

Programme Specification

1. Programme Title: PhD in Mathematics
2. Awarding Institution: University of Reading
3. Programme Status: Existing programme
4. Programme Length:

Full-time		Part-time		
Expected	Maximum	Minimum	Expected	Maximum
3 years	4 years	4 years	5 years	6 years

Full-time students are able to submit their thesis after the first day of the 9th term; part-time students are able to submit their thesis after the first day of the 12th term. The Dean of Postgraduate Research (PGR) Studies can approve requests for earlier submission where a case merits this.

5. Entry Requirements

Academic: Applicants should normally possess at least a first degree (normally of an upper second class honours standard or above), or equivalent.

The Dean of PGR Studies can approve the admission of students with lower or non-standard qualifications.

Language: Applicants whose first language is not English should normally have attained a score of at least 6.5, with 5.5 on each of the subsections, on the IELTS (International English Language Testing System), or equivalent, test.

Again, the Dean of PGR Studies can approve the admission of students with a lower mark if there is other evidence of appropriate English language proficiency.

APEL: Where previous experience in research is deemed satisfactory by the Dean of PGR Studies, the prescribed period of study may be reduced to two academic years for applicants for full-time PhD study and three academic years for applicants to part-time PhD study.

6. Learning Outcomes¹

By completion of the PhD, students should be able to demonstrate:

- That they are competent as an independent researcher in their discipline and capable of continuing to undertake research at an advanced level, contributing substantially to the development of new Ideas, techniques or approaches. As part of this, they should have gained;
 - An ability to evaluate critically the existing literature relevant to their thesis topic
 - An ability to conceptualise, design and implement a project for the generation of significant new knowledge and / or understanding
 - An ability to relate theory and concepts to evidence in a systematic way and to draw appropriate conclusions based on evidence
- An understanding of the place of the student's research in the context of the relevant field of study
- Awareness of the research integrity and relevant ethical and professional considerations
- Effective management of a project, from identifying research questions, planning interim milestones and timescale, prioritising activities, managing research resources, through to timely completion
- An appreciation of the impact (interpreted in the broadest sense) of their research and how to exploit this
- They should also be able to demonstrate that they can
 - Write clearly and in a style appropriate to the purpose and audience
 - Construct coherent arguments and articulate and defend ideas clearly to a range of audiences, through a variety of techniques
 - Develop and maintain working relationships and co-operative networks with supervisors, colleagues, peers and the wider research community
 - Demonstrate self-awareness and the ability to identify own training needs, in relation to their current position and future career development

In addition, many students will have attained additional skills relating to areas such as teaching, mentoring, public engagement, exploitation and commercialisation of research, and leadership.

7. Programme outline

The programme will comprise:

- An independent research project that makes an original contribution to knowledge, written up in the form of a thesis
- Research training
 - Discipline Specific skills:

¹ This adheres to level 8 of the FHEQ as required by the QAA

Students are normally required to take five modules over the course of their first two years of study. Further details, including on any pass requirements are set out in Annex A.

- Generic / transferable skills:

At the start of their programme, students will complete a Learning Needs Assessment to determine what further training would be beneficial to their studies and ongoing career development. This has to be reviewed by the supervisor/s and approved by the School / Department Director of PGR Studies

Students are normally required to take at least five courses from the Reading Researcher Development Programme (RRDP) in year 1, and at least three courses in years 2 and 3 (or part-time equivalent). The Preparing to Teach programme can substitute for one of these.

School / Department Directors of PGR Studies can alter these requirements in cases where students have taken equivalent courses in their Schools or elsewhere, or have appropriate professional experience.

- Other training:

Students may wish, or be required, to take additional training from within the University, such as that provided by the International Study and Language Centre.

8. Progression

- Students will be subject to an annual review of progress, the details of which are summarised in the Code of Practice on Research Students²
- In year 2 (or equivalent for part-time students), the review will take the form of a Confirmation of Registration assessment. The four possible outcomes of this assessment are:
 - Confirmation of PhD status at first attempt
 - Deferral of the decision, with an agreed plan of remedial action, and an opportunity to be re-assessed at an agreed time (normally with 3 months of the original interview). This is the expected outcome if Confirmation is not agreed at first attempt.
 - Transfer of registration to MPhil
 - Invocation of procedures for Academic Engagement & Fitness to Study

9. Additional requirements

Students should normally make at least two oral presentations of their work, to an appropriate audience within the School or Department, during the course of their programme.

² Available at http://www.reading.ac.uk/web/FILES/qualitysupport/cop_resstudents.pdf

10. Final Assessment

Students are required to submit a thesis, the length of which should not normally be greater than 90,000 words. The format of this is specified in the Rules for Submission of Theses for Higher Degrees³. Any divergence from these rules must be approved by the Dean of PGR Studies before the student submits.

Assessment of the thesis normally takes the form of a *viva voce* examination, conducted by two independent examiners. Further details of the procedure can be found in the Guide for Examiners of Higher Degrees by Research⁴.

