

## Course Specification

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<b>Status:</b>	Validated

## Core Information

<b>Awarding Body / Institution:</b>	University of Wolverhampton		
<b>School / Institute:</b>	Wolverhampton School of Sciences		
<b>Course Code(s):</b>	BC013K23UV	Sandwich	4 Years
<b>UCAS Code:</b>	C503		
<b>Course Title:</b>	BSc (hons) Microbiology and Biotechnology with Sandwich Placement		
<b>Hierarchy of Awards:</b>	Bachelor of Science with Honours Microbiology and Biotechnology, having satisfactorily completed a sandwich placement Bachelor of Science with Honours Microbiology and Biotechnology Bachelor of Science Microbiology and Biotechnology, having satisfactorily completed a sandwich placement Diploma of Higher Education Microbiology and Biotechnology Certificate of Higher Education Microbiology and Biotechnology University Statement of Credit University Statement of Credit		
<b>Language of Study:</b>	English		
<b>Date of DAG approval:</b>	01/May/2018		
<b>Last Review:</b>	2019/0		
<b>Course Specification valid from:</b>	2017/8		
<b>Course Specification valid to:</b>	2025/6		

## Academic Staff

<b>Course Leader:</b>	Dr Roy Protheroe
<b>Head of Department:</b>	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)

- A-Level minimum BB or CDD to include a Science subject preferably Biology
- Access to Higher Education Diploma requires 60 credits overall, 45 credits at Level 3 to include at least 18 Science credits at Merit.
- BTEC QCF Level 3 Extended Diploma in Applied Science grade MMP or BTEC National Diploma grade DM.
- Applicants will normally be expected to hold GCSE English and Maths at grade C+/4 or equivalent
- Successful completion of the International Foundation Year in Science and Engineering guarantees entry on to this course
- Suitable International entry requirements and application guidance can be found [here](#)

## 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. Former students have found 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 have also been 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 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:

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September

#### Major Source of Funding:

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Office for Students (OFS)

#### Tuition Fees:

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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	Home / EU	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00
2021/2	H	Full Time / Sandwich	£9250.00
2021/2	Overseas	Full Time / Sandwich	£13450.00
2022/3	H	Full Time / Sandwich	£9250.00
2022/3	Overseas	Full Time / Sandwich	£13950.00

#### PSRB:

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BC013K23UV (Sandwich)

Professional Accreditation Body:  
Royal 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 (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

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 (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

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

Group 01 | Min Value: 20 | Max Value: 20

5AB032	Biochemistry	20	SEM1	
5PY017	Pharmaceutical Microbiology	20	SEM1	

## September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Module	Title	Credits	Period	Type
5AB017	Sandwich Placement	40	YEAR	Core

## September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Module	Title	Credits	Period	Type
6AB023	Microbial Biotechnology	20	SEM1	Core

**Group 02 | Min Value: 40 | Max Value: 40**

6AB028	Plant Biotechnology	20	SEM2	
6AB025	Medical Microbiology	20	SEM2	
6BC009	Developmental Biology	20	SEM2	

6AB020	Honours Project (Biosciences)	40	YEAR	Core
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**Group 01 | Min Value: 20 | Max Value: 20**

6BC012	Advanced Topics in Biological Sciences	20	SEM1	
6BC006	Bioinformatics	20	SEM1	

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:

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AFRSC/17/22.4.4 - BSc (Hons) Biological Sciences/BSc (Hons) Genetics and Molecular Biology/BSc (Hons) Biochemistry/BSc (Hons) Microbiology and Biotechnology.

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

APPROVED (17/5/2018).

### Reference Points:

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Quality Code - [Part A: Setting and Maintaining Academic Standards](#). Including;

[Qualifications Frameworks](#)

[Characteristics Statements](#)

[Credit Frameworks](#)

[Subject Benchmark Statements](#)

## Overview of Assessment:

Learning Outcomes	Modules
<b>BHONS01</b> 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.	
<b>BHONS02</b> 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.	
<b>BHONS03</b> 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.	
<b>BHONS04</b> Use knowledge of physicochemical principles associated with fermentation design to enable the processing of materials.	
<b>BHONS05</b> 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.	
<b>BHONS06</b> 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.	
<b>BHONSN01</b> 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.	
<b>BHONSN02</b> 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.	
<b>BHONSN03</b> 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.	
<b>BHONSN04</b> Use knowledge of physicochemical principles associated with fermentation design to enable the processing of materials.	

Learning Outcomes	Modules
<b>BHONS05</b> 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.	
<b>BHONS06</b> 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.	
<b>CERTHE01</b> 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	
<b>CERTHE02</b> 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.	
<b>CERTHE03</b> Evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work.	
<b>CERTHE04</b> Communicate the results of your study/work accurately and reliably, and with structured and coherent arguments.	
<b>CERTHE05</b> Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.	
<b>DIPHE01</b> 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.	
<b>DIPHE02</b> 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.	
<b>DIPHE03</b> 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.	
<b>DIPHE04</b> Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis.	
<b>DIPHE05</b> 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.	
<b>DIPHE06</b> 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.	

## Teaching, Learning and Assessment:

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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:

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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:

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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](http://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:

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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.



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