication skills. It is intended in future to make use of self and peer-assessment at level 1 to encourage students to critically evaluate the assessment criteria and share their findings with each other. Development of research skills will be supported by teaching on the research methods modules and by project supervisors, but students will also be encouraged to make use of support available in the library

### Assessment strategy:

Details of the module assessment strategy are included with each module specification. Information given here provides an overview of the strategy that has guided the course management teams’ approach to assessment in each pathway. Of primary importance is the link between the module learning outcomes and the way in which the overall learning on each module is assessed. Assessments will relate directly to the module learning outcomes. Where appropriate each assessment may incorporate more than one learning outcome.

It is intended that the assessments at each level of the programme reflect change in demands upon the student change over the three years as they grow in knowledge and skill. Assessments aim at informing the teaching staff on the student progress, acquired academic knowledge and understanding, subject specific and transferable skills and attributes.

In level one, modules are assessed by essay, assignment, group presentation or laboratory reports and unseen examination.

In level two, modules are assessed by presentation, assignments, laboratory reports, unseen examination, essay or case study report.

In level three, modules are assessed by essay or assignment and examination or case study report. The biomedical research project is assessed by a presentation and report.

### Assessment tasks provide:

- A means of judging the performance of the student in achieving the learning outcomes of each module.
- Feedback to the student on performance

The assessment of each module is monitored by the course team to ensure the following:

1. Appropriate performance criteria.
2. Reasonable time required for the assessment task
3. Reliable and valid assessment marking through internal moderation

In addition to summative assessments, formative assessment will be included to inform students about their progress during the course of the delivery of modules. This includes practical report writing, seminar presentations, class tests and on-line assessments.

The membership and terms of the Board of Examiners and the responsibilities of the external examiners are set out in the University Taught Undergraduate Awards: Principles and Regulations. The progress panel normally convenes in February, and the subject board of examiners convenes in June and September of each year to facilitate progression of students and the confirmation of awards.

The MBio Biomedical science degree programme is operated according to the University of Lincoln Regulations and Progression regulations as enclosed in appendix VIII.

Details of module assessment strategy are included with each module specification.

## 6. Programme Structure

The total number of credit points required for the achievement of Certificate of Higher Education (CertHE) is 120.

The total number of credit points required for the achievement of Diploma of Higher Education (DipHE) is 240.

The total number of credit points required for the achievement of Bachelor of Science with Honours (BSc (Hons)) is 360.

The total number of credit points required for the achievement of Master of Biosciences (MBio) is 480.

### Level 1

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20	15	Core
Health & Disease 2019-20	15	Core
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20	15	Core
Genetics 2019-20	15	Core
Integrative Biochemistry 2019-20	15	Core
Research Methods for Life Scientists 1 2019-20	15	Core
Cell Biology 2019-20	15	Core
Integrative Biochemistry 2 2019-20	15	Core

### Level 2

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Medical Microbiology 2020-21	15	Core
Molecular Biology 2020-21	15	Core
Fundamentals of Pharmacology & Toxicology 2020-21	15	Core
Research Methods for Life Scientists 2 2020-21	15	Core
Biology of Human Disease 2020-21	15	Core
Immunology 2020-21	15	Core
Introduction to Clinical Biochemistry 2020-21	15	Core
Biological Analysis 2020-21	15	Core

### Level 3

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Clinical Biochemistry & Immunology 2021-22	15	Core
Genetics & Bioethics 2021-22	15	Optional
Haematology 2021-22	15	Core
Cellular Pathology 2021-22	15	Core
Infection Sciences 2021-22	15	Core
Transfusion & Transplantation 2021-22	15	Core
Life Sciences Research Project 2021-22	30	Core
Biotechnology 2021-22	15	Optional
Advanced Pharmacology 2021-22	15	Optional
Veterinary Parasitology 2021-22	15	Optional
Overseas Field Course 2021-22	15	Optional
Introduction to Forensic Anthropology 2021-22	15	Optional

Animal Population Genetics 2021-22	15	Optional
------------------------------------	----	----------

**Level 4**

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
MBio Research techniques 2022-23	30	Core
MBio Research project 2022-23	60	Core

**Masters**

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Professional and Research Skills in Biosciences A 2022-23	15	Core
Professional and Research Skills in Biosciences B 2022-23	15	Core

## Appendix I - Curriculum Map

This table indicates which modules assume responsibility for delivering and ordering particular programme learning outcomes.

