

Course Specification

Published Date:	14-Sep-2020
Produced By:	Laura Clode
Status:	Validated

Core Information

Awarding Body / Institution:	University of Wolverhampton		
School / Institute:	Wolverhampton School of Sciences		
Course Code(s):	BC013T01UV	Full-time	4 Years
	BC013T31UV	Part-time	8 Years
Course Title:	BSc (Hons) Microbiology and Biotechnology with Foundation Year		
Hierarchy of Awards:	Bachelor of Science with Honours Microbiology and Biotechnology Bachelor of Science Microbiology and Biotechnology Diploma of Higher Education Microbiology and Biotechnology Certificate of Higher Education Microbiology and Biotechnology Foundation and Preparatory Studies Microbiology and Biotechnology University Statement of Credit University Statement of Credit		
Language of Study:	English		
Date of DAG approval:	01/Apr/2020		
Last Review:			
Course Specification valid from:	2019/0		
Course Specification valid to:	2025/6		

Academic Staff

Course Leader:	Dr Roy Protheroe
Head of Department:	Georgina Manning

Course Information

Location of Delivery:	University of Wolverhampton
Category of Partnership:	Not delivered in partnership
Teaching Institution:	University of Wolverhampton
Open / Closed Course:	This course is open to all suitably qualified candidates.

Entry Requirements:

Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS)

Distinctive Features of the Course:

The emphasis throughout the course will be on the applied nature of the study of microbiology and biotechnology in terms of how fundamental knowledge can be applied to tangible vocational situations and problems, together with the acquisition of practical and generic skills. The intention of this approach will be to prepare students for their chosen career in any of the varied career options made available by a degree in the applied aspects of microbiology and biotechnology. Students have the opportunity to seek employment in careers involving quality assurance, medical and healthcare, product development and research: within the water, food, pharmaceutical and environmental industries. Careers such as teaching also have potential for developed. To achieve this the award is structured to enable challenges to apply information effectively, to work in teams, to gain actual industrial experience, to learn from the experiences of professionals, to acquire technical competence and to develop generic and time management skills.

Educational Aims of the Course:

We encounter micro-organisms continually, since they exist on the surfaces we touch and on the foods we eat and drink, and even the air we breathe. In addition to the vital role of microorganisms in disease and the environment they are also used in biotechnology for the manufacture of many products which we use and the foods we consume. The course aims to explore the diversity microorganisms together with the principles and applications of biotechnology.

Biotechnology is a rapidly expanding discipline which is finding applications throughout society including medicine, agriculture and the environment. The course will provide a grounding in the basic principles of microbiology, plant biology, cell biology, genetics and the structure and function of biomolecules necessary to underpin the advanced study of biotechnology and demonstrate how these principles are applied for the development of useful products and applications.

Specialist facilities will enable the investigation of the biology of the cell and the nature of genes together with the biochemical analysis of biological products. The course explores the physicochemical principles associated with fermentation design and operations for the processing of materials by microbial, animal and plant cells (and their enzymes) including genetic modification to make useful products or purposes.

Technical competence is an important aspect of the award hence you will be provided with ample opportunity to undertake experiments which not only underpin theory but also provide training in analytical equipment.

The course will also explore the social consequences of developments in biotechnology, considering the benefits and risks connected with recombinant DNA experiments and the use or release of genetically modified organisms and their products.

A sandwich year in an industrial or research setting, supported by a University supervisor, is an optional, yet highly recommended opportunity which will provide invaluable work experience in settings from hospital pathology, to major biotechnology companies or food production facilities.

Intakes:

September

Major Source of Funding:

Office for Students (OFS)

Tuition Fees:

Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2020/1	H	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00

PSRB:

BC013T01UV (Full-time)

Professional Accreditation Body:
Society of Biology

Accrediting Body:
Royal Society of Biology

Accreditation Statement:

"Accredited by the Royal Society of Biology for the purpose of meeting, in part, the academic and experience requirement of membership and Chartered Biologist (CBiol)."

Approved	Start	Expected End	Renewal
01/Jul/2020	01/Jul/2020		30/Jun/2025

BC013T31UV (Part-time)

Professional Accreditation Body:
Society of Biology

Accrediting Body:
Royal Society of Biology

Accreditation Statement:

"Accredited by the Royal Society of Biology for the purpose of meeting, in part, the academic and experience requirement of membership and Chartered Biologist (CBiol)."

