

Programme Specification

MSci Microbiology

For students entering Part 1 in September 2024

UCAS Code: C503

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This document sets out key information about your Programme and forms part of your Terms and Conditions with the University of Reading.

Awarding Institution	University of Reading
Teaching Institution	University of Reading
Length of Programme	4 years
Length of Programme with placement/year abroad	MSci Microbiology with Professional Experience - 5 years (UCAS Code: C504)
Accreditation	Royal Society of Biology
QAA Subject Benchmarking Group	QAA Subject Benchmark Statement – Biosciences

Programme information and content

The MSci Microbiology programme is a four-year programme that is designed to provide you with a comprehensive understanding of the fascinating world of microbes and their crucial roles in the biosphere. The programme will allow you delve deeper into the genetics, biochemistry and cell biology of microbes and explore their impact on human health, food and the environment. Students will engage in cutting-edge research and gain hands-on experience with modern techniques and equipment in a hazard category 2 laboratory. The programme places emphasis on the practical application of microbiological knowledge to address global challenges, such as antimicrobial resistance, emerging infectious disease, food production and climate change. The programme also offers a strong practical focus, ensuring graduates are equipped to work safely and competently with microbiological samples. In addition, you will strengthen your core competencies and professional skills through the completion of a skills portfolio, access to placement opportunities and employer-led sessions embedded throughout the programme. By integrating both undergraduate and postgraduate education, you will be immersed in a research-intensive environment, engaging with cutting-edge science and advanced microbiological techniques. The final year is characterised by a substantial independent research project, where you will investigate complex microbial phenomena, often contributing to ongoing research initiatives. Under the guidance of experienced academics, you will utilise state-of-the-art laboratory facilities to explore innovative solutions to pertinent research questions. Overall, the programme will allow you to hone your analytical, technical and problem-solving skills, ensuring that you are well-prepared for professional and academic success in the dynamic field of microbiology.

Part 1:

In the first year, you will learn about the structure and function of microbes (viruses, bacteria, archaea, fungi and protists), their molecular, cellular and biochemical processes, genetics and evolution, and the interrelationships between microbes, other organisms and the

	<p>environment. You will explore how knowledge of microbiology can be applied to address different challenges, including the treatment and prevention of infectious diseases, increasing food production and reducing food spoilage, and using microbes in biotechnology to tackle environmental challenges, such as climate change and pollution.</p>
Part 2:	<p>You will continue to deepen your knowledge of how microbes function, including the molecular mechanisms they use to replicate, survive in changing environments, and interact with host organisms. You will gain a deep understanding of infectious diseases and the pathogens that cause them, including the mechanisms of treatment and prevention. You will also expand your knowledge of genetics and key research methods used by microbiologists including cloning and molecular techniques. You will use the knowledge and practical skills that you have gained to identify medically important human pathogens from clinical samples. You will also be able to choose from a range of optional modules that enable you to focus in more depth on subjects of interest and support the development of your understanding of microbiology and its applications.</p>
Placement/Study abroad year:	<p>You will have the opportunity to undertake a placement year and discover what it is like to work in a professional setting. This will allow you to develop your skills further, expand your network and enhance your career prospects. The school has numerous contacts with microbiology-related companies/organisations within and beyond the UK, ranging from government health agencies and pharmaceuticals to water treatment and biotechnology. Students can express their interest to the school and receive guidance and support throughout the placement application process.</p>
Part 3:	<p>The third year of the programme places a strong emphasis on the application of knowledge and skills to propose realistic solutions to real world problems, such as antimicrobial resistance, emerging infectious diseases, food safety and security, climate change and pollution. Alongside chosen modules from across the breadth of microbiology, the highlight of the final year is the opportunity to work alongside an expert in the field on a unique microbiology research project. This capstone experience will allow you to develop an advanced understanding of your chosen topic and apply the skills that you have acquired from your first and second year.</p>
Part 4:	<p>In the fourth year of the programme you will gain advanced scientific and technical skills to solve complex research questions. You will undertake an 80-credit research-intensive project over a period of five months. This substantial research project will provide you with the opportunity to independently plan, execute, analyse and communicate a research project in a specialised area of microbiology-related research. You will develop valuable transferable skills that are highly desirable for employers,</p>

offering you excellent preparation for postgraduate research or a wide variety of future careers.

