UNIVERSITY OF
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WESTMINSTER

Part one: Programme Specification

Course record information

Name and level of final award:	MSc Pharmacology The MSc Pharmacology is a postgraduate degree that is Bologna FQ-EHEA first cycle degree or diploma compatible.
Name and level of intermediate awards:	Postgraduate Diploma Pharmacology Postgraduate Certificate Pharmacology
Awarding body/institution:	University of Westminster
Status of awarding body/institution:	Recognised Body
Location of delivery:	Cavendish
Language of delivery and assessment:	English
Course/programme leader:	Dr Stephen Getting
Course URL:	http://www.westminster.ac.uk/courses/subjects/biosciences/postgraduate-courses/full-time/p09fppha-pharmacology-msc
Mode and length of study:	Full time (1 year) and part time (flexible)
University of Westminster course code:	
JACS code:	
UK PASS code:	
QAA subject benchmarking group:	
Professional body accreditation:	
Date of course validation/review:	2014
Date of programme specification:	May 2014

Admissions requirements

The University will at all times seek to ensure equality of opportunity for all applicants as described in its Admissions policy.

Applicants must normally possess at least one of the following:

- BSc Honours degree (minimum 2.2) in Pharmacology, Physiology, Biochemistry or a closely related subject.
- A professional qualification of equivalent status and associated work experience
- An equivalent qualification which is deemed suitable by the course team

In addition:

Applicants who have not had their secondary or tertiary education through the medium of English should have attained the equivalent of an IELTS score of at least 6.5 overall with a minimum of 6.0 in all components.

Applicants may be interviewed and assessed for their suitability to join the course. Applicants for the part-time mode will normally be working in a relevant area and should have written support from their employer including confirmation that facilities will be available in their workplace for the research project.

Accreditation of Prior Learning (APL):
The University operates a system of awarding credit for prior learning, either accredited
(APCL) or experiential (APEL), which may contribute up to a maximum of 50% of the credits required for an award. If students think their prior experiential learning (e.g. work experience) or accredited learning (e.g. other study they may have undertaken) may qualify them for accreditation and thereby exemption from one or more modules they should contact their Course Leader.

Aims of the course

The course aims to provide students who have at least a rudimentary knowledge of pharmacology, with the opportunity to greatly enhance and expand their understanding of pharmacology, toxicology and closely associated disciplines. Cutting edge content will allow students to take a more proactive role in understanding research and development of novel pharmacological agents, as well as evaluating their safety. Additionally, students will also evaluate the subject in a broader context by looking at how funding for health care and pharmacoeconomics impacts upon the drug discovery and development process.

Employment and further study opportunities

Today's organisations need graduates with both good degrees and skills relevant to the workplace, ie employability skills. The University of Westminster is committed to developing employable graduates by ensuring that:

- Career development skills are embedded in all courses
- Opportunities for part-time work, placements and work-related learning activities are widely available to students
- Staff continue to widen and strengthen the University's links with employers in all sectors, involving them in curriculum design and encouraging their participation in other aspects of the University's career education and guidance provision

The course has been designed to provide students with a broad knowledge of different aspects of pharmacology and toxicology including theoretical and experimental, as well as developing their analytical and data interpretational skills. Successful completion of the course will provide skills that will enhance their career prospects. Graduates may continue in education, entering Ph.D. programmes or taking further masters courses, (such as MBA) or they may find employment in research laboratories in academia, as well as in the pharmaceutical and related industries, international organizations (including charities), NHS and private industry.

Learning outcomes

Learning outcomes are statements on what successful students have achieved as the result of learning. These threshold statements of achievement are linked to the knowledge, understanding and skills that a student will have gained on successfully completing a course.

