

BSc Applied Biology
For students entering Part 1 in 2003

UCAS code: C110

Awarding Institution:
Teaching Institution:
Relevant QAA subject benchmarking group(s):

The University of Reading
The University of Reading
Agriculture and Forestry, Food,
Biosciences (depending on option)
Faculty of Life Sciences

Programme length:
Date of specification:
Programme Director:
Programme Advisers:

3 years
March 2005
Dr M J Gooding
Dr M D Dennett (Applied Plant Sciences),
Dr M W Shaw (Applied Plant Sciences),
Dr A G Stephens (Applied Animal Sciences),
Dr R A Rastall (Food Biosciences),
Mr N F Beard (Business and Economics)
Applied Biology

Board of Studies:

Summary of programme aims

The programme aims to provide a foundation in biology followed by education in a choice of more specialist subjects relevant to careers for biologists. The programme allows flexibility to respond to student needs, interests and aspirations. Recognised subject areas include biomedical sciences, food biosciences, rural ecology and environment, applied plant science, applied animal science, and business and economics in applied biology sectors. The chosen specialism is developed alongside the investigative, presentation, and career management skills necessary for the successful professional biologist.

Transferable skills

The University's Strategy for Teaching and Learning has identified a number of generic transferable skills that all students are expected to have developed by the end of their degree programme. In following this programme, students will have had the opportunity to enhance their skills relating to career management, communication (both written and oral), information handling, numeracy, problem-solving, team working and use of information technology.

Students will be able to conduct, assess and interpret the results from personal investigations; assimilate knowledge from a range providers and sources on a specific topic, including lecturers, practitioners, visits, literature and digital platforms; develop skills in using technical and supervisory support; be able to present to different audiences.

Programme content

Part 1 (three terms 120 credits) 2003/4

Credits Level

Compulsory modules (40 or 50 credits)

			<i>Credits</i>	<i>Level</i>
Aut	AP1A05	<i>Professional Skills in Applied Biology 1</i>	10	C
Aut	BI1C10	<i>Cell Biology and Biochemistry</i>	10	C
Spr	BI1C11	<i>Genetics and Molecular Biology</i>	10	C
Aut	AM1M11	<i>Fundamental Microbiology</i>	10	C
And, if no chemistry has been studied post-16,				
Aut	BI1S10	<i>Chemistry for Biologists</i>	10	C

At least 10 credits from Rural Ecology and Environment i.e.
Recommended

Aut	BI1M10	<i>Biodiversity</i>	10	C
Modules that can be taken in addition to BI1M10 <i>Biodiversity</i>				
Spr	BI1Z10	<i>Ecology</i>	10	C
Sum	BI1Z11	<i>Community Ecology</i>	10	C
Modules that can be taken in addition to, or instead of BI1M10 <i>Biodiversity</i>				
Spr	PS1AB2	<i>Physical Ecology</i>	10	C
Aut	PS1HN1	<i>Ecology and the Landscape</i>	10	C
Aut	AM1Z11	<i>Environmental Biology</i>	10	C

At least 10 credits from Biomedical Science i.e

Recommended

Spr	AM1M12	<i>Important Microbes</i>	10	C
Module that can be taken in addition to, or instead of AM1M12 <i>Important Microbes</i>				
Spr	AM1C14	<i>Biochemistry and Metabolism</i>	10	C

At least 10 credits from Applied Animal Science i.e.

Recommended

Spr	AM1Z10	<i>The Whole Mammal</i>	10	C
Modules that can be taken in addition to, or instead of AM1Z10 <i>The Whole Mammal</i>				
Aut	AM1C12	<i>Animal Physiology</i>	10	C
Aut	AP1A03	<i>Introduction to Livestock Production Systems</i>	10	C

At least 10 credits from Applied Plant Science i.e.

