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Career Development

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Career Research Project

Career 1: Forensic Science Technician

Career Exploration Research Questions:

1. What education is needed for this career?

Forensic science technicians usually need either a bachelor's degree (4 years) in natural sciences like chemistry or biology, or a degree in forensic science. However, it can be more beneficial to take a forensic science class instead of one natural science class. There are certain programs depending on what area of forensic science someone would like to study, such as DNA, toxicology, or pathology. Some colleges that have forensic science programs in Pennsylvania include Drexel, Penn State, Duquesne, La Salle, Arcadia, and more. Drexel is especially prominent because they have a renowned two-year program that includes opportunities to gain exposure in law, courtroom testimonies, research, and crime scene investigation techniques.

2. What training is needed for this career?

Before forensic science technicians work on cases independently, they have on-the-job training so that they have a clearer understanding about what their job entails. For people are training to do crime scene investigations surrounding this career, they will work under experienced investigators, where they will learn methods for documenting and collecting evidence. Forensic science technicians also learn about laboratory specialties on the job, usually taking less than a year. They also may need to pass an exam before doing independent casework. Also, this job requires to be flexible when it comes to the advancements of technology that can improve the collection or analysis of evidence.

3. Who are the largest employers for this career/field?

In this field, the largest employers are through local or state governments (excluding education and hospitals), medical and diagnostic laboratories, and testing laboratories. About 59% of forensic science technicians are employed through local governments, 28% from state governments, and the remaining 6% from the laboratories previously mentioned.

4. What is the average starting salary?

The average starting salary in the United States for a forensic science technician is about \$34,600 per year for the lowest 10% of people. The average hourly rate is \$16.63 in the United States. In Pennsylvania, the average starting salary is about \$33,310 per year and \$16.02 per hour. The state with the highest starting salary of \$51,700 per year and \$24.85 per hour is Illinois.

5. What is the average ten-year salary?

The average ten-year salary in the United States for a forensic science technician is \$58,230 per year and \$27.99 per hour. In Pennsylvania, the average ten-year salary is \$46,900 per year and \$22.55 per hour. The state with the highest ten-year salary is Illinois.

6. What is the long-term outlook for this career? Will the need increase, decrease, stay the same, be eliminated?

This career is projected to grow by 14% from 2018 to 2028, much faster than the average occupation. However, since it is a small occupation, the growth will only result to about 2,500 more jobs. State and local governments are expected to hire additional forensic science technicians to process their high caseloads in the next ten years. The demand for this occupation will grow, but the competition will definitely be strong; applicants who have a master's degree will have the best opportunities for this job.

7. What are the working conditions?

Being a forensic scientist is not very arduous, except for when they are required to go to crime scenes. At times, they are required to preserve and collect evidence from crime scenes in bad weather because they need to get the results for the case back as soon as possible. In the laboratory, however, the only difficult task is analyzing the evidence, whether it be for fingerprints or bodily fluids to provide scientific answers to a case. There aren't any sort of health risks besides being in very cold or hot temperatures when outside; a crime scene is usually surrounded by government officials to ensure the safety of an FST.

8. What is the nature of the work?

Forensic scientists work both crime scenes and in laboratories. In crime scenes, they typically have to analyze crime scenes, take photographs of the scene and evidence, make sketches of the scene, record observations and findings, collect evidence (weapons, fingerprints, bodily fluids, etc.), preserve evidence, and reconstruct crime scenes. In laboratories, these technicians typically perform chemical, biological, and microscopic analyses on evidence, explore links between suspects and criminal activity using DNA, and consult with experts in specialized fields (toxicologists and odontologists).

9. What are some related occupations?

Some related occupations to a forensic science technician are biological technicians, chemical technicians, chemists and material scientists, clinical laboratory technologists/technicians, environmental science and protection technicians, fire inspectors, hazardous materials removal workers, police and detectives, and private detectives and investigators. The highest average ten-year salary out of these jobs are chemists and material scientists, making about \$78,330 annually.

10. What do three people in the career say about their jobs?

1. A forensic scientist in Phoenix, Arizona, interviewed by Ed Zuercher, said, “I really love all areas of forensic science. I feel like every single part of forensic science is interesting. My background is in molecular biology so I do find interest in the forensic biology section.”
2. An FST named Jason Birchman of Baltimore County, interviewed by Megan Sullivan said, “I really did not get interested in the field of forensics until after high school. In college, I took a variety of classes in an attempt to find a subject that sparked my interest — an introductory criminal justice course did just that.”
3. A forensic investigator named Eric Carita of Connecticut said, “A lot of the misconception is that forensic science is exactly like CSI, what you’re gonna see on TV, and it’s nowhere near that. You have your law enforcement which will do a lot of the processing of the crime scene (collecting the evidence), and then you have your scientists... We are absolutely the unbiased individual within the process.”

