



The
University
Of
Sheffield.

Department of Physics and Astronomy

**Handbook for Postgraduate Students
2007/08**

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Welcome to the Department of Physics and Astronomy. We hope that you find your time here as a PhD student enjoyable, rewarding and stimulating.

This handbook is intended to explain most of the academic and administrative details associated with your PhD programme. It should be read in conjunction with *Code of Practice and Guidebook 2007/08*, *The Research Training Programme Handbook 2007/08*, the *Health and Safety Handbook* and the *Departmental Handbook*.

1 General Information

1.1 Registration and Induction: Important Dates

2nd October RTP Information Session for New Research Students, Firth Hall, Firth Court
Surnames A to L : 10.30 - 11.15
Surnames M to Z : 11.15- 12.00

4th October On-Line Registration Event, Firth Hall, Firth Court
Surnames A to L : 15.001 – 15.45
Surnames M to Z : 15.45 – 16.30

9th October RTP Registration Event held in Firth Hall
Surname A-L : 10.30 - 11.15
Surname M-Z : 11.15-12.00

10th October Welcome Meeting. A Brief introduction to the Department to be given by Prof Mark Fox, Graduate Tutor.
15.00, Media Room (E39), Department of Physics & Astronomy

Welcome Drink Party at 16.00 in the Austin Room (D32)

17th October ****Health & Safety Meeting ****, given by Alan Bateman

15.00, Media Room (E39), Department of Physics & Astronomy

**** ALL STUDENTS MUST ATTEND THIS SESSION****

1.2 Key People

- Head of Department: Professor David Mowbray (E35)
- Postgraduate tutor: Prof Mark Fox (E14)
- Departmental Manager: Mrs Catherine Annabel (E29)
- Laboratory Superintendent: Mr Alan Bateman (E24a)
- Departmental Secretary: Mrs Linda Simmons (E34)

- Postgraduate Secretary: Mrs Julie Milner (E34)
- Postgraduate Secretary (DTC/MSc): Mrs Julie Milner (E34)
- Health and Safety Officer: Mr Alan Bateman (E24A)
- Postgraduate Representatives: See the postgraduate web site

A full list of members of staff (with their research interests), clerical and technical staff, postdoctoral research assistants, and research students is available at:
<http://www.shef.ac.uk/physics/contacts>

1.3 People to Contact if you have Problems or Queries

- **Financial Matters**
 - Cash advances and insurance
 - Conference registration

First point of contact: *Joanne Coates (Departmental Office)*

 - Expense Claim Forms
 - Purchase Orders
 - Petty cash
 - Car Hire
 - Demonstrating Forms

First point of contact: *Rebecca Raynor (Departmental Office)*
- **Postgraduate Matters**
 - Registration
 - Research Training Programme
 - Studentships
 - Research Council Forms
 - Graduate Research Office
 - Inter-Library Loan Vouchers
 - Photocopy Cards
 - Mentor Sessions

First point of contact: *Julie Milner (Departmental Office)*
- **General Technical Matters**
 - Infrastructure (office, labs, etc.)
 - Security

First point of contact: *Alan Bateman (E24a)*

 - I.T. Support
 - Web manager

First point of contact: *Richard Webb (E30a)*
- **Research Topic**
 - Progress or understanding of research topic

First point of contact: *Your supervisor*
- **Grievances**

First point of contact: *Your supervisor, mentor or the postgraduate tutor, as appropriate (see section 3.4)*

1.4 Health and Safety

Please refer to the *Health and Safety Handbook*.

- Health and Safety Lecture: Mr Alan Bateman (11 a.m.16th November, E39)
- Out of Hours Training: Contact Mr Chris Vickers (C10),
or wait for e.mail notification

1.5 Student Timetable

The timetable shown below is a summary of dates of key activities in your PhD programme. The items shown in bold are necessary activities for student progression (see section 2). (These are also components of some RTP modules (see section 4).) Mentor sessions and quarterly questionnaires are described in section 3.

