School of Physics and Astronomy
QA Model for Postgraduate Research Programmes

1. ACADEMIC MANAGEMENT STRUCTURE

The School of Physics and Astronomy comprises the Institute for Astronomy (IfA), Institute for Condensed Matter and Complex Systems (ICMCS), the Institute for Particle and Nuclear Physics (IPNP) and the Edinburgh Parallel Computing Centre (EPCC). The School also hosts the UK Centre for Astrobiology and the Higgs Centre for Theoretical Physics and co-hosts the Centre for Science at Extreme Conditions. Within some Institutes, research organised in research groups. IPNP has research groups on Particle Physics Experiments (PPE), Particle Physics Theory (PPT) and Nuclear Physics; ICMCS has two main research groups: Hard Condensed Matter and Soft Condensed Matter and a small research group on Physics Education Research (EdPER).

The responsibility for managing the School's postgraduate research programme resides with the School's Graduate Studies Committee (GSC), convened by the Director of Graduate School (DoGS). This group comprises representatives from each institute/research group, together with the Head of School (HoS), as ex officio member. There is no set term of office.

GSC reports to the School Executive Committee. GSC's responsibilities embrace all postgraduate research-related issues, formal, practical and strategic. Of necessity, many of those responsibilities are devolved to individuals or groups. We identify the principal exemplars here and their relationship with DoGS.

Postgraduate Selectors: There is 1 or 2 members of academic staff from each of research groups who selects PhD students for places within their group. Postgraduate selectors inform GSC of selected students.

Supervisors: All School permanent academic staff may act as first and/or second supervisors, and Senior Postdoctoral Research Assistants may act as second supervisors to postgraduate research students. Postgraduate selectors advise on first and second supervisors. GSC operates a 'soft touch' management, only involving itself with supervisor allocation when a specific need arises. Considerable responsibility is delegated to supervisors, and includes directing and training the student in research methodology appropriate to the student's research project, recommending courses, reading students' reports, papers and viva, and recommending external and internal examiners at viva stage.

1.1 ROLES WITH QA RESPONSIBILITY

In this section we provide a detailed list of the tasks associated with each of the groups and individuals featuring in the School's postgraduate research management structure.

Head of School (HoS)

The HoS is responsible for the provision of all postgraduate research programmes in the School.

Director of Graduate School (DoGS)

The Director of Graduate School is appointed by the Head of School (HoS) and has delegated responsibility from the HoS for the running of postgraduate research programmes within the School, including the allocation of all related administrative duties and monitoring/allocation of the postgraduate budget.

Director of Quality

The Director of Quality acts as the School point of contact on all QA matters. He/she oversees the implementation and proper functioning of the School QA Model and is responsible for the preparation of the Annual Quality Assurance and Enhancement Report for submission to CQAC. He/she ensures that appropriate performance indicators, and measures of success, are readily available to meet the requirements of external quality audit/assessment or professional accreditation exercises.

Assessors

Each PhD student has two assessors, whose research is in the same general area as that of the student. The assessors are nominated by postgraduate selectors and/or by the Heads of Research Groups. Generally, assessors will meet and assess more than one student. The assessors read the student's annual report and interview the student. Assessors provide a brief report on how the student performed at the interview, together with a grade from the range *Very Good* to *Unsatisfactory*.

Supervisors

Supervisors are responsible for the smooth running of their student's PhD programme from start to thesis submission. The supervisor meets regularly with the student and makes notes of progress, advises on research methodology and courses/conference, and generally nurtures to the student to become an independent researcher. All students have a second supervisor who provides project oversight, technical and career advice, and acts as backup when the first supervisor is unavailable.

Supervisors report annually on their student's progress, providing a grade from grade from the range *Very Good* to *Unsatisfactory*. A copy of their report, together with the assessors' report, is given to the student. The College of Science and Engineering are given the students' grades, and College is given the complete report where grades are less than *Satisfactory*.

1.2 COMMITTEES/BOARDS

School Executive Committee

The School Executive Committee comprises the Head of School (Chair), the Heads of Institutes and the Director of Professional Services. Its remit is to advise the Head of School on all aspects of the management of the School and it normally meets monthly.

Graduate Studies Committee

The Graduate Studies Committee meets each semester, with other meetings arranged on an 'action needed' basis and otherwise acts and advises by email consultation. It is chaired by the Director of Graduate School and is charged with the following remit:

1. Identify issues relating to all aspects of student postgraduate research, including aims, assessment, outcomes, standards, and transferable skills.
2. Advise on the recruitment of PhD students.
3. Selecting candidates to be offered PhD studentships/scholarships, where the studentships/scholarships are competitive amongst more than one research group or more than one Institute.
4. Take action on urgent practical matters, and formulate policy and practice on the issues identified above.
5. Act as pastoral contacts (see 3.2)

Health and Safety Committee

The Health and Safety Committee is convened by the School Safety Advisor and comprises Radiation Protection Officers (Nuclear, X-rays and Lasers), the Technical Services Manager, the Biological Safety Officer, a Union representative, and nominated individuals with responsibility for UG laboratories and PAT testing. Each School Institute nominates a member. The committee meets four times per year. One of the committee's members is also a member of the JCMB Multi-Occupancy Building Committee.