**Key:**  Delivered and Assessed     Delivered     Assessed

### Level 1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Cell Biology 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Genetics 2019-20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Health & Disease 2019-20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	
Integrative Biochemistry 2 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Integrative Biochemistry 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Research Methods for Life Scientists 1 2019-20						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Cell Biology 2019-20		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Genetics 2019-20		<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Health & Disease 2019-20									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20		<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20		<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Integrative Biochemistry 2 2019-20		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Integrative Biochemistry 2019-20		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Research Methods for Life Scientists 1	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		



Immunology 2020-21		✓			✓				✓	✓	✓	
Introduction to Clinical Biochemistry 2020-21		✓							✓	✓	✓	
Medical Microbiology 2020-21		✓			✓				✓	✓	✓	
Molecular Biology 2020-21		✓			✓				✓	✓	✓	
Research Methods for Life Scientists 2 2020-21	✓	✓	✓	✓			✓		✓	✓	✓	

	PO25	PO26	PO27	PO28	PO29	PO30	PO31	PO32
Biological Analysis 2020-21	✓	✓	✓	✓				✓
Biology of Human Disease 2020-21		✓	✓	✓				✓
Fundamentals of Pharmacology & Toxicology 2020-21	✓	✓	✓	✓				✓
Immunology 2020-21		✓	✓	✓				✓
Introduction to Clinical Biochemistry 2020-21		✓	✓	✓				✓
Medical Microbiology 2020-21		✓	✓	✓				✓
Molecular Biology 2020-21	✓	✓	✓	✓				✓
Research Methods for Life Scientists 2 2020-21	✓	✓	✓	✓				✓

### Level 3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Advanced Pharmacology 2021-22									✓	✓	✓	
Animal Population Genetics 2021-22										✓	✓	
Biotechnology 2021-22										✓	✓	
Cellular Pathology 2021-22		✓	✓	✓	✓		✓	✓	✓	✓	✓	
Clinical Biochemistry & Immunology 2021-22		✓			✓		✓	✓	✓	✓	✓	
Genetics & Bioethics 2021-22		✓	✓	✓	✓		✓	✓	✓	✓	✓	
Haematology 2021-22		✓	✓	✓	✓		✓	✓	✓	✓	✓	
Infection Sciences 2021-22		✓	✓	✓	✓		✓	✓	✓	✓	✓	
Introduction to Forensic Anthropology 2021-22	✓									✓	✓	
Life Sciences Research Project 2021-22						✓			✓	✓	✓	✓



Overseas Field Course 2021-22										✓	✓	✓
Transfusion & Transplantation 2021-22							✓	✓	✓	✓	✓	
Veterinary Parasitology 2021-22		✓	✓		✓					✓	✓	

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Advanced Pharmacology 2021-22	✓	✓							✓	✓	✓	
Animal Population Genetics 2021-22	✓								✓	✓	✓	
Biotechnology 2021-22	✓	✓			✓		✓	✓	✓	✓	✓	✓
Cellular Pathology 2021-22	✓	✓			✓	✓			✓			
Clinical Biochemistry & Immunology 2021-22	✓	✓							✓	✓	✓	
Genetics & Bioethics 2021-22	✓	✓			✓				✓	✓	✓	
Haematology 2021-22	✓	✓							✓	✓	✓	
Infection Sciences 2021-22	✓	✓			✓				✓	✓	✓	
Introduction to Forensic Anthropology 2021-22	✓			✓	✓				✓	✓	✓	
Life Sciences Research Project 2021-22	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Overseas Field Course 2021-22	✓	✓					✓		✓	✓	✓	
Transfusion & Transplantation 2021-22	✓	✓							✓	✓	✓	
Veterinary Parasitology 2021-22	✓	✓			✓		✓		✓	✓	✓	