Time (months)	Activity
0	Registration: “register to read”, register RTP modules, etc. Induction: meet with supervisor, postgraduate meeting, meet and greet social event, safety meetings, etc. Mentor session
3	Quarterly questionnaire
6	Quarterly questionnaire Mentor session
≤ 6	Literature review essay (PHY6030/50/70)
9	Quarterly questionnaire
≤ 9	Presentation of literature review to research group (PHY6030)
≤ 9	First year report and viva (PHY6010/50)
12	Quarterly questionnaire Mentor session
15	Quarterly questionnaire <i>Upgrade from MPhil to PhD</i>
18	Quarterly questionnaire Mentor session
21	Quarterly questionnaire
24	Quarterly questionnaire Mentor session
≤ 24	Presentation at the departmental research day (PHY6010) Second year report and thesis plan (PHY6010) Presentation of research topic to research group (PHY6010)
27	Quarterly questionnaire
30	Quarterly questionnaire Mentor session
33	Quarterly questionnaire
36	<i>Submit thesis</i>

1.6 Postgraduate Committee

The postgraduate committee consists of:

Prof Mark Fox	(postgraduate tutor)
Dr Chris Booth	(particle physics representative)
Dr Paul Crowther	(astronomy representative)
Mr Chris Duffy	(student representative)
Mr Paul Commins	(student representative)
Miss Kate Shaw	(student representative)

Dr Jamie Hobbs	(condensed matter physics representative)
Mrs Julie Milner	(postgraduate secretary)
Dr Luke Wilson	(recruitment)

1.7 Student Representatives

Postgraduate student representatives play an important role in organising social events (see section 1.10), representing student views on the postgraduate committee, and helping to organise the departmental research day (see section 2.3). A full list of these representatives is available on the postgraduate web site at,

<http://www.shef.ac.uk/physics/research/postgraduate>

Volunteers are always welcome. (Please see the postgraduate tutor, if you are interested.)

1.8 Reporting Illness

If you are unable to come into the department due to illness, please make sure that you telephone Mrs Julie Milner (direct line 222 3514) to let her know. She will then inform your supervisor and any other relevant people in your research group.

1.9 Departmental Colloquia and Seminars

As well as the Monday lunchtime seminars, that form part of the RTP module PHY6010 (see section 4.2), and the specialised research seminars that your supervisor will require you to attend, the department also organises general research colloquia, held on Tuesday and Wednesday afternoons. (The Tuesday colloquia are organised under the auspices of the IoP.)

You are strongly encouraged to attend as many of these colloquia as possible, as a good attendance helps to maintain a stimulating research atmosphere in the department.

1.10 Demonstrating and UCAS Activities

Research students often participate in demonstrating to undergraduates (in laboratory and problem class sessions), as well as in UCAS day activities. If you would like to help in these paid activities, please see the departmental office.

1.11 Social Activities

These are organised by the student representatives (see section 1.6), and usually include a welcome party early in semester 1, plus walks, meals and cinema trips. Please see the student representatives for more details.

1.12 Other Information

Please refer to the postgraduate web site at:

<http://www.shef.ac.uk/physics/research/postgraduate>

and the postgraduate notice board (near to E28) for the latest news and announcements. Also refer to the Graduate Research Office web site.

2. Assessment and Progression

2.1 First Year Report and Viva

First year reports are regarded by the department as an essential component of the first year of your PhD programme. The report and viva will be used as an assessment for upgrading from MPhil status to PhD status (see section 2.4). Successful completion of a satisfactory report is also an essential component of module PHY6010 of the University Research Training Programme (see section 4).

The report, which should be a minimum of ten typed pages in length, plus any diagrams, should contain a summary of your work so far, and a brief description of likely future directions in the next year.

The report should be submitted to the postgraduate secretary by the end of June of your first year. You will then be assessed by a *viva voce* with your supervisor and another member of staff, who will provide a written report on your progress.

2.2 Second Year Report and Thesis Plan

As for first year reports, second year reports and thesis plans are regarded by the department as an essential component of the second year of your PhD programme. Successful completion of a satisfactory report is also an essential component of module PHY6010 of the University Research Training Programme (see section 4).

The report should contain a *brief summary* of your second year work, a list of published or submitted papers, an outline plan of your thesis, and a timetable for the successful completion of your PhD. It should be submitted to the postgraduate secretary by the end of September of your second year.

2.3 Presentation at the Departmental Research Day

In your second year you will be expected to present your research via a short presentation (~20 minutes) at the departmental research day (scheduled at the end of September). A panel of academic staff and research students will judge these presentations, with the best three being awarded prizes. (Please note that this presentation also forms an integral part of module PHY6010 of the Research Training Programme (see section 4.2).)

2.4 Upgrading from MPhil to PhD

Upgrading from MPhil to PhD status usually occurs at the end of your first year of a PhD programme. This is determined by satisfactory performance in the previous 12 months, judged, for example by successful completion of the first year report, a satisfactory viva and the completion of at least 20 RTP credits.

3. Supervision, Monitoring and Grievance Procedures

3.1 Supervisory Meetings

Meetings between your supervisor and yourself should occur frequently and informally.

