

BSc Biomedical Sciences
For students entering Part 1 in 2015/6

UCAS code: C741

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	Biosciences
Faculty:	Life Sciences Faculty
Programme length:	3 years
Date of specification:	05/Jun/2018
Programme Director:	Dr Amanda Callaghan
Programme Advisor:	Dr David Leake
Board of Studies:	Biological Sciences
Accreditation:	Institute of Biomedical Science

Summary of programme aims

The programme in Biomedical Sciences aims to provide students with the opportunity to study disease in humans by providing a fundamental background in molecular and cell biology and physiology, which is balanced with applied laboratory skills in biochemistry, microbiology, physiology and histology.

The overall aims of the degree course in Biomedical Sciences are to provide a broad understanding of the biological basis of disease and concentrates on the interface between normal and abnormal biology. The basis for this is a study of the disciplines of biochemistry, microbiology and physiology. Emphasis is placed on sound understanding of chemistry as a basis for the appreciation of the biological processes involved. Students will study the normal and pathological state at every level, from genes and enzymes through cells, tissues and whole animals. They will learn about the biology of pathogens and the interactions of these and other disease agents with the host.

During these studies, students 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. Several transferable skills will be acquired, including the ability to design and execute experiments in the laboratory (including working in a team), access information, interpret data using statistics and computing, write essays, scientific papers and reports, and give oral and poster presentations.

Transferable skills

During the course of their studies at Reading, all students will be expected to enhance their academic and personal transferable skills. In following this programme, students will have had the opportunity to develop such skills, in particular relating to career management, communication (both written and oral), information handling, numeracy, problem-solving, team working in the laboratory, and use of information technology, and will have been encouraged to further develop and enhance the full set of skills through a variety of opportunities available outside their curriculum.

Students will also gain experience in the methodology of research and scholarship.

Programme content

The profile below states which modules must be taken (the compulsory part), together with optional modules thought to be most appropriate for Biomedical Scientists. Students must choose modules offered by the School of Biological Sciences (SBS), School of Chemistry, Food and Pharmacy or School of Agriculture, Policy and Development or other University of Reading Schools and Departments, subject to the agreement of the Programme Advisor, to a total of 120 credits in each Part (year).

Part 1 (three terms)

Compulsory modules

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI1BAD2	Pathology and Histology	20	4
BI1BEC1	Building Blocks for Life	20	4
BI1BF1	Laboratory and Study Skills for Biomedicine	10	4
BI1BH12	Human Physiology	20	4
BI1BK12	Key Skills for Biomedical Sciences	10	4
BI1S1	Introductory Microbiology	10	4
<i>Either</i>			
BI1BAB2	Metabolic and Practical Biochemistry	20	4

<i>Or</i>			
BI1MB2	Metabolic Biochemistry	10	4

Highly recommended

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI1BAC2	Bacteriology and Virology	10	4

Also, students without AS Chemistry or an equivalent qualification (such as International Foundation Chemistry A from the University of Reading) **must take**:

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
CH1F1	Fundamental Concepts in Chemistry 1	10	4

Optional modules

Students will choose further modules, to achieve a total of 120 credits, from the list of recommendations below. *Subject to agreement from the Programme Advisor, alternative modules may be chosen from the School of Biological Sciences or from other Schools. Timetable restrictions may apply.*

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
AP1A18	Digestion and Nutrition	10	4
BI1BAC2	Bacteriology and Virology	10	4
BI1ED2	Mammals: Diversity, Behaviour and Conservation	10	4
CH1FC3*	Molecular Studies for the Life Sciences	10	4
CH1OR2	Fundamentals of Organic Chemistry	10	4
CH1OR4	Further Fundamental Organic Chemistry for Biologists	10	4
CH1PH2	Physical Processes for Biologists	10	4
LA1XX1	Institution Wide Language Programme	20	4/5
PY1IN	Introduction to Neuroscience	10	4

*Students cannot take this module if they have A2 level Chemistry at grade A or B.

