

Programme Specification for

BSc Biology (Biotechnology)



1. Programme title	BSc Biology (Biotechnology)
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Details of accreditation by professional/statutory/regulatory body	
5. Final qualification	BSc (Honours) Biosciences (Biotechnology)
6. Year of validation Year of amendment	English
7. Language of study	Full-time/ Part-time/ Thick Sandwich Programme
8. Mode of study	

9. Criteria for admission to the programme

5 GCSEs (Grade C or above) or 5 GCEs (Grade C or above) including English Language, Mathematics

And one of the following:

- A2 - 260 UCAS points. You should have a minimum of 2 A2 Levels, one should be in Biology and the other in another science subject.
- QCF BTEC Applied Science (from 2010). Diploma at MMM, Certificate at DD. Subjects should include a significant amount of biology.
- HNC/HND Applied Biology (new award since 2011) Students will be eligible to enter Year 2.
- ACCESS to science course in relevant science subject (biology, chemistry, physics, science pathway) with a minimum of a pass mark. Should include significant amount of biology.
- Mature students will be interviewed by the programme leader to discuss suitability for study at Level 4.
- Entry to Year 3 of the programme – students are welcome to apply with

appropriate prior qualifications. Overseas students are required to demonstrate competence in English e.g. TOEFL of 550 or IELTS 6.0.

The programme is open to students with disabilities. Students who have a disability are welcome to contact the programme leader prior to applications to discuss any specific needs.

10. Aims of the programme

The programme aims to:

- develop in students a critical awareness of biology fostering an interest in the ever changing nature of knowledge, significance of new developments within the field and subsequent impact on society;
- introduce students to the cross disciplinary nature of biology and biotechnology and its wide range of applications providing the skills and technical knowledge to work in a multidisciplinary environment;
- develop in students an awareness of the impact of biotechnology on the environment applying technical knowledge to tackle global challenges;
- equip students with practical skills of the current analytical techniques in biology, molecular biology and fermentation;
- develop competence in scientific methods of enquiry and problem solving; produce graduates able to carry out research in their field of study and within an ethical framework;
- prepare students for work at postgraduate level and/or for employment in relevant fields.

11. Programme outcomes

A. Knowledge and understanding

On completion of this programme the successful student will have knowledge and understanding of :

1. Underpinning scientific principles.
2. Biological concepts from molecular, to cellular to whole organism.
3. Mechanisms of inheritance, gene expression and recombinant DNA

Teaching/learning methods

Students gain knowledge and understanding through attendance and participation in either online or campus based:

- lectures, seminars, workshops,
- laboratory classes COVID-19 permitting, fieldwork and group discussions;
- blended learning utilised in modules integrating taught, self-directed and E-learning;