However, it is a university requirement (see the *Code of Practice and Guidebook*) that a formal record is kept of some (but not all) supervisor-student meetings. Thus, every 6-8 weeks a formal meeting should take place between you and your supervisor(s). This meeting should include a review of the previous period and a plan of work for the next period.

Following the meeting it is your responsibility to make a written record of this meeting. A convenient way to do this is via the on-line form at:

<http://www.shef.ac.uk/pgresearch/uosonly/suprec.html>,

which should then be forwarded by e.mail to your supervisor(s) and the postgraduate secretary.

You should keep a copy of this report in your records.

Although apparently onerous, you will find that regular recorded meetings of this kind provide a useful structure and guidance to your PhD work.

3.2 Mentor Sessions

At the beginning of your first year you will be assigned a member of staff outside your research group as a mentor. Mentor sessions occur every 6 months and typically take up to 30 minutes. These will be scheduled for you by the postgraduate secretary.

We do attach great importance to these sessions, so please be sure to attend the meeting organised for you.

What is mentoring for?

The aim of the mentoring session is that you should be given the opportunity to discuss the progress of your research project, the quality of supervision, and the adequacy of your research environment with a member of academic staff who is outside your research group. You are encouraged to raise any worries that you might have and discuss what action, if any, needs to be taken to address them. Your mentor will ensure that you are progressing as expected, and that you have a clear idea of where your research is going. Reports from mentoring sessions will provide documentary evidence of your progress, identify any problems, and highlight areas where action needs to be taken.

What should the outcome of a mentoring session be?

At the end of the mentoring session, your mentor should be satisfied:

1. That you meet regularly with your supervisor(s) and that you are satisfied with the outcome of these meetings.
2. If more than one supervisor is involved, that you are receiving coherent supervision.
3. That you have a clear idea of what you are doing and where it is going, and that you have made adequate progress since the last session.
4. That you are happy that you have the facilities necessary to undertake the work.
5. That you are submitting papers to journals and/or presenting original material at conferences.

3.3 Quarterly Monitoring Questionnaire

In addition to the mentor system, each quarter you are also requested to fill in a one-page questionnaire about the progress of your research, and the quality of the supervision and research environment. The aim of this questionnaire is not to replace the mentor system, but to complement it by providing a means of identifying problems as quickly as possible so that they may be rapidly tackled. The questionnaires will be treated confidentially and reviewed by the graduate tutor. If you raise an issue, then in the first instance the graduate tutor will discuss it with you to determine the appropriate course of action.

We do attach great importance to these questionnaires, so please take a few minutes to complete them.

3.4 Grievance Procedures

Hopefully, you will find your experience as a PhD student in Sheffield an enjoyable, satisfying and stimulating experience. However, it is possible that circumstances occur that are not satisfactory, for example, problems with your research environment (e.g. office or laboratory space), problems with equipment or your supervision, etc. In the first instance, if appropriate,

you should raise these issues with your supervisor. If this is not appropriate, or if the issue is not resolved, you should then raise it with your mentor or the graduate tutor.

4. Departmental RTP Modules

This section contains brief details of departmentally organised Research Training Programme (RTP) modules. It is expected that most students will select at least one module from the generic modules, PHY6010, PHY6030, PHY6050 and PHY6070. There are also more specialised taught modules for astronomy, condensed matter and particle physics (see below). Please also refer to *The Research Training Programme Handbook 2007/08* and the Graduate Research Office web site for details of other modules.

4.1 Training Needs Analysis

Before choosing your RTP modules you should discuss with your supervisor your training requirements. Since the RTP extends over three years, this analysis should occur at the start of every academic year.

4.2 PHY6010 - Professional and Research Skills for Physicists and Astronomers

Aims/Descriptions: There are three interlinked objectives to this module:

1. To provide research training tailored to the student's research project.
2. To provide practice and feedback on scientific presentation and communication skills.
3. To expose students to a wider professional research environment.

These objectives will be accomplished by the student:

1. Receiving subject specific training by their research groups
2. Preparing first and second year reports.
3. Presenting a 20-minute talk at the departmental research day.
4. Regularly attending group meetings.
5. Regularly attending departmental seminars and colloquia.
6. Making other presentations to research groups, etc. as appropriate.

Time (months)	Activity
1 - 12	Attend twelve Monday lunch-time seminars
9	First year report and viva
9 - 24	Presentation of research topic to the student's research group
24	Second year report and thesis plan
24	Presentation of research at the departmental research day

The schedule for Monday lunchtime seminars (organised by Prof. Mark Fox) is posted on the postgraduate web page and notice board.