Criteria for the award of the degree

- The work presented by the candidate is such that it might reasonably be expected as a result of three years full-time postgraduate work;
- The abstract of the thesis is acceptable as it is, or with some modification
- The candidate understands how his or her thesis topic is related to a wider field of knowledge
- The candidate can demonstrate;
 - the creation and interpretation of new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, to extend the forefront of their discipline, and to merit publication in an appropriate form
 - a systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of the discipline or area of professional practice
 - the general ability to conceptualise, design and implement a project for the generation of new knowledge, applications or understanding at the forefront of the discipline, and the ability to adjust the project design in the light of unforeseen problems
 - a comprehensive understanding of techniques applicable to their own research or advanced scholarship.

11. Research Environment and Facilities

Schools and Departments are responsible for providing students with information about the availability of, and access to, relevant research facilities, as well as information about relevant School / Department based events.

The University Graduate School provides additional space and facilities for PhD students⁵.

³ Available at <http://www.reading.ac.uk/graduateschool/currentstudents/gsexaminations.aspx>

⁴ Available at <http://www.reading.ac.uk/graduateschool/currentstudents/gsexaminations.aspx>

⁵ Available at <http://www.reading.ac.uk/graduateschool>

12. Student Support and Guidance

In addition to that provided by the supervisor/s, School / Department Director of PGR Studies, and other School staff, students can draw on support and advice relating to the progress and management and their research programme from the PGR School Support Team and the Doctoral Research Office, both based within the Graduate School.

Sources of additional support and advice within the University are listed on the Graduate School website⁶.

13. Student representation

- Each School / Department will ensure that appropriate procedures are in place for the election of a postgraduate research student representative, each year.
- School / Department representatives attend termly meetings in the Graduate School to bring forward any matters of concern and to comment on matters raised by Graduate School staff.
- One or more postgraduate research students will also be a member of the appropriate board or committee where postgraduate research matters are discussed within the School / Department.

14. Student feedback

Students are expected to complete a questionnaire on their supervisory arrangements on an annual basis. This is carried out via a standard University form, which is emailed to all students. Completed forms need to be returned to the Graduate School⁵. A process is in place for following up any issues raised by students. Further details are given in the Code of Practice process².

Where Schools and Departments run subject specific training courses, they will have arrangements in place for students to provide feedback on these.

Students are asked to complete a feedback questionnaire on each RRDP course attended. Students can also feedback on any aspect of the RRDP directly to the Graduate School⁷, or through their School / Department Director of PGR Studies, or their School / Department PGR Representative.

⁶ Available at <http://www.reading.ac.uk/graduateschool/currentstudents/gs-university-services.aspx>

⁷ Email gradschool@reading.ac.uk

Annex A: Taught course requirements

This training takes two forms: Advanced training courses and Generic training courses as described below.

1. **Advanced training courses** in mathematics or statistics designed to support PhD studies and to provide a better rounded advanced research training.

All graduate students in Mathematics and Statistics are required to attend 100 hours of training (corresponding to 50 credits) within the first 2 years of registration. These credits can be obtained by attending and passing the assessment for five 20-lecture modules, or by attending summer schools or the APTS courses. MPE CDT students have covered this requirement in their MRes program but are able to do additional courses if they would like to and by agreement with their supervisor.

A 20-lecture module is normally worth 10 credits. Short courses are worth 5-10 credits depending on the length and intensity. Interdisciplinary PhDs could take modules in other departments, with the permission of the supervisor.

For a full list of modules offered in Mathematics & Statistics please see <http://www.reading.ac.uk/modules/module.aspx?sacyr=1718&school=MPS> . PhD students should be aiming to take fourth year/MSc modules in a specific subject, unless otherwise agreed with the module lead and the Director of Postgraduate Research Studies.

2. **Generic training courses** (apart from RRD courses)

1. Teaching Assistant course.
2. Library Skills.
3. Departmental colloquium series.
4. MAGIC: Postgraduate level lectures in mathematics by video conference, shared between 18 universities. Courses given by MAGIC are listed on the MAGIC website <http://maths.dept.shef.ac.uk/math/magic.html>.

Assessment

When signing up for modules there are two possibilities: assessed or non-assessed. If students sign up to be assessed (known as occurrence A) then you will be entered for the (usually undergraduate) exam in May/June and will be expected to sit this. If you students sign up as non-assessed (occurrence H) then you will not be entered for the exam but may be assessed by another route if required. Whilst this can be changed after registration, it is best done at the time students register for the module. Therefore when students discuss with their supervisor which modules to attend and sign-up for, they also discuss whether or not to sit the exam in May/June. Summer schools are decided on by individual supervisors for specific PhD topics.

All first year students must have completed a module during their first term. The assessment for this is set by the module convenor and can take a number of forms, e.g. oral/written examination, set piece of coursework, etc. This requirement acts as a "stop-gap" to ensure students are making progress in their studies and is an important element of their first monitoring meeting, 4 months after the commencement of their PhD (usually January for students who commence their studies at the start of the Academic year).