Part 2 (three terms)

Compulsory modules

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI2BE4	Pharmacology and Toxicology	10	5
BI2BC45	Cells and Immunity	20	5
BI2BCB5	Clinical Biomedicine	20	5
BI2BI45	Infectious Diseases	20	5
BI2BM45	Key Skills in Biomedicine 2	10	5
BI2BMG4	Molecular Genetics	20	5

Optional modules (20 credits)

Students will choose further modules, to achieve a total of 120 credits, from the list of recommendations below. *Subject to agreement from the Programme Advisor, alternative modules may be chosen from the School of Biological Sciences or from other Schools. Timetable restrictions may apply.*

Other options:

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI2BB4	Endocrinology	10	5
BI2BC4	Human Development, Organogenesis and Anatomy	10	5
BI2BL5	Protein Structure and Function	10	5
BI2BR5	The Bacterial Cell	10	5
BI2BT5	Introduction to Bioinformatics and Computational Biology	10	5
BI2EVP5	Venoms and Poisons	10	5
BI2PLA*	Summer Placement	10	5
MM270	Practice of Entrepreneurship	20	5
PY2NS1	Neuroscience 1	10	5
PY2NS2	Neuroscience 2	10	5

*** Takes place in the summer undergraduate vacation, after Part 1 examinations**

Part 3 (three terms)

Compulsory modules

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI3BA7	Medical Genetics	10	6
BI3BE8	Cardiovascular Disease	10	6
BI3BI8	Neurobiology	10	6
BI3BXX1	Cancer and Cell Communication	20	6
<i>Either</i>			
BI3PROB	Research Project - Biomolecular	40	6
<i>Or</i>			
BI3PROD	Research Project - Biomolecular	20	6

Optional modules

Students will choose further modules, to achieve a total of 120 credits, from the list of recommendations below.

Subject to agreement from the Programme Advisor, alternative modules may be chosen from the School of Biological Sciences or from other Schools. Timetable restrictions may apply.

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BI3BB7	Selected Topics in Endocrinology and Endocrine Disease	10	6
BI3BC7	Bacterial Pathogens	10	6
BI3BG8	Mechanisms for Microbial Function	10	6
BI3BH8	Mammalian Reproduction	10	6
BI3BJ8	Viral Pathogens	10	6
BI3BP7	Systems Biology	10	6
BI3BQ78	Bacterial Pathogens and Experimental Approaches	20	6
BI3BR7	Structural Proteomics	10	6
BI3B67*	Microbiology Field Course	20	6
BI3EP7	Wildlife Diseases	10	6
BI3S78	Seminars in Biology	10	6
FB3NHD	Nutrition, Health and Disease	20	6
FB3NGLA	Genes, Lifestyle and Nutrition	10	6

*Takes place in Summer Term, after Part 2 examinations

** Limited spaces

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 at Part 1, where all the credits are at 4 level or above, and achieve 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**:

obtain a weighted average of at least 40% in 110 credits over the compulsory Part 1 modules BI1BAD2, BI1BEC1, BI1BF1, BI1BH12, BI1BK12, BI1S1 and BI1BAB2

OR

obtain a weighted average of at least 40% in 100 credits over the compulsory Part 1 modules BI1BAD2, BI1BEC1, BI1BF1, BI1BH12, BI1BK12, BI1S1 and BI1MB2

AND

obtain marks of at least 40% in 90 credits of compulsory Part 1 modules BI1BAD2, BI1BEC1, BI1BF1, BI1BH12, BI1BK12, BI1S1 and BI1BAB2

OR

obtain marks of at least 40% in 80 credits of compulsory Part 1 modules BI1BAD2, BI1BEC1, BI1BF1, BI1BH12, BI1BK12, BI1S1 and BI1BAB2

AND

obtain marks of at least 30% in all compulsory part 1 modules

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 at Part 2; and
- marks of at least 40% in modules amounting to not less than 80 credits; and
- marks of at least 30% in modules amounting to not less than 120 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 **AND**

- obtain a weighted average of at least 40% in 100 credits over the compulsory modules BI2BE4, BI2BI45, BI2BM45, BI2BC45, BI2BMG4 and BI2BCB5 **AND**
- obtain marks of at least 40% in 80 credits from the modules BI2BE4, BI2BI45, BI2BM45, BI2BC45, BI2BMG4 and BI2BCB5

