

Overview

Programme Code	35649
Programme Title	Pharmaceutical Science
Awarding Institution	Liverpool John Moores University
Programme Type	Degree
Programme Leader	Raida Al Kassas
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Alternative Exit	Diploma in Higher Education (SW) - SDHE	<p>Reflect on the scientific skills required for the course and their future careers. 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. Possess knowledge and understanding of the evaluation of the formulation, preparation, manufacture and quality control of sterile products including injections, ophthalmic products and radiopharmaceuticals. Apply the skills needed for academic study and enquiry. Critically appraise laboratory methods and the design of laboratory experiments, their implementation and interpretation of their results. Utilise problem-solving skills to applied chemical and pharmaceutical science. Plan and execute safely laboratory experiments with an awareness of good laboratory practice (GLP) and COSHH assessment. Collect, analyse, and interpret experimental data. Evaluate his/her own academic and professional performance. Take responsibility for personal and professional learning and development. Understand career opportunities and challenges ahead. A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.</p>
Alternative Exit	Bachelor of Science - BS	<p>Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.</p>
Alternative Exit	Bachelor of Science (SW) - SBS	<p>Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.</p>
Recruitable Target	Bachelor of Science with Honours (SW) - SBSH	See Learning Outcomes Below
Target Award	Bachelor of Science with Honours - BSH	See Learning Outcomes Below

Alternative Exit	Certificate of Higher Education - CHE	<p>Reflect on the scientific skills acquired from the programme, and their future careers. Reflect on the scientific skills acquired from the programme, and their future careers. Develop a basic, practical and relevant mathematical and chemical foundation for the quantitative aspects of all Level 4 modules. Develop a basic, practical and relevant mathematical and chemical foundation for the quantitative aspects of all Level 4 modules. Understand the fundamentals of chemistry, basic human physiology, biochemistry and pharmacology to underpin pharmaceutical science. Understand the fundamentals of chemistry, basic human physiology, biochemistry and pharmacology to underpin pharmaceutical science. Apply the skills needed for academic study and enquiry. Apply the skills needed for academic study and enquiry. Utilise problem-solving skills relevant to pharmaceutical science Utilise problem-solving skills relevant to pharmaceutical science Collect, analyse, and interpret experimental data. Collect, analyse, and interpret experimental data. Evaluate his/her own academic and professional performance. Evaluate his/her own academic and professional performance. Take responsibility for personal and professional learning and development. Take responsibility for personal and professional learning and development. Understand career opportunities and challenges ahead. Understand career opportunities and challenges ahead.</p>
Alternative Exit	Diploma of Higher Education - DHE	<p>Reflect on the scientific skills required for the course and their future careers. 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. Possess knowledge and understanding of the evaluation of the formulation, preparation, manufacture and quality control of sterile products including injections, ophthalmic products and radiopharmaceuticals. Apply the skills needed for academic study and enquiry. Critically appraise laboratory methods and the design of laboratory experiments, their implementation and interpretation of their results. Utilise problem-solving skills to applied chemical and pharmaceutical science. Plan and execute safely laboratory experiments with an awareness of good laboratory practice (GLP) and COSHH assessment. Collect, analyse, and interpret experimental data. Evaluate his/her own academic and professional performance. Take responsibility for personal and professional learning and development. Understand career opportunities and challenges ahead.</p>

Alternate Award Names	
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External Benchmarks

Subject Benchmark Statement	UG-Biosciences (2019), UG-Chemistry (2022)
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Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Sandwich Year Out, Face to Face	September	LJMU Taught	4 Years
Full-Time, Face to Face	September	LJMU Taught	3 Years

Aims and Outcomes

Educational Aims of the Programme

To provide, for all students, a defined, integrated academic programme of study with clear learning outcomes. To provide students with a comprehensive understanding and skills base to equip them for a career in pharmaceutical science, allied and other industries, and associated professions. 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. 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. To encourage students to engage with the development of employability skills by completing a self-awareness statement. 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.

Learning Outcomes

Code	Description
PLO1	Demonstrate a knowledge and understanding of essential facts, concepts, principles and theories relating to the subject matter covered in their programme.
PLO2	Demonstrate initiative and originality in the use of chemical knowledge and methodologies applied to the study of pharmaceutical science.
PLO3	Develop an appreciation of the interdisciplinary nature of the nature of science and of the validity of different view points.
PLO4	Demonstrate self-direction and initiative in the planning and safe execution of laboratory work, in line with good laboratory practice (GLP) and COSHH assessment.
PLO5	Collect, analyse, and interpret experimental data
PLO6	Communicate effectively in multi-skilled teams, establishing professional and ethical relationships.
PLO7	Appreciate the requirement for responsible and ethical behaviour in the Chemical and allied industries, with particular reference to the environment.