Credit rating: A = 5, B = 5, C = 5

Teaching methods: Seminars, tutorials, laboratory sessions

Assessment: Project/dissertation, talks, coursework

Level of study: First and second year of research

Staff contact Prof. Mark Fox

4.3 PHY6030 - Literature Survey in Condensed Matter Physics

Aims/Description: To formalise the literature review for condensed matter physics PhD students in a way that will both enhance their presentational skills and provide a focus for their background reading. The course will consist of the following:

1. Literature search and review: starting from a list provided by the supervisor, the student will make a survey of key references in the literature.
2. Essay: the student will be expected to write a 3,000 word essay, based on the literature survey, which will consist of a critical review of the subject area of the PhD.
3. Talk: the student will also present an half hour talk on the subject of the essay to the research group. The essay and talk will be assessed by two members of staff. Feedback will be given to the students on their performance in the essay and talk.

Time (months)	Activity
6	Completion of literature survey and directed reading essay
9	Presentation of literature survey to research group

Credit rating: B = 5, C = 5

Teaching methods: Seminars, tutorials

Assessment: Project/dissertation, talk to research group

Level of study: First year of research

Staff contact Dr Jamie Hobbs

4.4 PHY6040 - Experimental and Theoretical Foundations of Particle Physics

Aims/Description: To provide, through 120 lectures, with tutorial support, the theoretical and practical skills required to conduct research in high energy particle physics. Theoretical topics include quantum electrodynamics and Feynman diagrams, electroweak theory and quantum chromodynamics. These subjects are assessed through sets of problems for each topic. Experimental techniques are introduced in courses on particle detectors and relevant computing skills, again with exercises provided for the students. Part of this course draws on training material provided by external bodies such as the Cockcroft Institute.

Teaching Methods Lectures, Problems Classes

Assessment Methods Coursework

Staff contact: Dr Sean Paling

4.5 PHY6050 - Research Skills for Particle Physics

Aims/Description: To develop the practical skills required for independent research in particle physics. Each student conducts a literature survey on some topic of current research, being guided in the use of research journals and other publications. A computing or hardware project is also assigned, with students developing a substantial analysis or simulation program, or building a detector or associated electronics (as appropriate to their personal research field). Assessment is on the basis of a written report and a presentation to the particle physics group.

Teaching Methods Laboratory Sessions, Problem Solving/Example Classes

Assessment Methods Project/Dissertation

Staff contact: Dr Davide Costanzo

4.6 PHY6060 - Astronomical Background for Graduate Students

Aims/Description: Graduate students in astronomy usually come from backgrounds in physics and mathematics. As a consequence they generally lack a background of essential astronomical knowledge. In order to remedy this situation we require all astronomy PhD students to take relevant courses from our undergraduate astronomy MPhys courses. The choice of courses will be matched to the PhD subjects of individual students. We envisage that each student will take 28 lectures (one 18 lecture course and one 10 lecture course). The assessment will be by oral examination involving two members of staff.

Teaching Methods Lectures, Tutorials

Assessment Methods Oral Examination

Staff Contact: Professor Clive Tadhunter

4.7 PHY6070 - Astronomical Literature Review

Aims/Description: To formalise the literature review for astronomy PhD students in a way that will both enhance their presentational skills and provide a focus for their background reading. The course will consist of the following:

- (1) Literature search and review - starting from a list provided by the supervisor, the student will make a survey of key references in the literature
- (2) Essay - the student will be expected to write a 3,000 word essay, based on the literature survey, which will consist of a critical review of the subject area of the PhD. The essay will be assessed by two members of staff
- (3) Talk - the student will also present an half hour talk on the subject of the essay to the research group. Feedback will be given to the students on their performance in the essay and talk.

Teaching Methods Seminars, Tutorials

Assessment Methods Project/Dissertation, Talk to Research Group

Staff contact: Professor Clive Tadhunter

4.8 Other Departmental Modules

- PHY6002 Inorganic Semiconductor Nanostructures
- PHY6006 Macromolecules at Interfaces and Structured Organic Films
- PHY6007 Molecular electronics and Photonics
- PHY6021 Advanced quantum mechanics

4.9 Other (non-departmental) Recommended Modules

- CIC6001-4 Introduction to High Performance and Grid Computing

- GSC6000 Information Management
- GSC6100 Library and Information Skills for Successful Research
- GSC6110 White Rose Interpersonal Skills School
- GSC6120 UK GRAD programme
- LAW666 Law for Scientists
- PMA6020 Learning LaTeX

Overseas students have found the following useful:

- GSC6050 Thesis Writing: Principles and Practice
- GSC6060 Speaking Skills for Research Purposes