

BSc Food Science
For students entering Part 1 in Autumn 2006

UCAS code: D610

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| Awarding Institution: | The University of Reading |
| Teaching Institution: | The University of Reading |
| Relevant QAA subject benchmarking group(s): | Agriculture, Forestry, Agricultural Sciences, Food Sciences and Consumer Sciences |
| Faculty of Life Sciences | Programme length: 3 years |
| Date of specification: February 2007 | |
| Programme Director: Mr R A Wilbey | |
| Programme Adviser: Mr R A Wilbey | |
| Board of Studies: Undergraduate Programmes in the School of Food Biosciences | |

Summary of programme aims

The programme aims to provide a degree-level education from which graduates can enter a career in the food industry (or employment in other sectors of the food chain, or related scientific sectors) as scientists and to develop their capacity to undertake research into the science of foods. The testable learning outcomes will be the ability to:

- integrate the scientific disciplines relevant to food
- apply and communicate scientific knowledge to meet the needs of industry and the consumer for the production and marketing of safe and quality foods.

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. 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.

Programme content

The profile which follows states which modules must be taken (the core Food Science modules) and, for Parts 2 and 3, lists of modules from which the student must make a selection (the optional modules). For the optional modules, students are free to select any module that is not a compulsory module so as to make 120 credits in each Part.

Part 1 (three terms)

Compulsory modules

| <i>Mod Code</i> | <i>Module Title</i> | <i>Credits</i> | <i>Level</i> |
|--|---|----------------|--------------|
| AM1M11 | Fundamental Microbiology | 10 | C |
| AM1M12 | Important Microbes | 10 | C |
| BI1C10 | Cell Biology and Biochemistry | 10 | C |
| BI1C11 | Genetics and Molecular Biology | 10 | C |
| FB1EPH | Physical Aspects of Biological Systems | 20 | C |
| FB1GFB | Topics in Food and Biotechnology | 20 | C |
| FB1EM1 | Mathematics and Computing for Life Sciences | 20 | C |
| 20 credits from the following modules (<i>choice dependent upon entry qualifications</i>): | | | |
| CH1FC1 | Fundamental concepts in Chemistry 1 | 10 | C |
| CH1FC2 | Fundamental concepts in Chemistry 2 | 10 | C |
| CH1O1 | Introduction to organic chemistry | 20 | C |

Part 2 (three terms)

Compulsory modules

Core Food Science Modules (100 credits)

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|--------|------------------------------------|----|---|
| FB2C1A | Chemistry of bulk food components | 10 | I |
| FB2C1B | Instrumental analysis of foods | 10 | I |
| FB2EFP | Food Processing | 20 | I |
| FB2MF1 | Microbiology of Food Preservations | 10 | I |
| FB2MF2 | Microbiological Hazards in Foods | 10 | I |
| FB2N1 | Fundamentals of Human Nutrition | 20 | I |
| FB2CFA | Food microstructure | 10 | I |
| FB2CFB | Food commodities | 10 | I |

Optional modules (20 credits):

Mod Code Module Title

| | | | |
|--------|--------------------------------------|----|-------|
| | Institution Wide Language Programme | 20 | C/I/H |
| AM2C31 | Molecular Biology and Bioinformatics | 10 | I |
| AM2M32 | Physiology of the bacterial cell | 10 | I |
| AP1EM1 | Introduction to Marketing | 10 | C |
| AP1SB1 | Introduction to Management | 10 | C |
| FB2BBE | Biochemistry and Enzymology | 10 | I |

(Plus additional modules subject to timetabling)

Part 3 (three terms)

Compulsory modules

| <i>Mod Code</i> | <i>Module Title</i> | <i>Credits</i> | <i>Level</i> |
|---|---------------------------------------|----------------|--------------|
| <i>Core Food Science Modules (100 credits)</i> | | | |
| FB3GPD | Food Product Development | 10 | H |
| FB3QAS | Food Quality Assurance and Safety | 20 | H |
| FB3GSE | Sensory Evaluation | 10 | H |
| FB3PFB | Individual Research Project | 40 | H |
| At least 20 credits from the following 4 modules: | | | |
| FB3CF1 | Special topics in Food and Toxicology | 10 | H |
| FB3CF2 | Selected topics in food chemistry | 10 | H |
| FB3N2A | Diet and Disease | 10 | H |
| FB3N2B | Genes, lifestyle and nutrition | 10 | H |

Optional modules (20 credits):

Mod Code Module Title

| | | | |
|--------|-------------------------------------|----|-------|
| | Institution Wide Language Programme | 20 | C/I/H |
| FB2BBE | Biochemistry and Enzymology | 10 | I |
| FB3EB2 | Economic manufacturing | 10 | H |

(Plus additional modules to be notified later)

Industrial Experience/Training

The student will normally be required to obtain one period of at least eight weeks' approved industrial experience in industry, or in appropriate laboratories or institutions during a Summer vacation. Appropriate vacation employment in the other Summer vacation is also recommended.

