

Programme Specification

Course record information

Name and level of final award:	MSc Medical Molecular Biology (Bioinformatics) The MSc. Medical Molecular Biology (Bioinformatics) is a postgraduate degree that is Bologna FQ-EHEA first cycle degree or diploma compatible.
Name and level of intermediate awards:	Postgraduate Diploma Medical Molecular Biology Postgraduate Certificate Medical Molecular Biology
Awarding body/institution:	University of Westminster
Status of awarding body/institution:	Recognised Body
Location of delivery:	Cavendish Campus
Language of delivery and assessment:	English
Course/programme leader:	Dr. Pamela Greenwell
Course URL:	http://www.westminster.ac.uk/courses/subjects/biomedical-sciences/postgraduate-courses/full-time/p09fpmmf-medical-molecular-biology-bioinformatics-msc
Mode and length of study:	Full time (1 year) and part time (flexible)
University of Westminster course code:	
JACS code:	
UCAS code:	
QAA subject benchmarking group:	
Professional body accreditation:	Institute of Biomedical Science
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 in Biomedical Sciences or in a closely related subject.
- A professional qualification of equivalent status and associated work experience
- The Postgraduate Certificate in Biomedical Sciences with a Cancer Biology specialism or a Graduate Diploma in Biomedical Science
- 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

This course aims to furnish students with up-to-date information in molecular biology and bioinformatics as they relate to human disease. All modules are core for this programme reflecting the named degree. A mixture of teaching and learning methods will encourage students to both understand and apply technologies to given problems. The bioinformatics elements contain a large practical content to ensure that graduates from this programme are competent end-users of the technology. Integration of bioinformatics and molecular medicine will be emphasised and demonstrated throughout the programme. The students will also learn a variety of presentation skills to ensure they are effective communicators of science.

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
- Staff are provided with up-to-date data on labour market trends and employers' requirements, which will inform the service delivered to students.

The course has been designed to provide professional scientists with a broad range of skills in molecular biology. By successfully completing this course, graduates will enhance their career prospects. Graduates may continue with their studies by entering PhD or professional doctorate programmes or perhaps further masters courses such as MBAs. Graduate employment opportunities may be available in hospital laboratories, universities, research institutes, contract research organisations, and commercial companies involved in pharmaceutical and/or diagnostic research and development. Part-time students are normally already in laboratory-based employment.

Learning outcomes

Learning outcomes are statements on what successful students have achieved as the result of learning. These threshold statements of achievement and 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, the successful student will be able to:

- critically evaluate and discuss the role of molecular biology in the investigation of human diseases and their therapy;
- contribute to the practice of biomedical science by applying key skills of critical analysis, evaluation and communication;
- develop competence, confidence and an enquiring, investigative approach;
- integrate information from diverse sources relevant to molecular biology
- articulate contemporary ethical dilemmas associated with the study of human pathology.

The scope of the modules included will ensure a breadth of knowledge appropriate for the scientific and professional needs of practising molecular biologists, at the same time making use of the knowledge and experience of the students themselves.

Specific skills

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

- Critically review the use of molecular tools in disease diagnosis
- Critically discuss the application of molecular biology to the design of novel therapeutics
- Evaluate the role of cell signalling in health and disease
- Critically review the tools used in data mining, DNA and protein sequence analysis, 3D-protein structure prediction and drug/ligand binding
- Critically evaluate the role of bioinformatics in the understanding of systems biology
- Analyse and present data correctly, utilising the appropriate statistical tools
- Independently design, execute and report on a research project in the area of bioinformatics

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 projects and 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 Haematology, 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 advanced scholarship in Haematology
 - 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, to further develop skills acquired by their previous study and to further pursue knowledge through active engagement 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 Molecular Biology and Bioinformatics, 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 in the programme has its own aims and teaching, learning and assessment methods that have been set up to facilitate its learning outcomes. Module assessment is either on the basis of 50% examination and 50% course work, or else 100% course work. Assessment methods are varied and include essays, practical work, group work, presentations 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
FBMS718	Molecular and cellular therapeutics	core	20	10
FBMS719	Molecular science and diagnostics	core	20	10
FBMS720	Principles of molecular medicine	core	20	10
Award of Postgraduate Certificate available				
Module code	Module title	Status	UK credit	ECTS
FBMS704	Cell signalling and genetics	core	20	10
FBIO730	Molecular bioinformatics	core	20	10
FBMS721	Systems biology	core	20	10
Award of Postgraduate Diploma available				
FSL700	Postgraduate research methods	core	20	10
FSL701	Postgraduate project	core	40	20
Award of MSc available				

Academic regulations

The MSc Medical Molecular Biology; Bioinformatics 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 Medical Molecular Biology (Bioinformatics) , a student must have:

- 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);
- 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.

- 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.

Student support at the departmental level continues with the Postgraduate Academic Tutorial Sessions (PATS) which provide students with the underpinning skills to successfully transfer from undergraduate to postgraduate level and enable students to achieve their potential. PATS sessions include study skills, preparation for the research project and careers/further study workshops. Support with academic English is also available with screening conducted as part of the orientation programme and a programme of tutorials designed to provide students with the underpinning skills in the English language to successfully study the biosciences at postgraduate level.

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.

At University level, Services for Students 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 International Office provides particular support for international students. The University of Westminster Students' Union also provides a range of facilities to support all students during their time at the University.

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
- PSRB guidance:
 - Institute of Biomedical Science.
 - The Health and Care Professions Council.
- Department of Biomedical Sciences Advisory Group.

Professional body accreditation

The course is accredited by the Institute of Biomedical Science (IBMS)

Quality management and enhancement

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
- Dr Martin Parry, Head of Department, holds overall responsibility for the course, and for the other courses run by the Department of Biomedical 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

This course was approved by a University Validation Panel in 2014. The panel included internal peers from the University and external subject specialists from academia and industry 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: greenwp@wmin.ac.uk

Please note: This programme specification provides a concise summary of the main features of the course and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. This specification should be read in conjunction with the Course Handbook provided to students and Module Handbooks, which provide more detailed information on the specific learning outcomes, content, teaching, learning and assessment methods for each module.

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