

Appendix 1

Competency Requirements for Chartered Geologists

In order to be validated as a Chartered Geologist or Chartered Scientist, applicants must demonstrate how they meet the respective required competencies.

There are seven qualifying criteria for Chartered Geologist:

1. Understanding of the complexities of geology and of geological processes in space and time in relation to your speciality;
2. Critical evaluation of geoscience information to generate predictive models;
3. Effective communication in writing and orally;
4. Competence in the management of Health & Safety and Environmental issues, and statutory obligations;
5. Clear understanding of professionalism and the Code of Conduct;
6. Commitment to Continuing Professional Development; and
7. Competence in your area of expertise.

Full details of the required competencies are available on the Society website here:

<https://www.geolsoc.org.uk/Membership/Chartership-and-Professional/Applicants/Chartership-Criteria>

Appendix 2

Essential Skills for Earth Science Graduates

(Based on the revised ES3 Subject Benchmark Statement)

A three-year accredited Bachelors degree in Earth Sciences should develop essential skills in the following areas, adjusted as appropriate for purposes of inclusivity:

Threshold level

Intellectual skills (knowledge and understanding)

Graduates of an accredited Earth Science degree:

1. have a knowledge and understanding of subject-specific theories, paradigms, concepts and principles, as outlined in Appendix 3;
2. integrate evidence from a range of sources to test findings and hypotheses;
3. consider and appraise issues from a range of interdisciplinary and multidisciplinary perspectives, using approaches such as systems thinking;
4. analyse, synthesise, summarise, appraise and critically evaluate information;
5. define complex problems and to develop and evaluate possible solutions;
6. develop and test hypotheses to inform and design investigations (and experiments);
7. plan, conduct and present an independent project with appropriate guidance;
8. take a critical approach to academic literature, data and other sources of information; and
9. have confidence and competence in dealing with uncertainty in data and systems response.

Practical skills

Graduates of an accredited Earth Science degree:

1. have a knowledge and understanding of specific subject-relevant practical techniques outlined in Appendix 3 (the Geoscientist Toolkit);
2. conduct fieldwork and laboratory investigations competently;
3. describe and record observations in the field and laboratory;
4. interpret and evaluate practical results in a logical manner;
5. undertake laboratory and fieldwork ethically and safely with an appreciation of appropriate legal requirements;
6. gather, prepare, process and interpret data using appropriate techniques;
7. use appropriate numerical, statistical and qualitative techniques; and
8. use appropriate technologies in addressing problems effectively.

Communication skills

Graduates of an accredited Earth Science degree:

1. communicate effectively with a variety of audiences using a range of formats and media;
2. have good interpersonal communication skills to enable effective team working;
3. acknowledge and understand different perspectives;
4. effectively articulate and synthesise an argument; and
5. present a case in an influential and persuasive manner.

Geological Society of London
Accreditation of Undergraduate Earth Science Degree Programmes

Personal and professional skills

Graduates of an accredited Earth Science degree:

1. reflect on the process of learning and to evaluate personal strengths and weaknesses;
2. develop the skills for autonomous learning;
3. plan and organise workloads including project management;
4. develop leadership qualities;
5. work effectively as a team member;
6. work online and remotely as well as in person;
7. demonstrate professional behaviours;
8. display an appreciation of developing graduate skills relevant to career pathways;
9. recognise the importance of planning for personal, career and professional development including identifying and working towards targets;
10. recognise and respect the views of others;
11. demonstrate an understanding of the importance of risk assessment and associated legislation for health, safety and wellbeing;
12. recognise the importance of equality, diversity and inclusivity and develop behaviours that support EDI; and
13. appreciate the need to act and work in an ethical and sustainable manner and in compliance with relevant legislation.

Appendix 3

Essential Subject-Specific Knowledge for Earth Science Graduates

A three-year accredited Bachelors degree in Earth Sciences should develop knowledge and understanding in the following themed areas, adjusted as appropriate for purposes of inclusivity (the emphasis on each theme may vary between degree programmes):

Theme 1 : Whole Earth Systems

1. Formation of the Earth and the Solar System
2. Plate tectonics
3. Earth's layers including the hydrosphere and atmosphere
4. Connectivity in the Earth System, including large scale circulation of matter and energy within and between Earth's layers
5. Geophysical and geochemical properties of the Earth and Earth Systems
6. The role of modelling in Earth System Science

Theme 2 : Earth Materials and Processes

1. Petrography and petrology of rocks and minerals
2. Igneous, metamorphic and sedimentary processes
3. Earth surface processes, including superficial deposits, geomorphology and landscape evolution
4. Hydrogeology and fluid flow
5. Deformation and rock mechanics
6. 4D distribution of Earth materials, natural resources and natural hazards

