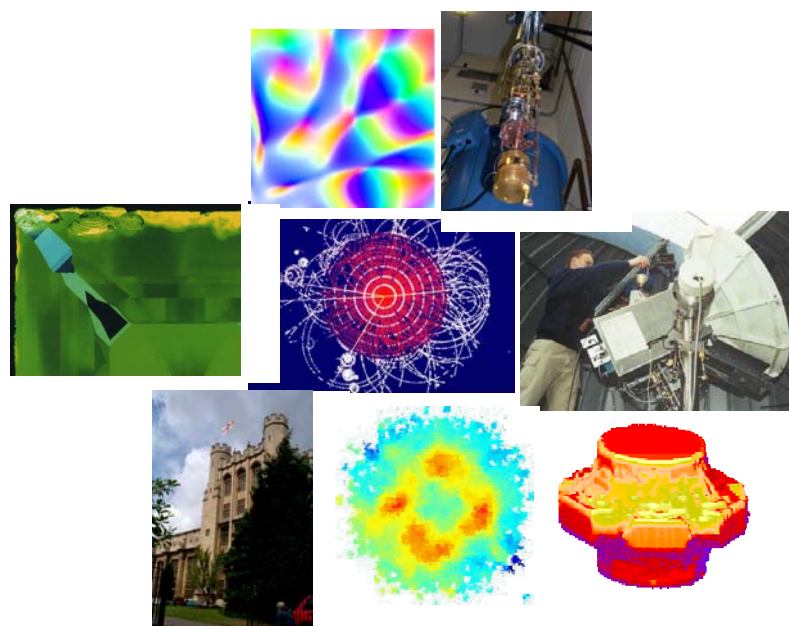


Postgraduate Handbook 2010-2011



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1 Welcome

Welcome to the University of Bristol and the School of Physics. You are joining a School with a strong reputation for research. Today the School has around 100 research staff engaged on a wide range of research areas, including Astrophysics, Particle Physics, Micro- and Nanomaterials, Correlated Electron Systems, Nanophysics and Soft Matter, Quantum Photonics and Theoretical Physics. .

These notes are for new postgraduates in the School and are meant to help them to settle in. Other information will be available e.g. the Faculty Handbook, which can be obtained at registration and these notes will serve as a Supplement to such publications. More details of the practicalities of School life can be found in the Staff Handbook on our internal web pages. Registration generally takes place in Freshers' week – and the Student Union Building on Queen's Road on Thursday and Friday of this week is dedicated to FRESH – more information can be found at <http://www.pgu.org.uk/>.

2 Postgraduate Induction

Science Faculty Induction: You should already have received your Registration Pack from the Science Faculty Office. Please note that you are required to register formally with the University online as well as on arrival.

School of Physics Induction & Welcome

Welcome to the School of Physics.

Physics Induction: Tuesday 5 October 2010 in 3.21 at 2:30 pm. All first year postgraduates are warmly invited to attend this event. Go to the third floor of the Physics Building.

- 1 14:30 in Room 3.21
Introduction to the Physics Graduate School and the Department
(Professor Walther Schwarzacher)
- 2 14:50 in Room 3.21
Teaching & Demonstrating
(Mr Mike Rothwell)
- 3 15:10 in Room 3.21
Introduction to Computing in the School
(Dr Rhys Morris)
- 4 15:30 in Room 3.21
Outreach Opportunities
(Dr Helen Heath)
- 5 15:50 in Room 3.21
Talk from Institute of Physics (IoP)
(Dr Alison Rivett)
- 6 16:00 Room 3.21 – returning to the Library
Short Tour of the Building
(Dr Andrei Sarua)
- 7 16:20 in Physics Library, Room 3.14
Introduction to the Physics Library
(Debra Avent-Gibson)
- 8 16:25 in Common Room 3.32
Reception - do not miss this opportunity to meet your fellow newcomers, and others associated with the Graduate School, over a drink or two.

Details of safety training and other scheduled meetings and training courses will be inside your welcome packs collected at registration.

Safety Induction: It is required that all new postgraduate students attend safety induction courses, run by the School Safety Officer Dan Uren. Classes will be arranged during Week 0 and you will be expected to attend these – details will be given in the welcome packs you collect at Faculty Registration.

In addition it is essential that new students do not start experimental work until they have attended the Safety Courses organised during Week 0 and read the School of Physics Safety Handbook and completed any necessary assessments as explained therein. The Safety Handbook will be distributed when you attend the first of the Safety Courses in Week 0. Extra copies may be downloaded from the physics web pages <http://www.phy.bris.ac.uk/safety/index.html> or collected from Mr Dan Uren Room G.38.

Teaching and Learning in Higher Education Courses

All new postgraduate (PhD) students are required to contribute towards the Undergraduate Teaching and Laboratory Demonstrating within the School. Students will therefore be required to attend the two day courses that have been booked for them in the Graduate School of Education. Details will be in on the schedule inside the welcome packs collected at registration.

3 General Information for Postgraduate Students

3.1 The PhD and MSc by Research programmes

The School of Physics accepts students for PhD and MSc by Research programmes. For the formal regulations covering PhD and MSc degrees by research, go to <http://www.bristol.ac.uk/esu/pg/cop-research-degrees.html>. In brief, PhD students generally undertake a three year programme of research and are required to submit their PhD thesis by the end of their fourth year. Some general information and advice on writing a PhD thesis is given later in the handbook. Within three months of submission of the thesis, students will take an oral examination (the “viva”) conducted by an internal and an external examiner. The decision to award the PhD will depend both on the quality of the thesis and on performance in the viva. In the PhD programme, students undergo additional skills training as outlined below.

Students enrolled for an MSc by Research are required to submit their thesis by the end of their second year. In a similar manner to the PhD degree, this will be followed by a viva examination. The skills training requirements for the MSc by research are essentially the same as for the first year of the PhD programme.

