

LOUGHBOROUGH UNIVERSITY

Programme Specification

MSc Research Studies in Physics

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 full advantage is taken 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 Module Specifications and other programme documentation and online at <http://www.lboro.ac.uk/>
The accuracy of the information in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Awarding body/institution;	Loughborough University
Department;	Physics
Teaching institution (if different);	
Details of accreditation by a professional/statutory body;	None
Name of the final award;	MSc
Programme title;	Research Studies in Physics
UCAS code;	
Date at which the programme specification was written or revised.	3 rd Jan 2008

1. Aims of the programme

To further the education of students in preparation for employment in industry, public service or academic research by enhancing their appropriate knowledge, competence and skills.

To provide students with an opportunity to apply their broad understanding of basic principles to the solution of a specific and detailed problem.

To provide the student with enhanced skills in: problem solving; experimental, mathematical or computational techniques; scientific report writing and presentation skills; obtaining and understanding information from the scientific literature; and the collection and analysis of data or the development of theoretical models.

To provide the student with an opportunity to enhance skills in the use of information technology for calculation, data analysis, control and the production of professional quality reports and presentations.

To provide an environment that gives students opportunities to develop their own interests, self-reliance and career aspirations.

2. Relevant subject benchmark statements and other reference points used to inform programme outcomes.

University Teaching and Learning Strategy
Framework for Higher Education Qualifications

3. Intended Learning Outcomes

Knowledge and Understanding

The taught postgraduate programme in Research Studies (in Physics) provides an opportunity to study in detail one of selection of advanced topics in current research. It develops experimental and/or mathematical, and/or computational and other transferable skills. On successful completion of this programme students should have demonstrated

1. Knowledge and understanding of some advanced topics in physics and/or other science disciplines.
2. Specialised knowledge and understanding of one topic in current research and competence in the application of an experimental, theoretical or computational method to this topic.
3. An ability to execute an experiment, analyse critically the results and to draw valid conclusions, or to use mathematical or computational techniques to investigate physical phenomena.
4. The ability to critically compare experimental results with the predictions of theory.
5. An enhanced ability to use competently IT packages in research.
6. An ability to communicate scientific information especially in the form of clear and accurate scientific reports and presentations.

Teaching, Learning and Assessment strategies to enable outcomes to be achieved and demonstrated

Knowledge and understanding of area 1 is acquired through lectures, tutorials, problem classes and guided independent study.

The specialized knowledge of areas 2 – 6 is acquired by supervised literature searches, training in research methods and supervised independent work within the context of an existing research group.

Area 1 is assessed by examinations and coursework. Areas 2 –6 are mainly assessed by written coursework supplemented by practical and viva voce examinations.

Skills and Attributes

(a) Subject specific cognitive skills:

On successful completion of the programme students should be able to

1. Demonstrate knowledge and understanding of essential facts, concept, principles and theories relating to the areas listed in 1 and 2.
2. Apply such knowledge and understanding to the solution of qualitative and quantitative problems of a familiar and unfamiliar nature within these areas.
3. Recognise and analyse novel problems and plan strategies for their solution.
4. Evaluate, interpret and collate information and data.

Teaching, Learning and Assessment strategies to enable outcomes to be achieved and demonstrated

Cognitive skills are promoted by lectures, tutorials, supervision of independent advanced research work, and by guided independent study.

Cognitive skills are assessed by written examinations, coursework and viva-voce examinations. Examinations show how well a student can

understand and apply an area of knowledge by applying their knowledge and understanding to an unseen question in a limited time period. Coursework allows the student to demonstrate wider skills by incorporating experimental skills, theoretical skills, data analysis, literature research, report writing skills and presentation skills in the assessment.

Subject specific practical skills:

On successful completion of the programme students should be able to

1. Operate intelligently advanced physical research equipment and be able to design an experiment using that equipment.

Or

2. Use theoretical or computational techniques and be able to apply them to solve physical problems in a selected area of physical research.

