PROGRAMME SPECIFICATION

Bachelor of Science with Honours in Biochemistry

Awarding institution	Liverpool John Moores University
Teaching institution	LJMU
UCAS Code	C700
JACS Code	C710
Programme Duration	Full-Time: 3 Years, Sandwich Thick: 4 Years
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	QAA Subject Benchmark Statement - Biosciences (2019)
Programme accredited by	
Description of accreditation	
Validated target and alternative exit awards	Bachelor of Science with Honours in Biochemistry Bachelor of Science with Honours (SW) in Biochemistry Diploma of Higher Education in Biochemistry Diploma in Higher Education (SW) in Biochemistry Certificate of Higher Education in Biochemistry
Programme Leader	Iain Hargreaves

Educational aims of the programme

To provide graduates with a wide knowledge and understanding of core subject matter which enables the student to pursue a career in Biochemistry/Molecular Bioscience related employment.

To enable students to acquire the personal transferable skills needed by science graduates, including research skills to enable them to undertake postgraduate study.

To develop study, communication and information technology skills sufficiently to allow graduates to engage in life long learning and to enable students to enter non-subject specific employment at graduate level.

To provide students from a wide variety of educational backgrounds with a high quality learning experience in a supportive environment.

The syllabus of the Biochemistry programme conforms to the QAA Biosciences benchmark statement (2019) and offers the possibility of a sandwich route or Erasmus placement to further enhance transferable and laboratory skills, and thus graduate employability.

In addition to the aims for the main target award, the sandwich programme aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education

A student who is eligible for this award will be able to:

Apply a broad knowledge base, incorporating theoretical concepts and employing a wide range of specialised skills to real and theoretical Biochemistry/Molecular Bioscience applications.

Evaluate information using it to plan and develop investigative strategies and to determine solutions to a wide range of scientific problems.

Operate in a range of science contexts, and take responsibility for their contributions and outputs.

Alternative Exit/ Interim Award Learning Outcomes - Diploma in Higher Education (SW)

A student who is eligible for this award will be able to:

A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the below, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment

Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education

A student who is eligible for this award will be able to:

Generate ideas through the analysis of concepts at an abstract level, with a command of highly specialised skills and the formulation of responses to concrete and abstract problems.

Accept responsibility for group and personal work.

Analyse and evaluate information, demonstrating significant judgement across a broad range of Biochemistry/Molecular Bioscience related areas.

Alternative Exit/ Interim Award Learning Outcomes - Bachelor of Science with Honours (SW)

A student who is eligible for this award will be able to:

In addition to the learning outcomes for the main target award, demonstrate the professional and personal skills necessary for effective employment within a professional environment.

Target award Learning Outcomes - Bachelor of Science with Honours

A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.

A student who is eligible for this award will be able to:

1. Appreciate fundamental concepts and principles of Molecular Bioscience/Biochemistry as given in the QAA Subject Benchmark Statement.

2. Demonstrate competence in core experimental skills, data analysis and interpretation of results with a critical understanding of the appropriate contexts for their use through the study of texts, original papers and reports.

3. Engage with the essential facts, major concepts, principles and theories associated with Biochemistry and current developments in the Biosciences, including the philosophical and ethical issues involved.

4. Analyse, synthesise and summarise information critically from a variety of sources including published research or reports

5. Recognise and apply subject specific theories, paradigms, concepts or principles, for example the relationship between genes and proteins.

6. Construct grammatically correct documents in an appropriate academic style and format, using and referencing relevant ideas and evidence.

7. Understand the importance of academic and research integrity.

8. Obtain and integrate several lines of subject specific evidence to formulate and test hypotheses.

9. Apply subject knowledge and understanding to address familiar and unfamiliar problems.

10. Recognise the moral and ethical issues of investigations and appreciate the need for ethical standards and professional codes of conduct.

11. Demonstrate competence and progressive development in the basic and core experimental skills.

12. Design, plan, conduct and report on investigations which may involve primary or secondary data.

13. Obtain, record, collate and analyse data using appropriate techniques working either individually or within a group.

14. Comply with health and safety policies, Good Laboratory Practice (GLP), risk and Control of Substances Hazardous to Health (COSHH) assessments and recognise the importance of quality control and quality assurances.

15. Use and interpret a variety of sources of information: textual, numerical, verbal and graphical within the laboratory setting.

16. Understand the need when undertaking sample selection to ensure validity, accuracy, calibration, precision, reproducibility and the need to highlight uncertainty and potential sources of bias during data collection.

17. Prepare, process, interpret and present data using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programmes for presenting data visually.

18. Communicate effectively by discussion, written materials, use of images and oral presentations.

19. Use information technology to prepare, process and present information.

20. Identify targets and follow schedules to meet targets.

21. Demonstrate team working skills.

Teaching, Learning and Assessment

The methods used to enable outcomes to be achieved and demonstrated are as follows:

Lectures, practicals, small group tutorials, seminars, workshops, individual project work, problem-based learning scenarios, self-directed study and student led group symposia.

Cognitive skills are assessed via many methods such as, but not exclusively, written examinations (short answer questions, essay style and MCQ), laboratory reports, research project report, data handling tests, oral presentations and group poster sessions.

It should be noted that if it is felt that a student is in need of key skill enhancement the Programme team is quick to direct students to the many study support sessions that the University provides.

The learning, teaching and assessment strategy of the Biochemistry programme is designed to encourage within the student a progressive acquisition of subject knowledge and skills by moving from level 4 where there is a greater degree of support and assistance to level 6 where there is a greater degree of independence and self-direction especially within the Research Project. The integration and cross-referencing of material between different modules should ensure that the student sees the Biochemistry field as a whole rather than discrete sub-units, allowing student responsibility of their own learning across disciplines as they enter the final level of their degree programme and subsequently on to their professional career.