New PhD students complete a health and safely sheet indicating the hazardous areas they will be working in. The sheets are passed to the health and safety officer.

Students are informed by email of health and safety courses in their area of risk.

Graduate School Forum

The Graduate School Forum provides a meeting place a forum where Postgraduate representatives and University staff can discuss issues raised by students and exchange information on future plans for the Graduate School. Postgraduate representatives are elected by the student body, and students should take the lead on frequency of meetings and agendas. At the first meeting of the Forum it was agreed by students and staff that meetings to be held twice a year, in Semester 1 and Semester 2, with ad hoc meetings as required, and that meetings should be informal in that a quorum is not required. On the student side, the meetings must include representatives across at least the three Institutes (ICMCS, IfA, IPNP) and preferably from all six main research groups. On the staff side, meetings must include as a core the Director of Graduate School with members of the Graduate Studies Committee, especially Director of Quality; Director of SUPA Graduate School; Teaching and Graduate School Manager; and Graduate School Secretary as available, and other staff as invited.

1.3 ADMINISTRATION

Graduate School Secretary

The Graduate School Secretary is responsible for the administration of the Graduate School, specifically processing student stipend and tuition fee payments; monitoring the graduate school and Research Council DTA budgets; providing student information; maintaining databases; organising induction days, meetings and training sessions, writing and updating the PhD Handbook, and taking minutes where required. The Graduate School Secretary is also a non-academic pastoral contact.

2. REPORTING AND MONITORING

2.1 Monitoring

(i) First year students

An informal meeting is held in February with each first year PhD student, to ensure that they are settling in to their studies and sort out any problems arising at this early stage in their research career. Comments from supervisors are sought.

In June, first year students are required to submit:

- A ~15-page report that focuses on introducing their project, and a critical assessment of the background literature. This should be written for someone familiar with the field.
- A 4-page report on: "what is my project about, why is it important, how does it fit into the wider context, what have I done so far, what am I going to do next year". This report should be written at a level understandable by a non-specialist physicist, and allows the student to gain experience in writing what can be the start of a first paper, as well as communicating research to a less specialised audience.
- A report form to document other items such as courses attended and passed, any teaching experience and transferable skills.

From July onward, students are invited to attend an interview with their annual assessors. The purpose of the interview, which will be based on the 15 page report, is to give first-year students an experience of viva-style questioning. After the interview, students receive a copy of the College report form that includes the panel's comments and grading on progress, and comments from the supervisor.

In October all 1st year students are interviewed by a panel including the Head of School and the Director of Graduate School. In preparation for this interview, the panel reads only the student's 4-page report, and the report from the viva-style interview and supervisor. Students do not receive a feedback from this meeting and no notes are taken unless any actions are required.

If either of the first-year interviews reveal any cause for concern, the DoGS will consult with the student's supervisor(s) and interviewers to consider further measures, as appropriate to the situation. A specific task may be allocated to the student to be completed by a deadline or a larger interview panel may be convened in order to examine the student's case in more detail.

(ii) Second year students

Second year students are required to submit:

- A four-page report on what has been achieved and what progress has been made.
- A two-page timetable for the final year, detailing what work is outstanding, and including a timeline for thesis completion.
- A report form to document other items such as courses attended and passed, any teaching experience and transferable skills.
- A poster for the annual poster display

Students are interviewed by their annual assessors and feedback and action taken are similar to those for first years.

During October, the School hosts an annual poster evening where the second year students present their posters. Prizes are given for the best posters; the posters remain on display for the following year.

(iii) Third year students

Third year students are required to submit, in the correct University of Edinburgh thesis format:

- Their thesis title page
- A one-page thesis abstract
- Thesis table of contents with brief notes about what each chapter/subchapter will contain, with a percentage on each chapter/subchapter indicating how much has been written.
- A report form to document other items such as courses attended and passed, any teaching experience and transferable skills.

Again, students meet with a panel of two, usually the same academic staff as in the previous year and feedback and action taken are similar to those for first and second years.

All final year students also meet with a panel in December comprising the Head of School and Director of Graduate School to discuss their timetable for completion.

The GSC is responsible for formulating the postgraduate student research monitoring procedures and considers cases where a student is achieving below *Satisfactory* annual report grades.

2.2. Student Feedback

Student feedback is solicited both informally and formally. Verbal feedback is obtained through informal discussions with students and from matters raised at the Graduate School Forum.

Formal feedback is obtained from a report form which is returned by each student with the annual report. General comments are put together into a brief document and circulated to the Graduate Studies Committee.

Students are actively encouraged to take part in PRES.