	PO25	PO26	PO27	PO28	PO29	PO30	PO31	PO32
Advanced Pharmacology 2021-22	✓	✓	✓	✓				✓
Animal Population Genetics 2021-22		✓	✓	✓				✓
Biotechnology 2021-22	✓	✓	✓	✓				✓
Cellular Pathology 2021-22		✓	✓					✓
Clinical Biochemistry & Immunology 2021-22		✓	✓	✓				✓
Genetics & Bioethics 2021-22		✓	✓	✓				✓
Haematology 2021-22		✓	✓	✓				✓
Infection Sciences 2021-22		✓	✓	✓				✓
Introduction to Forensic Anthropology 2021-22		✓	✓	✓				✓
Life Sciences Research Project 2021-22	✓	✓	✓	✓				✓
Overseas Field Course 2021-22	✓	✓	✓	✓				✓
Transfusion & Transplantation 2021-22		✓	✓	✓				✓

Veterinary Parasitology 2021-22

✓	✓	✓	✓				✓
---	---	---	---	--	--	--	---

## Level 4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MBio Research project 2022-23							✓	✓	✓	✓		✓
MBio Research techniques 2022-23							✓					
	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
MBio Research project 2022-23	✓			✓		✓	✓		✓		✓	
MBio Research techniques 2022-23									✓			
	PO25	PO26	PO27	PO28	PO29	PO30	PO31	PO32				
MBio Research project 2022-23	✓				✓			✓				
MBio Research techniques 2022-23							✓	✓				

## Masters

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Professional and Research Skills in Biosciences A 2022-23											✓	
Professional and Research Skills in Biosciences B 2022-23								✓	✓		✓	✓
	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Professional and Research Skills in Biosciences A 2022-23	✓								✓	✓	✓	✓
Professional and Research Skills in Biosciences B 2022-23				✓					✓	✓	✓	✓

	PO25	PO26	PO27	PO28	PO29	PO30	PO31	PO32
Professional and Research Skills in Biosciences A 2022-23			✓	✓				✓
Professional and Research Skills in Biosciences B 2022-23			✓	✓	✓			✓

## Appendix II - Assessment Map

This table indicates the spread of assessment activity across the programme. Percentages indicate assessment weighting.

### Level 1

	01	02	03	04	05	06	07	08	09	10	11	12
Cell Biology 2019-20									50			
Genetics 2019-20												
Health & Disease 2019-20												
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20											30	
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20												
Integrative Biochemistry 2 2019-20												
Integrative Biochemistry 2019-20								50				
Research Methods for Life Scientists 1 2019-20										50		50

	13	14	15	16	17	18	19	20	21	22	23	24
Cell Biology 2019-20		50										
Genetics 2019-20												50
Health & Disease 2019-20										50		
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20				70								
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20								30				
Integrative Biochemistry 2 2019-20												
Integrative Biochemistry 2019-20		50										
Research Methods for Life Scientists 1 2019-20												

	25	26	27	28	29	30	31	32	33	34	35	36
Cell Biology 2019-20												
Genetics 2019-20										50		
Health & Disease 2019-20												
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20												
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20								20				
Integrative Biochemistry 2 2019-20								50				
Integrative Biochemistry 2019-20												
Research Methods for Life Scientists 1 2019-20												

	37	38	39	40	41	42	43	44	45	46	47	48
Cell Biology 2019-20												
Genetics 2019-20												
Health & Disease 2019-20												
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20												
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20												
Integrative Biochemistry 2 2019-20												
Integrative Biochemistry 2019-20												
Research Methods for Life Scientists 1 2019-20												

	49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)
Cell Biology 2019-20						
Genetics 2019-20						

Health & Disease 2019-20													50
Human Anatomy & Physiology, with Clinical Correlations 1 2019-20													
Human Anatomy & Physiology, with Clinical Correlations 2 2019-20													50
Integrative Biochemistry 2 2019-20													50
Integrative Biochemistry 2019-20													
Research Methods for Life Scientists 1 2019-20													

