

CSci – Equivalence Report Guidance for Applicants

Please find below guidance that may help you complete your Chartered Scientist Equivalency Report. If you require further guidance or assistance please contact the membership team by emailing membership@ipem.ac.uk

- 1) [How have you developed and maintained your systematic understanding of knowledge, and critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of your academic discipline, field of study or area of professional practice?](#)

The term “systematic understanding” relates to a structured (systematic) approach to learning and use of knowledge. In this section you will need to demonstrate, with supporting evidence, how you have developed your knowledge across your speciality, field of practice or equivalent professional area and how you have kept up to date with advances in your field of study or areas of practice. Don't forget it is very much about producing or referring to evidence wherever possible to substantiate your statements. Examples of evidence here might include:

- Detail of research undertaken in producing a technical report, research publication or other form of output.
- Details of reading or research that have helped you develop your professional practice, the methods or techniques that you use.
- Any training you have received as part of your role, position or responsibilities. For example: short courses, workshops, training, briefings, etc.
- Details of new methodology or approaches that have come out since your degree and that you have adopted or used in your practice.
- Online forums used to solicit technical information, e.g. Research Gate. If you provide this as evidence, please provide appropriate hyperlinks.

You also need to demonstrate how you have maintained your understanding, for example through independent learning, continuous CPD, on-going research, personal targets set in any annual performance/career reviews, etc.

- 2) [How have you developed and maintained a comprehensive understanding of techniques applicable to your own research or advanced scholarship?](#)

You will have used a range of different techniques, approaches and methodologies since graduating and you will need to give detail of these here. You will also need to demonstrate your understanding of how such methods work. This can also include methodologies such as those involved in analysis, survey, design, etc. It can also include literature and database searching and use of relevant software such as modelling software, control software, programming, computer graphics, IT skills, etc.

Your career may be more related to methodologies, than the application of theoretical knowledge, which you may have then applied in different subject specialities or fields as your career has progressed. In which case you might find it useful to describe, using examples or case studies, how you have, when progressing from one position to the next, updated your skills and understanding in line with current developments and adapted your methodology to your new field of practice. Please note, such examples do not have to be recent, but must be at some time in your career since graduating.

You also need to demonstrate how you maintain and develop your understanding, for example through independent learning, continuous CPD, on-going research, personal targets set in any annual performance/career reviews, etc.

- 3) [How you have used originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in your discipline?](#)

This may at first seem a bit daunting. However, what is looked for here are descriptions of your approach to using research methodology to gain more information, such as the use of molecular biology, big-data or other databases, literature searches, journals, archives, books, etc. It would be useful to give one or more examples of how, at some time in your career since graduating, you have carried out interrogation of existing data and knowledge, in order to gain information that you have then applied in your work or professional practice. This could be an answer to a scientific or

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technical question, a new lecture or talk, original written document, a modification to improve an existing method or practice, survey, etc. It can include quite simple hands-on experimentation to in-depth research. Alternatively, it may be a piece of work, research or investigation that you directed, rather than doing yourself. However, it has to contain some element of originality, i.e. the creation of something new or novel. This can be conceptual or material.

The examples you give do not have to be something that you do every day, or even something very recent, just since you graduated.

- 4) **Demonstrate that you have developed an understanding of concepts to a level that enable you to critically evaluate current research, new methodologies and, where appropriate, to propose new hypotheses, improvements or ideas.**

In this section you need to demonstrate that, at some time in your career since graduating, you have achieved a level of understanding of the scientific principles or professional practice that allow you to critically assess new ideas and methods. You also need to demonstrate that when you do so, you are able to come up with new ideas, methods, hypothesis, and solutions to problems or improvements to existing methods or approaches.

For example, you may have been involved in a piece of research that has required you to research background literature and recent publications reports and evaluate these within the context of the current understanding of the relevant science or professional practice. You may then have carried out some form of research or analysis based on this work which led to new investigations, findings, conclusions, etc. It may, though, only have confirmed an existing finding. Or, for example, you may have carried out research to find the most appropriate methods to tackle a problem and adapt it to your specific needs. It can include work that you have undertaken yourself and, or, work that you have directed and been responsible for.