Part 2 contributes one third of the overall assessment and Part 3 the remaining two thirds. In order to obtain a degree, students must gain an overall weighted average of at least 35% and achieve 80 credits in Part 3 with a mark of at least 35% including BI3PROB or BI3PROA. In order to be eligible for Honours, students must gain an overall weighted average mark of at least 40% **AND** obtain a weighted average mark of at least 40% for the following compulsory Part 3 modules: BI3BA7; BI3BE8; BI3BT78 and either BI3PROB or BI3PROA **AND** no more than 20 credits of compulsory modules between 30 and 38%. **AND** no compulsory modules below 30%. Honours degrees are accredited by the Institute of Biomedical Science (IBMS) but pass degrees are not.

Summary of Teaching and Assessment

The University's Honours classification scheme is:

<i>Mark</i>	<i>Interpretation</i>
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

For the University-wide framework for classification, which includes details of the classification method, please see: www.reading.ac.uk/internal/exams/Policies/exa-class.aspx

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

Three-year programmes

Part 2 one-third

Part 3 two-thirds

Teaching is organised in modules. Teaching in Part 1 consists of lectures and practical classes with small group work being largely restricted to the Laboratory and Study Skills for Biomedicine 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 (usually 30%) and formal examination (usually 70%).

The assessment is carried out within the University's degree classification scheme, details of which are in the School of Biological Sciences Undergraduate Handbook.

Admission requirements

Entrants to this programme are normally required to have obtained:

Typical Offer: Grades ABB/AAC from three A levels including Biology and a second science, both at minimum grade B. Acceptable science subjects: Chemistry, Physics, Maths, Further Maths, Statistics, Psychology, Geography, Applied Science, Environmental Studies, Geology. Exclusions: General Studies, Critical Thinking and Citizenship A levels, Key Skills and the Extended Project.

International Baccalaureate: 32 points overall including 6 in Biology and 6 in a second science, both at higher level.

BTEC Level 3 Extended Diploma: Grades DDD in a relevant subject.

GCSEs: Minimum grade C required in English, Mathematics and Science.

Applicants with other equivalent qualifications will also be considered.

This degree is accredited with the Institute of Biomedical Science.

Admissions Tutor: Dr Andrew Bicknell

Support for students and their learning

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, In-session English Support Programme, the Study Advice and Mathematics Support teams and IT Services. 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, School Senior Tutors, the Students' Union, the Medical Practice and the Support Centres. If a student has a general enquiry and is unsure where to seek help, they should visit their Support Centre. There are five Support Centres across the University, including one based at the London Road Campus. The Support Centre will be able to advise on matters such as extenuating circumstances, module selection, suspensions, withdrawals, timetable queries and transferring programme. The Support Centre will also be able to signpost students to Carrington building where other University services related to disability, financial support, counselling and wellbeing, accommodation and careers can be found. More information on what student services are available can be found here: <http://student.reading.ac.uk/essentials>.

The Programme Advisor is available to offer advice on the choice of modules within the degree course.

Career learning

Career prospects

Biomedical Sciences students will be qualified to undertake a career in a range of areas, such as hospital laboratories, public health institutions or the pharmaceutical industry, universities, research institutes or in clinical trials. Many of our students have gone on to study for a MSc or PhD or medicine, dental or veterinary sciences. Others have used their skills and problem-solving abilities in careers not directly related to biomedical sciences.

Institute of Biomedical Science

Our degree in Biomedical Sciences is accredited by the Institute of Biomedical Science (IBMS) and can lead to State Registration by the Health and Care Professions Council (HCPC). Graduates with an honours degree in Biomedical Sciences will therefore receive an accredited degree. As stated on its website (<http://www.ibms.org>), the Institute of Biomedical Science (IBMS) is the professional body for those who work within the field of biomedical science. The Institute was founded in 1912 and represents over 19,000 members employed predominately within the healthcare arena but also within university and veterinary laboratories, government agencies and other services. Other members also work in related commercial fields and academia. Although most Institute members live and work in the United Kingdom, many other members are employed throughout the world.