Potential Employer Research Questions (Career #1):

1. What is the title of the job being advertised?

The title of the job being advertised is “Forensic Scientist.”

2. What is the company name?

The company name is Quest Diagnostics.

3. Where are they located?

They are located in Norristown, Pennsylvania.

4. What are their requirements for hiring?

Their requirements for hiring are to have a Bachelor of Science or Art degree with a minimum of 15 semester hours in Chemistry, 15 semester hours in Biology, and 3 semester hours of mathematics.

5. What is the starting salary?

The starting salary is \$21.42 per hour or \$45,000 on average per year.

Career 2: Environmental Engineer

Career Exploration Research Questions:

1. What education is needed for this career?

To be an environmental engineer, one would need to have a bachelor's degree in environmental engineering, or a related field, such as civil, chemical, or general engineering. This would take at least four years in school. Another requirement to become a licensed engineer is to get a degree from an ABET-accredited program, a non-profit program company accredits engineering programs; employers will potentially hire someone with this accreditation over someone who may not have it. For higher level jobs in the field, engineers are required to have a passing score on the Professional Engineering Exam and the Fundamentals of Engineering Exam.

2. What training is needed for this career?

For training, since there is no on-the-job training, there are programs that include classroom, laboratory, and field studies. Some colleges and universities offer these type of cooperative programs for students to gain experience before entering the field. Employers value experience from cooperative engineering programs that show practical characteristics about that person. At least four years of training before the entry-level is required for most employers to be an engineer. During high school, students can attend engineering summer camps to see what engineers do, which will help the difficult decisions that high schoolers make.

3. Who are the largest employers for this career /field?

The largest employer in this career/field is AECOM Technology Corporation, which has a fantastic reputation and is known for having major environmental projects that focus around water, transportation, and energy. Some other large employers are CH2M, including 20,000 people from around the world, HDR, Inc., Jacobs Engineering Group, and Bechtel.

4. Where can one find work in this field?

The top industries in this field are from the federal government (excluding postal service), the local government (excluding education and hospitals), engineering services, management, scientific, and technical consulting services, and state government (excluding education and hospitals). The median wage for engineers working for the federal government is about \$105,000 per year and about \$80,000 for workers for the state government.

5. What is the average starting salary?

The average starting salary for an environmental engineer is about \$53,180 in the United States. In Pennsylvania, the average starting salary is \$55,870. The state with the greatest starting salary is Alaska at \$73,210.

6. What is the average ten-year salary?

The average ten-year salary for environmental engineers in the United States is \$87,620. In Pennsylvania, the average median salary is \$85,690. The state with the greatest median salary is Alaska at \$107,400.

7. What is the long-term outlook for this career? Will the need increase, decrease, stay the same, be eliminated?

The long-term outlook for environmental engineers is projected to grow 5% from 2018 to 2028, which is about the average projection for most occupations. Most of the projected employment growth is in professional, scientific, and technical services as concerns of water increases every year.

8. What is the nature of the work?

The nature of the work environmental engineers are likely to be offices when working with other engineers and urban and regional planners, at seminars presenting information and answering questions when working with business people and lawyers, and at specific outdoor sites when they are working with hazardous material removal workers and environmental scientists.

9. What are the responsibilities of the job?

The responsibilities of this job include preparing, reviewing, and updating environmental investigation reports, design projects that lead to environmental protection, obtain, update, and maintain plans, permits, and standard operating procedures, analyzing data, monitoring the progress of environmental improvement programs, and advising corporations about procedures for cleaning up contaminated sites.

10. Are there any professional associations or unions that are necessary or suggested to be a member of this profession?

After getting a bachelor's degree, to be an environmental engineer, most employers require a degree from an ABET-accredited program. After licensing, environmental engineers can earn board certification from the American Academy of Environmental Engineers and Scientists, which shows that a certain engineer has expertise in one or more areas of specialization in this field.

11. What are some related occupations?

Some related occupations to environmental engineers include chemical engineers, civil engineers, environmental engineering technicians, environmental scientists and specialists, hydrologists, and natural science managers.

Potential Employer Research Questions (Career #2):

1. What is the title of the job being advertised?

The title of the job being advertised is a Environmental Engineer.

2. What is the company's name?

The company name is GHD Group.

3. Where are they located?

They are located in Exton, Pennsylvania.

4. What are their requirements for hiring?

Their requirements for hiring are strong technical writing skills, strong written and verbal communication skills with ability to work both within a team and independently, able and willing to travel and work outdoors under adverse weather conditions 3-4 days a week (rain, snow, etc.).

5. What education is needed and training?

The education and training needed for this job are to have a Bachelor's and/or Master's degree in Environmental Engineering, Engineering In Training (EIT) certification, and 1-4 years of previous environmental consulting experience.