Graduates who have completed successfully the PhD programme will have showed they are capable of original and independent research. However, our programme is also designed to enable you to develop a broad range of skills that will be useful not only in your research but also in your future career. This includes writing and communication skills, teaching skills, teamwork and networking skills, training to develop your wider understanding of science etc. While some skills will be developed as a natural part of your research programme, others are subject to formal training, through lecture courses, teaching duties and University or outside (eg Research Council) courses. Details of these courses are given below. Skills training is also reviewed annually as part of our progress monitoring, see section 3.

3.2 School Organisation

The School of Physics is a large teaching and research institution involving about 600 students and staff. All of its activities are ultimately the responsibility of the Head of School, Professor R Evans, though much is delegated for detailed organisation to other members of the School. Academic policy is decided by the Head of School after consultation with other academic staff. Such consultation is often informal but there are regular Staff Meetings, attended by student representatives, where discussions on policy take place (see the School Calendar which can be found at <http://www.phy.bris.ac.uk/staff.html>).

There is a Postgraduate Committee with representatives from the seven major research groups, where discussions on postgraduate matters and the running of the Graduate School take place. The current composition of the committee is as follows:

Professor Walther Schwarzacher, Director of the Graduate School
Dr Dave Newbold, Deputy Director of the Graduate School
Tracie Anderson, Administrator for the Graduate School and
Representatives from each of the seven research groups in the School of Physics, together with the Interface Analysis Centre and the Bristol Centre for Functional Nanomaterials DTC

There is postgraduate representation on the Staff-Student Committee, chaired by Dr Terry McMaster. School of Physics teaching policy is considered first by Teaching Committee, taking reports from each Level Teaching Coordinator plus laboratory and Staff-Student coordinators. Items for consideration are then taken to Staff Meetings.

School of Physics organisation falls naturally into the research groups. Each group will typically have several members of academic staff, post-doctoral research workers, technical staff, a

secretary and postgraduate students. It is within such a group that the new postgraduate will find immediate help and support in his/her new environment and it will become the focal point of the postgraduate's training.

At the beginning of his/her studies a postgraduate will be assigned a Supervisor and two other members of academic staff who together will comprise the Advisory panel (see Section 3). The student should feel free to approach any member of the panel for help or advice on any matter, academic or personal. Professors Walther Schwarzacher (Director of the Physics Graduate School) and Ashraf Alam (Advisor to Overseas Students) or Dr Dave Newbold (Deputy Director of the Physics Graduate School) can also provide advice. The Advisory panel meets at the end of each academic year to review the student's progress. The overall progress of the student is kept in view by the Science Faculty Graduate Studies Committee. The School representative on this Committee is currently Professor Schwarzacher but there are also student representatives on the Committee.

Some members of the School have special responsibilities which may bring you into contact with them.

Professor R Evans, FRS	3.23	Head of School and Director of the Laboratory
Ms J Inglis	3.26	Head of Administration
Ms V K Johnson	3.23	PA to Head of School & School Secretary
Mr S Neck	G.48	Laboratory Superintendent
Mr A Crimp	w/shop	Head of the mechanical & glass workshop
Mr D Linnett	1.38	Stores
Mrs A Michael	3.17	Finance and Resources Officer
Mrs Y Walker	3.17	Finance and Resource Assistant
Mr S Nash	1.26	Electronics Laboratory
Mr R Kelly	1.26	Electronics Laboratory
Dr A Kierzkowska	1.31	Chemical Research Technician
Mr J-P Melot	4.42	Computing
Dr Rhys Morris	4.33b	Computing (Linux)
Mrs D Avent-Gibson	Library	Library
Professor M A Alam	4.40	Advisor to Overseas Students & Immigration Officer
Professor W Schwarzacher	1.12	Director of Physics Graduate School
Dr D Newbold	4.40	Deputy Director of Physics Graduate School
Mrs T Anderson	3.39	Physics Graduate School Administrator
Professor D Cherns	3.48	School Safety Advisor
Mr D Uren	G.38	School Safety Manager
Professor P Barham	3.22	Senior Tutor
Mr J Rowden	w/shop	Glass working Technician
Mr M Rothwell	T/Labs	Level H and M Teaching Laboratories
Dr A Wilmshurst		
Dr G Winter	T/Labs	Level C Teaching Laboratory
Mr P Galbriath		
Mr T Kennedy	T/Labs	Project Laboratory Technician

3.3 Lecture Courses, Seminars etc.

As you will see from the pages in Section 9 on Graduate lecture courses, there is a variety of courses available. In the first year, the postgraduate student will be guided by their Supervisor as to which courses should be attended. In addition to specialised postgraduate lectures, some of the Level 3 and Level 4 Options in Physics will be of value as will courses at undergraduate or postgraduate level in other departments. A number of research groups in Physics hold regular Seminars. More details are available on the Events web page at <http://www.phy.bris.ac.uk/events.html>.

The **Physics Colloquium** is held on Mondays at 4:00 pm in the Tyndall Lecture Theatre. These lectures on topics of current research interest are aimed at final year undergraduate / 1st year postgraduate level and it is expected that **all** postgraduate students will attend as part of their wider education. The Colloquium is preceded by tea at 3:30 pm in Room 3.32 (Staff Common Room) and should be regarded as a School event rather than just another lecture. – Link to the list of talks is at <http://www.phy.bris.ac.uk/events/colloquia.html>.

Noticeboards

Seminars and Colloquia are announced on the noticeboards around the building and in the two lifts in the School and by email. Most individual and group communications with postgraduates are now conducted via email, you should check your email on a regular basis.