Programme structure - programme rules and modules

Study Abroad

Students will be offered the opportunity of study abroad at Level 5. Students can choose either Option A or Option B unless they undertake the Sandwich Year, in which case Option B is not available:

Option A: replacement of 60 credits of Level 5 with appropriate study abroad.

The programme will offer the opportunity of 60 credits of study at Level 5. Students will be enrolled on a 360 credit honours with study abroad programme. A 60 credit Level 5 study abroad module [5109BCBMOL] will normally replace the semester 2 modules on the standard programme. This study abroad should cover the same learning outcomes as the modules being replaced. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 120 credits at Level 5.

Option B: additional study year abroad following Level 5.

The programme will offer the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 480 credit honours with study abroad programme. Of those 480 credits, 120 will be taken via a Level 5 study abroad module [5108BCBMOL], the modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Sandwich Year [5107BCBMOL]

The aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

The placement year will follow Level 5 and students will be enrolled on a 480 credit honours sandwich programme.

Students beginning the programme prior to September 2022 will remain on the previous validated versions of the modules on their programme unless going on a leave of absence / have been awarded Final Module Attempts by the Board of Examiners, which may require that they move to the new programme version.

Level 6	Potential Awards on completion	Bachelor of Science with Honours
Core	Option	Award Requirements
6101BCBMOL ADVANCED STRUCTURAL AND FUNCTIONAL	6104BCBMOL MICROBIAL TECHNOLOGY (20 credits)	100 core credits at level 6 20 option credits at level 6

BIOCHEMISTRY (20 credits) 6102BCBMOL BIOCHEMISTRY SYMPOSIA (20 credits) 6103BCBMOL ADVANCED CELL AND MOLECULAR BIOLOGY (20 credits) 6108BCBMOL Biochemistry/Biotechnology Research Project (40 credits)	6104BMBMOL CANCER (20 credits) 6108BMBMOL WORK-BASED LEARNING (20 credits) 6203NATSCI APPLICATIONS OF GENETICS IN HEALTH AND DISEASE (20 credits) 6211NATSCI NEUROBIOLOGY (20 credits)	

Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5101BCBMOL METHODS IN BIOCHEMISTRY (20 credits) 5102BCBMOL METABOLIC BIOCHEMISTRY (20 credits) 5104BCBMOL STRUCTURAL AND FUNCTIONAL BIOCHEMISTRY (20 credits) 5105BCBMOL MOLECULAR BIOLOGY AND FUNCTIONAL GENOMICS (20 credits) 5106BCBMOL MOLECULAR CELL BIOLOGY (20 credits) 5115BCBMOL MICROBIAL BIOTECHNOLOGY 2 (20 credits)		120 core credits at level 5 0 option credits at level 5

Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4102BCBMOL INTRODUCTION TO STRUCTURAL AND FUNCTIONAL BIOCHEMISTRY (20 credits) 4104BCBMOL PHYSIOLOGICAL BIOCHEMISTRY (20 credits) 4112BCBMOL MICROBIAL BIOTECHNOLOGY 1 (20 credits) 4113BCBMOL PRACTICAL AND EMPLOYABILITY SKILLS IN BIOCHEMISTRY (20 credits) 4114BCBMOL INTRODUCTION TO CELL BIOLOGY (20 credits) 4115BCBMOL INTRODUCTION TO MOLECULAR BIOLOGY (20 credits)		120 core credits at level 4 0 option credits at level 4

Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.
https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework

Opportunities for work-related learning (location and nature of activities)

The programme also offers the option of a sandwich route, which involves 1 year of work experience in a specialist field. The sandwich placement occurs at the end of level 5 and the training allows students to develop their professional and technical skills. Work related learning is delivered throughout the programme and for those students who are eligible there is a level 6 Work-Based Learning module.

Criteria for admission

A/AS Level
Applicants should have (or expect to obtain) at least 2 'A2' levels or equivalent, including Biology and/or Chemistry with a minimum of 104 points.

BTEC National Diploma
BTEC applicants should hold or be studying and appropriate diploma and have (or expect to obtain) a pass with at least 3 merit grades at level 3 in appropriate units.

AVCE
AVCE applicants should have (or expect to obtain) 104 points in an appropriate discipline (normally science).

Irish Leaving Certificate
Applicants must have passed (or expect to pass) their Irish Higher exams with at least grade BBC in 3 subjects, 2 of which must be sciences

Scottish Higher
Applicants must have passed (or expect to pass) their Scottish Higher exams with at least grade BBC in 3 subjects, 2 of which must be sciences.

International Baccalaureate
Applicants must have (or expect to obtain) the full award including grade 5 in an appropriate science.

Access
Access applicants should have (or expect to obtain) a pass in an appropriate QAA-approved Access course.

Higher national diploma
Applicants with either a HNC or HND will be considered on an individual basis and may be eligible for some recognition of prior learning

Other
In common with standard University policy, applicants should have GCSE passes in Mathematics and English with a minimum grade C, or equivalent.

Mature entry
Approved science access or foundation course. Students aged 21 or over who do not meet the requirements listed may be admitted provided that there is sufficient evidence (interview) that the applicant has the necessary motivation, knowledge and study skills to complete the course successfully.

Overseas qualifications
A wide variety of qualifications may be acceptable provided that they equate to UK requirements. They should also provide evidence of English language ability equivalent to 6.0 IELTS.

External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA) Published review reports are available on the QAA website at www.qaa.ac.uk

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

Methods for evaluating and improving the quality and standards of teaching and learning

Student Feedback and Evaluation

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives

to improve the quality of programmes.

Staff development

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

Internal Review

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

External Examining

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

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, teaching, learning and assessment methods of each module can be found in module and programme guides.