

**MSc by Research in Formulation Design and Analysis (full-time)  
For students entering in 2016/7**

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	
Programme length:	12 months
Date of specification:	04/Aug/2017
Programme Director:	Prof Vitaliy Khutoryanskiy
Board of Studies:	Pharmacy

**Summary of programme aims**

The course aims to prepare students for pursuing a research career in industry or academia and subsequent PhD studies by providing them with:

- Practical experience of the most important laboratory techniques used in pharmaceutical and formulation science and an understanding of experimental design and statistical analysis;
- Critical appraisal skills for understanding topics at the cutting edge of formulation science; and
- The ability to plan, manage and conduct an in-depth lab based research project;

**Transferable skills**

The programme requires a substantial amount of independent reading, research and study, and students are expected to take personal responsibility and show initiative in developing their knowledge and understanding of the field of study. In following this programme, students will also have the opportunity to enhance and develop their skills relating to communication (oral and written), presentations, information and data handling, problem solving, teamwork, and the use of information technology. Students will learn to work independently, under time pressures, and will learn to set priorities and manage their time in order to meet strict deadlines. Career planning will also be an integral part of the programme.

**Programme content**

MSc by Research in Formulation Design and Analysis

There are two taught compulsory modules totalling 40 credits and an in-depth research project worth 140 credits. All taught modules will take place in the Autumn term with the research project commencing in January.

Code	Title	Credits	Level
PMMR1A	Research Methods	20	7
PMMR1B	Advanced topics in Pharmacy Research	20	7
PMMR2	Research Project	140	7

**Part-time or modular arrangements**

Due to the intensive nature of the research project it is not anticipated that part-time or modular arrangements will be offered for this programme.

**Progression requirements**

Students will be required to receive an overall pass mark for all of the taught modules in the Autumn term (PMMR1A and PMMR1B) before being allowed to progress to the research project (PMMR2).

**Summary of Teaching and Assessment**

Teaching is organised in modules. The delivery of materials takes a variety of forms including lectures, practical classes, seminars and small group discussions. Assessment is modular and involves coursework. The nature of the assessment is determined by the aims of the module. A project supervisor is appointed for each student.

The University's taught postgraduate marks classification is as follows:

Mark Interpretation
70 -100% Distinction
60 - 69% Merit
50 - 59% Good standard (Pass)

Failing categories:

40 - 49% Work below threshold standard

0 - 39% Unsatisfactory Work

### **For Masters Degree**

To qualify for Distinction, students must gain an overall average of 70 or more over 180 credits and a mark of 60 or more for the dissertation, and must not have any mark below 40.

To qualify for Merit, students must gain an overall average of 60 or more over 180 credits and a mark of 50 or more for the dissertation, and must not have any mark below 40.

To qualify for Passed, students must gain an overall average of 50 or more over 180 credits and a mark of 50 or more for the dissertation. In addition, the total credit value of all modules marked below 40 must not exceed 30 credits and of all modules marked below 50 must not exceed 55 credits.

### **Admission requirements**

Entrants to this programme are normally required to have obtained a good honours degree (normally 2.1 or First class) or its equivalent in a subject relevant to pharmaceutical, chemical, food or formulation sciences.

Applicants with other qualifications approved by the Senate or a 2.2 honours degree, and who have appropriate professional experience in a relevant field, are also encouraged to apply for admission to this programme.

References are also taken into account.

**Admissions Tutor:** Prof Vitaliy Khutoryanskiy

### **Support for students and their learning**

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, the Careers, Placement and Experience Centre (CPEC), In-session English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing, academic issues (eg problems with module selection) and exam related queries. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see [www.reading.ac.uk/student](http://www.reading.ac.uk/student)

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### **Career prospects**

The MSc by Research in Formulation Design and Analysis prepares students for work in a wide range of organisations engaged with pharmaceutical research and formulation science; we also envisage that some graduates will go on to pursue a PhD programme. Potential employers include pharmaceutical, food, chemical, agrochemical and cosmetics companies, national governments, nongovernmental organisations, international organisations, media and private sector consultancies.

### **Opportunities for study abroad or for placements**

With the agreement of their dissertation supervisor, students may be allowed to study abroad in a collaborator's lab or to learn a new research technique as part of their project work.

## Programme Outcomes

### Knowledge and Understanding

#### A. Knowledge and understanding of:

1. Experimental design and statistical analysis
2. The principles underlying key pharmaceutical and formulation research techniques
3. How to plan and manage a pharmaceutical/formulation research project
4. The latest topics in materials and polymer science, colloidal chemistry & nanomaterials, chemical synthesis and physical chemistry, agrochemicals and pharmaceuticals.

#### Teaching/learning methods and strategies

Mixture of lectures, seminars, journal clubs & paper discussions, practical classes, individual project work and guidance on key sources of reference material. The emphasis will be on self-directed study with feedback and guidance important elements in achieving these aims.

#### Assessment

By coursework including written in-course test, referenced project outline, project report in the form of a scientific paper and an oral presentation.

### Skills and other attributes

#### B. Intellectual skills - able to:

1. Engage with and draw upon different scientific fields to develop an overview of the latest trends in pharmaceutical and formulation research.
2. Perform gap analysis of the scientific literature to identify the limitations of current pharmaceutical and formulation knowledge and to propose a research plan to address the identified gaps.
3. Develop a scientific hypothesis and then develop an experimental strategy to test this hypothesis.
4. Think logically, analytically and critically with respect to interpreting scientific data.

#### Teaching/learning methods and strategies

Students are required to attend a broad range of seminars across different disciplines within pharmaceutical, chemical and food sciences. Students will attend practical classes covering a diverse range of research techniques and will learn how to apply what they learn in these classes to tackle a variety of research problems. Students will also attend journal clubs / paper discussion sessions in which they are frequently challenged to complete logical arguments, analyse problems, seek and evaluate alternative explanations, and justify held opinions. The research project will enable students to design and test their own hypothesis and to critically analyse their own data.

#### Assessment

By coursework including written in-course test, referenced project outline, project report in the form of a scientific paper and an oral presentation.

#### C. Practical skills - able to:

1. Perform a range of standard research techniques used in pharmaceutical and formulation studies, including, but not limited to, spectroscopic analysis (mass-, NMR-, infrared- and UV-spectroscopy), thermal analysis (TGA and DSC), rheological and mechanical characterisation techniques, and X-ray diffractometry.
2. Perform data analysis on experimental results where appropriate in order to quantify the data and perform statistical analysis of the data and evaluate the significance of experimental results.

#### Teaching/learning methods and strategies

Development of practical skills is achieved through a series of practical classes as well as seminars and presentations. Practical skills are further enhanced during the research project.

#### Assessment

By coursework including written in-course test, referenced project outline, project report in the form of a scientific paper and an oral presentation..

3. Modify and adapt the experimental design and techniques used in light of the research results.
4. Problem-solve and troubleshoot technical issues that arise during a research project.

**D. Transferable skills - able to:**

1. Communicate knowledge and opinions effectively to a wide range of people
2. Work independently, responsibly and professionally
3. Reflect and evaluate his/her own academic progress and its implications for emerging/changing professional practice
4. Identify, access, evaluate, synthesise, analyse, collate and represent data relevant to the issue at hand.
5. Manage time and prioritise workloads in the context of changing demands

**Teaching/learning methods and strategies**

Presentation of research results to a large group including other students and academics. Oral presentations will be further enhanced during group discussions in the journal club sessions. All of the modules in this programme will develop independent work while the research project will also develop time management, team working and self-reflection skills.

*Assessment*

By oral presentation and other coursework including reports and the project dissertation.

**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 and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.**