3.4 Staff Development Courses

The University's Staff Development Office organises a wide range of courses designed to improve research effectiveness. Some titles are 'Planning and managing your PhD', 'Presenting Research Orally', 'Presentation Skills', 'Muddling through the middle of your PhD', and 'Completing your PhD – when the going gets tough'. There are also courses on word processing and computing, as well as on the development of personal skills. Bookings can be made online by going to <http://www.bris.ac.uk/staffdevelopment/>.

3.5 Postgraduate teaching

PhD students are required to contribute to the teaching activities within the School. Acquiring teaching and communication skills is an important ingredient in your professional development. You may be asked to demonstrate in our practical classes, problems or computing classes, or teach in tutorial groups. Training will be provided and you will be paid for teaching at the standard university rates. For a list of who has been assigned what duties see the postgraduate web pages at <http://www.phy.bris.ac.uk/graduateschool/index.html>.

3.6 Postgraduate Union

All postgraduate students automatically belong to this association, which arranges social and sporting events. More information can be found at <http://www.pgu.org.uk/>.

3.7 Annual Leave Entitlement

You should be aware that you are entitled to 25 days per year for annual leave in addition to the dates when the University is closed (Bank Holidays and other University Closure days – for more information on these dates see <http://www.bris.ac.uk/university/dates/>). You should make sure that your Supervisor is happy with the dates that you select for your annual leave. For more details you should consult your Code of Practice which is also available online at <http://www.bristol.ac.uk/tsu/policy/cop-research-degrees.html>.

4 Facilities and Services within the Laboratory and the University

4.1 Library

The School Library is on the third floor (Room 3.14). It is open from 8:45 am to 7:00 pm Monday to Wednesday, 9:45 am to 7:00 pm Thursday and 8:45 am to 6:00 pm on Friday during Autumn and Spring term-time, The library is open later in the evening in the Summer Term. During the Vacation the library closes each day at 4:45 pm (opening hours remain the same as for term time). Any changes to the above opening times will be advertised within the building. Library staff will acquaint newcomers with the library facilities and their conditions of use. They can also provide assistance in using Physics Abstracts, on-line catalogues, registering for Web of Science, electronic journals etc. Suggestions for additions to the library may be made to the library staff or to the Chairman of the Library Committee, Dr S Hanna. Members of the School are entitled to use the Arts and Social Sciences library in Tyndall Avenue, and other departmental libraries, but in each case they should make themselves known to the counter staff and enquire what rules apply.

Your security / library card, a single card issued at registration, allows you to borrow from any branch library with automated issue. The same card provides access to the building – see below. The Information Services web site provides expert help and advice on library catalogues, databases, reference sources and information skills at <http://www.bris.ac.uk/is/>.

4.2 Computing, Email & the HPC

The computing facilities in the School and in the University are constantly changing. Each research group has its own arrangements but Mr Melot may always be consulted as to the current position of computing facilities. Advice on PC's is available from Neil Laws in Room 4.33b. It is important that **every** postgraduate has access to email and reads it regularly as this is the most efficient form of communication within the School and University. In order to obtain an email account a student must first register with the University, so that their name is on the academic database, and then contact the Computing Service, opposite Physics. You can request a more personal email address to replace the phxyz@bris.ac.uk that you are given as a default username by accessing the web page and using the online form at <https://www.cse.bris.ac.uk/cgi-bin/choose-mailname.pl> you will need your username and password to do this and your address will automatically have the format '____.surname@bristol.ac.uk) you only select the part before the '.' (period). You should also use this portal to update your personal records.

You can contact other postgraduates in Physics through the email list phys-phd@bris.ac.uk (for official messages only please do not use to circulate junk mail/spam). You should be added automatically to this list, but if for some reason you are not, please contact Tracie.Anderson@bristol.ac.uk asking to be added.

Information on High Performance Computing (HPC) and the dedicated PG computing room will be added shortly.

4.3 Stores, Orders and Deliveries

The research work of the School is organised into a number of research groups, each of which has individual or group grants. The Stores hold stocks of many small items in general use and these can be drawn as needed. For some items an authorised signature is needed for accounting purposes; this can be obtained from your group secretary or supervisor. Orders for goods and services from outside the University are placed by Mrs Yvonne Walker (Room 3.317 who will also need an order slip signed by an authorised person in your group. Most groups operate their own duplicate order-book system to keep a check on expenditure, and orders on top copies from such books are accepted, as sufficient authority to issue an official University

order. The maximum value of an order accepted from a postgraduate research student without the authority of the head of the research group is usually £35. Goods are delivered to the Stores and must be signed for. Any problems with goods should be addressed to the Stores in the first instance. Mr Neck (Room G.48) must be consulted before goods and services supplied by the University maintenance staff are ordered (e.g. installation of a compressed air line, fitting of shelves).

4.4 Access to the Building: School Superintendent

Mr S Neck, The School Superintendent, will advise on many aspects of the building and its services including the provision of furniture. He should also be consulted over the provision of access to the building as it is normally locked on weekdays at 6:00 pm until 8:00 am, and all day on Saturdays, Sundays, Bank Holidays and University Holidays. All staff and postgraduate members of the School should have a plastic security/library card. This has a magnetic strip with a personal identification number (PIN) and acts as a swipe card for opening the door to the front (north end) of the building. It is needed both for entering and leaving the building when the doors are locked. (New card readers are due to be introduced shortly so some of the information may be incorrect at the time – if you have any questions please contact Tracie Anderson on tracie.anderson@bristol.ac.uk).

For visiting staff and new postgraduate students, the academic responsible for the visitor/student will need to complete a web form Process for new Starter at <http://www.phy.bris.ac.uk/buildings/newstarter.html>. It is important that everyone using the card to open this door should ensure that the door shuts and locks properly behind them. **It is also of the highest importance for the security of the building that cards should not be loaned or otherwise passed on to anyone else, nor should anyone else be allowed to ‘slip into’ the building as the card holder lets him/herself into the building.** It is a requirement of the Security Officer that when you use the building outside normal hours you must sign the notebook in the entrance foyer as you enter and leave the building. Room keys can also be obtained from Mr Neck (Tuesday PM & Thursday PM only) after the supervisor has completed the form for new starters – a deposit of £10.00 per key will be required to ensure that it is returned when no longer needed when your deposit will be refunded.