And

3. Communicate ideas effectively by means of written reports and orally.
4. Plan and execute a research project on a topic of current scientific interest.

Teaching, Learning and Assessment strategies to enable outcomes to be achieved and demonstrated

Practical skills are promoted through research training and project work. An experienced member of staff directly trains students in the use of experimental apparatus or theoretical methods. Further development of skills is enabled by the research project that is carried out within the context of an existing research group.

Assessment is via coursework, mainly in the form of practical examinations, viva-voce examinations, written reports, presentations and discussions of experimental work with staff members. The research project is mainly assessed by presentation, report, and viva voce examination.

(b) Key/transferable skills:

On successful completion of the programme students should be able to

1. Formulate problems in precise terms and identify key issues, construct logical arguments and use technical language correctly.
2. Use with greater proficiency scientific and standard IT
3. Listen carefully, read demanding texts and present complex information in a clear and concise manner.
4. Demonstrate study skills for continuing professional development.
5. Demonstrate retrieval skills for directly taught and independently acquired information and for primary as well as secondary information sources.

Teaching, Learning and Assessment strategies to enable outcomes to be achieved and demonstrated:

Students should have gained an understanding of how to clearly report experimental methodology, observations and results including the analysis of qualitative and quantitative data through written reports and their feedback. Presentations provide an opportunity to develop skills in the oral presentation of information from directly taught and independently acquired information, and for primary as well as secondary information sources. They also aid interpersonal skills by interaction with other people and engagement in team-working to develop scientific arguments and problem solve. The management of a research project to deadlines trains students in time management, teamwork and organisation

4. Programme structures and requirements, levels, modules, credits and awards:

The programme structure is described at:
<http://www.lboro.ac.uk/departments/ph/teaching/programmes/MSc.html>

Full details are to be found in the Programme Regulations:
<http://www.lboro.ac.uk/departments/ph/teaching/regs/current/mscr.pdf>

5. Criteria for admission to the programme:

First Degree Qualification: Degree in appropriate scientific discipline with I or Ili Honours or equivalent.

6. Information about assessment regulations:

Modules are assessed by either coursework or examination, or a mixture of the two. Some will include practical assessment.

Students follow modules weighted at a total of 180 credits in the year.

Any student who fails to meet the programme requirements has the automatic right of appropriate module reassessment on one occasion only. The project module may be referred for further work.

Such students will be reassessed in the following academic year and may choose to take the reassessment with or without tuition. Students who are reassessed with tuition are required to take both coursework and examination components of the module (and the new mark supersedes the original mark). Students who are reassessed without tuition may be allowed to carry forward the component that has been passed. The overall mark, averaged over coursework and examination, for reassessed modules is capped at 50% or 40% depending on the requirement for passing the programme.

7. What makes the programme distinctive:

A distinctive feature of the programme is its three-semester structure, the first two consisting mainly of taught courses while the final “semester” (in the summer) consists entirely of a research project, which was already begun in the second semester. This gives students the opportunity to work within one of the research groups in the department.

8. Particular support for learning:

i) Departmental Support

The department has an integrated structure for the management, appraisal and planning of teaching and learning. This is comprised of a Director of Teaching who manages the teaching committee and has overall responsibility for teaching matters, Programme Tutors who have responsibility for the academic content and the general organisation of the programmes, and Personal Tutors, who are responsible for matters relating to a student's academic welfare.

On the first day of their academic studies, students receive a handbook from the department with important information including the management structure of the department, programme specifications and general points relating to coursework and examination. The students are also assigned a personal tutor who is responsible for their personal welfare who arranges to see them during the first semester. Thereafter the personal tutor arranges to see their tutees at important times, such as after examinations, or when

problems have been raised in respect to the tutees by module organisers, Programme Tutors or the Director of Teaching. The personal tutor is available for consultation by a student at all reasonable times.

ii) University Support

Please refer to <http://www.lboro.ac.uk/admin/ar/templates/notes/lps>