Some of the examples, e.g. research, that you have used in the sections above might also cover aspects of this criteria here. You will need to clearly identify how such examples meet this specific criteria though and how you measured the success of your strategy against expected metrics or outcomes.

- 5) A. **Demonstrate clearly how you deal with complex issues both systematically and creatively, making sound judgements in the absence of complete data and in complex and unpredictable situations.**

This is about how you approach complex issues, making sound decisions and judgements, when you may not have a complete picture of information and where the outcomes are not certain or predictable. One example might be an explanation of experimental work and data evaluation you have undertaken where the outcomes have been surprising, or not as expected. How did you react to the unexpected outcome? Another scenario might be a situation where solutions or data could not be obtained with standard means or methodology. How did you go about selecting, modifying, improving or improvising standard approach to tackle this situation?

Other examples might include where you have dealt with issues that have arisen when you are managing staff. You might be able to describe a piece of work, project or situation that you have undertaken in an unusual, flexible or novel way.

Some of the examples that you have detailed in the sections above might also cover aspects of this criteria here. You will need to clearly identify how such examples, meet this specific criteria though and how you measured the success of your strategy against expected metrics or outcomes.

- 5) B. **Demonstrate clearly how you communicate conclusions from complex issues clearly to specialist and non-specialist audiences.**

You need to demonstrate here, giving several different examples, how you communicate effectively with people working both within and outside your particular area of expertise. Such communication can be public lectures or tours, lectures to students, training sessions, email and other form of communication to administrative, support and other non-specialist staff. Other examples could be where you have led on, or taken part in, group discussions or meetings. These could be written, such as papers, conference presentations, reports, policies, procedures etc. It can include face-to-face communication, such as in group or one-to-one meetings, or event telephone conversations, interviews, etc. You might

want to talk about how you deal with training, lecturing or explaining knowledge, especially to those whose first language is not English, or who have other perceptual disabilities in lectures, tours, meetings, etc. You might also like to give examples of how, if relevant, you use different forms of media, e.g. verbal, written & pictorial, to reinforce your communication of a concept, idea, message, etc. Similarly, how do you gauge audience understanding to assess how effective you are? This could be supported by an example or two as to how you use such information to improve future communications. An example could be describing how you alter your mode or style of deliver to communicate to adapt to different audiences.

6) **Demonstrate self-direction and originality in tackling and solving problems, describing how you act autonomously, exercise personal responsibility and use your own initiative in planning and implementing tasks at a professional or equivalent level.**

This is about showing that you are demonstrating that you are able to work on your own (autonomously), without supervision for extended periods of time, i.e. more than a day or two, making decisions and solving problems on your own, taking the initiative or lead as required. You need to describe how you manage your own work load, i.e. planning and prioritising.

This section also asks you to demonstrate your own originality in solving problems. You may be able to refer back to examples and answers given in the sections above. Again, you will need to make it clear exactly what your contribution was. Other examples may refer to where you have come up with original proposals, approaches or solutions in your research, practice or day-to-day routine.

It is also about demonstrating taking personal responsibility for your own work, seeking guidance when you need it. If you manage others, examples of where you have delegated and managed tasks and responsibilities within a team would help here. In these examples you need to ensure that you make it clear what your own role was, what your contribution was and what you personally achieved.

Examples might include how you manage multiple responsibilities in terms of your time. This could be project based work, budgeting etc. You could explain how you plan meetings to summarise key findings and make suggestions to your superiors where you might progress in your work.

You could provide specific case studies pertaining to one or more projects. In addition, if your autonomy has included giving public progress reports, in the form of speaking at internal team meetings, e.g. in a group or departmental seminar, then how do you summarise the key findings, progress and follow on activities? You may also be responsible for more junior staff and thus can explain how you plan, or prepare, for supervisory meetings, set and measure objectives, etc.