Knowledge and understanding

By the end of their course of study (dependent on module choice), the successful student will be able to:

- review the fundamental principles of pharmacology and drug discovery, giving examples of their application in the pharmaceutical and biotechnology industries;
- take an in depth view of the molecular mechanisms of toxicology, with perspectives on drug metabolism and pharmacokinetics and how these can lead to toxicity;
- elucidate basic principles of cellular signalling pathways relevant to drug discovery and disease; gain insight into the associated molecular and genetic techniques, and learn about current debates and issues in these fields;
- exhibit a high level of competence in the application and use of bioinformatics and 3-D structure prediction tools in the field of pharmacology;
- critically appraise the pharmacological drugs used in the major CNS disorders and how they interact with the brain at the neuronal and system level;
- critically assess the use of pharmacological drugs in the clinical management of major immunological disorders, allowing students to build on their knowledge of inflammation and immunology;
- develop competence, confidence and an enquiring, investigative approach;
- Knowledge-based aspects will be addressed in lectures and/or tutorials sessions. Students are expected to supplement core teaching hours with independent reading to consolidate their learning.

Specific skills

By the end of their course of study (dependent on module choice), the successful student will be able to:

- critically appraise the role that *in silco*, *in vitro* and *in vivo* pharmacology plays in drug discovery/development reflecting on the inter-relationship between aspects of biotechnology and industry with respect to processes, financial flows and marketing;
- provide an in-depth analysis of techniques including: Genome-wide association studies (GWAS); structural genomics; antisense, RNAi, gene-editing and knock-out technologies, cell-based and in vitro assay-development and protein purification
- exhibit a detailed understanding of ADME and inter-individual variation in response to xenobiotics and use of mathematical models of pharmacokinetics to explain these processes and use of *in vitro* and *in vivo* methods to assess toxicity;
- critically appraisal of the inter-play between cells and mediators of the immune system and to critically evaluate the pathophysiological mechanisms to the aetiology of these conditions;
- critically review the major CNS structures, neurotransmitters and their receptors; discussing the neuropathological, neurochemical and genetic abnormalities underlying a wide variety of CNS disorders;
- develop skills relating to starting and financing a company, the role of intellectual property protection, writing a business plan and communicating business ideas, assessing projects, managing a company and finances, coping with industrial safety legislation and regulatory requirements.

Key transferable skills

By the end of their course of study, the successful student will be able to:

- work effectively with a group as a leader or member, to produce team seminars
- use a full range of learning resources in making literature searches via the library, PubMed, World Wide Web, University intranet, and in using on-line teaching material, word processors, spreadsheets, and databases;
- show self evaluation skills, reflecting on own and others' functioning via coursework feedback, project reports, critical reviews of scientific articles and peer evaluation;
- manage information effectively by competently undertaking research tasks and compiling reviews and discussion essays;
- show autonomy by acting as an independent and self-critical learner, managing requirements and undertaking research tasks with minimum guidance;
- communicate effectively by means of oral, written and poster presentations, using print and electronic resources, reporting information, ideas and actions clearly, autonomously and competently;
- demonstrate problem solving skills by interpreting data, designing and carrying out experimental work, and making professional use of others where appropriate.

Master's degrees are awarded to students who have demonstrated:

- a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of research in Pharmacology, and professional practice

- a comprehensive understanding of techniques applicable to their own research or advanced scholarship
- originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline
- conceptual understanding that enables the student:
    - to evaluate critically current research and scholarship in Pharmacology
    - to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses.

Typically, holders of the qualification will be able to:

- deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
- demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
- continue to advance their knowledge and understanding, and to develop new skills to a high level.

And all holders will have:

- the qualities and transferable skills necessary for employment requiring:
    - the exercise of initiative and personal responsibility
    - decision-making in complex and unpredictable situations
    - the independent learning ability required for continuing professional development.

Learning, teaching and assessment methods

Learning

The Course views the student as being at the centre of the learning process and students are expected to take responsibility for their own learning, pursuing knowledge through active engagement and further developing skills acquired by their previous study with learning resources provided.

Teaching

The Course itself utilises a variety of teaching methods and approaches, including a mixture of formal lectures, practical sessions, tutorials (student-centred learning activities), poster presentations and oral presentations. These combined teaching approaches aim to improve both students' knowledge of Pharmacology, as well as helping to develop their critical faculties through an experiential approach. In addition, the key communication skills required by any professional scientist are developed throughout the course.

