PROGRAMME SPECIFICATION

Bachelor of Science with Honours in Pharmaceutical Science and Biological Chemistry

Awarding institution	Liverpool John Moores University
Teaching institution	LIVERPOOL JOHN MOORES UNIVERSITY
JACS Code	B230, C720
Programme Duration	
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	Pharmacology and Pharmacy.
Programme accredited by	
Description of accreditation	
Validated target and alternative exit awards	Bachelor of Science with Honours in Pharmaceutical Science and Biological Chemistry Bachelor of Science in Pharmaceutical Science and Biological Chemistry Diploma of Higher Education in Pharmaceutical Science and Biological Chemistry Certificate of Higher Education in Pharmaceutical Science and Biological Chemistry
Programme Leader	Shaqil Chaudary

Educational aims of the programme

To provide, for all students, a defined academic programme with clear learning outcomes.

To provide graduates with a comprehensive understanding and skills to equip them for a career in pharmaceutical science and biological chemistry.

To develop critical, analytical problem-based learning skills, and transferable skills to prepare the student for graduate employment.

To permit students to acquire a high level of vocationally-orientated practical, analytical and research skills.

To encourage students to make an academic and practical contribution to the discipline of pharmaceutical science and biological chemistry

To develop those learning, information technology, communication and reflective skills necessary to enable students to undertake independent study, and to participate in lifelong learning.

To develop new areas of teaching in response to the advance of scholarship and the needs of the community.

Target award Learning Outcomes - Bachelor of Science with Honours

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

Knowledge and understanding

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

A1. Possess knowledge and understanding of traditional and electronic sources of information retrieval.

A2. Reflect on the scientific skills required for the course and their future careers.

A3. Possess knowledge and understanding of the application of physical chemistry concepts.

A4. Possess a detailed knowledge and understanding of the chemical properties which are significant with respect to the involvement of drugs in both biochemical transformations and the interaction between medicinal agents and body chemistry.

A5. Be aware of the basic physiology, biochemistry, and pharmacology relating to (i) the biochemical, physiological, and genetic bases of disease and pathological processes and (ii) the modes of action, clinical uses and side-effects of therapeutic agents.

A6. Possess knowledge and understanding to reinforce basic chemistry such as atomic structure, functional group chemistry, reaction mechanisms and numerical calculations.

A7. Possess knowledge and understanding of the organisation and functioning of the cell.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Lectures, tutor-led tutorials, student and tutor-led seminars, problem-based learning scenarios, and self-directed study.

Assessment

Testing of the knowledge base is through a combination of unseen written examinations and assessed coursework in the form of laboratory experiment write-ups, essays, coursework reports and project reports and presentations.

Skills and other attributes

Intellectual Skills

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

B1. Apply the skills needed for academic study and enquiry.

B2. Critically evaluate information and data from a variety of sources.

B3. Apply planning, research methodologies and analytical skills to an in-depth study of a topic in a chosen field of pharmaceutical science and biological chemistry.

B4. Critically appraise laboratory methods and the design of laboratory experiments, their implementation and interpretation of their results.

B5. Apply problem-solving skills to pharmaceutical science and biological chemistry

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Lectures, seminars, tutorials, case studies, research project proposals and the project itself, dissertation.

Assessment

Written examinations, coursework, portfolio, dissertation, research project proposals and reports.

Professional practical skills

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

C1. Plan and execute safely laboratory experiments with an awareness of good laboratory practice (GLP) and COSSH assessment.

C2. Collect, analyse, and interpret experimental data.

C3. Make evaluative judgements on the technical outcomes relating to pharmaceutical and biological chemistry, and report the findings accordingly.

C4. Effectively, and safely apply transferable skills to the management of individuals with continued analysis and evaluation of outcome and appropriate modification of information.

C5. Communicate effectively with individuals and establish professional and ethical relationships.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Lectures, seminars, dissertation, data handling workshops, problem-based learning, research project.

Assessment

Research project proposals and reports, dissertation report, case study reports, portfolio.

Transferable / key skills

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

D1. Communicate effectively with a wide range of individuals using a variety of means.

D2. Evaluate his/her own academic and professional performance.

D3. Utilise problem-solving skills in a variety of theoretical and practical situations.

D4. Take responsibility for personal and professional learning and development.

D5. Manage time, prioritise workloads and recognise and manage personal emotions and stress.

