



The Cockcroft Institute
of Accelerator Science and Technology

Cockcroft Institute

Postgraduate Handbook

2021/22

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Welcome

The Cockcroft Institute is a collaboration between the Universities of Lancaster, Liverpool, Manchester and Strathclyde, and with the Accelerator Science and Technology Centre of the Science and Technology Facilities Council at Daresbury Laboratory, Cheshire. Including the efforts of mainly physicists and engineers but also of other disciplines, the Institute carries out world-leading research and technology development in the field of particle accelerators at a number of centres both within the UK and around the world; its main site is on the world-renowned Daresbury Science and Innovation Campus, co-located with many staff that work for the Science and Technology Facilities Council.

Named after the Nobel Prize winner Sir John Cockcroft FRS who pioneered early methods to utilise particle accelerators for scientific research, the Institute's aim is to provide the intellectual focus, educational infrastructure, and the scientific and technological facilities, for particle accelerator research and development. It thus enables UK scientists and engineers to take a major role in accelerator development, operation and application, both now and for the future.

This handbook gives information about the educational programme of the Institute, primarily directed at postgraduate researchers and those who work with them.

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Throughout this handbook, 'Institute' refers to 'The Cockcroft Institute'.

1. Postgraduate Study at the Cockcroft Institute: General Context

The aim of a PhD is for the postgraduate researcher to learn and demonstrate research skills through the development of a suitable research project. By the time of their examination the PhD candidate should have delivered an end goal of their project, and most importantly they should have provided an intellectual leadership of the work that led to that goal.

The supervisor's role is to provide the intellectual guidance and support required for the postgraduate researcher to achieve their goals, within the context of the wider work of that field. In many cases a particular postgraduate researcher may have more than one nominated supervisor; for example, the postgraduate may be working at an overseas laboratory with a local collaborating supervisor plus they also have an academic supervisor. It is important to note that it is the primary *academic* supervisor at the postgraduate's registered university that is ultimately responsible for the postgraduate's ability to successfully submit a thesis.

Postgraduates working towards a PhD will typically have a limit of four years by which time they must submit a thesis for examination. This limit will be different for other intended qualifications (e.g. MSc) and for part-time students (e.g. those also working full-time for a national laboratory or in industry). Also, there may be different restrictions on *how soon* a thesis may be submitted, and the funding duration the postgraduate has received may differ from the other time limits. It is the academic supervisor's responsibility to understand and advise the postgraduate researcher on these matters.

At the end of their studies the postgraduate researcher will submit a thesis for examination that is typically around 200 pages in length; each university has its own rubric on the required format and content of the thesis, how it is to be submitted, and how it is to be examined. The examination that follows submission will assess the research quality evidenced by the thesis, the understanding of the candidate not only of their own work but of the wider subject, and thereby the suitability of the candidate to have the title 'PhD' conferred upon them. In the UK a PhD examination is typically of several hours' duration, and is most typically conducted with the aid of a single external examiner who is an acknowledged expert in the research topic discussed in the submitted thesis.

To help the postgraduate researcher to successfully complete a PhD, the supervisor must not only support their day-to-day work to obtain results suitable for a thesis, but also to enable them to have their own intellectual leadership of that work. In addition, the postgraduate researcher may also need to undertake various other training, for example in writing, presenting and so forth; the supervisor must facilitate this.

2. General Guidance for Postgraduate Research Students

Each partner university sets its own assessment and progression requirements, and postgraduate researchers at the Cockcroft Institute must satisfy those requirements. Also, the Cockcroft Institute has specific sub-programmes and funding grants (for example, European Union Training Grants) that have their own training requirements; postgraduate members of those programmes or grants must likewise satisfy the requirements of those programmes. However, there is a common set of requirements for all postgraduate researchers, which are listed below. In cases where there are conflicts about satisfying the various training requirements, postgraduate researchers should contact the Director of Education for advice.

The list of general requirements are as follows:

- Postgraduates should attend all supervision and research meetings (such as group and project meetings) as directed by their supervisor(s).
- Postgraduates are expected to present appropriate work at subject-specific workshops and conferences during their PhD studies.

