

BSc Microbiology
For students entering Part 1 in 2006

UCAS code: C500

Awarding Institution: University of Reading
Teaching Institution: University of Reading
Relevant QAA subject benchmarking group(s): Biosciences
Programme length: 3 years

Faculty of Life Sciences

Date of specification: July 2006
Programme Director: Dr D Savva
Programme Adviser: Dr Sheila MacIntyre
Board of Studies: Biomolecular Sciences
Accreditation: None

Summary of programme aims

The course will deliver a broad understanding of the fundamental principles of Microbiology emphasising Bacteriology and Virology. The diverse aspects of the field covered include biochemistry, ecology, genetics, molecular biology, pathogenicity, phylogeny and physiology. In year 1, an understanding of principles of modern biology and basic characteristics of microorganisms will be achieved. By the end of year 2, students will have a deeper understanding of the core areas of microbiology. In the final year, an in-depth comprehension of selected topics at the forefront of Microbiology will be acquired. Students will also develop a range of subject-specific and transferable skills including: practical skills in microbiology and related subjects; an ability to analyse and evaluate scientific information; and experience in the methodology of research and scholarship.

Transferable skills

The University's Strategy for Teaching and Learning has identified a number of generic transferable skills which all students are expected to have developed by the end of their degree programme. As part of this programme students are expected to have gained experience and show competence in the following transferable skills: Communication, Numeracy, Problem-solving, Team working, Use of Information Technology, Business Awareness, Information Handling, Career Management.

Programme content

The profile which follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the optional modules). Students must choose such additional modules as they wish, in consultation with their Programme Adviser, to make 120 credits in each Part. The number of module credits for each module is shown after its title.

Programme content

Part 1 (three terms)

Compulsory modules

		<i>Credits</i>	<i>Level</i>
BI1C10	<i>Cell biology and biochemistry</i>	10	C
BI1C11	<i>Genetics and molecular biology</i>	10	C

BI1M10	<i>Biodiversity</i>	10	C
AM1M11	<i>Fundamental microbiology</i>	10	C
AM1M12	<i>Important microbes</i>	10	C
AM1M13	<i>Practical biochemistry</i>	10	C

Students without a post-16 qualification in chemistry must take:

CH1FC1	<i>Fundamental Chemistry</i>	10	C
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Optional modules

Students will choose a further 5 to 6 modules up to a final total of 120 credits subject to the agreement of the Programme Adviser. Modules from other Departments or Schools (including the Institution Wide Language Programme) may be chosen subject to the agreement of the Programme Adviser. Details of available modules can be found on the University website at www.info.rdg.ac.uk/Module/.

Part 2 (three terms)

Compulsory modules

AS2A1	<i>Statistics for life sciences</i>	10	I
AM2S31	<i>Concepts and skills</i>	10	I
AM2C31	<i>Molecular biology and bioinformatics</i>	10	I
AM2C39	<i>Regulation of gene expression</i>	10	I
AM2M33	<i>Practical virology</i>	10	I
AM2M32	<i>Physiology and genetics of bacteria</i>	10	I
AM2M31	<i>Viruses and their hosts</i>	10	I
AM2Z35	<i>Immunology</i>	10	I
AM2C40	<i>Recombinant DNA exercise</i>	10	I
AM2C35	<i>Cellular Biology</i>	10	I
AM2M35	<i>Medical Microbiology</i>	10	I

Optional modules

Students will choose a further 10 credits subject to the agreement of the Programme Adviser, but will be encouraged to include any of the following:

		<i>Credits</i>	<i>Level</i>
AM2C36	<i>Protein structure and function</i>	10	I
FB2MF2	<i>Microbial hazards in food</i>	10	I
AM2C34	<i>Introduction to human disease</i>	10	I
AM2C38	<i>Receptors and signal transduction</i>	10	I
AM2C33	<i>Pharmacology and toxicology</i>	10	I

Part 3 (three terms)

Compulsory modules

AM3S75	<i>Project</i>	40	H
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AM3M71	<i>Specialised groups of bacteria</i>	10	H
AM3M72	<i>Bacterial pathogenicity</i>	10	H
AM3M73	<i>Viruses as pathogens</i>	10	H
AM3M74	<i>Molecular microbiology</i>	10	H

Optional modules

Students will choose a further 40 credits subject to the agreement of the Programme Adviser. Suitable choices would be:

AM3C80	<i>Cancer</i>	10	H
AM3C73	<i>Chromosome mapping and genetic disease</i>	10	H
AM3C72	<i>Life and death of the cell</i>	10	H
FB3BGE	<i>Molecular techniques in Microbiology and Biotechnology</i>	10	H

Progression requirements

Progression from Part 1 to Part 2

To gain a threshold performance at Part 1 a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1.

Progression from Part 2 to Part 3

To gain a threshold performance at Part 2 a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 2, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 2 to Part 3, a student shall normally be required to achieve a threshold performance at Part 2.