Approved	Start	Expected End	Renewal
01/Jul/2020	01/Jul/2020		30/Jun/2025

Course Structure:

September (Full-time)

Year 1

Module	Title	Credits	Period	Type
3CC004	Problem Solving in Science and Technology	20	SEM1	Core
3PY002	Communication and study skills	20	SEM1	Core
3MM003	Foundation Mathematics I	20	SEM1	Core
3AB003	Fundamentals of Bioscience	20	SEM2	Core
3BM003	Fundamentals of Healthcare Science	20	SEM2	Core
3CH002	Chemistry for Foundation Sciences	20	SEM2	Core

September (Part-time)

Year 1

Module	Title	Credits	Period	Type
3CC004	Problem Solving in Science and Technology	20	SEM1	Core
3PY002	Communication and study skills	20	SEM1	Core
3AB003	Fundamentals of Bioscience	20	SEM2	Core

September (Full-time)

Year 2

Module	Title	Credits	Period	Type
4AB023	Introduction to Biosciences	20	SEM1	Core
4BC003	Cell Biology and Genetics	20	SEM1	Core
4BC005	Biochemistry for Life Science	20	SEM1	Core
4BM024	Introduction to Microbiology	20	SEM2	Core
4AB026	Introduction to Plant Biology	20	SEM2	Core
4BM017	Biomedical Basis of Disease	20	SEM2	Core

September (Part-time)

Year 2

Module	Title	Credits	Period	Type
3MM003	Foundation Mathematics I	20	SEM1	Core
3BM003	Fundamentals of Healthcare Science	20	SEM2	Core
3CH002	Chemistry for Foundation Sciences	20	SEM2	Core

September (Full-time)

Year 3

Module	Title	Credits	Period	Type
5BC001	Molecular Biosciences	20	SEM1	Core
5BC005	Molecular Biosciences Practical Techniques	20	SEM1	Core
5AB031	Cellular and Organismal Biosciences	20	SEM2	Core
5AB030	Analytical Techniques in Biosciences	20	SEM2	Core
5AB027	Applied and Environmental Microbiology	20	SEM2	Core

For this option group you must choose a minimum of 1 credits and a maximum of 1 credits

5AB032	Biochemistry	20	SEM1	
5PY017	Pharmaceutical Microbiology	20	SEM1	

September (Part-time)

Year 3

Module	Title	Credits	Period	Type
4AB023	Introduction to Biosciences	20	SEM1	Core
4BC003	Cell Biology and Genetics	20	SEM1	Core
4BM024	Introduction to Microbiology	20	SEM2	Core

September (Full-time)

Year 4

Module	Title	Credits	Period	Type
6AB023	Microbial Biotechnology	20	SEM1	Core
6AB020	Honours Project (Biosciences)	40	YEAR	Core

For this option group you must choose a minimum of 20 credits and a maximum of 20 credits

6BC013	Advanced Topics in Microbial Biotechnology	20	SEM1	
6BC006	Bioinformatics	20	SEM1	

For this option group you must choose a minimum of 40 credits and a maximum of 40 credits

6AB028	Plant Biotechnology	20	SEM2	
6AB025	Medical Microbiology	20	SEM2	
6BC009	Developmental Biology	20	SEM2	
6EH005	Control of Water and Foodborne Disease	20	SEM2	

September (Part-time)

Year 4

Module	Title	Credits	Period	Type
4BC005	Biochemistry for Life Science	20	SEM1	Core
4AB026	Introduction to Plant Biology	20	SEM2	Core
4BM017	Biomedical Basis of Disease	20	SEM2	Core

September (Part-time)

Year 5

Module	Title	Credits	Period	Type
5BC001	Molecular Biosciences	20	SEM1	Core
5BC005	Molecular Biosciences Practical Techniques	20	SEM1	Core
5AB031	Cellular and Organismal Biosciences	20	SEM2	Core

September (Part-time)

Year 6

Module	Title	Credits	Period	Type
5AB030	Analytical Techniques in Biosciences	20	SEM2	Core
5AB027	Applied and Environmental Microbiology	20	SEM2	Core

For this option group you must choose a minimum of 1 credits and a maximum of 1 credits

5AB032	Biochemistry	20	SEM1	
5PY017	Pharmaceutical Microbiology	20	SEM1	

September (Part-time)

Year 7

Module	Title	Credits	Period	Type
6AB023	Microbial Biotechnology	20	SEM1	Core
6AB020	Honours Project (Biosciences)	40	YEAR	Core

For this option group you must choose a minimum of 20 credits and a maximum of 20 credits

6AB028	Plant Biotechnology	20	SEM2	
6AB025	Medical Microbiology	20	SEM2	
6BC009	Developmental Biology	20	SEM2	
6EH005	Control of Water and Foodborne Disease	20	SEM2	

September (Part-time)

Year 8

Module	Title	Credits	Period	Type
6AB020	Honours Project (Biosciences)	40	YEAR	Core

For this option group you must choose a minimum of 20 credits and a maximum of 20 credits

6BC013	Advanced Topics in Microbial Biotechnology	20	SEM1
6BC006	Bioinformatics	20	SEM1

For this option group you must choose a minimum of 20 credits and a maximum of 20 credits

Students must choose one of the options, different to the one chosen in Year 7.