The roles of the IBMS are:

To aid and support the development of biomedical science, both nationally and internationally.

Develop professional standards to guide those who practice biomedical science and to ensure patient safety.

Assess competence to practise as HCPC registered biomedical scientists.

Represent the interests of biomedical science, provide advice and work with UK governments, public and independent healthcare providers and all other partners.

Provide professional support and benefits for members.

Develop qualifications, training and diplomas for members to demonstrate levels of expertise and competency along a career pathway.

To enable members to achieve their highest potential via continuing professional development and other professional activities.

Inform and guide biomedical scientists through media, professional and scientific publications, meetings and events.

Promote public awareness of biomedical science.

Award the designation of Chartered Scientist to qualifying members.

Fund research and support charitable causes in biomedical science.
Maintain a historical archive of the Institute and biomedical science profession.

Classes of membership for individuals:

There are various classes of membership for individuals:

eStudent membership

eStudent is an online class of Institute membership for those currently studying for a biomedical science or related degree. To be eligible for eStudent membership you must be studying for an undergraduate degree in biomedical science, studying for a postgraduate degree in biomedical science (MSc, PhD) or studying for an undergraduate or postgraduate degree related to biomedical science. You can complete an eStudent online application and pay a £10 annual membership fee.

Associate membership

Associate is the non-corporate class of Institute membership for persons who are not eligible for corporate membership but who possess a minimum level of educational and vocational standards that recognise the ability to gain a good knowledge and understanding of a subject area of work or study, and to perform varied tasks with some guidance or supervision (e.g. GCSE, City & Guild Level 2) and are working within the field of, or related to, biomedical science. All applications will be considered on an individual basis.

Licentiate

Licentiate is the initial class of corporate membership for a person who has been awarded the Institute's Certificate of Competence or demonstrated equivalence as determined by the Institute through an individual assessment.

Member

Member is the next class of corporate membership and applicants to the class of Member will be required to have a minimum two years' professional experience as a Licentiate and hold an Institute Specialist Diploma or a Diploma of Specialist Practice.

Fellow

Fellow is the highest corporate class of Institute membership and applicants to the class of Fellow will be required to have a minimum of three years' professional experience as a Member and hold an Institute Higher Specialist Diploma or Diploma of Higher Specialist Practice.

Registration

All biomedical scientists wishing to practise in the UK under the protected title of biomedical scientist must be registered with the HCPC. The HCPC is an independent, UK-wide regulatory body responsible for setting and maintaining standards of professional training, performance and conduct for the healthcare professions under its regulation. The standards for registration are known as the standards of proficiency. The IBMS endorses the HCPC's standards and the requirement for biomedical scientists and its members to integrate and maintain them as part of safe practice. The IBMS and HCPC are two separate organisations but work in close co-operation for the fundamental and primary aim of patient safety, to represent the interests of the profession.

Opportunities for study abroad

Placement opportunities

Industrial Placement

Students who are interested in a scientific career, whether in industry, research or some other related field, can apply for a year's placement between Parts 2 and 3.

Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:

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

Human anatomy and physiology

Human anatomy and physiology refers to the structure, function and control of the human body, its component parts and major systems.

Cell biology

Teaching/learning methods and strategies

These areas are covered in:

Human anatomy and physiology

Part 1: Human Physiology (BI1BH12; 20 credits), Pathology and Histology (BI1BAD1): Optional - Digestion and Nutrition (AP1A8)

Part 2: Human Development, Organogenesis & Anatomy (BI2BB4), Optional - Endocrinology (BI2BB4)

Part 3: Cardiovascular Disease (BI3BE8),

Cell biology is the study of the structure and function of cells (and the organelles they contain) and includes their life cycle, division, self-replication and eventual death.

Biochemistry

Biochemistry is the study of chemical processes which support life. It requires knowledge of key chemical principals which are relevant to biological systems and includes the structure and function of biological molecules and cellular metabolism and its control.

Genetics and molecular biology

Genetics is the study of the structure and function of genes (including their role in human disease) and inheritance. Molecular biology is that branch of biology that deals with the manipulation of nucleic acids (DNA, RNA) so that genes can be isolated, sequenced or mutated. It covers methods which allow the insertion of new genes from the genome or the deletion of genes from the genome of an organism. It allows the functions of genes and the effects of gene mutations to be investigated.