Progression requirements

- To gain a threshold performance at Part 1 and qualify for the CertHE a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, where all the credits are at C 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 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1, and have no module mark below 30%. Where students have taken an option to replace CH1FC1 and/or CH1FC2, progression to Part 2 may be allowed if students have achieved a mark of less than 30 % in this option.
- To gain a threshold performance at Part 2 and qualify for the DipHE 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.
- To obtain the degree at the end of Part 3, students must obtain an overall average of 40%. The final degree assessment is based on the following weightings:

For students registered for a 3 year programme:

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| Part 2 Modules | 33 % |
| Part 3 Modules | 67 % |

Summary of teaching and assessment

As indicated above, teaching is organised into modules – each module will consist of lectures, practicals, or a combination of these. Students are assessed on each module, usually by a formal examination, although modules consisting only of practicals (or similar coursework) may not have a formal examination. All coursework is assessed and the assessment contributes towards the modular marks. The Part 3 project is an individual study requiring the submission of formal report for assessment.

Admission requirements

Entrants to this programme are normally required to have obtained:

GCSE: Grade C or better in Mathematics and English in GCSE; and achieved Advanced Level (AS and A2):

- At least one core science at A2 level and either a core or related science subject at AS level (where 'Core Science' is defined as: mathematics, chemistry, physics and biology, and 'Related Science' is defined as: food technology, environmental science and human biology)
- A UCAS Tariff of 280 with 80 obtained in at least one core science

International Baccalaureate: 30 points

Irish Leaving Certificate: BBBB

Admissions Tutor: Dr R Frazier

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

The food industry has a great demand for qualified food science graduates for a wide range of activities. Graduates from this programme gain employment in, for example, research (gaining an understanding of the underlying science of foods from nutritional factors to enzyme reactions) or in product development (developing new products or introducing new ingredients into existing products). Many food retailers employ graduates to ensure the safety and quality of their own-label products and to monitor the goods received from their suppliers. Other opportunities arise in companies supplying the food industry with ingredients, equipment and packaging and in specialist food research laboratories. In addition to the career opportunities in the biotechnological industries, the academic training our graduates receive equips them for positions in other industries, commerce and Government service.

Opportunities for study abroad or for placements

There are no formal arrangements for study abroad. Students may transfer to the 4 year programme including industrial training, and industrial training attachments have sometimes been found in other countries including the United States of America and Australia.

Educational aims of the programme

The Food Science programme aims to:

- Provide a programme of education which can enable its graduates to enter a career in the food industry as scientists capable of ensuring the production and marketing of safe and quality foods.
- Provide a broadly based scientific education whose graduates can also enter into employment in other sectors of the food chain or related scientific sectors where they can apply their scientific skills.
- Allow individuals to develop their capacity to undertake research into the science of foods.
- Provide students with an opportunity to experience the application of their course work through a short placement in industry.
- Provide undergraduates with opportunities to develop their inter-personal and communication skills.
- Enable graduates to meet the entry requirements of the Institute of Food Science and Technology (IFST).

Programme Outcomes

Knowledge and Understanding

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| <p>A. Knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. food composition (including major chemical interactions and nutritional factors) in the context of food quality and safety 2. food processing and food processing equipment 3. microbiological aspects of food quality and safety 4. a more detailed understanding of a specialist area depending upon chosen specialism. | <p>Teaching/learning methods and strategies Lectures and practical classes provide the basic knowledge. A variety of coursework gives opportunities for extending knowledge and techniques. Individual and group projects reinforce techniques and give experience of practical applications</p> <p><i>Assessment</i> Most knowledge is tested through a combination of coursework and unseen formal examinations. Project work, reports, oral presentations and computer-based exercises also contribute to the final assessment.</p> |
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Skills and other attributes

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| <p>B. Intellectual skills – able to:</p> <ol style="list-style-type: none"> 1. analyse and solve problems, 2. critically evaluate scientific literature, 3. assess problems and design experiments to test hypotheses, 4. apply knowledge to new problems, 5. plan, conduct and report on an individual research project. | <p>Teaching/learning methods and strategies Topics 1 and 2 are essential components of the programme and are embedded in many parts of the programme. Topics 3 and 4 are introduced in Part 2 course-work. Topics 3, 4 and 5 are fully developed during the individual research project in Part 3 of the programme.</p> <p><i>Assessment</i> Coursework is structured to assess topics 1, 2, 3 and 4. Topics 3, 4 and 5 are assessed as components of the individual research project</p> |
| <p>C. Practical skills – able to:</p> <ol style="list-style-type: none"> 1. develop and perform chemical and physical, microbiological and sensory laboratory tests to assess the quality and safety of foods, 2. participate in, and help develop, food research and food product development programmes, 3. operate quality assurance procedures in food processing, 4. participate in the assessment of a food production process by the use of techniques such as Hazard Analysis and Critical Control Points (HACCP) so as to ensure the production of safe and quality foods. | <p>Teaching/learning methods and strategies Topic 1 is introduced by lectures but is developed fully by appropriate laboratory exercises during all Parts of the programme. Topics 2, 3 and 4 are developed during lectures, exercises and group work in Part 3 of the programme.</p> <p><i>Assessment</i> All topics will be assessed by coursework.</p> |

D. Transferable skills – able to:

1. work as an individual, in a small group or as part of a larger team,
2. prepare reports and make presentations that effectively present the results of investigations carried out,
3. critically assess and present data using appropriate statistical techniques,
4. make effective use of information technology,
5. consider and manage career choice.

Teaching/learning methods and strategies

The development of transferable skills is integrated into many parts of the programme. Students are required to work both as individuals and as part of groups. Career skills (topic 5) are introduced in a Part 1 module and reinforced by the industrial experience period between Parts 2 and 3.

Assessment

All topics are assessed both by coursework within the modules and in formal 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.