	<ul style="list-style-type: none"> critical discussion during practical and
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<p>technology and its applications.</p> <ol style="list-style-type: none"> Diversity of life and evolutionary principles. Concepts and techniques used in production of products from living organisms. Processes and use of biotechnology in environmental applications. Impact and applications of biology/ biotechnology on health, society and the environment. Use of analytical techniques and their applications to different fields of biology. 	<p>dissertation work;</p> <ul style="list-style-type: none"> participating in assessment. <p>Assessment methods</p> <p>Students' knowledge and understanding is assessed by:</p> <ul style="list-style-type: none"> formative assessment such as online learning tests, peer evaluation, incourse tests, feedback of sample work; seen and unseen examinations; laboratory/ field work; reports/ journals; essays; case studies; specimen collections; oral and poster presentations.
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<p>B. Cognitive (thinking) skills</p> <p>On completion of this programme the successful student will be able to:</p> <ol style="list-style-type: none"> 1. Review evidence and evaluate new information. 2. Analyse and apply theories. 3. Critically evaluate information collated by fieldwork/experiment or in literature. 4. Solve problems. 5. Design research project, collect, analyse, interpret and evaluate data. 6. Appreciate ethical problems associated with biology research and applications health. 	<p>Teaching/learning methods</p> <p>Students learn cognitive skills through attendance and participation in either online or campus based::</p> <ul style="list-style-type: none"> • seminars, workshops, group discussions, debates, peer review of seminar presentations and problem solving exercises; • engaging in assessment activities. <p>Assessment methods</p> <p>Students' cognitive skills are assessed by:</p> <ul style="list-style-type: none"> • formative assessment including working with case studies, laboratory activities, engaging in workshops and seminars, designing and giving seminars; • summative assessment by case studies, examinations – both seen and unseen, group work, problem solving exercises, dissertation, reflective journals, laboratory and field results analysis
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<p>C. Practical skills</p> <p>On completion of the programme the successful student will be able to:</p> <ol style="list-style-type: none"> 1. Competently perform laboratory techniques. 2. Appropriately calibrate and use key equipment and record results. 3. Interpret and evaluate data. 4. Recognise and respond to ethical and health safety issues. 5. Apply practical skills to study of biology and biotechnology. 	<p>Teaching/learning methods</p> <p>Students learn practical skills through:</p> <ul style="list-style-type: none"> • participation in laboratory classes either virtual or face to face, COVID 19 permitting; • field work; • <p>Assessment methods</p> <p>Students' practical skills are assessed by:</p> <ul style="list-style-type: none"> • formative and summative assessment including laboratory/field work reports, data evaluation exercises, case studies, dissertation, field/reflective journal.
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<p>D. Graduate skills</p> <p>On completion of this programme the successful student will be able to:</p> <ol style="list-style-type: none"> 1. Effectively communicate through a range of different methods. 2. Work effectively in teams. 3. Use information technology to support their learning. 4. Analyse data and carry out appropriate numerical calculations. 5. Engage in effective learning. 6. Reflect on personal and career development. 	<p>Teaching/learning methods</p> <p>Students acquire graduate skills through:</p> <ul style="list-style-type: none"> • participation in the programme; • group work; • exercises and case studies; • E-learning for ICT and numeracy skills; • personal development portfolio; • career tutorials for enhancing their personal and career development. <p>Assessment methods</p> <p>Students' graduate skills are assessed by:</p> <ul style="list-style-type: none"> • summative and formative assessment, which include written reports, case study analysis, portfolio, group and individual presentation, through examination and individual research dissertation; • online quizzes; • presentation of work by ICT; • information retrieval and collation using web searches.
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12. Programme structure (levels, modules, credits and progression requirements)

12. 1 Overall structure of the programme

An undergraduate BSc honours degree is comprised of 360 credits of learning. In each year you will take 120 credits of learning and this will enable you to complete your award as a full-time student in three years. Part-time students normally undertake 60-90 credits of learning per year and so will complete their study in four-six years.

The learning units are comprised of 15 and 30 credit modules. In your first year you will undertake a core programme of study of 120 credits. In subsequent years you will have some core and some optional modules. The 30 credit modules are normally studied over the whole academic year of 24 weeks of learning plus an assessment period. 15 credit modules are either studied for 12 weeks in term 1, or 12 weeks in term 2 or studied over a 24 week period. Some modules may be taught in blocks of learning.

Not all optional modules will be available each year.

Levels of study are denoted by a nationally recognised system with students progressing from Level 4 learning (Year 1), to Level 5 (Year 2) and to Level 6 (Year 3). In order to qualify for an honours award, students must have 360 credits of learning of which 120 credits must be at Level 5 and 120 credits must be at Level 6.

The University Regulations allow one module at each level to be compensated at Level 4 (as long as a minimum of 30% is achieved on the module) and 30 credits over Levels 5 and 6. Core modules at Levels 5 and 6 cannot be compensated. For specific details about compensation, refer to the University regulations.

12.2 Levels and modules		
Level 4 (1)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS

<p>Students must take all of the following:</p> <p>BIO1524 <i>15 credits</i></p> <p>BIO1634 <i>30 credits</i></p> <p>BIO1113 <i>30 credits</i></p> <p>BIO1604 <i>15 credits</i></p> <p>BIO1607 <i>30 credits</i></p>		<p>Successful students who have passed 120 credits can progress to Year 2. Students with credit deficit may be required to repeat modules, or pass outstanding assessment, before progressing.</p>
Level 5 (2)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>BIO2005 <i>30 credits</i></p> <p>BIO2501 <i>15 credits</i></p> <p>BIO2556 <i>15 credits</i></p> <p>BIO2512 <i>15 credits</i></p> <p>BIO2607 <i>15 credits</i></p> <p>BIO2536 <i>15 credits</i></p> <p>BIO2605 <i>15 credits</i></p>		<p>Successful students who have passed 120 credits can progress to Year 3. Students with credit deficit may be required to repeat modules, or pass outstanding assessment, before progressing.</p>
Level 6 (3)		

COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>BIO3888 <i>30 credits</i></p> <p>BIO3226 <i>15 credits</i></p> <p>BIO3403 <i>15 credits</i></p> <p>BIO3409 <i>15 credits</i></p>	<p>Students must also choose at least 45 credits from the following:</p> <p>BIO3310 <i>15 credits</i></p> <p>BIO3506 <i>15 credits</i></p> <p>BIO3706 <i>15 credits</i></p> <p>BIO3899 <i>30 credits</i></p>	<p>Students who have gained 360 credits with 120 credits at Level 6 will be awarded the honours degree.</p>

12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)

Module level	Module code
Level 4	BIO1113
Level 5	BIO2005, BIO2607, BIO2605
Level 6	BIO3888, BIO3899, BIO3403, BIO3409

13. Curriculum map

See attached.

14. Information about assessment regulations

The regulations for assessment are common to the University.

Each module has one or more pieces of assessment. A minimum of 40% is required on each piece of assessment to pass. Within modules, where there is more than one component to a module assessment, the marks are aggregated and a grade given using the Middlesex University 20 point scale.

There are opportunities for re-assessment in failed components of work and specific details are given in the module handbooks. At Levels 5 and 6, where a student has failed a piece of work, the mark for the resubmitted work is capped at 40%.

Students must adhere to module assessment deadlines. Where a student cannot meet the deadline for extenuating reasons (for example illness, accidents, bereavement, family problems), an extension can be formally requested. Failure to participate in assessment without permission will result in a fail grade for the module.

In some modules, especially those with seminars and laboratories, participation in the sessions is essential in order to achieve the learning for the module. Students who do not attend sufficiently may not be able to submit the relevant assessment for the module.

Note that self-deferral is not permitted.

15. Placement opportunities, requirements and support (if applicable)

There are two opportunities to gain relevant work experience, the one year long placement and a 30 credit work experience module. Both provide excellent opportunities to gain employability skills, transferable skills and gain experience of working in science. This may be in an industrial, field or hospital based environment for example.

The year-long placement is not available in 2020.21

The 30 credit work experience module will be assessed on a case to case basis and a risk assessment must be undertaken.

The 30 credit work experience module is taken either as a day release in Year 3 or as a block during the summer months between Years 2 and 3. Students can use the Employability Office to help secure relevant placements and are supported in the placement by the office. The module enables work of about 150 hours (24 days) in a relevant organisation. Students would be expected to have successfully completed Year 2 before they go in to a work experience module.

16. Future careers (if applicable)

The Employability and Career Centre can advise on future careers.

Students may progress to postgraduate study. Biology is a broad degree and so a number of postgraduate disciplines may be open to them including, but not exclusively in the fields of Biology, Microbiology, Biotechnology, Ecology, Biomedical Sciences and Environmental Sciences.

There is a wide range of employment opportunities due to the diverse subject area in the pharmaceutical industry and the food and drinks industry for example. There are also careers in the environmental sector and in waste management for example.

Students may also progress to teaching, both at primary and secondary level following a teaching qualification. There are employment opportunities in both the sciences and non-science sectors as water industry, publishing and sales representatives.

17. Particular support for learning (if applicable)

The University has a number of points of support for students:

- Academic support is provided by the Learning Enhancement Team advising students on literacy, English language and numeracy.
- The Disability Support Service offers supports disabled students during their time at Middlesex.
- There is an on-line learning platform to provide module and programme support.
- Departmental Graduate Teaching Assistants support students with their coursework and subject understanding in small group tutorials or on a 1:1 basis.
- First year students will be offered programme progression interviews.

18. JACS code (or other relevant coding system)

C100

19. Relevant QAA subject benchmark group(s)

Biosciences (2007)

20. Reference points

- Middlesex University Regulations 2019.20
- Middlesex University Learning, Quality and Enhancement Handbook, 2019.20
- QAA for Higher Education, Subject Benchmarks, Biosciences, 2007
- Middlesex University (2006) The Learning Framework, London, MU
- Society of Applied Biology

21. Other information

There are not additional costs associated with the programme

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the rest of your programme handbook and the university regulations.

Appendix 2: Curriculum Map

Curriculum map for *[title of Programme]*

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

Programme learning outcomes

Knowledge and understanding		Practical skills	
A1		C1	
A2		C2	
A3		C3	
A4		C4	
A5		C5	
A6		C6	
A7		C7	
Cognitive skills		Graduate Skills	
B1		D1	
B2		D2	
B3		D3	
B4		D4	
B5		D5	
B6		D6	