Immunology

Immunology is the study of components of the immune system, their structure, function and mechanism of action. It includes innate and acquired immunity.

Microbiology

Microbiology is the study of the structure, physiology, biochemistry, classification and control of micro-organisms, including the role of normal flora.

Clinical Laboratory Specialists

The traditional disciplines of cellular pathology, clinical biochemistry, clinical immunology, haematology, transfusion science, clinical genetics and medical microbiology are increasingly being reconfigured into blood science, cellular science, tissue pathology, infections and molecular science in major pathology service units in the NHS; However, the subjects below specifically address the knowledge and understanding of disease processes in the context of laboratory investigation

Cellular Pathology

Cellular pathology is the microscopic examination of normal and abnormal cells (cytopathology) and tissues (histopathology) for indicators of disease.

Clinical Biochemistry

Clinical Biochemistry is the evaluation of analytes to aid the screening, diagnosis and monitoring of disease.

Clinical Immunology

Neurobiology (BI3BI8), Optional - Selected Topics in Endocrinology and Endocrine Disease (BI3BB7), Mammalian Reproduction (BI3BH8), Bioavailability, Diet and Gut Health (FB3N3)

Cell biology

Part 1: Building Blocks of Life (BI1BEC1), Pathology and Histology (BI1BAD1)
Part 2: Cells and Immunity (BI2BXX4)
Part 3: Cancer and Cell Communication (BI3BXX1)

Biochemistry

Part 1: Building Blocks of Life (BI1BEC1), Optional - Metabolic and Practical Biochemistry (BI1BAB2).
Part 2: Optional - Protein Structure Function and Proteomics (BI2BXX7)
Part 3: Cancer and Cell Communication (BI3BXX1)

Genetics and molecular biology

Part 1: Building Blocks of Life (BI1BEC1), Optional - Metabolic and Practical Biochemistry (BI2BAB2)
Part 2: Molecular Genetics (BI2BXX6), Cells and Immunity (BI2BXX5)
Part 3: Medical Genetics (BI3BA7), Optional - Genes, Lifestyle and Nutrition (FB3N2B)

Immunology

Part 1: Human Physiology (BI1BH12)
Part 2: Cells and Immunity (BI2BXX5), Clinical Biomedicine (BI2XX8)

Microbiology

Part 1: Building Blocks of Life (BI1BEC1), Bacteriology and Virology (BI1BAC1)
Part 2: Microbiology: A Medical Perspective (BI2BJ5), Optional - Animal, Plant and Microbial Development (BI2BL5), Function of the Bacterial Cell (BI2BR4)
Part 3: Optional - Bacterial Pathogens (BI3BC7), Mechanisms of Microbial Function (BI3BG8), Viral Pathogens (BI3BJ8), Bacterial Pathogens and Experimental Approaches (BI3BXX2), Microbiology Field Course (BI3B67), Use and Abuse of the Microbial World (BI3BN8), Bioavailability, Diet and Gut Health (FB3N3)

Clinical Laboratory Specialists

Part 1: Building Blocks of Life (BI1BEC1), Pathology and Histology (BI1BAD1), Human Physiology (BI1BH12)
Part 2: Clinical Biomedicine (BI2BXX8)

Cellular Pathology

Part 1: Pathology and Histology (BI1BAD1), Human Physiology (BI1BH12)
Part 2: Clinical Biomedicine (BI2BXX8)

Clinical Biochemistry

Clinical Immunology is the study of immunopathological conditions and abnormal immune function.

Haematology

Haematology is the study and investigation of the different elements that constitute blood in normal and diseased states.

Transfusion Science

Transfusion science is the identification of blood group antigens and antibodies which ensures a safe supply of blood and blood components.

Clinical Genetics

Clinical genetics is the identification of genetic mutations and polymorphisms and their influence on disease processes.

Medical Microbiology

Medical Microbiology is the study and investigation of pathogenic microorganisms.