Teaching methods are flexible and will make use of a variety of media. Data projectors are present in all lecture and tutorial rooms attached to a fixed pc but with the option for lecturers to attach their own laptop if preferred. All rooms are also equipped with visualisers and whiteboards to allow a variety of interactive teaching styles. The University is also equipped with the Blackboard Virtual Learning Environment (VLE) which functions both at a course and modular level with every course and module having a dedicated Blackboard site all accessible from the user's

homepage. Module Blackboard sites acts as a focal point for interaction between staff and students away from the classroom environment. They contain administrative and teaching content for the module, allow students to participate in learning activities and interact with staff and their peers in open discussion fora. Blackboard is also used to manage the online submission of coursework, plagiarism checking and return of student marks via the grade centre, improving the flexibility of student access and learning.

Assessment

Each module is designed to address specific learning outcomes and has its own aims using appropriate teaching, learning and assessment methods. Module assessment is frequently used on the basis of 50% examination and 50% coursework or else 100% course work. Assessment methods are varied and include presentations, practical work, group work and reports.

Course structure

This section shows the core and option modules available as part of the course and their credit value. Full-time Postgraduate students study 180 credits per year.

Credit Level 7				
Module code	**Module title**	**Status**	**UK credit**	**ECTS**
FBIO731	Molecular pharmacology and pharmacogenomics	Core	20	10
FBIO735	Principles of pharmacology and drug discovery	Core	20	10
FBIO736	Xenobiotic metabolism, pharmacokinetics and toxicology	Core	20	10
Award of Postgraduate Certificate available				
Module code	**Module title**	**Status**	**UK credit**	**ECTS**
FBIO730	Molecular bioinformatics	Core	20	10
Any two of the option modules shown below				
3BIO7N4	Communicating science	Option	20	10
FBIO728	Immunopharmacology	Option	20	10
FBMS718	Molecular and cellular therapeutics	Option	20	10
FBIO726	Neuropharmacology	Option	20	10
Award of Postgraduate Diploma available				
Module code	**Module title**	**Status**	**UK credit**	**ECTS**
FSLS700	Postgraduate research methods	Core	20	10
FSLS701	Postgraduate project	Core	40	20
Note: FSLS701 may be exchanged for a 60 credit extended project (with prior agreement of course leader and proposed project supervisor) in which case only one 20 credit level 7 option modules will be taken				
Award of MSc available				

Please note: Not all option modules will necessarily be offered in any one year.

Academic regulations

The MSc pharmacology and its intermediate awards operate in accordance with the University's Academic Regulations and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland published by the Quality Assurance Agency for Higher Education (QAA) in 2008.

All students should make sure that they access a copy of the current edition of the general University handbook called Essential Westminster, which is available at westminster.ac.uk/essential-westminster. The following regulations should be read in conjunction with Section 18: Modular Framework for Postgraduate Courses and relevant sections of the current Handbook of Academic Regulations, which is available at westminster.ac.uk/academic-regulations

Award

To qualify for the award of MSc Pharmacology, a student must have:

i) obtained a minimum of 180 credits at Level 7 (this may include a maximum of 30 credits at Level 6 where validated as part of the award);

ii) attempted modules worth no more than 240 credits; and

Note: A first attempt of any module will count as an attempt, and a re-attempt of any module that a student has failed will count as a further, separate attempt. Re-assessment following referral at the first sit will not count as a further separate attempt.

iii) satisfied the requirements contained within any course specific regulations for the relevant Course Scheme.

The University may award:

- a Masters Degree with Merit to a student whose marks average at least 60% across modules at Level 7.
- a Masters Degree with Distinction to a student whose marks average at least 70% across the modules at Level 7.

Support for students

Upon arrival, an induction programme will introduce students to the staff responsible for the course, the campus on which they will be studying, the Library and IT facilities and to the Faculty Registry. Students will be provided with the Course Handbook, which provides detailed information about the course. Students are allocated a personal tutor who can provide advice and guidance on academic matters.

Learning support includes four libraries, each holding a collection of resources related to the subjects taught at their Faculty. Students can search the entire library collection online through the Library Search service to find and reserve printed books, and access electronic resources (databases, e-journals, e-books).