## Level 2

	01	02	03	04	05	06	07	08	09	10	11	12
Biological Analysis 2020-21					50							
Biology of Human Disease 2020-21												
Fundamentals of Pharmacology & Toxicology 2020-21												
Immunology 2020-21												
Introduction to Clinical Biochemistry 2020-21												
Medical Microbiology 2020-21												
Molecular Biology 2020-21							50					
Research Methods for Life Scientists 2 2020-21										50		50

	13	14	15	16	17	18	19	20	21	22	23	24
Biological Analysis 2020-21												
Biology of Human Disease 2020-21						50						
Fundamentals of Pharmacology & Toxicology 2020-21										50		
Immunology 2020-21							50					
Introduction to Clinical Biochemistry 2020-21									50			
Medical Microbiology 2020-21	50											
Molecular Biology 2020-21												
Research Methods for Life Scientists 2												

2020-21													
	25	26	27	28	29	30	31	32	33	34	35	36	
Biological Analysis 2020-21													
Biology of Human Disease 2020-21													
Fundamentals of Pharmacology & Toxicology 2020-21													
Immunology 2020-21													
Introduction to Clinical Biochemistry 2020-21													
Medical Microbiology 2020-21													
Molecular Biology 2020-21													
Research Methods for Life Scientists 2 2020-21													
	37	38	39	40	41	42	43	44	45	46	47	48	
Biological Analysis 2020-21													
Biology of Human Disease 2020-21													
Fundamentals of Pharmacology & Toxicology 2020-21													
Immunology 2020-21													
Introduction to Clinical Biochemistry 2020-21													
Medical Microbiology 2020-21													
Molecular Biology 2020-21													
Research Methods for Life Scientists 2 2020-21													
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)	
Biological Analysis 2020-21											50		
Biology of Human Disease 2020-21												50	

Fundamentals of Pharmacology & Toxicology 2020-21												50
Immunology 2020-21												50
Introduction to Clinical Biochemistry 2020-21												50
Medical Microbiology 2020-21											50	
Molecular Biology 2020-21											50	
Research Methods for Life Scientists 2 2020-21												

### Level 3

	01	02	03	04	05	06	07	08	09	10	11	12
Advanced Pharmacology 2021-22								10				40
Animal Population Genetics 2021-22							20					30
Biotechnology 2021-22							40					
Cellular Pathology 2021-22												
Clinical Biochemistry & Immunology 2021-22											50	
Genetics & Bioethics 2021-22												100
Haematology 2021-22												50
Infection Sciences 2021-22												
Introduction to Forensic Anthropology 2021-22										50		50
Life Sciences Research Project 2021-22										100		
Overseas Field Course 2021-22	20											
Transfusion & Transplantation 2021-22												
Veterinary Parasitology 2021-22								50				50

	13	14	15	16	17	18	19	20	21	22	23	24
Advanced Pharmacology 2021-22												
Animal Population Genetics 2021-22				50								
Biotechnology 2021-22	60											
Cellular Pathology 2021-22										50		
Clinical Biochemistry & Immunology 2021-22												



Genetics & Bioethics 2021-22												
Haematology 2021-22				50								
Infection Sciences 2021-22									50			
Introduction to Forensic Anthropology 2021-22												
Life Sciences Research Project 2021-22												
Overseas Field Course 2021-22				80								
Transfusion & Transplantation 2021-22											50	
Veterinary Parasitology 2021-22												

	25	26	27	28	29	30	31	32	33	34	35	36
Advanced Pharmacology 2021-22												
Animal Population Genetics 2021-22												
Biotechnology 2021-22												
Cellular Pathology 2021-22												
Clinical Biochemistry & Immunology 2021-22												
Genetics & Bioethics 2021-22												
Haematology 2021-22												
Infection Sciences 2021-22												
Introduction to Forensic Anthropology 2021-22												
Life Sciences Research Project 2021-22												
Overseas Field Course 2021-22												
Transfusion & Transplantation 2021-22												
Veterinary Parasitology 2021-22												

	37	38	39	40	41	42	43	44	45	46	47	48
Advanced Pharmacology 2021-22												
Animal Population Genetics 2021-22												
Biotechnology 2021-22												
Cellular Pathology 2021-22												
Clinical Biochemistry & Immunology 2021-22												
Genetics & Bioethics 2021-22												