Subject-specific and generic skills

A biomedical science graduate will be aware of the need for compliance with health and safety policies, good laboratory practice, risk and COSHH assessments, the Human Tissue Act and the importance of quality control and quality assurance.

Part 1: Human Physiology (BI1BH12), Pathology and Histology (BI1BAD1)

Part 2: Clinical Biomedicine (BI2BXX8)

Clinical Immunology

Part 1: Human Physiology (BI1BH12), Pathology and Histology (BI1BAD1)

Part 2: Cells and Immunity (BI2BXX5), Clinical Biomedicine (BI2BXX8)

Part 3: Cardiovascular Disease (BI3BE8), Medical Genetics (BI3BA7)

Haematology

Part 1: Human Physiology (BI1BH12)

Part 2: Cells and Immunity (BI2BXX5), Clinical Biomedicine (BI2BXX8)

Transfusion Science

Part 2: Clinical Biomedicine (BI2BXX8)

Part 3: Medical Genetics (BI3BA7)

Clinical Genetics

Part 1: Pathology and Histology (BI1BAD1)

Part 2: Clinical Biomedicine (BI2BXX8)

Part 3: Medical Genetics (BI3BA7)

Medical Microbiology

Part 1: Bacteriology and Virology (BI1BAC1)

Part 2: Microbiology: A Medical Perspective (BI2BJ5), Optional - Virology (BI2BO4)

Part 3: Optional - Bacterial Pathogens (BI3BC7), Viral Pathogens (BI3BJ8)

Subject-specific and generic skills

Laboratory skills are taught in a large number of modules, for instance, Laboratory and Study Skills for Biomedicine (BI1BF1), Human Physiology (BI1BH12), Microbiology: A Medical Perspective (BI2BJ5), Clinical Biomedicine (BI2BXX8), Metabolic and Practical Biochemistry (BI1BAB2), Virology (BI2BO4) and the Research Project (BI3PROB). Safety issues and good laboratory practice are taught in Laboratory and Study Skills for Biomedicine (BI1BF1) and also in practicals in other modules and in the Part 3 Research Project (BI3PROB).

Assessment

Skills and other attributes

B. Intellectual skills - able to:

1. Address problems in a logical and structured manner

Teaching/learning methods and strategies

Basic skills associated with problem solving and data analysis are taught in a specific module using a

2. Manipulate and analyse numerical data
3. Construct and test hypotheses
4. Critically evaluate scientific literature and data

variety of teaching methods. These skills are further developed in individual modules, students in small groups will be taught how to construct and logically investigate a hypothesis and to analyse the data produced. In Part 3 students are able to enhance their critical and analytical skills by undertaking a research project and to demonstrate this by presenting the results in an accompanying dissertation.

Assessment

Assessment of 1 and 2 is by examination. Critical evaluation of scientific data and literature is assessed in essay and dissertation form.

C. Practical skills - able to:

1. Conduct practical laboratory work safely and successfully.
2. Design and undertake a programme of scientific investigation

Teaching/learning methods and strategies

Practical laboratory skills will be taught in departmental teaching laboratories. Further practical skills may also form part of the Part 3 project, where students will be taught on a one-to-one basis how to design and implement a programme of scientific investigation.

Assessment

Skill 1 is typically assessed by course work, while skill 2 is assessed by written report.

D. Transferable skills - able to:

1. To be able to communicate effectively in both written and oral form
2. To be numerate and capable of approaching problems in a logical and structured manner
3. To be able to operate effectively as part of a team
4. To be familiar with IT operation and resources
5. To be able to work independently
6. To be able to effectively plan and time manage projects

Teaching/learning methods and strategies

Specific modules in Parts 1 and 2 teach skills 1 to 4 using a combination of seminars, demonstrations and practical approaches. In addition, other modules include aspects of different skills, including team working as part of structured group work and many modules include an integral component of written and oral communication as coursework. In Part 3 students undertake a detailed research project during which their individual planning and time management skills are developed through contact with their academic supervisor. Some modules include oral presentations.

Assessment

Skills are assessed by coursework as part of the Professional Career Development module. In addition, most individual modules include written and oral coursework as 20-30% of the total module assessment.

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 process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.