

TRAINING NEEDS ANALYSIS 2017 – 2018

Areas for Development in the Next Year

A research degree is about much more than completing your research project and successfully writing and defending your thesis. It is also about training you to be a professional researcher whether in an academic or non-academic environment. As in other professions, you will need to develop a wide range of skills as well as the detailed subject knowledge to be an effective researcher and, as your career progresses you will need to continuously update your skills and knowledge base through your own programme of continuous professional development. **This Training Needs Analysis, which should be undertaken in consultation with your supervisory team, is designed to help you plan and record your professional and career development needs.**

External Reference Points

Vitae, which is the national organisation which champions the professional and career development of postgraduate researchers and research staff in Universities has produced the Researcher Development Framework (RDF) (<https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework>) to enable researchers to articulate their skills and take a proactive approach to their professional development. The RDS and RDF provide a very detailed view of the skills that successful researchers have developed at various stages of their career development, from research student to world-leading researcher. You should not view the RDS/RDF as providing a list of skills that all researchers should develop – you should use it more as a guide to the areas which you as an individual might need to develop and the levels that you might aspire to.

Your subject/discipline

What particular knowledge and skills will you need to develop over the next year? This is the general background knowledge appropriate to your research topic and includes the core research skills and knowledge specific to your academic discipline.

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| <ul style="list-style-type: none">• This year I will need to develop:• A good understanding of using equilibrium reconstruction codes such as EFIT++ and a good understanding of the origins of edge current (neoclassical theory) to complete the analysis of MSE measurements from previous MAST shots.• I need to understand fully and to demonstrate how the MSE diagnostic data can be beneficial for other areas of tokamak physics (such as ELM suppression, instabilities, constraining equilibria) and have a good grasp of the uncertainties/errors associated with measurement• Both of these aims can be achieved by using the expertise here at CCFE through discussions, attending talks by researchers on other areas of tokamak physics and using internal codes such as CALCAM (for calibration of the diagnostic) and RAYSECT (understanding of collection volume effects ie. measurement uncertainty) |
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Advanced research skills

What particular advanced research skills specific to your project will you need to develop over the next year to successfully complete your research project? How are you going to develop these? The areas for development here will obviously be very closely linked to your individual research project. However, it is very important that you look ahead and plan the development of e.g. any specialist statistical analysis techniques that you will need to employ and to explore with your supervisory team how these development needs can be best supported.

- To successfully undertake my collaboratory project at Australia National University next year for a feasibility study of an imaging MSE system on MAST-U, I should aim to understand the underlying concepts of coherence imaging and optical setups required. This can be achieved through continuous thesis reading and discussions with academics at ANU.
- To complement this work and to prepare for this part of the project I am in the process of arranging a two week visit to ASDEX in Germany during their calibration period, to gain a good understanding of what is required in terms of hardware/calibration of an imaging MSE system.

Generic research skills and professional development

What generic research skills relating to your professional development more generally (e.g. project management, presentation skills, etc.) will you need to develop over the next year? *The Researcher Development Programme* <https://www.dur.ac.uk/carod/resstudev/> catalogues provision at Durham. However, workshops and online training provision can only help you so far in developing these skills – you really need to look for opportunities to refine these skills by putting them into practice.

- I endeavor to improve upon the clarity of my explanations and presentation of ideas, through further practicing public speaking at student seminars and diagnostic meetings in the next few weeks. I can also request feedback from my supervisors on the nature of my talks, so that I feel confident to attend conferences in the future.
- With some delays to the MAST-U schedule, it is imperative that I manage my time accordingly. I ensure that I have several avenues to follow (imaging system study, analysis of previous data from MAST, working on the JET MSE system during the DT campaign), so that my PhD would not be impacted by any further delays.
- To help with academic writing and other skills I can use online help provided by CAROD for PhD students who are not based at their home university.

Your future career

What are your current thoughts about your career after completion of your research degree? Are there any skills you might need to develop to make yourself the ideal candidate for that job? How will you go about developing these skills? The Careers, Employability and Enterprise Centre provides a range of workshops to support your career development (<https://www.dur.ac.uk/careers/students/>) and one-to-one consultations with a Careers Consultant who specialises in research careers.

I am considering a career focussed on an academic setting, however this is somewhat dependent on the future of fusion physics research in the UK. I would be quite happy to work in industry with my specific skill set (such as with defence companies) To decide whether I would want to pursue an academic career I should attend and present work at conferences. I am also attending a regional conference as a panel member for undergraduate women in physics to discuss career paths.

Outreach work is also important, of which I completed a week as a supervisor for a young student interested in pursuing a career in physics. I will be continuing this work through outreach to college age students at a school in Bournemouth, to discuss the pathway to becoming a scientist.