4.5 Copying and Printing

The School has a number of machines for copying and duplicating as follows:

- a) A photocopier is available in 3.41 for use by staff and postgraduate students. Codes for the use of this may be obtained from the finance and resource assistant (room 3.17) – she will need to know your research group to be able to give you the appropriate code.
- b) There is also a coin operated copier in the Physics library.

Members of the School using any of these facilities **must accept individual responsibility for ensuring that their action does not infringe copyright regulations (guidance is displayed in Room 3.41).**

4.6 Mechanical and Glass Workshops

The School workshops are currently housed underneath the old Mathematics Building located behind the Physics School. Mr Crimp is responsible for organising the work and will advise on the design and construction of new apparatus if asked. Elaborate drawings of work to be done are rarely necessary, but clear sketches and sufficient written instruction should accompany jobs of any magnitude.

In the same building there is also a specialist glass workshop run by Mr J Rowden.

A number of research groups have machine tools as part of the Group's equipment for use by members of that research group.

4.7 Electronics Laboratory

The School has an electronics workshop, in Room 1.35, whose staff provide electronics support to research groups. They will assist in the design and building of electronic equipment.

4.8 Chemical Research Technician

Agnieszka Kierzkowska (Aga) is a trained and qualified Chemist and is available to support any chemical aspects of your research project. This includes advice on designing chemical processes, advice on chemical safety and it could extend to hands-on help. If you will need to use chemicals at any level in the course of your research, you should consult Aga at an early stage so that the best location and methods can be identified and an appropriate risk assessment can be drawn up.

Phone: 46886 office: 1.31 email: aga.kierzkowska@bristol.ac.uk

4.9 School Office

The School Secretary, Ms Vicki Johnson, (Room 3.23) maintains personal records of staff and students. Newcomers to the School should make themselves known to her and then **help her keep the records up-to-date by informing her, for example, of a change of address.** Staff and postgraduate students should also inform her if they are absent through illness. The School Secretary is also a valuable source of information about School, faculty and University matters. You are also able to up-date your address and other personal information online by using the University student database on the web page www.bris.ac.uk/studentinfo/. You will need your username and password.

4.10 Telephone Calls

The University uses the British Telecom Merlin System, which means that the same telephone handset serves for internal and external calls. For external calls (dial 21 for access) there are three levels of priority.

- 1 Telephone in the public areas, e.g. teaching laboratories and many research laboratories, can be used to make internal calls and local calls only.
- 2 Many of the telephones in academic offices can also be used to make national calls.
- 3 A few telephones in the School can be used to make international calls.

Many of the incoming calls are routed via the University switchboard but some telephones have Direct Dial In (DDI) lines and so can accept incoming calls at times other than switchboard hours (9:00 am to 5:30 pm Monday to Friday).

The telephone system should not be used for private and personal calls any more than is absolutely necessary. If it is necessary to make a private call, key R*2303 immediately following the call, and before putting the handset down.

4.11 Mail & Fax

Mail: Incoming mail is delivered around the School each morning and afternoon and can also be collected from the Porters Lodge. Outgoing mail should be placed in the box provided in the Porters Lodge or in the baskets in the Post Room 3.41. These are cleared at 3:45 pm (internal also at 11:50). The University operates an internal delivery service and care should be taken to distinguish between letters for internal delivery and those which go through the Post Office system (UK and Airmail). **Letters will normally be sent by second class mail and all external mail should have the senders name clearly written on it; for anything which costs over £2.00 a grant code will be needed.** Purely personal and private correspondence should **not** be sent through the University mailing system unless you use your own stamps to do so - 1st and 2nd class stamps can be purchased from Mrs Tracie Anderson (Room 3.19). Arrangements for parcel dispatch should be made at Stores (Room 1.37); an order form will also be needed (see under Stores).

FAX: The School FAX machine (number is +44 (0) 117 925 5624) is housed in Room 3.41. There is a record sheet which should be filled in for each fax sent, and you should also indicate if the fax is School or private. Incoming faxes are pinned to the notice board above the fax machine - if you are expecting a fax please check the board. Tracie Anderson (Room 3.39) is responsible for this machine.

4.12 Car Parking and Bicycles

Car parking is on a pay-and-display basis using scratch cards (the cost being dependent on your salary/grant). A permit is needed for pay-and-display parking. Details are given on Travel to Work Web pages at <http://www.bristol.ac.uk/transportplan/>. Although parking will not normally be provided to postgraduate students unless you have special circumstances.

Bicycles must not be brought into the building. There are a range of cycle sheds and hoops close to Physics as well as some more secure, locked cycle sheds nearby. Access codes for the secure sheds and their locations can be obtained from the Security Office at the entrance to Royal Fort gardens.

4.13 Tea and Coffee

Tea and coffee facilities are available at nominal cost for all graduate members of the School in the Staff Common Room 3.32. Members of the School meet at 11:00 am and 4:00 pm on Monday to Friday, and you are urged to use this opportunity to meet colleagues. You are asked to keep the common room and the kitchen clean and tidy. Some research groups make their own arrangements for morning coffee and in addition there is a coin-operated machine which dispenses hot drinks in the School outside Room 2.12 on the second floor.