Recommended

Spr	AP1A11	<i>The Biology and Production of Crop Plants</i>	10	C
Modules that can be taken in addition to, or instead of AP1A11 <i>The Biology and Production of Crop Plants</i>				
Aut	PS1BA1	<i>How Plants Work</i>	10	C
Spr	PS1BA2	<i>Plant Development</i>	10	C
Sum	PS1AA3	<i>Introductory Field Skills in Agricultural Botany</i>	10	C
Spr	PS1HA1 or PS1HE1	<i>Horticultural Crop Production: Fruit Crops or Field Crops</i>	10	C
Aut	PS1H 2	<i>Organic Horticulture</i>	10	C
Aut	PS1HB1	<i>Principles of Horticulture</i>	10	C
Spr, Sum	PS1HD2	<i>Plants of Horticulture</i>	10	C
Aut	PS1HC1	<i>Arboriculture and Practical Horticulture</i>	10	C
Spr	PS1BB2	<i>Morphology of Land Plants</i>	10	C
Spr	PS1HC2	<i>Amenity Horticulture</i>	10	C
Spr	PS1HQ2	<i>Applied Plant Physiology</i>	10	C

At least 10 credits from Food BioScience i.e.

Recommended

Spr	AM1C13	<i>Digestion and Nutrition</i>	10	C
Modules that can be taken in addition to, or instead of FB1M1 <i>Foundation Food Microbiology</i>				
Aut & Spr	FB1GSF	<i>Science in Biotechnology</i>	20	C
Aut & Spr	FB1EPH	<i>Physical Aspects of Biological Systems</i>	20	C
Aut & Spr	FB1GSF	<i>Science in the Food Chain</i>	20	C

At least 10 credits from Business and Economics in Applied Biology Sectors i.e.

Recommended

Aut	AP1SB1	<i>Introduction to Management</i>	10	C
-----	--------	-----------------------------------	----	---

Module that can be taken in addition to, or instead of Introduction to Management

Aut & Spr	AP1EE1	<i>Economics 1</i>	20	C
Spr	AP1EM1	<i>Introduction to Marketing</i>	10	C
Aut	AP1EE3	<i>Economics 1A</i>	10	C

Additional Modules that can be taken

Aut & Spr	IWLP	<i>Institution Wide Language Programme</i>	20	C,I,H
Spr	ID1DEV	<i>International Development: Global & Local Issues</i>	10	C/I
		<i>Any other single module available in Part 1 across the University</i>	10	

Part 2 (three terms, 120 credits)

Credits Level Term

Compulsory modules

AP2A22	<i>Professional Skills in Applied Biology including Career Management Skills</i>	10	I	3
AS2A1	<i>Statistics for Life Sciences</i>	10	I	4

Optional modules totalling 100 credits

Students will normally be expected to take one or two of the following options in part 2. However, subject to timetabling constraints, and after discussion with the programme director to form a coherent course of study, students may choose any combination of Level I modules available within the Faculty of Life Sciences.

Subject Option 1. Applied Plant Science – students taking this option to obtain at least 40 credits from:-

AP2A38	<i>Organic Farming</i>	10	I	4
AP2A25	<i>Grassland Management</i>	10	I	4
PS2AA4	<i>Crop Physiology and Breeding</i>	10	I	4
PS2HD4	<i>Crop Disease and its Control</i>	10	I	4
PS2AB5	<i>Crop Pests and Integrated Crop protection</i>	10	I	5
PS2AA5	<i>Plant Genetics</i>	10	I	5
PS2AB4	<i>Weed Biology and Control</i>	10	I	4
AP2A32	<i>Arable Crop Protection</i>	10	I	5
PS2HA1 or PS2HE1	<i>Horticultural Crop Production: Fruit Crops or Field Crops</i>	10	I	5
PS2HC4	<i>Amenity Grassland Management</i>	10	I	4

Subject Option 2. Applied Animal Science – students taking this option to obtain at least 40 credits from:-

AM2Z32	<i>Vertebrate Zoology</i>	10	I	4
AM2Z33	<i>Animal Behaviour</i>	10	I	4
AM2Z34	<i>Invertebrate Zoology</i>	10	I	4
AP2A24	<i>Applied Animal Nutrition</i>	10	I	4
AP2A34	<i>Animal Breeding and Reproductive Technology</i>	10	I	5
AP2A35	<i>Animal Health and Welfare</i>	10	I	5

AP2A36	<i>Animal Production</i>	10	I	5
AP2A38	<i>Organic Farming</i>	10	I	4
AP2A25	<i>Grassland Management</i>	10	I	4

Subject Option 3. Food Bioscience – students taking this option to obtain at least 40 credits from:-