Students can choose to study in the libraries, which have areas for silent and group study, desktop computers, laptops for loan, photocopying and printing services. They can also choose from several computer rooms at each campus where desktop

computers are available with the general and specialist software that supports the courses taught at their Faculty. Students can also securely connect their own laptops and mobile devices to the University wireless network.

The University uses a Virtual Learning Environment called Blackboard where students access their course materials, and can communicate and collaborate with staff and other students.

Student Affairs provide advice and guidance on accommodation, financial and legal matters, personal counselling, health and disability issues, careers and the chaplaincy providing multi-faith guidance. The Student Affairs Hub is located at 101 New Cavendish Street, Cavendish House (1st Floor), with an additional office located at the Harrow Campus.

http://www.westminster.ac.uk/study/new-students/when-you-arrive

The University of Westminster Students' Union also provides a range of facilities to support all students during their time at the University. http://www.uwsu.com/

Reference points for the course

Internally

- University of Westminster Mission Statement
- University teaching and learning policies.
- University quality assurance handbook and Modular Frameworks.
- Handbook of Academic Regulations.
- Faculty of Science and Technology teaching, learning and assessment strategies.
- The research and practice of staff in the Department/ Faculty have influenced not only the breadth of the curriculum on offer, but also teaching and learning.

Externally

- QAA The framework for higher education qualifications in England, Wales and Northern Ireland, Level 7, August 2008, QAA 264 08/08
- The South East England Consortium (SEEC, 2010) descriptors have been adopted by the University as good practice

Professional body accreditation

N/A

Quality management and enhancement

Course management

The management structure supporting the courses is as follows:

- The Course leader, responsible for day to day running and overall management of the course and development of the curriculum
- Prof Annie Bligh, Head of Department, holds overall responsibility for the course, and for the other courses run by the Department of Life Sciences within the Faculty of Science and Technology
- Prof Jane Lewis, Dean of Faculty, holds overall responsibility for the course and for other courses run by the Faculty of Science and Technology

The management structure is further supported by the Course Team. Its membership is as follows:

- Course Leader
- full-time staff teaching the course, including Module Leaders and representatives of all major subject areas
- visiting lecturers and outside advisors, where appropriate.

Course teams consider those aspects of the course not covered by the Course Committee such as timetabling, rooming and preparation and monitoring of examinations and assessments.

Course approval, monitoring and review

The course was initially approved by a University Validation Panel in 2008 as MSc Drug Discovery and Development and a name change was approved in 2013 to MSc Pharmacology to better reflect the content being offered via the validation of two new modules neuropharmacology and immunopharmacology. The panel included internal peers from the University and external subject specialists from academia to ensure the comparability of the course to those offered in other universities and the relevance to employers. Periodic course review helps to ensure that the curriculum is up-to-date and that the skills gained on the course continue to be relevant to employers.

The course is monitored each year by the Faculty to ensure it is running effectively and that issues which might affect the student experience have been appropriately addressed. Staff will consider evidence about the course, including the outcomes from each Course Committee, evidence of student progression and achievement and the reports from external examiners, to evaluate the effectiveness of the course. The Annual Monitoring Sub-Committee considers the Faculty action plans resulting from this process and the outcomes are reported to the Academic Council, which has overall responsibility for the maintenance of quality and standards in the University.

Student involvement in Quality Assurance and Enhancement

Student feedback is important to the University and student views are taken seriously. Student feedback is gathered in a variety of ways. The most formal mechanism for feedback on the course is the Course Committee. Student representatives will be elected to sit on the Committee to represent the views of their peer group in various discussions. The University and the Students' Union work together to provide a full induction to the role of the course committee.

All students are invited to complete a Module Feedback Questionnaire before the end of each module. The feedback from this will inform the module leader on the effectiveness of the module and highlight areas that could be enhanced. The University also has an annual Student Experience Survey, which elicits feedback from students about their course and University experience.

Students meet with review panels when the periodic review of the course is conducted to provide oral feedback on their experience on the course. Student feedback from course committees is part of the Faculty's' quality assurance evidence base.

For more information about this course: s.getting@westminster.ac.uk.