6AB028	Plant Biotechnology	20	SEM2
6AB025	Medical Microbiology	20	SEM2
6BC009	Developmental Biology	20	SEM2
6EH005	Control of Water and Foodborne Disease	20	SEM2

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

Learning, Teaching and Assessment

Academic Regulations Exemption:

Section 1.2.5 - Exemption to permit less than 33% differentiation between cognate Biosciences honours degrees;

BSc (Hons) Biological Sciences

BSc (Hons) Genetics and Molecular Biology

BSc (Hons) Biochemistry

BSc (Hons) Microbiology and Biotechnology.

Effective date: September 2019.

APPROVED by AFRSC (17/5/2018).

Reference Points:

UK Quality Code for Higher Education
Qualifications and Credit Frameworks

Subject Benchmark Statements

University Policies and Regulations

Equality Act (2010)

QAA Biosciences 2015.

Learning Outcomes:

UG Credits Course Learning Outcome 1 (UCCL01)

Solve real world problems using mathematical and statistical techniques.

UG Credits Course Learning Outcome 2 (UCCL02)

Communicate scientifically using oral and written skills to provide information to a variety of audiences.

UG Credits Course Learning Outcome 3 (UCCL03)

Demonstrate and apply problem solving skills to a range of scientific and technological scenarios.

UG Credits Course Learning Outcome 4 (UCCL04)

Demonstrate and apply knowledge of a range of scientific and technological subjects.

UG Credits Course Learning Outcome 5 (UCCL05)

Demonstrate personal development in terms of career choice.

CertHE Course Learning Outcome 1 (CHECLO1)

Demonstrate knowledge of the underlying concepts and principles associated with your area(s) of study, and an ability to evaluate and interpret these within the context of that area of study.

CertHE Course Learning Outcome 2 (CHECLO2)

Demonstrate an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of your subject(s) of study.

CertHE Course Learning Outcome 3 (CHECLO3)

Evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work.

CertHE Course Learning Outcome 4 (CHECLO4)

Communicate the results of your study/work accurately and reliably, and with structured and coherent arguments.

CertHE Course Learning Outcome 5 (CHECLO5)

Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.

DipHE Course Learning Outcome 1 (DHECLO1)

Demonstrate knowledge and critical understanding of the well-established principles of your area(s) of study, and of the way in which those principles have developed with an understanding of the limits of your knowledge, and how this influences analyses and interpretations based on that knowledge.

DipHE Course Learning Outcome 2 (DHECLO2)

Demonstrate the ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context.

DipHE Course Learning Outcome 3 (DHECLO3)

Demonstrate knowledge of the main methods of enquiry in the subject(s) relevant to the named award, and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study.

DipHE Course Learning Outcome 4 (DHECLO4)

Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis.

DipHE Course Learning Outcome 5 (DHECLO5)

Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively.

DipHE Course Learning Outcome 6 (DHECLO6)

Demonstrate the qualities and transferable skills necessary for employment, requiring the exercise of personal responsibility and decision-making and undertake further training, developing existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.

Ordinary Degree Course Learning Outcome 1 (ORDCLO1)

understand and apply the basic principles of microbiology, plant biology, cell biology, genetics and the structure and function of biomolecules necessary to underpin the study of biotechnology.

Ordinary Degree Course Learning Outcome 2 (ORDCLO2)

recognise and analyse the complex relationships between form and function in microorganisms, including their growth and development of organisms and their adaptation to the environment.

Ordinary Degree Course Learning Outcome 3 (ORDCLO3)

perform laboratory analysis safely and reliably relating for the production and analysis of biological materials. Gather and formulate scientific information, reliably collate and analyse data and apply appropriate statistical tests, demonstrating knowledge of the industrial processing of materials by cells and enzymes, including genetic modification, to make useful products or purposes.

Ordinary Degree Course Learning Outcome 4 (ORDCLO4)

use knowledge of physicochemical principles associated with fermentation design to enable the processing of materials.