- By the end of their 1st year of studies, postgraduates should have carried out a literature review, obtained preliminary results and completed a research plan for the remainder of their PhD studies; usually this activity will be done as a matter of course because of university-specific requirements.
- All postgraduates must complete at least 100 hours of subject-specific training over the course of their PhD studies. This comprises 60 hours from the Cockcroft Institute education programme and 40 hours of additional relevant credits (as agreed with the director of education). The Cockcroft lecture series will satisfy the first 60-hour requirement, and in most cases the other 40 hours will be satisfied by their courses available from their home university.
- Postgraduate researchers should attend the Cockcroft Institute lecture courses appropriate to their programme (typically held on Mondays in term time). Postgraduates based at Daresbury, Liverpool, Manchester or Lancaster should attend in person; postgraduates based at Strathclyde should attend via the SUPA grid room (or other equivalent) connection. Other postgraduates may view the lectures online.
- Postgraduates should complete any assessments which are set as part of their coursework. For 1st-year postgraduates there are assessments between January and March 2020 for the introductory courses; there is a pass mark of 50% for these assessments, which all postgraduates taking the module should attain.
- Postgraduate researchers should arrange to attend in person the Institute postgraduate conference held each year (usually in October or early November). Second-year postgraduate researchers are required to present a poster or a talk at this conference.
- Postgraduates must complete, each year, 2 weeks (80 hours) of transferable skills ('soft skills') training. This training may include transferable skills such as programming, software engineering, communication and presentation, outreach training, networking, team-working, leadership training, time management training, and business and entrepreneurship training. Activities that do not count include such things as giving presentations at conferences. Postgraduates should keep a personal record of their training and submit it to the Institute office at the end of each semester.
- Postgraduates are expected to attend a reasonable number of seminars given by external speakers that visit the Institute.
- Postgraduates are required to comply with the CI policy on social media use, which is available from the Institute Directorate.
- Academic misconduct, including plagiarism, is considered a serious matter both by universities and by the Institute. Postgraduates should be aware of their university's policy on plagiarism. A summary of specific guidance is given below, in section 7.

3. Joint ASTeC-University Projects

The Institute has a significant number of projects where the postgraduate researcher works primarily within the Accelerator Science and Technology Centre (ASTeC) of STFC, with day-to-day supervision by a staff researcher within ASTeC but with a primary academic supervisor at one of the Cockcroft partner universities. It is therefore worth highlighting some specific guidance for those postgraduate researchers.

- ASTeC may either commission projects to be carried out separate to them, or may by joint supervisors on a project they are actively involved in. It must be clearly defined prior to the start of any project what sort it is.

- Joint projects within ASTeC should have a named ASTeC member of staff as a recognised supervisor in addition to the required academic (university) supervisor. As with any other project, both supervisors should meet with their postgraduate researcher at least once per week, and neither supervisor should leave the other to solely carry out the supervision of the postgraduate.
- Joint projects within ASTeC will often involve day-to-day work on the wider goals of the particular research group the postgraduate is working in; however – similar to any other PhD study topic - it is mandatory that postgraduate researchers have sufficient time to develop their topic and to have intellectual leadership of it such that they can eventually submit a successful thesis.
- Whilst joint postgraduate researchers are primarily based within ASTeC for their day-to-day research work, they are still registered with their home universities and required to undertake the training, administrative and examination duties specified by that university. Supervisors must allow their students to undertake those activities.

4. Mentoring

Each postgraduate researcher should have an assigned mentor not connected to the postgraduate's project. The purpose of the mentor is to be an independent contact within the Institute from which advice and support may be obtained in confidence, and the mentor should be contacted in the first instance if a postgraduate has issues with their studies which they do not feel they can discuss with their supervisor. As a second line of support, the Director of Education and the Cockcroft Institute Director may also be contacted for advice.

In most cases this mentor will be assigned as a matter of course by their home university. Postgraduates who do not have an assigned mentor should contact the Director of Education, who will arrange for one to be assigned.