4.14 Outside the School

The range of services provided in the University extends from catering to computing, from accommodation to information. In particular there are useful offices in Senate House; the Reception desk in the entrance which can tell you who can help with which particular problem (visas, fees, salary, cheques etc.) and direct you to the correct locations. The Science Faculty Office located in Royal Fort House to the rear of the Physics Building handles registration, progress and many other matters concerning postgraduate students. Other useful services include the Students Counselling Service located at 1a Priory Road (<http://www.bristol.ac.uk/student-counselling/>), the Student Health Service located at **Hampton House Health Centre** at the top of St. Michael's Hill (<http://www.bris.ac.uk/depts/StudentHealthService/>), and the Accommodation Office located on the 4th floor, Student's Union, Queens Road (<http://www.bris.ac.uk/accommodation/>).

5 Advisory Panels

Each postgraduate student will have a panel of advisors, consisting of the student's Research Supervisor plus two others. The panel is responsible for directing and assessing the student's progress throughout his/her postgraduate studies. It will be appointed by the Director of Physics Graduate School in consultation with the Research Supervisor. Records of a student's progress are kept by the School and by the Science Faculty. The student should feel free to approach any member of the panel for help or advice on any matter, academic or personal. Occasionally problems with supervision do arise. Any student who experiences serious difficulties should consult either the Director, Professor W Schwarzacher, the Deputy Director, Dr D Newbold or Professor M A Alam who acts as Advisor to overseas students.

6 Assessment Procedures for MSc by Research Students

Each research student in the University is assessed annually to ensure that the progress they are making is adequate. In the case of MSc students we try to make this process as simple as possible, since you are expected to complete your work within a year anyway. You are asked to complete a short report (1-2 pages) stating how much of your research is complete and what you still need to do. You should state when you are likely to complete your MSc thesis. In addition, you should supply an outline of the proposed structure of your thesis, eg a list of chapter headings and an outline of when you expect to be able to submit your thesis. Your report should be discussed with your supervisor and sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2011.

7 Assessment Procedures for 1st years

It is important that students continue to broaden their education throughout their research project. The UK Research Councils recommend a range of mechanisms to support learning, including self-direction, advisor support and mentoring, School support, workshops, conferences, elective training courses, formally assessed courses and informal opportunities.

The appropriate training should be discussed with your Supervisor. It is the School's policy that all postgraduates should attend a satisfactory number of courses during their first year. These courses are intended to provide a deeper understanding and a broader education in basic physics than is possible in most undergraduate degrees and **the School recommends that postgraduates should not confine themselves to attending only those courses which appear to be directly relevant to their research project.** The selection of courses to be taken by each student must be agreed between the student and his/her Supervisor at the beginning of the year. Details of this selection should be forwarded to the Graduate School Administrator on

the relevant form. **As a guideline, a selection of 3 courses (around 50 lectures) is usually appropriate for students who have BSc degrees, while one course, is usually appropriate for students with an MSci degree.** Although you are encouraged to take the exams in such courses, this is not mandatory, although you should be prepared to answer questions on your course(s) during the assessment procedure. Postgraduate courses that are available this year are set out on our undergraduate teaching web pages at <http://wwwteach.phy.bris.ac.uk/>. Courses given primarily as Level 4 options are often very valuable and may be attended (for credit) by postgraduates. Other lecture courses in the School of Chemistry or in the School of Mathematics – please see the relevant web sites for more information. Students should also consult the relevant notice boards in these departments for details and timetables.

The Supervisor may recommend that a programme of directed reading (review articles, text-books), or attendance at an appropriate Summer School be substituted for a lecture course. This should be specified on the aforementioned form.

It is not the intention that formal study should take up more than, say, 25% of the effort of a first year student, since three years is all too short a time in which to complete a good PhD research project.

7.1 Postgraduate Conference

First year students will present a poster at the Postgraduate Conference which is held towards the end of the academic year. All members of the School will be invited to attend. Details will be circulated in due course. The conference is an excellent opportunity to learn about the breadth of research activity in the Laboratory and to find out what is expected of you by your second year.

7.2 Assessment of Progress

Students taking Level 4 options should take the written examinations on these courses. The assessment for postgraduate courses will consist of written assignments, i.e. answering problems, and/or an oral presentation or viva. The lecturers will forward the grades to the Director.

Each student is asked to write a short progress report (≤ 5 pages) describing the aims of the research, what work he or she has carried out and plans for the next year of research. A copy of the poster prepared for the Postgraduate Conference can be included as an appendix, together with plans for the coming year. In addition, each student is asked to complete a short questionnaire detailing skills training, including the lecture courses he or she attended, together with the results of any assessment, and what progress was made in any directed reading assignments (Recall that a minimum of 3 courses is the usual requirement, unless the student has a MSc, MSci or equivalent). The student should discuss both report and the skills training questionnaire with his/her Supervisor. **The questionnaire and your report** should be sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2011

Copies of the report and questionnaire will be sent to the appropriate Advisory Panel who will interview the student. The purposes of the interview are (i) to discuss progress with the student and provide feedback on the report, (ii) to assess whether skills training has been adequate (iii) to give the student an opportunity to raise any problems or difficulties which might have arisen with supervision or training. After the interview the panel is required to complete the Faculty of Science form, which asks whether the School recommends progression to the second year of the PhD programme. **Transfer is not automatic. Evidence of satisfactory progress is required.**

8 Assessment Procedures for 2nd years

Students in their second and third years may find it useful to attend any of the more advanced postgraduate courses which are arranged from time to time on topics of current interest, or they can take some of the courses they did not attend in their first year.

8.1 Postgraduate Conference

Each second year student will present a talk on their research project at the Postgraduate Conference, held towards the end of the academic year. All members of the School will be invited to attend. Details will be circulated in due course.

8.2 Assessment of Progress

Towards the end of their second academic year, each student will be asked to write a progress report (≤ 8 pages) on their research project.