Code	Description
PLO8	Identify and work towards targets for personal, academic, professional and career development.
PLO9	Communicate effectively with a wide range of individuals via discussion, written materials, use of image and presentations (oral and poster).
PLO10	Self-evaluate academic and professional performance.
PLO11	Utilise problem-solving skills, qualitative and quantitative, in a variety of theoretical and practical situations.
PLO12	Reflect on the scientific skills required for the course and their future careers.
PLO13	Demonstrate a wide range of study, IT, numerical and computational skills.
PLO14	Manage time, prioritise workloads and recognise and manage personal emotions and stress.
PLO15	Present pharmaceutical science material and arguments clearly and correctly, in writing and orally, to both specialist and lay audiences.
PLO16	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.
PLO17	Develop an ability to assimilate, evaluate and present research results objectively.
PLO18	Apply the skills needed for academic study and enquiry to an advanced level.
PLO19	Adapt and apply knowledge and understanding of Chemistry to the solution of qualitative and quantitative problems.
PLO20	Evaluate, summarise, and report research laboratory and literature data and relate them to underlying theory.
PLO21	Design and construct laboratory work.

Programme Structure

Programme Structure Description

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 [5009PHASCI] 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 [5008PHASCI], 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 [5007PHASCI] 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 and take the module 5007PHASCI (Sandwich Year - Pharmaceutical Science). The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Programme Structure - 360 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4001PHASCI Physical Properties Approved 2022.01 - 20 credit points	
[MODULE] 4002PHASCI Organic Chemistry Approved 2022.01 - 20 credit points	
[MODULE] 4003PHASCI Principles of Human Biology and Disease Approved 2022.01 - 20 credit points	
[MODULE] 4004PHASCI Formulation Science Approved 2022.01 - 20 credit points	
[MODULE] 4005PHASCI Analytical Chemistry Approved 2022.01 - 20 credit points	
[MODULE] 4006PHASCI Biologically Active Molecules Approved 2022.01 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5001PHASCI Pharmaceutical Formulation Approved 2022.01 - 20 credit points	
[MODULE] 5002PHASCI Synthetic and Natural Drugs Approved 2022.01 - 20 credit points	
[MODULE] 5003PHASCI Principles of Pharmacology Approved 2022.01 - 20 credit points	
[MODULE] 5004PHASCI Sterile Pharmaceutical Products Approved 2022.01 - 20 credit points	
[MODULE] 5005PHASCI Pharmaceutical Analysis Approved 2022.02 - 20 credit points	
[MODULE] 5006PHASCI Integrated Approaches to Therapeutics Approved 2022.01 - 20 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5007PHASCI Sandwich Year - Pharmaceutical Science Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5008PHASCI Study Year Abroad - Pharmaceutical Science Approved 2022.01 - 120 credit points	
Optional Study Semester - 60 credit points	OPTIONAL
[MODULE] 5009PHASCI Study Semester Abroad - Pharmaceutical Science Approved 2022.01 - 60 credit points	

Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6000PHASCI	Research Methods and Project Approved 2022.01 - 40 credit points
[MODULE] 6001PHASCI	Industrial Drug Development Approved 2022.02 - 20 credit points
[MODULE] 6002PHASCI	Advanced Pharmaceutical Analysis Approved 2022.01 - 20 credit points
[MODULE] 6003PHASCI	Advanced Delivery Systems Approved 2022.01 - 20 credit points
[MODULE] 6004PHASCI	Clinical Drug Development Approved 2022.01 - 20 credit points

Module specifications may be accessed at <https://proformas.ljmu.ac.uk/Default.aspx>

Teaching, Learning and Assessment

The acquisition of knowledge is promoted via formal taught sessions, primarily lectures supported by practical and sessions. Understanding is facilitated through seminars, workshops, tutorials, field projects, e-learning, group work, and independent study. 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, presentations and coursework reports. Lectures, practicals, seminars, tutorials, and case studies. Written examinations, practical reports, coursework, evidence-based portfolio submissions, oral presentations. Lectures, practicals, seminars, data handling workshops, and problem-based learning. Laboratory reports, case study reports, and evidence-based portfolio submission. 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 the production of a transferable/key skills portfolio. Oral presentations (individual and group), poster presentations, portfolio, and laboratory reports.

Opportunities for work related learning

The Pharmaceutical Sciences programme offers the option of a sandwich route, which involves 1 year of work experience in a specialist field as well as the possibility of Erasmus exchange. 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.

Entry Requirements

Type	Description
BTECs	BTEC applicants should hold or be studying an appropriate diploma and have (or expect to obtain) a pass with at least 3 merit grades at level 3 in appropriate units.
NVQ	Applicants with either a HNC or HND will be considered on an individual basis and may be eligible for some recognition of prior learning.
A levels	Minimum points required from qualifications: 104 UCAS Points Minimum number of A Levels required: 2 Subject specific requirements: Grade C or above in Chemistry and preferably one further science subject Is general studies acceptable? No Are AS level awards acceptable? Acceptable only when combined with other qualifications

Other international requirements	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.
International Baccalaureate	Applicants must have (or expect to obtain) the full award including grade 5 in an appropriate science.
Alternative qualifications considered	In common with standard University policy, applicants should have GCSE passes in Mathematics and English with a minimum grade C, or equivalent.