

Geologist – STEM Learning

Q1. What is a geologist?

A1. A geologist is someone who studies the rocks at and below the surface of the Earth in order to understand what the different rock types there are, how they got there, what economic minerals they contain and what hazards such as earthquakes, landslides and volcanoes they present.

Q2. What qualifications would you need to become a geologist?

A2. The minimum requirement is a BSc in geology, preferably with some physics or chemistry.

Q3. What GCSE courses would be most appropriate for a STEM career?

A3. Ideally, GCSE and A level in geology, though few schools offer geology. All universities would require 2 science subjects at A level in order for you to do geology, so GCSE and then A level in Physics, Chemistry and Maths. Biology is very useful if you want to get into environmental science rather than mining or petroleum.

Q4. What jobs are available in STEM?

A4. Loads! The jobs in STEM include geology (my profession) in minerals, petroleum, environment, geotechnical engineering; chemistry in paints, adhesives, cleaners, medicine, food science, etc.; physics in medicine, telecoms, geophysical surveying, materials science, engineering of all kinds; biology in environment, medicine, food science; engineering of all kinds: civil, mechanical, electrical, IT, bioengineering (e.g, making heart valves), energy solutions from oil to nuclear to unconventional; maths in statistical analysis and prediction of future trends, actuary in the insurance industry; and all of the above require teachers with practical experience. And I haven't even touched on astronomy (there aren't many jobs), or jobs in the armed forces and police (e.g., forensic science).

Q5. What is the biggest skills gap currently?

A5. Pretty well across the STEM board as school leavers have opted for courses in media, leisure and tourism, entertainments and fashion. University intake of geology students is half what it was 15 years ago, and we badly need to find new supplies of many minerals and to research such things as CO₂ capture and storage.

Q6. How did you decide what industry to work in?

A6. Not difficult; I collected my first fossils when I was 4 years old and just knew there was nothing else I wanted to do. I left school at 188 and went to South Africa to work in the gold mines. My employer wanted me to do mining engineering, I(wanted to do geology, so I came back to the UK, did geology at Uni (Bsc and PhD) and joined the oil industry. Never regretted it; lucky me.

Q7. What is the best industry/field to go into currently?

A7. If by best, you mean best for humanity, probably medicine; go and find a cure for cancer. If you mean best salary, the petroleum industry pays well, and so does engineering.

Q8. How are you dealing with Covid 19? How has the outbreak affected your job or the companies you work with?

A8. I'm semi-retired and before Covid-19 I was giving industrial training courses overseas. These have now come to a complete halt, unfortunately. However, I run a U3A (Google it if you don't know what that is!) geology group and we have Zoom meetings once a week.

Q9. How long is a shift? Have they differed between the jobs you've had?

A9. As a professional in STEM, you don't work shifts as such, you basically work as long as it takes, which is often 8 to 9 hours a day. Junior doctors regularly do 10 to 12 hours. I worked in India for 4 years and worked 07.30 to 18.30 6 days a week. When I was a wellsite geologist, I worked as long as the rig was drilling, looking at the rocks coming up out of the well, testing them for oil and gas and predicting what we'd drill next. I often worked 6 hours straight then 2 hours sleep, day after day. On 2 occasions I stayed awake for 50+ hours.

Q10. What personality traits do you look for in a successful candidate?

A10. Job knowledge, enthusiasm for the subject, willingness to learn, team spirit, a desire to break new ground, readiness to pass knowledge on to newcomers.

Q11. Do you have to wear a uniform? Has this differed between the jobs you've had?

A11. If you want to work in the armed forces or police, you will have to wear a uniform. If you're a professional in an office in a major city, men and women are often expected to wear "smart" office clothes. When I was working in London, Bogota, and Dallas I wore a suit and tie. However, this is often relaxed in hot countries, so that when I worked in India, Papua New Guinea and Angola, smart slacks and open-necked shirts were allowed, but not shorts and tee-shirt! In many instances in science, engineering and medicine, you have to wear PPE (personal protective equipment). In my case, on the rig, that was overalls, hard hat, goggles and steel toe-capped boots, all provided for free.

Q12. What equipment do you use? Has this differed between the jobs you've had?

A12. At the wellsite, I have used my own laptop and hand lens, plus a binocular microscope and various pieces of oil and gas detection and measuring equipment, all provided for me. When I was geological surveying and mapping in Kenya and Nigeria, I used surveying instruments all provided for me. Back in the lab, thin sections of the rocks I had collected were made and I examined them under the microscope, which was provided for me.

Q13. What qualifications do you need to gain employment in the industry sector you specialise in? Do specific subjects help?

A13. I had to have a BSc in geology (and a good grade at that, i.e. a first or upper second class) and these days the competition is such that a MSc or PhD is a great help. In engineering you'd need a BEng or BSc in physics and/or maths. For medicine, a degree in medicine.

Q14. What is the minimum wage for someone starting in the industry you specialise in? What is the average salary?

A14. A petroleum geologist's (that's what I was) starting annual salary is £25k – 35k. This a useful link for salary information.

<https://www.geolsoc.org.uk/Geology-Career-Pathways/Careers/Salary-Information>

Q15. How do you find STEM apprenticeships? How many hours is training/academic work? How much is the starting salary for a STEM apprentice?

A15. No problem, just Google STEM apprenticeships, you'll find loads of information.

Q16. What opportunities do you know of that STEM organisations provide for young people? Do they offer virtual work experience?

A16. I've not been a STEM Ambassador very long, but I don't think we actually provide job opportunities or work experience, real or virtual. What we provide is an awareness of how important STEM is in society, and pathways to careers in STEM.

Q17. Can you be over qualified for a job?

A17. Yes, you can. An employer interviewing a PhD in chemistry for a job as a lab technician at maybe £14k p.a. will (probably rightly) suspect that the candidate will leave at the earliest opportunity if they find a job more suited to their level.

Q18. What do you look for in a successful job application?

A18. I look for qualifications to the required level (A levels, first degree, second degree); length and variety of work experience; evidence of having worked as part of a team; staying power (I suspect anybody who never lasts longer than a year or two in any one job); communication skills (well written CV, speaks clearly and confidently); and enthusiasm.

Q19. Is having top grades and no work experience better or worse than having mediocre grades and lots of work experience?

A19. Having top grades and no work experience is expected at entry level; the lack of work experience will not count against you. You can counter that by appearing alert, interested and willing to learn. With mediocre grades your "lots of work experience" would very likely consist of doing the same mediocre job over and over again.

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