This could be based on material presented at the Postgraduate Conference but should also include plans for the 3rd year of research and an outline of the proposed structure of their PhD thesis, eg chapter headings and a list of topics. In addition, each student is asked to complete a short questionnaire detailing skills training, including the lecture courses he or she attended, together with the results of any assessment, and what progress was made in any directed reading assignments. The student should discuss the report and questionnaire with their Supervisor. **The questionnaire and your report** should be sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2011

The Advisory Panel will be convened to interview the student and assess whether his/her progress is satisfactory. If there are significant problems with progress, so that it is unlikely that the student will complete a PhD thesis within the recommended period, these should be noted and raised with the student's Supervisor. The panel is required to complete the Faculty of Science form which assures the Faculty that satisfactory progress is being made.

Continuation to the Third year is not automatic.

9 Assessment Procedures for 3rd years

Towards the end of their third academic year each student is asked to provide a brief report (1-2 pages) stating how much of your research is complete and what progress has been made in writing the PhD thesis. You should also include a thesis outline and a plan for completion of your thesis as well as an estimate of when you are likely to submit. The report will be forwarded to the Advisory Panel who will interview the student and assess progress and the timetable for completion. The Panel is required to complete the Faculty of Science form and comment on the likely submission date.

Every effort should be made by the student and Advisory Panel to ensure that research is complete within three years.

9.1 The PhD thesis and viva voce examination

The regulations require that your PhD thesis is submitted within 48 months of your start date for the PhD programme. Extensions have been allowed, but only in exceptional circumstances (such as illness, catastrophic equipment failure etc), and these require a specific case to be made by the School to the Graduate Dean of Science. In general, students underestimate the time needed to write up a thesis. It will not be completed in a couple of months of sporadic writing. A realistic estimate is three months of uninterrupted writing, and most take longer in practice.

There is, in fact, a limit of 80,000 words for a Bristol PhD. However, in practice, a typical thesis from the School of Physics will contain 150-200 pages including all text (double or one-and-a-half spacing in, **for example**, Times new Roman, font size 12), figures, references and appendices. Your thesis should be a personal account of your activities and achievements in your research programme. Decisions about its content should be made in consultation with your supervisor, who is better placed than you to assess whether or not you are in a position to start writing, and, subsequently, whether the style and content is that required for a PhD degree. It is a good idea to read through previous PhD theses before writing, to give you ideas about presentation and style.

The structure of the thesis can vary, depending on the subject and type of research, but you should attempt to devise a logical structure. This might include **for example**, (in chapters) introduction, background review, experimental techniques, results and analysis (there might be several such chapters), conclusions, suggestions for further work, appendices, references. Whatever scheme you choose, it is important to remember that your literature review should be comprehensive, well-referenced and up-to-date, that you interpret and discuss results as thoroughly as possible, and produce a concise and clear abstract describing your key findings. You should refer to the regulations concerning the preliminary pages (Title page, Abstract, Dedication and Acknowledgements, Author's Declaration and Table of Contents) and for further formatting information. It is also important to remember that you should clearly distinguish what is your own work and what is the work of others, by referencing the source of figures, text, explanations, or results which are not your own. For more details, you should see the plagiarism regulations at <http://www.bristol.ac.uk/is/library/findinginformation/plagiarism/> .

Before you submit your thesis, you should discuss with your supervisor the appointment of examiners, one internal and one external, and complete the "Appointment of Research Degree Examiners" form available on the School of Physics website (also attached as Appendix C) This should be submitted to the Director of the Graduate School at least 28 days prior to your submission date. The viva should be held within three months of your submission date. Normally the date and time will be arranged by your supervisor. The viva itself will normally be conducted with the external examiner acting as chairman. On rare occasions, the examiners may decide that your supervisor or an independent observer should be present at the viva. This can only be done by agreement with yourself and the Head of School, and your supervisor or the observer cannot take part in the discussions in the viva. The examiners will decide whether to recommend the award of a PhD on both the quality of the thesis and the performance in the viva. Among other factors, the examiners will be checking your knowledge of the background to your thesis, and whether you can assess the significance of your results. It is thus a good idea to be prepared to summarise your thesis and identify the key findings if asked (a favourite opening question!).

10 Graduate School Lecture Courses 2010 - 2011

The School recommends that graduate students should not confine themselves to attending only those courses which appear to be directly relevant to their research project. Lectures are intended to provide a deeper understanding and broader education in basic physics than is possible at the first degree level.

The majority of courses offered this year are units from the Level M MSci in Physics programme. These are appropriate for students who have a BSc in Physics or who have not covered the topics in their MSci degree. More details on of these course are on our teaching web pages at <http://wwwteach.phy.bris.ac.uk/level.php?level=m>.

Some other level H (year 3) might also be appropriate. For these please see the Level H Teaching on the web pages at <http://wwwteach.phy.bris.ac.uk/level.php?level=h>.

A syllabus for each of these courses can be found in appropriate webs. Postgraduate students wishing to obtain credit for a course should take the examination or consult the lecturer as to which form of assessment is appropriate.

Postgraduate Lectures

Research groups offer postgraduate lectures, research seminars and other specialist courses to meet postgraduate training needs. Provision is as follows (timings will be announced at a later date).

10.1 Particle Physics Group

The first year students undertake a series of lectures designed to provide the theoretical foundation necessary for further studies in particle physics. These lectures are taught in conjunction with the Universities of Warwick & Birmingham and use the Access Grid Node located in 3.29 for the sessions conducted by an external lecturer. The schedule for 2010/11 will soon be available at <http://www.phy.bris.ac.uk/groups/particle/postgrads.html>.

10.2 Astrophysics Group

Incoming STFC funded students are expected attend a STFC supported Summer School which is scheduled to take place prior to them starting their postgraduate studies.

In addition to Level H and M undergraduate lecture courses, there will be 2 postgraduate lectures/seminars per week in weeks 1-6 introducing Research in Astrophysics at Bristol, and Statistics for Research in Astrophysics.