5. Welfare

Postgraduates with personal issues not connected with their studies may make use of the counselling, welfare and other support services available from their home universities. Postgraduates who are also STFC members of staff (for example, part-time students) may also use the STFC welfare services. Whilst STFC offers welfare services to its own staff, postgraduates who are not STFC staff are not eligible to use those services, and they should use the services available from their home university.

It is recognised that many postgraduates at the Institute will be geographically remote from their home universities, and the Institute support staff will assist in accessing welfare services.

6. Office Accommodation and Resources for PGR Students

Postgraduates based at the main Cockcroft Institute site at Daresbury Laboratory will normally be provided with a dedicated desk for a maximum period of four years; other postgraduates will have accommodation provided via their registered university or host laboratory. During their funding period all postgraduates may make use of the local resources at the main CI site, such as the Library. Postgraduates requiring access after this period should make arrangements via their supervisor to access a 'hot desk' and other facilities.

At the completion of their studies, it is the student's responsibility to dispose of or re-allocate any office items, to clear their desks and office storage, and to ensure that any IT equipment is returned to their supervisor / host institution.

7. Academic Integrity

As with any reputable academic institute, the CI places a strong emphasis on the importance of maintaining a high standard of academic integrity. Poor academic practice or academic misconduct in any activity – intentional or otherwise – is likely to damage the reputation not only of the persons directly concerned, but also the reputations of the institute and all those associated with it. Poor academic practice and misconduct include plagiarism, collusion, fabrication or falsification of results, and anything else that could result in unearned or undeserved credit for those engaging in it. Poor academic practice or academic misconduct can result from a deliberate act, or may be committed unintentionally.

As a postgraduate you are expected to cooperate in the learning and research process throughout your programme of study by completing assignments of various kinds that are the product of your own study or research. You must ensure that you are familiar with, and comply with, your university's regulations and conventions regarding academic integrity: ignorance of the university regulations and conventions cannot be claimed as a defence for plagiarism or any other form of academic misconduct. Please refer to your university's policy on academic integrity for further information.

8. UKRI Policy on Postgraduate Research

UK Research and Innovation (UKRI) has published a “Statement of Expectations for Doctoral Training”, which sets out common principles for all Research Council-funded students, including students funded by STFC (the main funder of the Cockcroft Institute). Further information is available from the STFC and UKRI web sites:

<https://www.ukri.org/our-work/developing-people-and-skills/find-studentships-and-doctoral-training/get-a-studentship-to-fund-your-doctorate/>

<https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/supporting-skills-and-talent/>

9. Education and Training Programme

The Cockcroft Institute runs a comprehensive education and training programme for postgraduate research students, which covers both subject-specific education (i.e. courses on accelerator science and technology) and training in complementary or transferable skills (including, for example, communication and outreach). The programme is intended to be complementary to personal and professional development opportunities available elsewhere, including:

- PGR courses run by university partners in the CI (on technical topics, or in complementary skills);
- training courses offered by STFC – some of which are mandatory for anyone working at Daresbury Laboratory;
- accelerator schools, such as the CERN Accelerator School, or the US Particle Accelerator School;
- training offered by academic or commercial organisations, including (for example) software providers;
- attendance at meetings, conferences and workshops.

Members of the Institute of Physics can take advantage of opportunities and resources provided by the IOP for professional development. For further information, see:

<https://membership.iop.org/continuing-professional-development>

PGR students are expected to discuss education and training needs and goals with their supervisors on a regular basis, and should maintain an up-to-date plan for training and professional development.

The education and training programme offered by the Cockcroft Institute includes the following elements:

- participation in a lecture programme covering introductory, advanced and specialist topics, and complementary skills;
- attendance at seminars organised by the CI, or by STFC, partner universities or other organisations;
- presentation of research at the CI Postgraduate Conference (held annually, usually in October or November);
- visits to other education or research institutes;
- contribution to outreach and communication activities;

For further information, please see the “CI PGR Handbook: Education Programme” (available as a separate document), speak to your supervisor or to the CI Head of Education and Training.