Haematology 2021-22													
Infection Sciences 2021-22													
Introduction to Forensic Anthropology 2021-22													
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22													
Transfusion & Transplantation 2021-22													
Veterinary Parasitology 2021-22													
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)	
Advanced Pharmacology 2021-22											50		
Animal Population Genetics 2021-22													
Biotechnology 2021-22													
Cellular Pathology 2021-22												50	
Clinical Biochemistry & Immunology 2021-22												50	
Genetics & Bioethics 2021-22													
Haematology 2021-22													
Infection Sciences 2021-22												50	
Introduction to Forensic Anthropology 2021-22													
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22													
Transfusion & Transplantation 2021-22												50	
Veterinary Parasitology 2021-22													

## Level 4

	01	02	03	04	05	06	07	08	09	10	11	12
--	----	----	----	----	----	----	----	----	----	----	----	----

MBio Research project 2022-23									20				
MBio Research techniques 2022-23								25					
	13	14	15	16	17	18	19	20	21	22	23	24	
MBio Research project 2022-23				10								20	
MBio Research techniques 2022-23			25								25		
	25	26	27	28	29	30	31	32	33	34	35	36	
MBio Research project 2022-23								45		5			
MBio Research techniques 2022-23							25						
	37	38	39	40	41	42	43	44	45	46	47	48	
MBio Research project 2022-23													
MBio Research techniques 2022-23													
								49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)
MBio Research project 2022-23													
MBio Research techniques 2022-23													

## Masters

	01	02	03	04	05	06	07	08	09	10	11	12	
Professional and Research Skills in Biosciences A 2022-23									50				
Professional and Research Skills in Biosciences B 2022-23													

	13	14	15	16	17	18	19	20	21	22	23	24
Professional and Research Skills in Biosciences A 2022-23		50										
Professional and Research Skills in Biosciences B 2022-23										50		
	25	26	27	28	29	30	31	32	33	34	35	36
Professional and Research Skills in Biosciences A 2022-23												
Professional and Research Skills in Biosciences B 2022-23					50							
	37	38	39	40	41	42	43	44	45	46	47	48
Professional and Research Skills in Biosciences A 2022-23												
Professional and Research Skills in Biosciences B 2022-23												
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)
Professional and Research Skills in Biosciences A 2022-23												
Professional and Research Skills in Biosciences B 2022-23												

## Appendix III - Benchmark Analysis

This table maps programme learning outcomes to relevant QAA subject benchmark statements or PSRB guidelines.

### Knowledge and Understanding

	BIOMED1	BIOMED2	BIOMED3	BIOMED4	BIOMED5	BIOMED6	BIOMED7	BIOMED8	BIOMED9
PO1	✓								
PO2	✓								
PO3		✓				✓			
PO4		✓				✓			
PO5		✓				✓			
PO6			✓	✓	✓		✓	✓	✓
PO7	✓								✓
PO8					✓				
PO9		✓	✓	✓		✓	✓		

	BIOSSBIO1	BIOSSBIO2	BIOSSBIO3	BIOSSBIO4	BIOSSHUM 1	BIOSSHUM 2	BIOSSHUM 3	BIOSSHUM 4	BIOSSHUM 5
PO1	✓								
PO2	✓	✓	✓						
PO3	✓	✓	✓						
PO4	✓								
PO5	✓	✓	✓						
PO6									
PO7	✓	✓	✓	✓					
PO8	✓	✓	✓						
PO9		✓	✓	✓					

	BIOSSHUM MED1	BIOSSHUM MED2	BIOSSHUM MED3	BIOSSHUM MED4	BIOSSHUM MED5	BIOSSPHA 1	BIOSSPHA 2	BIOSSPHA 3	BIOSSPHA 4
PO1	✓	✓							