Programme Learning Outcomes - MSci Microbiology

During the course of the Programme, you will have the opportunity to develop a range of skills, knowledge and attributes (known as learning outcomes) For this programme, these are:

	Learning outcomes
1	Describe and explain fundamental principles and concepts in Microbiology, including microbial structure, replication, genetics, biochemistry, host-interactions and applications of microbiology, demonstrating a more detailed knowledge and understanding of selected areas.
2	Search for, critically analyse, integrate, synthesise and evaluate scientific literature to draw conclusions, make hypotheses and suggest solutions.
3	Effectively communicate subject-specific knowledge, concepts and research outputs to technical and non-technical audiences using a range of multimedia formats
4	Safely and competently use a range of practical laboratory and/or field skills and techniques to generate accurate records and robust datasets
5	Competently perform aseptic technique to ensure containment of microbiological material and prevent contamination of samples in a category hazard 2 laboratory, demonstrating an awareness of all required health & safety measures
6	Analyse experimental and observational data using relevant statistical tests/analytical tools and interpret the results, recognising the limitations of the methodology used to obtain and analyse the data
7	Design experimental protocols and conduct original microbiological research adhering to appropriate ethical procedures and implementing appropriate health and safety measures
8	Use a creative, innovative and evidence-based approach to propose realistic solutions for complex biological and real-world problems in light of continued scientific advances.
9	Organize and manage workload to complete tasks and projects effectively, both independently and collaboratively as part of a team
10	Characterise and identify microorganisms using a variety of systematic techniques
11	Independently design, execute, and critically evaluate complex research within a microbiology-related field.
12	Employ diverse research methodologies, data collection techniques, and analytical tools, exhibiting a high level of adaptability and innovation in solving research problems.

You will be expected to engage in learning activities to achieve these Programme learning outcomes. Assessment of your modules will reflect these learning outcomes and test how far you have met the requirements for your degree.

To pass the Programme, you will be required to meet the progression or accreditation and award criteria set out below.

In addition to the learning outcomes stated above if you are on a placement or study abroad programme you will have the opportunity to develop the following learning outcome:

Additional Learning outcomes

Placement

By the end of the Placement Year Programme, students will have explored and developed their professional experience, skills and knowledge, contributing significantly towards their continuous learning and career prospects as graduates.

Module information

Each part comprises 120 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.

Part 1 Modules:

Module	Name	Credits	Level
BI1AP3	Anatomy and Physiology	20	4
BI1CMP1	Cellular and Molecular Principles of Life	20	4
BI1FB2	Fundamentals of Biochemistry	20	4
BI1FM1	Fundamentals of Microbiology	20	4

The remaining 40 credits will be made up of optional modules from selected modules from the School of Biological Sciences. or modules from an approved list.

Part 2 Modules:

Module	Name	Credits	Level
BI2CM1	Advanced Studies in Cellular and Molecular Biology	20	5
BI2HI1	Haematology and Immunology	20	5
BI2ID2	Infectious Diseases	20	5
BI2MM2	Molecular Microbiology	20	5
BI2RP3	Research and Professional Skills	20	5

The remaining 20 credits will be made up of an optional module from selected modules from the School of Biological Sciences or modules from an approved list.

Modules during a placement year or study year (if applicable):

Module	Name	Credits	Level
BI2PEX	Professional Experience	120	5

Students may be permitted to undertake a placement year between Part 2 and Part 3 of the programme. In such cases students will transfer to a 5-year programme. The placement year should not normally be shorter than nine months full-time.

If you take a year-long placement or study abroad, Part 3 as described below may be subject to variation.

Part 3 Modules:

Module	Name	Credits	Level
BI3AM2	Applied Microbiology	20	6
BI3P1	Pathogens	20	6
BI3RP3	Research Project	40	6

The remaining 40 credits will be made up of optional modules from selected modules from the School of Biological Sciences or modules from an approved list.

Part 4 modules:

Module	Name	Credits	Level
BI4APS1	Critical Analysis and Problem Solving	20	7
BI4ARP	Advanced Research Project	80	7
BI4PLE1	Project Planning, Laboratory Skills and Experimental Design	20	7

Placement opportunities

Placements:

You may be provided with the opportunity to undertake a credit-bearing placement as part of your Programme. This will form all or part of an optional module. You will be required to find and secure a placement opportunity, with the support of the University

Study Abroad:

You may be provided with the opportunity to undertake a Study Abroad placement during your Programme. This is subject to you meeting academic conditions detailed in the Programme Handbook, including obtaining the relevant permissions from your School, and the availability of a suitable Study Abroad placement. If you undertake a Study Abroad placement, further arrangements will be discussed and agreed with you.

Optional modules:

The optional modules available can vary from year to year. An indicative list of the range of optional modules for your programme can be found online in the Course Catalogue. Details

of optional modules for each part, including any additional costs associated with the optional modules, will be made available to you prior to the beginning of the Part in which they are to be taken and you will be given an opportunity to express interest in the optional modules that you would like to take. Entry to optional modules will be at the discretion of the University and subject to availability and may be subject to pre-requisites, such as completion of another module. Although the University tries to ensure you are able to take the optional modules in which you have expressed interest this cannot be guaranteed.

Teaching and learning delivery:

You will be taught through lectures, seminars/tutorials, laboratory practical sessions and supervised project work, depending on the modules you choose.

The contact hours for your Programme are dependent on module choice. Information about module contact hours can be located in the relevant module description.

Elements of your programme will be delivered via digital technology.

The scheduled teaching and learning activity hours and amount of technology enhanced learning activity for your programme will depend upon your module combination. In addition, you will undertake some self-scheduled teaching and learning activities, designed by and/or involving staff, which give some flexibility for you to choose when to complete them. You will also be expected to undertake guided independent study. Information about module study hours including contact hours and the amount of independent study which a student is normally expected to undertake for a module is indicated in the relevant module description.