Summary of teaching and assessment

Teaching is organised in modules. Teaching in Part 1 consists of lectures and practical classes with small group work being largely restricted to the Concepts and Skills module. Modules can be assessed by 100% coursework but more usually are assessed by a combination of coursework (20%) and formal examination (80%).

In Parts 2 and 3, lectures and practical classes continue to be major modes of teaching but they are increasingly supplemented by seminars and other group work. Modules can be 100% in-course assessed but are more usually assessed by a combination of coursework (30%) and formal examination (70%).

Part 2 contributes one third of the overall assessment and Part 3 the remaining two thirds. In order to be eligible for Honours, students must gain at least 40% in all Part 3 examinations averaged together and must gain at least 40% in the Project module.

The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbooks.

Transferable skills

By the end of the course students will be expected to have reached an appropriate level of competence in a number of transferable skills which include: the ability to communicate clearly and effectively both orally and in writing, being responsible for their own learning, information retrieval, data handling, the use of information technology and the ability to work effectively as individuals and in a group. Students will have been encouraged to become aware of career opportunities and of the organisation and activities of science-based business and to have taken steps to plan their career path.

Admission requirements

Entrants to this programme are normally expected to have achieved

UCAS Tariff: 300 points from no more than 4 A/AS levels, including B in A-level Biology and C in another A-level Science (preferably Chemistry), plus Mathematics, Double Science and English at Grade B at GCSE level. The university supports Key Skills and will take account of points awarded for Key Skills although they are not part of the entry requirements.

Irish Highers: BBBBC (inc. Chemistry and preferably Biology)

IB: 30 points (including Chemistry and preferably Biology)

Admissions Tutor: Dr W Barclay

Career prospects

Reading Microbiology graduates are qualified to enter a variety of careers in the biological sciences, including work in industry (Pharmaceuticals, biomedical, agrochemicals), the government service (research institutes and bodies such as the Environment Agency) and other public bodies (hospitals, local water authority). As numerate scientists they also enter a wide variety of commercial and business occupations.

Opportunities for study abroad

Students can take part in the Erasmus exchange programme in which they can spend the first term of Part 3 studying in a variety of other European Universities. Recent exchanges involving SBS students have taken place with the following: University of Tours, France; Odense University, Denmark; Uppsala University, Sweden; University College Cork, Ireland; University of Zaragoza, Spain; ENSA, Montpellier, France; University of Cagliari, Sardinia; Rostock University, Germany; Siena University, Italy.

Educational aims of the programme

After Part 1, you will have gained an understanding of several of the basic concepts of modern biochemistry. After Part 2, you will have deepened your understanding of biological concepts and developed a range of expertise over the main areas of the subject. After Part 3, you will have studied selected subjects in depth and will be equipped to tackle detailed problems and analyses.

During these studies you will be exposed to a variety of information sources and techniques and be trained in various skills including those used in reasoning, argument and communication. You will acquire a number of transferable skills including learning how to design and execute experiments (including working in a team), access information, interpret data using statistics and computing, write essays and reports and give oral presentations.

Programme Outcomes

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

Knowledge and Understanding

<p>A. Knowledge and understanding of: The fundamental concepts of microbiology underpinned by a knowledge of other branches of molecular and cell biology.</p>	<p>Teaching/learning methods and strategies</p> <p>Formal lectures and practicals supported by tutorials (in part 1), group work and miniprojects.</p> <p><i>Assessment</i> Most knowledge is tested through a combination of coursework and unseen formal examinations. Dissertations, oral and poster presentations also contribute.</p>
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Skills and other attributes

<p>B. Intellectual skills – able to:</p> <ol style="list-style-type: none">1. think logically2. analyse and solve problems.3. organise tasks in a structured form4. transfer appropriate knowledge and methods from one topic to another within the overall subject5. plan, conduct and write a report on an independent project	<p>Teaching/learning methods and strategies</p> <p>Rational thought and logical analysis is developed throughout the programme, building to an ability to deduce how solutions to key problems in biology are derived through the application of experimental procedure.</p> <p><i>Assessment</i> Embedded throughout the assessment protocols</p>
<p>C. Practical skills – able to:</p> <ol style="list-style-type: none">1. Undertake microbiological laboratory tasks and techniques2. Plan experiments and carry them out in the laboratory	<p>Teaching/learning methods and strategies</p> <p>Formal practical classes</p> <p><i>Assessment</i> By practical laboratory reports.</p>

D. Transferable skills – able to:

1. Use IT
2. communicate scientific ideas
3. give oral and poster presentations
4. work as part of a team
5. use library resources
6. manage time
7. plan their career

Teaching/learning methods and strategies

The use of IT is embedded throughout the course.

Assessment

The skills will enhance the performance of students in both coursework and unseen examinations.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance processes or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.