Theme 3 : Deep Time Perspectives

1. Evolution of Earth systems through time
2. Principles and applications of stratigraphy, uniformitarianism and major events in Earth history
3. Geological time, the rates of geological processes and how these are constrained
4. Evolution of life on Earth and underpinning biological processes and how these are represented in the fossil record
5. Long term climate change

Theme 4 : Human interactions with the Earth System

1. Exploration, development, management and sustainability (whole life cycle) of natural resources, both renewable and non-renewable.
2. Anthropogenic climate change
3. Management and mitigation of natural hazards and human-related geohazards.
4. Applied Earth Science, including engineering geology, geophysics, environmental geology and urban geology
5. Socio-environmental global development frameworks (e.g. UN Sustainable Development Goals) and the concepts of geoethics and environmental justice
6. Socio-economic, commercial and business principles relevant to the Earth Sciences
7. Global perspectives on the historical development of the Earth Sciences and how these influence the modern discipline

Geological Society of London
Accreditation of Undergraduate Earth Science Degree Programmes

Theme 5 : The Geoscientist Toolkit

1. Coding to facilitate collection, analysis, modelling and interpretation of Earth and other planetary systems in 4D and across a range of scales
2. Creation, analysis and interpretation of geospatial data at the surface and in the sub-surface, in both digital and analogue formats, using appropriate professional software such as GIS
3. Instrument-based survey and investigation of the surface and sub-surface of the Earth, including remote sensing, geophysical and geochemical techniques
4. Application of terminology, nomenclature and classifications relevant to the Earth Sciences
5. Observation and interpretation of field-based data (in situ and virtual) from first principles
6. Working with qualitative and quantitative data, an understanding of using data sets and an appreciation of how to assess data quality and uncertainty

Additional skills and knowledge expected of M-level graduates

In addition to the requirements for a Bachelor's level degree, integrated masters programmes should conform to the *Descriptor for a higher education qualification at level 7 on the FHEQ and SCQF level 11 on the FQHEIS: Master's degree* (please see Appendix 5).

Graduates of integrated Master's programmes will demonstrate the ability to independently interrogate the relevant literature, applying ideas, techniques and data to a range of questions, demonstrating key skills and working independently to design and carry out a project to address important practical questions.

Appendix 4: Degree Apprenticeship Scheme

Operators

The degree apprenticeship scheme is currently operated by [Skill England](#). It was originally established by the Institute for Apprenticeships and Technical Education (IfATE), as part of the Department of Education.

What are degree apprenticeships?

A degree apprenticeship is a particular type of job, which combines work with higher-level learning, and which leads to an undergraduate or postgraduate degree.

Apprentices spend most of their week at work. But they also spend at least 20 per cent of their time in off-the-job study or training.¹

Geoscientist Degree

Degree apprenticeships are available in a wide range of subjects. [The Geoscientist Apprenticeship is a Level 6 degree, and details may be found here](#).

The following employers were involved on the creation of the degree apprenticeship standard: Angmering Secondary School, Atkins, BAM Nuttall, British Geological Survey, Cathie Group, Collyer's College, Cornish Lithium, Derby University, Equipe Group, Freelance Geotechnics, GDS Instruments, Geological Society of London, Geoquip, Hanson, Idris Consulting Limited, Institute of Materials, Minerals & Mining, Jacobs, Jomas Associates, Land Quality Management, Maven Energy Services Ltd, PetroStrat, PL Projects, University of Portsmouth, Scottish Power, Socotec, Stantec, Tarmac, University of Newcastle, Wardell Armstrong

Quality of end-point assessments²

The Office for Students has a specific role in assessing the quality of end-point assessments for 'integrated' higher and degree apprenticeships. This covers providers that are registered with the OfS and registered on the Apprenticeship Provider and Assessment Register (APAR) as the 'End Point Assessment Organisation' (EPAO).

- **Integrated higher and degree apprenticeships**

End-point assessments are the final assessments that apprentices must complete as part of their training. Where the end-point assessment has been designed as part of a degree – such as for the Geoscientist apprenticeship – this is referred to as an 'integrated' degree apprenticeship. In these circumstances, the OfS assesses the quality of the end-point assessment. The OfS has published [guidance for OfS registered providers about this process](#).

- **Non-integrated degree apprenticeships**

In the case of 'non-integrated' degree apprenticeships, the degree for which an apprentice studies already meets the requirements of the relevant occupation. This means the apprentice will be assessed for their degree and their end-point assessment separately. In these circumstances, Ofqual regulates end-point assessments.