FB2N1	<i>Fundamentals of Human Nutrition</i>	20	I	4&5
FB2BBE	<i>Biochemistry and Enzymology</i>	10	I	4
FB2BAE	<i>Applied Enzymology and Food Biotechnology</i>	10	I	5
FB2BFP	<i>Fermentation Processes</i>	10	I	5
FB2MF1	<i>Microbiology of Food Preservation</i>	10	I	4
FB2MF2	<i>Control of Microbiological Hazards in Food</i>	10	I	5
FB2MF3	<i>Topics in Food Microbiology</i>	10	I	4
FB2MP1	<i>Microbial Physiology I</i>	10	I	4
FB2C1	<i>Fundamentals of Food Chemistry</i>	20	I	4&5

Subject Option 4. Biomedical Science – students taking this option to obtain at least 40 credits from:-

AM2C33	<i>Pharmacology and Toxicology</i>	10	I	4
AM2C34	<i>Introduction to Human Disease</i>	10	I	4
AM2M31	<i>Viruses and their hosts</i>	10	I	4
AM2M32	<i>Physiology of the Bacterial Cell</i>	10	I	4
AM2C37	<i>Cardiovascular and Respiratory Systems Physiology</i>	10	I	5
AM2C38	<i>Receptors and Signal Transduction</i>	10	I	5
AM2C39	<i>Regulation of Gene Expression</i>	10	I	5
AM2M33	<i>Practical Virology</i>	10	I	5
AM2M34	<i>Molecular Genetics of Bacteria</i>	10	I	5
AM2M35	<i>Medical Microbiology</i>	10	I	5
AM2Z35	<i>Immunology</i>	10	I	5

Subject Option 5. Rural Ecology and Environment – students taking this option to obtain at least 40 credits from:-

PS2BC5	<i>Ecological Aspects of Environmental Assessment</i>	10	I	5
AP2A26	<i>Forestry and Woodlands</i>	10	I	4
AP2A40	<i>Aquatic Environments</i>	10	I	6
AM2Z37	<i>Aquatic Biology</i>	10	I	5
PS2BE5	<i>Ecological Biochemistry</i>	10	I	5
PS2BA4	<i>Economic Botany</i>	10	I	4
PS2BB4	<i>Evolution and Plant Biodiversity</i>	10	I	4
AP2A37	<i>Countryside Management</i>	10	I	5

Subject Option 6. Business and Economics in Applied Biology Sectors – students taking this option to obtain at least 40 credits from:-

AP2EP1	<i>Policy Analysis I</i>	10	I	4
AP2EE3	<i>Environmental Economics</i>	10	I	4
AP2EE1	<i>Economics II</i>	20	I	4&5
AP2EM1	<i>Marketing Management</i>	10	I	5
AP2ET1	<i>International Economics I</i>	10	I	5
AP1DV1	<i>International Development: Global & Local Issues</i>	20	I	4 & 5
AP1DV2	<i>International Development: Global & Local Issues</i>	10	I	4
AP2EC1	<i>Consumer Behaviour</i>	10	I	5

AP2EP2	<i>Agricultural and Rural Policy</i>	10	I	5
AP2SB1	<i>Business Management</i>	10	I	4
AP2SB2	<i>Financial Management</i>	10	I	5

Additional Modules that can be taken

IWLP	<i>Institution Wide Language Programme</i>	20	C/I/H	4&5
------	--	----	-------	-----

Part 3 (three terms, 120 credits)

In Part 3 students will undertake an investigational project to be submitted as a dissertation, normally expected to be within a subject options taken in Part 2.

Compulsory modules (50 credits)

	<i>Project and Dissertation</i>	40	H	7&8
AP3A51	<i>Professional Skills in Applied Biology 3</i>	10	H	7

Optional modules (70 credits)

Students will normally be expected to continue a Subject Option taken in Part 2 with related modules in part 3. However, subject to timetabling constraints, and after discussion with the Programme Director to form a coherent course of study, students may chose any combination of Level H modules available within the Faculty of Life Sciences.