D6. Understand career opportunities and challenges ahead and begin to plan a career.

D7. Communicate effectively by discussion, written materials, use of image and presentations (oral and poster).

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Transferable/key skills are embedded in the modules of the programme. Examples include the use of spreadsheets and statistical computer packages to analyse data, the use of presentation packages to produce seminars and posters, group working and research projects, and the production of a transferable/key skills portfolio.

Assessment

Oral presentations (individual and group), poster presentations, portfolio, dissertation and project reports.

Programme structure - programme rules and modules

Programme rules

The programme leading to the BSc Honours Pharmaceutical Science and Biological Chemistry degree is composed of study units called modules which have a credit value of 12, 24, or 36 credits. In order to obtain a BSc (Hons) degree, students must acquire a minimum of 360 appropriate credits of which 120 credits has been gained at each of the Levels 1, 2, and 3. Students who do not complete the programme leading to an Honours degree in Pharmaceutical Science and Biological Chemistry may be eligible for an intermediate award in Pharmaceutical Science and Biological Chemistry. Students will be eligible for the Certificate in Higher Education following successful completion of Level 1 of the programme and for the Diploma in Higher Education after successful completion of Level 2 of the programme. For the University Certificate, students must have completed at any level a minimum of 72 credits of modules from the BSc Honours Pharmaceutical Science and Biological Chemistry degree programme. Students eligible for the University Advanced Certificate must have completed 120 credits of which at least 80 credits were obtained at Level 1 of the BSc Honours Pharmaceutical Science and Biological Chemistry degree programme. For the BSc award in Pharmaceutical Science and Biological Chemistry, students must have completed successfully Levels 1 and 2 of the programme and a minimum of 60 credits of Level 3.

The academic year is made up of two 15-week semesters (September-January and January-May). The programme is studied full-time over three calendar years, or four years if the sandwich option is taken.

Level 1 of the BSc Honours Pharmaceutical Science and Biological Chemistry degree programme comprises sixcore modules to a total of 120 credits. The core modules which are undertaken by all students at Level 1 within the School of Pharmacy and Chemistry, are designed to provide the students with the required academic, practical, and transferable/key skills necessary to successfully pursue their chosen programme of study. The module, Key Skills for Pharmaceutical and Chemical sciences (PHCCH1019), is intended to act as a basis for the student to launch the recording of a file on Development Personal Planning. The student will maintain and monitor progress files in their skills development in a number of key areas, and ultimately submit their files as a portfolio at the end of the academic year. It is envisaged that the portfolio will be maintained throughout the course, and operate as a starting point for their Development Personal Planning in the workplace.

Three of the core modules, Introduction to Analytical, Biological and Chemical Principles (PHCCH1020), Physical Pharmaceutics (PHCDF1015), and Pharmaceutical Chemistry (PHCMC1022) are aimed at providing the student with a basic practical and relevant analytical, biological, and chemical foundation for all Level 1 modules.

The remaining two modules, Pharmaceutical Microbiology (PHCDF1013) and Foundation in the Scientific Basis of Therapeutics (PHCSB1035) are available designed tocomplement not only the core modules at Level 1, but also the modules available at Levels 2 and 3.

The Level 2 modules build upon the core modules in Level 1. Modules at this stage of the degree programme include Chromatographic Methods of Analysis (PHCCH2006) which has been included to develop student knowledge and practical experience of separative techniques, and Interpretative Spectroscopy (PHCCH2016) that introduces the student to a range of spectroscopic techniques for the identification and structure elucidation of organic molecules. Pharmaceutical Dosage Forms (PHCDF2016) and Pharmaceutical Quality Control (PHCMC2094) are more vocationally-orientated modules whereby the emphasis is placed on the examination of major pharmaceutical dosage forms and the quality control of pharmaceuticals. The above modules are supplemented by Medicinal Chemistry (PHCMC2095) and Scientific Basis of Therapeutics 2 (PHCSB2041), engendering the students with a knowledge and understanding of selective elements of the anatomy, physiology and pharmacology of the cardiovascular, respiratory, gastrointestinal, immune, and central nervous system. Practical Chemistry (PHCCH2017) will focus on developing routine laboratory techniques in chemistry, via the

preparation and analysis of selected compounds, and the physical investigation of selected reactions in the main branches of chemistry.