PO2			✓	✓				
PO3			✓	✓				
PO4					✓			
PO5			✓	✓				
PO6								
PO7								
PO8								
PO9								

BIOSSPHA  
5

PO1								
PO2								
PO3								
PO4								
PO5								
PO6								
PO7								
PO8								
PO9								

### Subject Specific Intellectual Skills

	BIOMED1	BIOMED2	BIOMED3	BIOMED4	BIOMED5	BIOMED6	BIOMED7	BIOMED8	BIOMED9
PO10	✓	✓	✓	✓		✓			
PO11		✓	✓	✓			✓		✓
PO12			✓	✓		✓			
PO13			✓	✓	✓		✓		
PO14		✓	✓					✓	
PO15		✓	✓					✓	
PO16		✓	✓			✓			

	BIOSSBIO1	BIOSSBIO2	BIOSSBIO3	BIOSSBIO4	BIOSSHUM 1	BIOSSHUM 2	BIOSSHUM 3	BIOSSHUM 4	BIOSSHUM 5
PO10	✓	✓	✓	✓					
PO11	✓	✓	✓	✓					
PO12			✓	✓					
PO13		✓	✓	✓					
PO14			✓						
PO15			✓	✓					
PO16									

	BIOSSHUM MED1	BIOSSHUM MED2	BIOSSHUM MED3	BIOSSHUM MED4	BIOSSHUM MED5	BIOSSPHA 1	BIOSSPHA 2	BIOSSPHA 3	BIOSSPHA 4
PO10	✓	✓	✓	✓	✓		✓		
PO11	✓	✓	✓	✓	✓		✓		
PO12					✓				
PO13					✓				
PO14					✓				
PO15					✓				
PO16					✓				

	BIOSSPHA 5
PO10	
PO11	
PO12	
PO13	
PO14	
PO15	
PO16	

## Subject Specific Practical Skills

	BIOMED1	BIOMED2	BIOMED3	BIOMED4	BIOMED5	BIOMED6	BIOMED7	BIOMED8	BIOMED9
PO17		✓	✓			✓			
PO18		✓	✓						
PO19		✓	✓			✓			
PO29		✓	✓	✓	✓	✓	✓	✓	
PO30		✓	✓	✓	✓	✓	✓		

	BIOSSBIO1	BIOSSBIO2	BIOSSBIO3	BIOSSBIO4	BIOSSHUM 1	BIOSSHUM 2	BIOSSHUM 3	BIOSSHUM 4	BIOSSHUM 5
PO17									
PO18									
PO19									
PO29									
PO30									

	BIOSSHUM MED1	BIOSSHUM MED2	BIOSSHUM MED3	BIOSSHUM MED4	BIOSSHUM MED5	BIOSSPHA 1	BIOSSPHA 2	BIOSSPHA 3	BIOSSPHA 4
PO17									
PO18									
PO19									
PO29									
PO30									

	BIOSSPHA 5
PO17	
PO18	
PO19	
PO29	
PO30	



## Transferable Skills and Attributes

	BIOMED1	BIOMED2	BIOMED3	BIOMED4	BIOMED5	BIOMED6	BIOMED7	BIOMED8	BIOMED9
PO20		✓							
PO21			✓	✓					
PO22	✓			✓			✓		✓
PO23		✓	✓	✓			✓		
PO24		✓	✓						
PO25		✓	✓			✓			
PO26		✓	✓	✓	✓	✓	✓	✓	✓
PO27	✓		✓	✓			✓		
PO28		✓	✓	✓		✓			✓
PO31		✓	✓	✓	✓	✓	✓	✓	✓
PO32		✓	✓	✓		✓			✓

	BIOSSBIO1	BIOSSBIO2	BIOSSBIO3	BIOSSBIO4	BIOSSHUM 1	BIOSSHUM 2	BIOSSHUM 3	BIOSSHUM 4	BIOSSHUM 5
PO20									
PO21									
PO22	✓								
PO23									
PO24									
PO25									
PO26									
PO27	✓								
PO28									
PO31	✓								
PO32									

BIOSSHUM	BIOSSHUM	BIOSSHUM	BIOSSHUM	BIOSSHUM	BIOSSPHA	BIOSSPHA	BIOSSPHA	BIOSSPHA
----------	----------	----------	----------	----------	----------	----------	----------	----------

	MED1	MED2	MED3	MED4	MED5	1	2	3	4
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									
PO26									
PO27									
PO28									
PO31									
PO32									