Subject Option 1. Applied Plant Science – students taking this option to obtain at least 40 credits from:-

AP3A47	<i>Cereal Management and Marketing</i>	10	H	7
AP3A48	<i>Crop Growth & Development</i>	10	H	7
AP3A49	<i>Seed Science & Technology</i>	10	H	7
AP3A45	<i>Agricultural Systems in the Tropics</i>	10	H	7
AP3A58	<i>Crops & Water</i>	10	H	8
AP3A76	<i>Principles & Practice in Biological Control</i>	10	H	7
AP3A77	<i>Agronomy of Combinable Break Crops</i>	10	H	8
PS3AB7	<i>Crops and Climate</i>	10	H	7
PS3AA7	<i>Plant Biotechnology for Post Harvest Quality</i>	10	H	7
PS3AE7	<i>Weed Management</i>	10	H	7
PS3HH8	<i>Plant Development Genetics & Physiology</i>	10	H	8
PS3AF8	<i>Tissue Culture</i>	10	H	8
PS3AG8	<i>Weed Ecology</i>	10	H	8
PS3HB8	<i>Syngenta Plant Biotechnology</i>	10	H	8

Subject Option 2. Applied Animal Science – students taking this option to obtain at least 40 credits from:-

AP3A80	<i>Animal Growth and Lactation</i>	10	H	7
AP3A79	<i>Animal Food Products: Milk and Meat</i>	10	H	8
AP3A67	<i>Animal Welfare</i>	10	H	7
AP3A66	<i>Horses, Cats and Dogs</i>	10	H	7
AM3C78	<i>Mammalian reproduction</i>	10	H	8
AP3A75	<i>Equine Management</i>	10	H	6

Subject Option 4. Biomedical Science – students taking this option to obtain at least 40 credits from:-

AM3C71	<i>B&P of Cardiovascular Disease</i>	10	H	7
AM3C80	<i>Cancer</i>	10	H	8

AM3C73	<i>Chromosome mapping and genetic disease</i>	10	H	7
AM3M71	<i>Specialised groups of bacteria</i>	10	H	7
AM3M72	<i>Bacterial pathogenicity</i>	10	H	7
AM3C76	<i>Neurobiology</i>	10	H	8
AM3M73	<i>Viruses as pathogens</i>	10	H	8
AM3M74	<i>Molecular Microbiology</i>	10	H	8
AM3C79	<i>Pathology and clinical biochemistry</i>	10	H	8

Subject Option 5. Rural Ecology and Environment – students taking this option to obtain at least 40 credits from:-

AP3A44	<i>Approaches to Sustainable Development</i>	10	H	8
AP3A68	<i>Wildlife in the Farming Environment</i>	10	H	8
PS3BC7	<i>Conservation & Biodiversity: Global & Local Scales</i>	10	H	7
PS3BD8	<i>Physiological Ecology</i>	10	H	8
PS3BE8	<i>Biodiversity Informatics</i>	10	H	8
PS3BG8	<i>Biogeography</i>	10	H	8
AM3Z72	<i>Insects and society</i>	10	H	8
AM3Z74	<i>Conservation biology</i>	10	H	7
AM3Z76	<i>Behavioural ecology and life history theory</i>	10	H	7
AM3Z77	<i>Research topics in ecology</i>	10	H	8
ES38A	<i>Environmental Issues</i>	10	H	8

Subject Option 6. Business and Economics in Applied Biology Sectors – students taking this option to obtain at least 40 credits from:-

AP3EP1	<i>Regulation of the Food Industry</i>	10	H	8
AP3EM1	<i>Marketing Strategy</i>	10	H	7
AP3EE1	<i>Economic Aspects of the Food Supply Chain</i>	10	H	7
AP3EP3	<i>Rural Policy and Countryside Planning</i>	10	H	7
AP3EM2	<i>Marketing Research Methods</i>	10	H	8
AP3EB1	<i>Business Strategy</i>	10	H	8
AP3EB2	<i>Multinational Food Business</i>	10	H	8
AP3ED1	<i>Food Issues in Developing Countries</i>	10	H	8
AP3ED2	Appraisal of Agricultural and Rural Development Projects	10	H	8
AP3A39	<i>Business Management (Business Control)</i>	10	H	8
AP3A55	<i>Business Management (Managerial Economic Principles)</i>	10	H	7
AP3A56	<i>Business Management (Planning Methods)</i>	10	H	7
AP3A64	<i>Human Resource Management</i>	10	H	8
AP3A74	<i>Business Entrepreneurship</i>	10	H	8

Students can also choose:-

IWLP	<i>Institution Wide Language Programme</i>	20	C/I/H	7&8
------	--	----	-------	-----

Progression requirements

To proceed from Part 1 to Part 2 it is necessary to have obtained an overall average of at least 40% in Part 1, at least 40% in the compulsory Part 1 modules, and at least 30% in every Part 1 module.