An additional module, Molecules of Life (PHCCH2015) will familiarise the student with the structure and organic chemistry of simple biomolecules which occur naturally in the environment

The Research project (PHCCH3099) will form the basis of the Level 3 delivery, and will be undertaken throughout the final year. The aim of the module is to equip the student with the practical and transferable skills necessary to investigate and present a piece of research in the chemical and pharmaceutical sciences. Appropriate topics for group research will be provided. The learning activities in the module include lectures and workshops on the transferable skills required, practical laboratory sessions, preparation and presentation of a poster, report writing, and an oral presentation. These projects are envisaged to be laboratory-based, but in exceptional circumstances may be computer or library-based. Formally scheduled teaching will form the foundation of the modules Industrial Pharmacy (PHCDF3164) that includes an industrial visit, and Pharmaceutical Delivery Systems (PHCDF3166). Two further modules, Bio-organic Chemistry (PHCCH3013) and Toxicology and Drug Interactions (PCSB3035) are designed to provide the student with an up-to-date study of biomolecules and their importance in nature, research and industry, and to present the underlying mechanisms of toxicity.

On the sandwich course, the whole of the third year is spent in an industrial or professional workplace. The performance of the student is assessed separately from the degree course and a Professional Training Certificate is awarded for a successful completion of the year.

Level 6	Potential Awards on completion	Bachelor of Science with Honours
Core	Option	Award Requirements
6004CHACAP BIO-ORGANIC CHEMISTRY (24 credits) 6005CHACAP PROJECT AND RESEARCH METHODS (36 credits) 6002DFACAP INDUSTRIAL PHARMACY (24 credits) 6004DFACAP PHARMACEUTICAL DELIVERY SYSTEMS (24 credits) 6000SBACAP TOXICOLOGY AND DRUG INTERACTIONS (12 credits)		120 core credits at level 6 0 option credits at level 6

Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5000CHACAP CHROMATOGRAPHIC METHODS OF ANALYSIS (12 credits) 5001CHACAP MOLECULES OF LIFE (12 credits) 5002CHACAP INTERPRETATIVE SPECTROSCOPY (12 credits) 5003CHACAP PRACTICAL CHEMISTRY (12 credits) 5003DFACAP PHARMACEUTICAL DOSAGE FORMS (24 credits) 5004MCACAP MEDICINAL CHEMISTRY (24 credits) 5004SBACAP SCIENTIFIC BASIS OF THERAPEUTICS 2 FOR PCS PROGRAMMES (24 credits)		120 core credits at level 5 0 option credits at level 5

Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4000CHACAP KEY SKILLS FOR PHARMACEUTICAL AND CHEMICAL SCIENCES (12 credits) 4001CHACAP INTRODUCTION TO ANALYTICAL, BIOLOGICAL AND CHEMICAL PRINCIPLES (24 credits) 4000DFPHAR PHARMACEUTICAL MICROBIOLOGY (12 credits) 4002DFPHAR PHYSICAL PHARMACEUTICS (24 credits)		120 core credits at level 4 0 option credits at level 4

4000MCPHAR PHARMACEUTICAL CHEMISTRY (24 credits) 4002SBPHAR FOUNDATION IN SCIENTIFIC BASIS OF THERAPEUTICS (24 credits)		

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 BSc Honours Pharmaceutical Science and Biological Chemistry degree programme is available as a 4-year sandwich option. On the sandwich course, the whole of the third year is spent in an industrial or professional workplace. The performance of the student is assessed separately from the degree course, and a Professional Training Certificate is awarded for a successful completion of the year.

Criteria for admission

A/AS Level
A/AS Level:

Normally a minimum of 220 points (CCD) from a minimum of two `A` levels including Chemistry, but excluding General Studies.

Preference given to `A` level in the Sciences.

BTEC National Diploma:

An appropriate National Diploma with a good standing, including at least five Merits.

Other:

GCSE English and Mathematics at a minimum C grade.

Mature entry:

Access courses: Validated courses in appropriate subjects, with a typical average of 60%.

Overseas qualifications:

As for Mature Students.

BTEC National Diploma
An appropriate National Diploma with a good standing, including at least five Merits.

Other
GCSE English and Mathematics at a minimum C grade.

Mature entry
Access courses: Validated course in appropriate subjects with a typical average mark of 60%.

Overseas qualifications
As for Mature Students.

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.