10. Guidance for Supervisors

Please note that individual universities within the Institute have their own supervision procedures, which should be read and followed in conjunction with the specific guidance for Cockcroft Institute researchers given here. This may, for example, include certain administrative, reporting and examination activities; a notable point is the requirement of some universities to submit intermediate reports part-way through the PhD study period that may also be examinable. The guidance here is not intended to supplant or replace individual university guidance, but is meant to support and augment it.

10.1 Planning Research

All postgraduate researchers and their supervisor(s) must together develop a project plan for the postgraduate’s work; this is often also a requirement of the university at which the postgraduate is registered. It is to be expected that this project plan will be updated numerous times during the course of the PhD study period, and that a schedule for writing up and submitting be part of the plan. The academic supervisor, in discussion with other supervisor(s) and with the postgraduate, is responsible for ensuring that the project plan provides a clear, timely route toward a successful thesis submission.

10.2 Supervisory Meetings

The postgraduate researcher and their supervisor(s) will typically meet in person at least once per week for perhaps an hour or more; however, some universities will have a supervision schedule that may be different from that. A significant fraction of the Institute’s PhD researchers are based outside of the UK but with UK-based academic supervisors; in this case it is understood that some of the regular meetings may need to take place via telephone or video, but efforts should still be made by all supervisors to be in regular contact with their researcher.

10.3 Monitoring Progress

The supervisor (or supervisors) are responsible for ensuring their postgraduate researchers are making suitable progress towards submitting a thesis within the time limits set out for them; the academic supervisor has ultimate responsibility for this. Whilst it is normal for postgraduate researchers to undertake work that contributes to the wider research efforts of their research group, university and Institute, supervisors must give their researchers adequate opportunity and time to develop the work required for a successful thesis.

10.4 Training for Supervisors

To assist in successful supervision, the Cockcroft Institute has a policy that supervisors undertake suitable training in supervision skills, diversity awareness and unconscious bias. Such training may be provided by their individual employers, and should be completed in addition to any training on the

progression and administrative requirements of the university at which their postgraduate researcher is registered.

10.5 Equality, Diversity and Inclusion

All the CI partner institutes are deeply committed to promoting equality, diversity and inclusion, and the CI inherits this culture which is embedded in our policies and practices. All members of the CI are expected, as a minimum, to follow the policies on equality, diversity and inclusion set by their home institutions: this includes completing all required training on these issues, and related issues. In addition, members of the CI should be aware of, and abide by, the principles, policies and guidance set by UKRI on equality, diversity and inclusion. For further information, see:

<https://www.ukri.org/about-us/policies%20standards-and-data/good-research-resource-hub/equality-diversity-and-inclusion/>

10.6 Prevention of Bullying and Harassment

Supervisors play an important role in providing an environment in which all students can carry out their study and research without risk of bullying or harassment. Supervisors should complete training in awareness and prevention of bullying and harassment, and must comply with their university's policy as well as the UKRI policy on preventing harm in research. Further information on the UKRI policy is available on the UKRI web site:

<https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/preventing-harm-in-research/>

10.7 Research Integrity

Supervisors are responsible for ensuring that all their research activities, including those in which their students are involved, are conducted according to principles achieving the highest standards of academic integrity. Supervisors should ensure that they and their students are fully aware of their university's policy on academic integrity, undertake appropriate training, and follow all proper procedures. In particular, supervisors should ensure adherence to the Concordat for Research Integrity:

<https://www.universitiesuk.ac.uk/topics/research-and-innovation/concordat-research-integrity>

Supervisors should also ensure that their work, and that of their students, follows UKRI policy and guidelines on governance of good research conduct. Further information is available on the UKRI web site:

<https://www.ukri.org/our-work/supporting-healthy-research-and-innovation-culture/research-integrity/>

10.8 Numbers of Students Supervised

It is the policy of the Cockcroft Institute that no supervisor should be supervising more than five PhD students at any given time. However, joint supervision and part-time students may be counted as pro-rata load based on the rate set at the supervisor's university, and with agreement by the Cockcroft Institute Management Committee.