BIOSSPHA  
5

PO20									
PO21									
PO22									
PO23									
PO24									
PO25									
PO26									
PO27									
PO28									
PO31									
PO32									

## **Appendix IV: Benchmark Benchmark Statement(s)**

**BIOMED1** - *The ability to explain biomedical sciences phenomena at a variety of levels (from molecule to cell to organ and system function) in the human body in health and disease, the common causes and effects of disease, the body's defence mechanisms and...*

**BIOMED2** - *Experience and competence in a broad range of appropriate practical techniques and skills relevant to the biomedical sciences including data collection, analysis and interpretation of those data, and testing of hypotheses and the ability to place...*

**BIOMED3** - *Experience in planning, execution and presentation of a piece of hypothesis-driven work within a supported framework in which qualities such as time management, problem solving, and independence are evident.*

**BIOMED4** - *The ability to access and evaluate biomedical sciences 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.*

**BIOMED5** - *An appreciation of ethical issues and professional integrity and standards and the impact on society of advances in the biomedical sciences.*

**BIOMED6** - *The ability to record data accurately, and to carry out basic manipulation of data (including qualitative data and statistical analysis, when appropriate).*

**BIOMED7** - *The ability to assess the evidence base for scientific claims, by reading primary literature and commenting on the adequacy of the methods, data and interpretation.*

**BIOMED8** - *An awareness and understanding of intellectual property issues (IP) issues and how they relate to the innovation process.*

**BIOMED9** - *Strategies which enable them to update their knowledge of the biomedical sciences.*

**BIOSSBIO1** - *The ability to integrate the knowledge of various key subjects to further the understanding of the study, investigation, diagnosis and monitoring of human health and disease.*

**BIOSSBIO2** - *Knowledge and understanding of various therapeutic strategies applicable to disease states.*

**BIOSSBIO3** - *Awareness of the current laboratory methods available for the study, investigation, diagnosis and monitoring of human health and disease in clinical and research environments.*

**BIOSSBIO4** - *An appreciation of the development and evaluation of new and current methods and therapeutic intervention strategies.*

**BIOSSHUM1** - *The ability to describe and discuss key scientific principles underpinning the nutritional biosciences.*

**BIOSSHUM2** - *Knowledge of socio-demographic, economic and environmental factors on dietary behaviour and patterns.*

**BIOSSHUM3** - *An understanding of the clinical biochemistry of human disease and its management,*

*with a focus on the nutritional factors involved.*

**BIOSSHUM4** - *The ability to discuss in detail the impact of nutrients and their potential role in the prevention of diet-related diseases.*

**BIOSSHUM5** - *The ability to describe and apply a wide variety of research methods that can be used to collect, interpret, manipulate and analyse and present diet and nutritional status.*

**BIOSSHUMMED1** - *An understanding of how the body functions throughout the levels of organisation from chemical/molecular, through cellular to systems and organismal level.*

**BIOSSHUMMED2** - *Knowledge and understanding of normal anatomy and physiology including nervous, hormonal, and other homeostatic control mechanisms.*

**BIOSSHUMMED3** - *Knowledge and understanding of the impact of disease and inherent pathophysiological changes and processes on cells, tissues, and body systems.*

**BIOSSHUMMED4** - *The ability to discuss the pathophysiological processes that underpin disease and the biomedical sciences.*

**BIOSSHUMMED5** - *The ability to describe and apply a wide variety of scientific methodologies to investigate human physiological processes.*

**BIOSSPHA1** - *Knowledge and understanding of the science of drugs, their chemical and physical properties.*

**BIOSSPHA2** - *An understanding of the actions of drugs on living tissues and systems, and their effects on health and disease.*

**BIOSSPHA3** - *An understanding of drug absorption, distribution, metabolism and elimination.*

**BIOSSPHA4** - *An extended understanding of the relationship between drug concentration and response, the principle mechanisms of drug action, the drug discovery process, factors affecting drug safety and efficacy.*

**BIOSSPHA5** - *Experience in a range of practical skills of relevance to the investigation of drug action.*