

**MSc Molecular Medicine (full-time)**  
**For students entering in 2017/8**

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Programme length:	12 months
Date of specification:	11/Sep/2017
Programme Director:	Dr Mike Fry
Programme Advisor:	Dr Phillip Dash
Board of Studies:	Biological Sciences MSc Board of Studies

**Summary of programme aims**

The course aims to provide students with an overview of the molecular and cellular causes and treatments of human diseases and provide practical and theoretical understanding of the most important current topics in molecular medicine.

It will prepare students for subsequent PhD studies or for pursuing a research career in industry or academia by providing them with:

- Practical experience of the most important laboratory techniques used in molecular medicine and an understanding of experimental design and statistical analysis;
- Critical appraisal skills for understanding topics at the cutting edge of modern biomedical research;
- The ability to plan, manage and conduct an in-depth lab based research project; and
- Detailed knowledge of topics at the forefront of molecular medicine including cancer biology, cardiovascular diseases, stem cells & regenerative medicine and synthetic biology.

**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 Molecular Medicine (180 credits):

Students take six compulsory modules (BIMBA1, BIMBC1, BIMBD1, BIMBC2, BIMBD2 and BIMBE2) to total 110 credits. This comprises the taught component of the course. Students then additionally perform an extensive research project (BIMBPRO2) worth 70 credits. Four of the modules offered in this programme are new modules, designed specifically for the MSc Molecular Medicine, while two of the modules (BIMBA1 and BIMBC1) are already running as part of the MRes Biomedical Research programme. Additionally BIMBPRO2 is a shorter version of the MRes Project module.

**Compulsory taught modules**

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BIMBF1	Research techniques, analysis and experimental design	20	7
BIMBC1	Research planning and project management	10	7
BIMBD1	Regenerative Medicine	20	7
BIMBC2	Biology of Cancer	20	7
BIMBD2	Cardiovascular disease and therapeutics	20	7
BIMBE2	Synthetic biology	20	7

**Dissertation**

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
BIMBPRO2	Research project	70	7

**Part-time or modular arrangements**

Part-time study is not available as an option.

### **Progression requirements**

Students will be required to pass the compulsory taught modules with at least a 50% average before being allowed to progress to the research project (BIMBPRO2).

### **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 biological sciences, including but not restricted to: biological sciences, biochemistry, biomedical sciences and microbiology. 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:** Dr Phil Dash (Head of Admissions) is responsible for admissions.

### **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, In-sessional English Support Programme, the Study Advice and Mathematics Support teams and IT Services. 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 the Support Centres. If a student has a general enquiry and is unsure where to seek help, they should visit their Support Centre. There are five Support Centres across the University, including one based at the London Road Campus. The Support Centre will be able to advise on matters such as extenuating circumstances, module selection, suspensions, withdrawals, timetable queries and transferring programme. The Support Centre will also be able to signpost students to Carrington building where other University services related to disability, financial support, counselling and wellbeing, accommodation and careers can be found. More information on what student services are available can be found here: <http://student.reading.ac.uk/essentials>.

### **Career prospects**

The MSc in Molecular Medicine prepares students for work in a wide range of organisations engaged with biomedical research; although we envisage that many graduates will go on to pursue a PhD programme. Potential employers include 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 collaborators 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 biomedical research techniques
3. How to plan and manage a biomedical research project
4. The latest topics in regenerative medicine, cancer, cardiovascular diseases and synthetic biology.

#### **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 lab reports, in-course tests, essays and a project proposal in the form of a grant application, dissertation.

### **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 biomedical research.
2. Perform gap analysis of the scientific literature to identify the limitations of current biomedical 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 biomedical 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 in the form of essays, a dissertation, in-course tests, and participation in problem based learning.

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

1. Perform a range of standard biomedical research techniques including, but not limited to, genetic cloning, RNA/DNA quantification, microscopy, bioinformatics, flow cytometry, cell culture and protein purification.
2. Perform data analysis on experimental results where appropriate in order to quantify the data

#### **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*

Dissertation, in-course tests, practical reports.

and perform statistical analysis of the data and evaluate the significance of experimental results.

3. 3. Modify and adapt the experimental design and techniques used in light of the research results.
4. 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.**