In weeks 7-24, there are weekly seminars/colloquia on research topics

New students will have directed reading in weeks 1-10, and weekly meetings in weeks 7-24 to discuss recent research papers

10.3 Theoretical Physics Group

Theory Group students will be able to take the following courses:

- Weekly theoretical physics seminars (Wednesdays 2.15pm room 3.34) and
- Physics colloquium (4pm Mondays Tyndall lecture theatre)
- 4th year MSci lectures in subjects students have not covered in their undergraduate studies.
- High Performance Computing courses offered by the Advanced Computing Research Centre (for times see <http://www.acrc.bris.ac.uk/>), including FORTRAN, C, C++ and parallel programming methods.

Theory Graduate Courses are also run on Tuesdays and Thursdays at 11:00 am (room 3.34 or 3.27).

The provisional lecture programme for 2010-11 is:

Prof James Annett, "Introduction to Density Functional Theory"

Dr Jari Lindberg, "Wavelets"

Professor B L Gyorffy "Many Body Physics"

Dr M Dennis "Introduction to General Relativity".

Details of dates for each course will be advertised during the academic year.

Each new student will be given a detailed reading programme in addition to any formal courses that are taken

Condensed matter theory students are encouraged to attend the two week summer school "Physics By the Lake" towards the end of their 1st year of study, more details can be found at <http://www.physicsbythelake.org/> organized by the Institute of Physics, at Ambleside, Cumbria.

There are other schools on different aspects of Physics in the UK and Europe. Students are strongly encouraged to attend relevant schools.

10.4 Other Research Areas

Micro- and Nano-structural Materials, Correlated Electron Systems, Nanophysics and Soft Matter and Quantum Photonics.

These Groups will be organising lectures/seminars running throughout the academic year to cover relevant research topics, and research seminars which postgraduate students are expected to attend.

10.5 Lecture Courses in Other Departments

A) The **School of Chemistry** gives lectures to its postgraduates and some of these may be of interest to students in Polymer Physics, Materials Science or Condensed Matter. Details can be found in the Chemistry Graduate Handbook at: <http://www.chm.bris.ac.uk/gradschool/graduate.htm>.

B) Some courses taught in the **Mathematics** Department might be of interest see mathematics web pages for more details <http://www.maths.bris.ac.uk/study/postgrad/>.

11 Summer Schools, Conferences & Training Funds

Many of the research groups will send their students to Conferences or to Summer Schools/Workshops – we have a source of funding to help fund students who wish to attend relevant Summer Schools or who present a talk or a poster at a conference that their supervisor deems relevant them. Funds are also available for transferable skills training – see Appendix B for a sample form to claim for such funding – a Travel claim form (available from our Finance Office and on the School web pages) will also be need to submitted as usual for reimbursement of funds. You will be required to provide receipts with your claim form.

12 Worldwide Universities Network (WUN)

The University of Bristol is a partner in WUN, a global alliance of research-led universities with the aim of promoting research through collaborative academic activity. The scheme allows doctoral students to spend 6-weeks – 6 months doing research at one of the WUN partner universities in the US (and vice versa) - see www.bris.ac.uk/research/university/WUN/index.html for more details. In addition, students are encouraged to attend on-line video seminars held regularly (8-10 Berkeley Square) on advanced materials.

This is an example of the emails sent out to students and their panels towards the end of the summer term:

Dear All

It's that time of year again, when we will expect you to submit a report for the annual assessment of all postgraduate students. You will need to write a report - the length is advised in the details below - sorted by year. **First** and **second** year students will also be required to complete a Skills Training Questionnaire (which can be found on our web pages at <http://www.phy.bris.ac.uk/graduateschool/index.html> under the heading 'Annual Assessment of PhD students') in both word and pdf formats. **If your start date is other than the normal October start date adjustments can be made to this schedule to reflect the length of time you have been here to study so please let Tracie Anderson know if you will need more time to write your report because of a different starting date.**

MSc by Research Students

Each research student in the University is assessed annually to ensure that the progress they are making is adequate. In the case of MSc students we try to make this process as simple as possible, since you are expected to complete your work within a year anyway. You are asked to complete a short report (1-2 pages) stating how much of your research is complete and what you still need to do. You should state when you are likely to complete your MSc thesis. In addition, you should supply an outline of the proposed structure of your thesis, eg a list of chapter headings. Your report should be discussed with your supervisor and sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2010.

Your Advisory Panel will read your report and interview you to assess progress, the thesis plan, and whether the timetable for completing the thesis is realistic, with a view to completing the whole process before the end of the term.

Please meet [this](#) deadline!

1st Year Postgraduates

Each student is asked to write a short progress report (≤ 5 pages) describing the aims of the research, what work he or she has carried out and plans for the next year of research. In addition, each student is asked to complete a short questionnaire detailing skills training, including the lecture courses he or she attended, together with the results of any assessment, and what progress was made in any directed reading assignments (Recall that a minimum of 3 courses is the usual requirement, unless the student has a MSc, MSci or equivalent). The student should discuss the report with his/her Supervisor. **The questionnaire and your report** should be sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2010.

and copies will be forwarded to the appropriate Advisory Panel. The panels will interview the student **with a view to completing the whole assessment process before the end of the term**. The purposes of the interview are (i) to discuss progress with the student and provide feedback on the report, (ii) to ascertain whether the student has completed sufficient skills training and (iii) to give the student an opportunity to raise any problems or difficulties which might have arisen with supervision. After the interview the panel is required to complete the Faculty of Science form, which asks, where appropriate, whether the Department recommends transfer to PhD registration. **Transfer is not automatic. Evidence of satisfactory progress is required.**

2nd Year Postgraduates

Each student is asked to write a progress report (≤ 8 pages) on their research project. This could be based on material to be presented at the Postgraduate Conference but should also include plans for the forthcoming 3rd year of research and an outline of the proposed structure of their PhD thesis, eg chapter headings and a list of topics. In addition, each student is asked to complete a short questionnaire detailing skills training, including any lecture courses he or she attended, together with the results of any assessment, and what progress was made in any directed reading assignments. The student should discuss the report with their Supervisor. **The questionnaire and your report** should be sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2010.

