

The Association for Science Education

General Requirements

Registered Science Technician, Registered Scientist and Chartered Science Teacher status

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Registered Science Technician RSciTech

The following standards were agreed by the New Registers Advisory Group of the Science Council on 12 July 2011 for the award of Registered Science Technician (RSciTech) status in the pilot phase of the new registers project.

Competencies

The professional skills and attributes that applicants are expected to demonstrate –through a combination of knowledge and experience – are set out in five key areas.

Applicants will need to demonstrate how they meet each of the following competencies:

A: Application of knowledge and understanding
Identify and use relevant scientific understanding, methods and skills to complete tasks and address well defined problems

A1: apply knowledge of underlying concepts and principles associated with area of work
A2: review and select appropriate scientific techniques, procedures and methods to undertake tasks
A3: interpret and evaluate data and make sound judgements in relation to scientific Concepts

B: Personal responsibility
Exercise personal responsibility in planning and implementing tasks according to prescribed protocols

B1: work consistently and effectively with minimal supervision to appropriate standards and protocols
B2: manage and apply safe working practices
B3: accept responsibility for the quality of work of self and others
B4: take responsibility for completing tasks and procedures as well as using judgement within defined parameters

C: Interpersonal skills
Demonstrate effective communication and interpersonal skills

C1: demonstrate effective and appropriate communication skills
C2: demonstrate interpersonal and behavioural skills
C3: demonstrate an ability to work effectively with others

D: Professional practice
Apply appropriate theoretical and practical methods according to protocol

D1: recognise problems and apply appropriate scientific methods to identify causes and achieve solutions
D2: identify, organise and use resources effectively to complete tasks
D3: participate in continuous performance improvement

E: Professional standards

Demonstrate a personal commitment to professional standards

E1: comply with relevant codes of conduct and practice

E2: maintain and enhance competence in own area of practice within structured and managed environment

Education

The exemplifying educational requirement for **RSciTech** is a relevant qualification at QCF level 3. Candidates may also meet the requirement by a combination of work based learning and other qualifications.

Note for all registers there is a common standard for CPD and Code of conduct which appears at the end.

Registered Scientist RSci

The following standards were agreed by the New Registers Advisory Group of the Science Council on 12 July 2011 for award of Registered Scientist (RSci) status in the pilot phase of the new registers project.

Competencies

The professional skills and attributes that applicants are expected to demonstrate – through a combination of knowledge and experience – are set out in five key areas.

Applicants will need to demonstrate how they meet each of the following competencies:

A: Application of knowledge and understanding **Identify and use relevant scientific understanding, methods and skills to address broadly-defined, complex problems**

- A1: develop, maintain and extend a sound theoretical approach to application of science and technology in practice
- A2: apply underlying scientific concepts, principles and techniques in the context of new and different areas of work
- A3: analyse, interpret and evaluate relevant scientific information, concepts and ideas and to propose solutions to problems

B: Personal responsibility **Exercise personal responsibility in planning and implementing tasks**

- B1: work autonomously while recognising limits of scope of practice
- B2: take responsibility for safe working practices and contribute to their evaluation and improvement
- B3: promote and ensure the application of quality standards
- B4: take responsibility for planning and developing courses of action as well as exercising autonomy and judgement within broad parameters

C: Interpersonal skills **Demonstrate effective communication and interpersonal skills**

- C1: demonstrate effective and appropriate communication skills
- C2: demonstrate interpersonal and behavioural skills
- C3: demonstrate productive working relationships and an ability to resolve Problems

D: Professional practice **Apply appropriate theoretical and practical methods**

- D1: identify, review and select scientific techniques, procedures and methods to undertake tasks
- D2: contribute to the organisation of tasks and resources
- D3: participate in the design, development and implementation of solutions
- D4: contribute to continuous performance improvement

E: Professional standards

Demonstrate a personal commitment to professional standards

E1: comply with relevant codes of conduct and practice

E2: maintain and enhance competence in own area of practice through professional development activity

Education

The exemplifying educational requirement for **RSci** is a relevant qualification at QCF level 5. Candidates may also meet the

Note for all registers there is a common standard for CPD and Code of conduct which appears at the end.

Chartered Science Teacher CSciTeach

Key to the development and success of the Chartered Science Teacher (CSciTeach) designation is the establishment of the necessary criteria against which applications will be assessed and, subsequently, awarded to successful candidates. In determining the criteria it is important that they provide an appropriate balance of high, yet attainable, standards and aspirational goals which support and encourage the continuous development of professional expertise and competence through the enhancement of the knowledge, understanding and skills that underpin high quality practice.

Chartered Science Teachers

Chartered Science Teachers are professional teachers and educators who are practicing and / or advancing science teaching and learning at the full professional level and are individuals for whom knowledge of science education and science are essential elements at that level in their role.

Requirements for CSciTeach

For the purposes of the pilot phase of the CSciTeach arrangements qualifying candidates should:

- be members of The Association for Science Education;
- meet the qualifying educational standard of an M-level qualification or equivalent in pedagogy / education together with an honours level qualification in which there is a minimum of 50% of course content in science;
- have a minimum of four years' experience of teaching science following QTS (or equivalent) of which two should involve an appropriate level of responsibility;
- have engaged in, and reflected on, appropriate professional development during the qualifying period;
- work with colleagues and others in developing science education beyond their own classroom;
- demonstrate their commitment to continually maintaining and updating their professional expertise and competence;
- work within the professional code of conduct for Chartered Science Teachers;
- be able to provide evidence of their professional expertise and competence in relation to Professional Knowledge and Understanding, Professional Practice and Professional Attribute.