The students have a Postgraduate Inter-Physics Committee (PIPC) and elect student representatives from each research group. The representatives bring issues from PGR students to the Graduate School Forum, held each semester with other meetings being arranged if necessary.

3. STUDENT SUPPORT

3.1 Supervisors

Students are principally supported by supervisors. Each PhD student has two supervisors. The main supervisor is responsible for the setting the student's research project parameters, recommending attendance at appropriate courses and conferences, encouraging the student to produce publishable articles and papers, and advising on the content and style of the thesis. The main supervisor may also advise the student on day to day problems with work, or this may be delegated to the second supervisor. The second supervisor will act as the main supervisor during the main supervisor's absence.

3.2 Pastoral Care

GSC members also provide pastoral care to students. All first year postgraduate students have an initial progress meeting after their first six months of study, and select the GSC member with whom they would like to meet. Students are encouraged to select a contact outwith their own research area. The purpose of the meeting is to ensure that the student is engaging with their studies and has no concerns that are affecting their progress. The meetings are confidential, but the GSC member will take any concerns further, with either the supervisor or the DoGS, if the student wishes this.

The GSC member with whom the student meets may become that student's main contact for pastoral matters, but it is important that students feel they can approach any GSC member at any time, to ensure good practice and service to students. The full list of pastoral contacts is displayed in the PhD Handbook, discussed at the Induction Day, and is noted on the PGR wiki page.

GSC members are informed of dates of relevant workshops, in particular 'Helping Distressed Students', and all have a copy of that course's publication.

3.2 Other support

GSC members may refer students to the Director of Graduate School to resolve issues. Incoming students who have registered a special need are noted. Students are informed about the Student Disability Service at induction, on the PGR wiki page, and in the PhD Handbook. Any students for whom English is not the first language are asked to take TEAM testing and required to take any IALS classes recommended by the TEAM test.

3.3 Provision of information to students

The School induction programme for new PhD students brings together formal School-led induction, TEAM testing for English language competence (where appropriate), College, EUSA and University-wide events, and informal School welcomes. There is a mandatory

Scottish Universities' Physics Alliance (SUPA) Graduate School induction day in early October each year for all physics and astronomy PhD students in Scotland. (SUPA is discussed further in section 5.1.)

An induction day is held on the first day of Fresher's week for new students. Existing students who have not attended an induction day are invited to attend. The programme includes welcomes from the HoS and DoGS, an icebreaker session and talk from the Institute for Academic Development. Presentations then follow from the PhD students committee (PIPC), the Sustainability, Equality and Diversity officer, Beltane, the Careers Service, Technical Services Manager, Librarian, Health & Safety Officer, Computing & IT officers and the Graduate School Secretary.

Each student receives a pack on arrival at the School. The pack contains:

- Programme of induction events for the month
- PhD Handbook containing student support information and Code of Practice
- SUPA Graduate School programme
- Health and safely information
- Setting up a bank account, maps, other useful local information

The PhD Handbook is written and updated by the Graduate School Secretary in collaboration with School staff. In addition, email group lists are used to provide general and course specific information.

4. EXTERNAL AUDIT

4.1 External Examiners

An External Examiner for each PhD student selected by the supervisors and approved by the Director of Graduate School. Such examiners are recognised leaders in the student's field of research, and are usually of Professor or Senior Academic grade.

4.2 External Accreditation

All PhD theses are approved by the CSE and Senatus before the degree is awarded.

5. TEACHING DEVELOPMENT AND QUALITY ENHANCEMENT

5.1 Graduate Courses in Physics and Astronomy

The Scottish Universities Physics Alliance (SUPA) was established in 2005 and includes all the Scottish universities teaching and researching physics and astronomy. The universities concerned are Aberdeen, Dundee, Edinburgh, Glasgow, Heriot Watt, St Andrews, Strathclyde and University of the West of Scotland. SUPA run the SUPA Graduate School (SUPA GS). The SUPA GS delivers a comprehensive programme of Physics and Astronomy graduate courses to all research students at the constituent universities. Courses are delivered by videoconference, in person, or at short residential courses at one of the Institutes.

The Graduate Studies Committee agreed in 2008 that all research students would be required to take a minimum of 40 hours of SUPA Technical Courses during the first 2 years of their PhD studies. In addition, every PhD student within SUPA is required to undertake a minimum of the equivalent of 20 hours (or 4 days) of generic (core) skills development during the first 2 years of their PhD studies. The performance of PhD students in technical courses is assessed (by exams or otherwise) and all students are required to undertake and pass all relevant assessments.

5.2 Institute for Academic Development (IAD)

The 20 hours requirement of generic skills courses is fulfilled by a combination of SUPA and IAD courses. An IAD representative speaks to new students at the induction day, and students receive IAD newsletters and details of courses by email.

A programme of courses specific to the needs of Physics and Astronomy research students is arranged through IAD. Students are asked to suggest courses.

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