Part 2 Examination and Progression from Part 2 to Part 3

The Part 2 Examination is used to assess a student's suitability to proceed to Part 3 of their programme. It also determines eligibility for the Diploma of Higher Education.

In addition, the marks achieved in the Part 2 Examination contribute to the classification of your degree.

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 (of which not less than 100 credits should normally be at Intermediate level or above), 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.

If you gain a threshold performance at Part 2 and do not proceed to achieve a higher award, you are eligible to receive the award of Diploma of Higher Education.

Part 3 Examination

The classification of the degree will normally be based on the marks for Part 2 and Part 3 modules, weighted in a ratio of 1:2. Full details of classification conventions (that is, the rules for determining your final degree award) can be found in your Programme Handbook.

Summary of teaching and assessment

Teaching is organised in modules that can typically involve both lectures and practicals. Modules are assessed by a mixture of coursework (which may include tests) and formal examination. The Part 3 Dissertation is assessed only as course work.

Admission requirements

Entrants to this programme are normally required to have obtained:

Grade C or better in English and Maths in GCSE; and achieved

UCAS Tariff: 260 points at A or AS level in a programme of study that contains Biology and at least one other Science subject, preferably Chemistry.

Admissions Tutor: Dr M.J. Gooding

Support for students and their learning

University support for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

Career prospects

Applied Biology aims to produce graduates that can pursue careers using their biology. Such careers include those in environmental management and conservation; food and brewing; biotechnology; industrial microbiology; horticulture; crop and animal production; crop protection; advisory and educational services; and biomedical industries. Graduates from Life Sciences are welcomed by other professions, such as accountancy and management.

Opportunities for study abroad or for placements

The course allows and encourages students, provided they have passed Part 2, to consider the possibility of studying abroad for a term or a year.

Educational aims of the programme

The programme aims to provide a degree level education in biological and allied subjects chosen by students to suit their interests and career aspirations.

Programme Outcomes

Knowledge and Understanding

<p>A. Knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. The fundamental knowledge of cell biology, biochemistry, genetics and microbiology 2. The role and function of professional biologists 3. A selection of specialised topics in applied biology 	<p>Teaching/learning methods and strategies Lectures and practical classes provide the basic knowledge. A variety of course work gives opportunities for extending knowledge and techniques. Individual and group projects reinforce techniques and give experience of practical applications. Interactive seminars with professional biologists, and visits to biologically-based industries contribute to a knowledge and understanding of careers in applied biology.</p> <p>Assessment Combinations of coursework and formal examinations are used to assess basic knowledge. Project reports, oral presentations, a dissertation and integrative exercises contribute to final assessment</p>
--	--

Skills and other attributes

<p>B. Intellectual skills – able to:</p> <ol style="list-style-type: none"> 1. Think logically 2. Critically evaluate scientific literature 3. Evaluate scientific developments in specialised areas of the subject 4. Assess problems and design experiments to test hypotheses 5. Apply knowledge and techniques to new problems 6. Plan, conduct and report on an individual research project 	<p>Teaching/learning methods and strategies Critical evaluation of the scientific literature and the application of scientific method is taught throughout the course, but particularly in final year options</p> <p>Assessment Most parts of the course assess topics 1,2,3. Topics 4,5,6 are largely assessed throughout projects work, essays and integrative exercises, including the Part 3 dissertation</p>
<p>C. Practical skills – able to:</p> <ol style="list-style-type: none"> 1. Develop the practical laboratory and/or field skills necessary for one or more applied biology subject. 2. Analyse and interpret numerical data 3. Plan, conduct and report a research project 	<p>Teaching/learning methods and strategies Topic 1 is taught throughout the course, Topics 2 and 3 are taught and applied within compulsory modules in Parts 2 and 3.</p> <p>Assessment Through appropriate module and project assessments</p>

D. Transferable skills – able to:

1. Use IT (word processing, spreadsheets, statistical packages and databases).
2. Communicate scientific ideas in writing and orally
3. Communicate and interact with professional biologists
4. Effectively use information resources (WWW, library databases).
5. Plan and manage use of time
6. To consider career choice and opportunities

Teaching/learning methods and strategies

Use of IT and information resources occurs throughout the course within individual modules. Other skills contribute to effective performance in the course.

Assessment

Within modules

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 expect 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 module and programme handbooks.