Ordinary Degree Course Learning Outcome 5 (ORDCLO5)

recognise the social and ethical consequences of developments in microbiology and biotechnology, considering the benefits and risks connected with recombinant DNA experiments and the use or release of genetically modified organisms and their products.

Honours Degree Course Learning Outcome 1 (DEGCLO1)

understand and apply the basic principles of microbiology, plant biology, cell biology, genetics and the

structure and function of biomolecules necessary to underpin the study of biotechnology.

Honours Degree Course Learning Outcome 2 (DEGCLO2)

recognise and analyse the complex relationships between form and function in microorganisms, including their growth and development of organisms and their adaptation to the environment.

Honours Degree Course Learning Outcome 3 (DEGCLO3)

perform laboratory analysis safely and reliably relating for the production and analysis of biological materials. Gather and formulate scientific information, reliably collate and analyse data and apply appropriate statistical tests, demonstrating knowledge of the industrial processing of materials by cells and enzymes, including genetic modification, to make useful products or purposes.

Honours Degree Course Learning Outcome 4 (DEGCLO4)

use knowledge of physicochemical principles associated with fermentation design to enable the processing of materials.

Honours Degree Course Learning Outcome 5 (DEGCLO5)

recognise the social and ethical consequences of developments in microbiology and biotechnology, considering the benefits and risks connected with recombinant DNA experiments and the use or release of genetically modified organisms and their products.

Honours Degree Course Learning Outcome 6 (DEGCLO6)

participate in the development of biology through honours research project, to initiate theories, gather and formulate scientific information, reliably collate and analyse data, apply appropriate statistical tests, debate and draw conclusions.

Overview of Assessment:

Module	Title	Course Learning Outcomes
3AB003	Fundamentals of Bioscience	UCCL02, UCCL04, UCCL05
3BM003	Fundamentals of Healthcare Science	UCCL02, UCCL04, UCCL05
3CC004	Problem Solving in Science and Technology	UCCL01, UCCL03
3CH002	Chemistry for Foundation Sciences	UCCL02, UCCL04, UCCL05
3MM003	Foundation Mathematics I	UCCL01, UCCL02, UCCL03, UCCL04, UCCL05
3PY002	Communication and study skills	UCCL02, UCCL04, UCCL05
4AB023	Introduction to Biosciences	CHECLO1, CHECLO2, CHECLO3, CHECLO4, CHECLO5
4AB026	Introduction to Plant Biology	CHECLO2, CHECLO4
4BC003	Cell Biology and Genetics	CHECLO2, CHECLO4
4BC005	Biochemistry for Life Science	CHECLO2, CHECLO4
4BM017	Biomedical Basis of Disease	CHECLO2
4BM024	Introduction to Microbiology	CHECLO1, CHECLO2, CHECLO3, CHECLO4
5AB017	Sandwich Placement	DHECLO6
5AB027	Applied and Environmental Microbiology	DHECLO3, DHECLO4
5AB030	Analytical Techniques in Biosciences	DHECLO1, DHECLO2, DHECLO5, DHECLO6
5AB031	Cellular and Organismal Biosciences	DHECLO1, DHECLO2, DHECLO5, DHECLO6
5AB032	Biochemistry	DHECLO1, DHECLO2, DHECLO5, DHECLO6
5BC001	Molecular Biosciences	DHECLO1, DHECLO2, DHECLO5, DHECLO6
5BC005	Molecular Biosciences Practical Techniques	DHECLO3, DHECLO4
5PY017	Pharmaceutical Microbiology	DHECLO1, DHECLO2, DHECLO5, DHECLO6
6AB020	Honours Project (Biosciences)	DEGCLO3, DEGCLO6
6AB023	Microbial Biotechnology	DEGCLO1, DEGCLO2, DEGCLO3, DEGCLO4, ORDCLO1, ORDCLO2, ORDCLO3, ORDCLO4
6AB025	Medical Microbiology	DEGCLO1, DEGCLO2, DEGCLO5, ORDCLO1, ORDCLO2, ORDCLO5
6AB028	Plant Biotechnology	DEGCLO1, DEGCLO2, ORDCLO1, ORDCLO2
6BC006	Bioinformatics	DEGCLO1, DEGCLO2, ORDCLO1, ORDCLO2
6BC009	Developmental Biology	DEGCLO1, DEGCLO2, DEGCLO5, ORDCLO1, ORDCLO2, ORDCLO5
6BC013	Advanced Topics in Microbial Biotechnology	DEGCLO1, DEGCLO2, DEGCLO5, ORDCLO1, ORDCLO2, ORDCLO5
6EH005	Control of Water and Foodborne Disease	DEGCLO1, DEGCLO3, ORDCLO1, ORDCLO3

Teaching, Learning and Assessment:

The award will include a diverse range and variety of learning activities. These may include lectures, tutorials, seminars, practicals, discussion and work experiences.