Science teaching is a complex process that involves a wide range of activities and processes which can vary in differing contexts and circumstances as well as stages in a career. Chartered Science Teachers will be expected to provide evidence of their professional expertise and competence across the following areas:

(NB. The exemplars in italics are indicative at this stage but more will be added in order to provide additional guidance)

- 1) ***Professional Knowledge and Understanding*** which provides the underpinning base for practice and include:
 - a) a broad and up to date knowledge and understanding of science and science curricula related to the nature of their teaching;

Typically this may include:

- i) *using information from current debates in science to extend the learning experience of students;*
 - ii) *implementing new/novel methodologies related to science teaching*
- b) a broad and up to date knowledge and understanding of teaching, learning and assessment specifically related to science education;

Typically this may include:

- i) *implementing different approaches to teaching and learning and investigating ways to support them through a range of appropriate teaching styles;*
- c) a knowledge of students and understanding of influences on them including developmental, cultural, gender and other contextual factors that might impact on their learning in science;

Typically this may include:

- i) *using knowledge of students' perceptions of science to adapt/change teaching practice to challenge their conceptual understanding and support their science learning.*
- 2) **Professional Practice** which relates specifically to the development of effective teaching and learning strategies, including those which contribute to enhancing the quality of the educational experience of students and to the wider professional context of science education. This includes:
- a) planning coherent programmes of teaching and learning in science that are intellectually challenging, emotionally supportive and physically safe;

Typically this may include the ability and commitment to:

- i) *develop, monitor and evaluate schemes of work appropriate to the students that are being taught;*
 - ii) *maintain a knowledge of health and safety requirements and enable students to develop the ability to assess risks involved in experimental work;*
 - iii) *introduce materials, exhibits, and scenarios which challenge students' understanding of scientific concepts;*
- b) engaging students in generating, constructing and testing scientific knowledge by collecting, analysing and evaluating appropriate evidence while at the same time looking for and implementing ways of extending students' understanding of major ideas of science;

Typically this may include the ability and commitment to:

- i) *enable students to apply ideas to new situations and to suggest alternative interpretations of the evidence available;*
 - ii) *demonstrate ways in which scientific principals underpin new technologies related to student experience;*
- c) developing students' confidence and ability to use scientific knowledge and processes to understand the world around them and make informed decision through using a wide variety of strategies, coherent with learning goals, to monitor and assess students' learning and provide effective feedback;

Typically this may include the ability and commitment to:

- i) *engage students and colleagues in debates about scientific ideas and their implications to everyday life ;*
 - ii) *develop and refine strategies to improve their use of formative assessment to enhance student learning;*
- 3) **Professional Attributes** which are the overarching principles that characterise the professional autonomy and relate to self-evaluation, collegial activity, personal responsibility and leadership. Specifically these include:
- a) analysing, evaluating and refining teaching to improve student learning;
- Typically this may include the ability and commitment to:*
- i) *gather and interpret assessment evidence to identify ways of improving their own teaching and the learning of their students;*
- b) working collegially with colleagues and the wider professional communities to improve the quality and effectiveness of science education
- Typically this may include the ability and commitment to:*
- i) *act as a mentor to newly qualified colleagues in order to support their induction and subsequent professional development;*
- c) contributing to, and taking responsibility for, leadership, management and development of science teaching;
- Typically this may include the ability and commitment to:*
- i) *lead colleagues in the development of new initiatives to improve the use of e.g. ICT to support the learning of their students.*

Presentation of evidence

In overall terms it might be anticipated that candidates would maintain a portfolio of evidence which might contain:

- *A CPD diary* that details the development opportunities undertaken and a reflection on and how the development outcomes have impacted on their practice;
- *Examples of scholarship* through completion of specific qualifications at an appropriate level, undertaking and reporting of research projects or the production of publications and resources;
- *Leadership and development of others* through activities such as mentoring, presenting CPD, curriculum development activity, or contributions to wider professional activities;
- *Examples of analysis of particular aspects of practice* which may include self-evaluations or peer observation and discussion.

Continuing Professional Development

Note for RSci, RSciTech and CSCiTeach the following apply to the CPD return

Licensed Bodies are required to monitor the CPD of their registrants annually.
Registered Science Technicians must comply with the Science Council *CPD Standards for Registrants* which state that:

Registrants must:

1. Maintain a continuous, up-to-date and accurate record of their CPD activities;
2. Demonstrate that their CPD activities are a mixture of learning activities relevant to current or future practice (see learning activities below);
3. Seek to ensure that their CPD has benefited the quality of their practice;
4. Seek to ensure that their CPD has benefited the users of their work;
5. Present a written profile containing evidence of their CPD on request.

Learning activities

Registrants' CPD should be a mixture of learning activities relevant to current or future practice and should include activities in at least three (exceptionally two) of the following categories:

1. Work based learning (e.g. supervising staff / students, reflective practice)
2. Professional activity (e.g. involvement in a professional body, mentoring)
3. Formal / Educational (e.g. writing articles / papers, further education)
4. Self-directed learning (e.g. reading journals, reviewing books / articles)
5. Other (e.g. voluntary work, public service)

Code of Conduct

Registrants will agree to be bound by the code of professional conduct of their Licensed Body as well as by the Science Council *Model Rules of Conduct for Registrants* which state that:

Registrants must:

- Exercise their professional skills and judgement to the best of their ability and discharge their professional responsibilities with integrity, serving as an example to others.
- Have regard at all times to the public interest.
- Do all in their power to ensure that their professional activities do not put the health and safety of others at risk.
- When called upon to give a professional opinion, do so with objectivity and reliability.
- Never engage in corrupt practice.
- Undertake appropriate Continuing Professional Development (CPD) and be able to demonstrate this to others.
- Further the interests of and maintain the dignity and welfare of their Licensed Body and profession.