¹ [Office for Students](#)

² [Office for Students](#)

Geological Society of London
Accreditation of Undergraduate Earth Science Degree Programmes

Apprenticeship and Accreditation

To be eligible for consideration for accreditation, the programme should be administered and approved by the Office for Students under the Geoscientist Apprenticeship scheme, and the host provider, the University.

Applicants should complete Form A.2App and the KSB (Knowledge, Skills & Behaviours) matrix M3. The Occupational Standard for the Geoscientist Apprenticeship, upon which matrix M3 is based, was developed in harmony with the 2019 QAA Subject Benchmark Statement in Earth Sciences, Environmental Sciences and Environmental Studies, and overlaps with the skills and knowledge criteria used for the accreditation of normal undergraduate degree programmes.

An important aspect of the scheme is the End-Point Assessment (EPA) and the End-Point Assessment Organisation (EPAO). Assessments are designed by employers in the sector and are conducted by independent bodies known as end-point assessment organisations (EPAOs). Details of the EPA and EPAO should be included on Form A.2App.

Appendix 5

Geological Society Equal Opportunities Statement

The Geological Society has a responsibility to ensure that individuals are valued, treated with dignity and respect and that discrimination has no place within the geosciences. The Society aims to be representative of and welcoming towards all sections of society.

[This statement](#) has been written in line with the provisions set out in the [UK Equality Act 2010](#) and the Science Council's [Declaration](#) on delivering Equity, Diversity and Inclusion. As the Society is a membership organisation with members from around the world, we recognise and uphold the principles of fairness and equality set out in the following internationally recognised agreements: [Universal Declaration of Human Rights](#), [Convention on the Rights of Persons with Disabilities](#), [Convention on the Elimination of All Forms of Discrimination against Women](#). The Society expects all Fellows and accredited institutions to abide by these principles.

The Geological Society is committed to:

- Fostering an inclusive culture that promotes equity, values diversity and maintains a harmonious inclusive environment in which the rights and dignity of all its Fellows, Candidate Fellows, visitors, and staff are respected.
- Welcoming applicants for Fellowship, employment, awards, and grants from all who are suitably qualified regardless of age, disability, ethnicity or national origins, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex or sexual orientation.
- Ensuring that all members and prospective members of the geological community are treated solely based on their merits, abilities and potential without being subject to discrimination or unfavourable treatment because of a protected characteristic.
- Providing and promoting a positive working, learning and social environment that is free from prejudice, discrimination and any form of harassment, bullying, victimisation or persecution.

This statement applies to Fellows, Candidate Fellows, applicants for Fellowship, Award & Grant applicants & recipients, job applicants, employees, visitors, and anyone acting on behalf of the Society.

All are expected to respect and act in accordance with the principles set out in this statement. Breach of these principles is a serious offence and could result in disciplinary action. Allegations of improper behaviour will be investigated in accordance with the Society's Employee Handbook and/or Code of Conduct respectively.

If you are interested in finding out more about any aspect of equity, diversity, and inclusion at The Geological Society please contact diversity@geolsoc.org.uk

Appendix 6

Descriptor for a higher education qualification at level 7 on the FHEQ and SCQF level 11 on the FQHEIS: master's degree^{3,4}

Integrated master's degree courses typically include study equivalent to at least one full-time academic year at level 7 of The Framework for Higher Education Qualifications in England, Wales and Northern Ireland (FHEQ) and level 11 in Scotland (for example, at master's level). Thus, study at bachelor's level is integrated with study at master's level. Courses are designed to meet the qualification descriptors in full at level 6 of the FHEQ/level 10 on the The Framework for Qualifications of Higher Education Institutions in Scotland (FQHEIS); and level 7 of the FHEQ/level 11 on the FQHEIS.

The descriptor provided for this level of the frameworks is for any master's degree which should meet the descriptor in full. This qualification descriptor should also be used as a reference point for other qualifications at level 7/ SCQF level 11 on the FQHEIS, including postgraduate certificates and postgraduate diplomas.

Master's degrees are awarded to students who have demonstrated:

- a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice
- a comprehensive understanding of techniques applicable to their own research or advanced scholarship
- 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 the discipline
- conceptual understanding that enables the student:
 - to evaluate critically current research and advanced scholarship in the discipline
 - to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses.

Typically, holders of the qualification will be able to:

- deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
- demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
- continue to advance their knowledge and understanding, and to develop new skills to a high level.

And holders will have:

- the qualities and transferable skills necessary for employment requiring:
 - the exercise of initiative and personal responsibility
 - decision-making in complex and unpredictable situations
 - the independent learning ability required for continuing professional development.

³ https://www.qaa.ac.uk/docs/qaa/quality-code/master's-degree-characteristics-statement.pdf?sfvrsn=86c5ca81_18 (p 9)

⁴ <https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf> (p 28)