Information central to a module will be principally delivered by lectures with a proportion through directed e-learning. Fundamental principles will be reinforced and given applied relevance by case studies within tutorials and seminars. Increasingly, problem based exercises will be used to enable the application of

knowledge to actual situations. Group working will be encouraged both within formal sessions and on-line. Practical skills will be undertaken and practiced to increasing levels of independence from the use of elementary equipment, to more advanced skills development and ultimately to the independent final year project as students progress through the course.

Vocational experience and relevance will be promoted by the Sandwich Placement and the use within modules of presentations by guest speakers with vocational specialism to emphasise the applied relevance of module content.

Digital literacy: This will be central to most activities. This will range from module organisation, familiarisation with core module content, literature searching, data analysis with interpretation and production of various forms of assessed work (including essays, posters, visual aids and practical reports) for formative and summative submission. Assessed work is increasingly submitted, marked and made available for feedback electronically.

Knowledge and Enterprising: The use of problem based teaching and application of information will enable an appreciation of fundamental knowledge and how principles can be put to use. These approaches enable the development of enterprising mechanisms for solving problems. Students will be encouraged to seek placement and to gain industrial experience which will require enterprise in job seeking.

Global Citizens: Throughout the course students will be given the opportunity to consider case studies and real life situations which will be drawn not only from UK examples but also worldwide, to give an international perspective.

Assessment Methods:

At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

Student Support:

General University Support:

University Learning Centres are the key source of academic information for students. Learning Centres provide physical library resources (books, journal, DVDs, etc.) and offer a range of study areas to allow students to study in the environment that suit them best: Social areas, quiet and silent areas. Learning Centres also provide access to wide range of online information sources, including eBooks, eJournals and subject databases.

Learning Centres also provide students with academic skills support via the Skills for Learning programme. Students on campus can attend workshops or ask for one-to-one help on a range of skills such as academic writing and referencing. Students can access a range of online skills material at: www.wlv.ac.uk/lib/skills
The University Student Support website offers advice on a variety of matters (careers, counselling, Student Union advice, etc.). Students can also access these services by booking appointment with the SU, careers, counselling services, etc.

Course Specific Support:

A well established system of proven effectiveness will exist for student support throughout the course. Students will have readily accessible (made possible via the SAMS appointment system) separate personal and award tutors to give guidance and assistance with course and module related problems as necessary.

Academic skills will be introduced initially by the Introduction to Biosciences module which runs in Semester 1 of the first year to provide a foundation in literature searching, data collection, statistical analysis and

scientific presentation, including writing, referencing and oral presentation. The skills module will support both generic and practical skills which will be used on related modules during the year.

These skills will then be developed throughout modules with specific emphasis on particular skills for example group working (4BM024), practical competence (5BC005 and 5AB030), preparation for project (5AB030) case studies (6AB023; 6AB025) and oral presentation (6AB023).

Development of skills will be assisted by workshops and formative assessment exercises to prepare for summative assessment with timely and constructive feedback from assessed work to foster experiential learning.

Employability in the Curriculum:

Employers are keen to see transferable skills within the curriculum. Transferable skills integrated in the course include;

- Numeracy
- Literacy
- Numeracy
- Report writing
- Critical Thinking
- Problem Solving
- Team working/leadership
- Time management
- Communication

During Level 4 within 4AB023 Introduction to Biosciences, students undertake activities relating to gaining employability skills which can contribute to the Enterprise and Employability Award Silver.

During Level 5, students obtain instruction and guidance in CV production, which are subsequently used, in conjunction with a letter of application, to apply to prospective supervisors during the process of project topic allocation.

The sandwich version of the course is actively promoted and supported by a Sandwich tutor, which enables students to obtain valuable work experience during their year of placement. The experience of work placement on sandwich greatly enhances the employability of graduates.

A number of activities run in the University Career Development Week, to either heighten awareness of the application of science in industry and prospective jobs. These include visits to industry, participation in jobs fairs and postgraduate fairs and team building activities.

Within modules guest speakers from industry who are practitioners in specialist roles, provide explanation and insights into the roles of biologists in the workplace.

Assessment on the project module 6AB020 Honours Project (Biosciences), will involve a poster session to which prospective employers will be invited so that the skills acquired and used in research can be showcased to a wider audience.