The Advisory Panel will be convened to interview the student and assess whether his/her progress is satisfactory **with a view to completing the whole assessment process before the end of the term**. If there are significant problems with progress, so that it is unlikely that the student will complete a PhD thesis within the recommended period, these should be noted and raised with the student's Supervisor. The panel is required to complete the Faculty of Science form which assures the Faculty that satisfactory progress is being made. **Continuation to the Third year is not automatic.**

3rd and 4th Year Postgraduates

Each third year student is asked to complete a short report (1-2 pages) stating how much of his/her research is complete and what progress has been made in writing the PhD thesis. They are also asked to estimate when they are likely to complete the thesis. The statement should be discussed with the student's Adviser and sent, by email to Tracie Anderson (Tracie.Anderson@bristol.ac.uk) by

1 June 2010.

The Advisory Panel will interview the student to assess progress, the thesis plan, and whether the timetable for completing the thesis is realistic **with a view to completing the whole assessment process before the end of the term**. For students coming to the end of their 4th year, and who are likely to continue beyond the 4-year deadline, it is **crucial** that I am informed in order to make a request for an extension. This should be done at least 3 months in advance of the deadline.

Please meet these deadlines.

Professor Walther Schwarzacher (Room M.18)
Director of Physics Graduate School



School of Physics

Application form for training support

Application form for research students seeking support from the Postgraduate Training Budget to attend a conference or course.

1. Name (in capitals):	
2. Supervisor:	
3. Conference or course to be attended:	
4. Location and dates:	
5. Relevance to training¹	
6. Details of estimated expenditure²	
Travel:	
Accommodation:	
Subsistence:	
Other (specify):	
Total:	
7. Have you applied for (or been offered further assistance) from other sources?	
Signature of student, with date:	
Signature of supervisor, with date and comments:	
Signature of Director of Graduate School, with date and comments:	

For notes ¹ and ² - see overleaf

Notes

1 For conferences, funds will normally only be provided where the applicant has a paper accepted for oral or poster presentation.

2 The fund will cover reasonable costs for travel (normally second class rail travel, economy air fares, etc.), accommodation and subsistence, conference or course fees up to a normal maximum of £300. Awards will be made subject to the availability of funds and will take into account previous awards. However, it is intended that all PhD students can receive at least one award from the fund during the course of their PhD.



APPOINTMENT OF RESEARCH DEGREE EXAMINERS

Please fill in this form in print. The form must reach the Head of School/Department not less than 28 days before the intended date of submission of the dissertation.

After discussing the choice of examiners with the candidate, the supervisor(s) should make recommendations to the head of school/department using Part B of the form and sign the form. After signature by the Head of School/Department or his/her designated nominee, the form should be sent:

- [Faculty of Engineering and Faculty of Science] to the faculty office
- [all other faculties] to the Examinations Office

Where the Head of School/Department, the Graduate Dean, or one of their designated nominees, is one of the candidate's supervisors, the form should be signed by an alternative senior member of the academic staff of the School/Department or Faculty.

The University's requirements for appointing research degree examiners are contained in Section 9 of Code of Practice for Research Degree Programmes and in the Regulations for Examinations for Doctoral and Masters Degrees where the principal form of assessment is by dissertation excluding higher doctorates (DLitt, DSc, DEng, LL.D, DMus), both of which are available on the University's website.

A) DETAILS OF THE CANDIDATE AND THE DISSERTATION

Full name of candidate	
Student ID number	
School /Department	
Faculty	
Main supervisor (full name and title)	
Degree sought (e.g. PhD, EdD, MPhil)	
Title of dissertation	
Details of any patent/confidentiality restrictions which apply	
Expected date of submission	
Proposed viva date (if already arranged)	
School/department postgraduate administrator	Tracie Anderson: Email Tracie.Anderson@bristol.ac.uk
Person to whom claim form should be returned (if different from above)	
(For Faculty Office use) Final date for submission	

Please complete section B

Full name of candidate			
B) NOMINATION OF EXAMINERS			
The University's rules require the appointment of two or more examiners, at least one of whom is external to and independent of the University, while normally one is a member of the academic staff of the University. If a second external or internal examiner is to be appointed, please duplicate the appropriate section of the form and enter the details of the additional examiner.			
EXTERNAL EXAMINER			
Name			
Position			
Department and institution			
Postal address			
E-mail address		Telephone	
Research interests (<i>if described on Web pages, please also give address</i>)	Key words:		
Research degrees examined at this level	<i>(please select option)</i>		
	None	1-4	More than 4
INTERNAL EXAMINER (or coordinator, if no internal examiner is appointed)			
Name			
Position			
Department			
Research interests (<i>if described on Web pages, please also give address</i>)	Key words:		
Research degrees examined at this level	<i>(please select option)</i>		
	None	1-4	More than 4
DECLARATIONS			
I am satisfied that, to the best of my knowledge:			
<ul style="list-style-type: none"> • the external examiner has the required expertise in the candidate's subject area • the examiners between them have adequate experience of examining research degrees for the same type of programme as that leading to the candidate's intended award • the internal examiner (or coordinator, if no internal examiner is appointed) understands the requirements of the University's regulations that apply to this award • none of the examiners has any connection with the candidate, the research project or the supervisor(s) or, in the case of the external examiner, with the University, which might impair their ability to make a fair and impartial assessment of the candidate's work. 			
Main Advisor			
Name	Signature	Date	
Head of School/ Department or designated nominee			
Name	Signature	Date	
Graduate Dean or designated nominee			
Name	Signature	Date	