Accreditation details

This programme is accredited by the Royal Society of Biology

Assessment

The programme will be assessed through a combination of written examinations, coursework (including class tests) and oral examinations. Further information is contained in the individual module descriptions.

Progression

Part 1

To achieve a threshold performance at Part 1, a student will normally be required to:

- (i) Obtain an overall average of 40% over 120 credits taken in Part 1;
- (ii) Obtain a mark of at least 40% in individual modules amounting to not less than 80 credits taken in Part 1; and
- (iii) Obtain marks of at least 30% in modules amounting to 120 credits.

In order to progress from Part 1 to Part 2, a student must achieve a threshold performance.

The achievement of a threshold performance at Part 1 qualifies a student for a Certificate of Higher Education if they leave the University before completing the subsequent Part.

Transferring from a Joint Honours to a Single Honours programme

Students are able to transfer from a Joint Honours to a Single Honours programme in one of their joint subject areas at the end of Part 1, subject to fulfilling the Part 1 University Threshold Standard, achieving marks of at least 40% in at least 40 credits of modules in the subject to which they wish to transfer, and fulfilling any programme-specific progression rules for the Part 1 Single Honours Programme to which they wish to transfer.

Students who transfer from a Joint Honours to a Single Honours programme may not have taken all of the Part 1 modules listed in the Single Honours Programme Specification. The modules which they have taken will be shown on their Diploma Supplement.

Part 2

To achieve a threshold performance at Part 2, a student shall normally be required to:

- (i) Obtain a weighted average of 40% over 120 credits taken in Part 2; and
- (ii) Obtain marks of at least 40% in individual modules amounting to at least 80 credits taken in Part 2; and
- (iii) Obtain marks of at least 30% in individual modules amounting to at least 120 credits, except that a mark below 30% may be condoned in no more than 20 credits of modules owned by the Department of Mathematics and Statistics.

In order to progress from Part 2 to Part 3, a student must achieve a threshold performance; and

- (iv) achieve an overall average of 50% over 120 credits taken in Part 2 (of which not less than 100 credits should normally be at level 5 or above).

The achievement of a threshold performance at Part 2 qualifies a student for a Diploma of Higher Education if they leave the University before completing the subsequent Part.

Professional/placement year

Students are required to pass the professional placement year/study abroad year in order to progress on the programme which incorporates the professional placement year/study abroad year. Students who fail the professional placement year/study abroad year transfer to the non-placement year version of the programme.

Part 3

To achieve a threshold performance at Part 3, a student shall normally be required to:

- (i) achieve an average of 40% over 120 credits taken in Part 3 and

(ii) obtain a mark of at least 40% in individual modules amounting to not less than 80 credits taken in Part 3.

In order to progress from Part 3 to Part 4, a student must achieve a threshold performance; and

(iii) a mark of at least 40% in BI3RP3;

Students who do not meet the above requirements to progress to Part 4, but who:

(i) meet the requirements described in Section 17 of the Assessment Handbook: Bachelor's (for cohorts entering in 2022/23 and onwards) (see, in particular, section 17.5); and

(ii) gain a mark of at least 40% in BI3RP3

Will be eligible for the BSc Microbiology. The classification for this exit award will be based upon an overall weighted average ratio of 1:2 (Part 2: Part 3).

Classification

Bachelors' degrees

The University's honours classification scheme is based on the following:

Mark Interpretation

70% - 100% First class

60% - 69% Upper Second class

50% - 59% Lower Second class

40% - 49% Third class

35% - 39% Below Honours Standard

0% - 34% Fail

The weighting of the Parts/Years in the calculation of the degree classification is:

Integrated Masters Programmes (MEng, MMath, MChem etc.)

Part 2: 20%

Placement/Study Abroad Year: not included in the classification

Part 3: 40%

Part 4: 40%

The classification method is given in detail in Section 18 of the Assessment Handbook (see, in particular, section 18.5).

Students who do not meet the above Part 4 requirements for obtaining the MSci Microbiology degree but who have achieved all previous progression requirements will be eligible for the award of BSc Microbiology. The classification for this exit award will be based upon an overall weighted average ratio of 1:2 (Part 2: Part 3).

Additional costs of the programme

Participation in any residential field based optional modules offered, is subject to fees payable by the student.

If you undertake a Placement Year, associated costs will vary according to the nature and location of the placement and/or the study abroad host institution, and individual travel and subsistence arrangements.

Costs are indicative and may vary according to optional modules chosen and are subject to inflation and other price fluctuations. Estimates were calculated in 2024.

For further information about your Programme please refer to the Programme Handbook and the relevant module descriptions, which are available at <http://www.reading.ac.uk/module/>. The Programme Handbook and the relevant module descriptions do not form part of your Terms and Conditions with the University of Reading.

MSci Microbiology for students entering Part 1 in session 2024/25

18 December 2024

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