Career Exploration Report

Chemical Engineering & Physician Assistant

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ABSTRACT

The purpose of this research paper was to conduct extensive research into two different careers and write a career exploration report on them. Careers chosen and researched were chemical engineering and physician assistant. The research began with compiling more than ten sources with information on both careers (five for each). Topics researched included job outlook, salary, day-to-day responsibilities/role, and education and certification required. Internship research was also required and co-op programs, companies, and hospitals were chosen as internship locations. Next steps include reaching out to internship choices and conducting further research into specializations and extra education in chemical engineering.

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OVERVIEW

ONLY EDIT HIGHLIGHTED SECTIONS The purpose of this document is to report the research process of Nathan's during his career exploration in Technical Reading and Writing at the Dayton Regional STEM School during the 2021-22 school year. The following sections document essential questions used to begin the career exploration process, potential career(s) and rationale(s) for choosing those career(s), an overview of the research process used during Nathan's career exploration, resources found and used during the process, a resolution, and a reflection of the process as well as a daily logbook of all tasks completed.

The following Driving Question was used to guide this career exploration process: How can I locate a potential internship site, college, potential career by conducting extensive independent research?

ESSENTIAL QUESTIONS

ONLY EDIT BY ADDING QUESTIONS IN BULLETED LIST PROVIDED Throughout the career exploration research process, the following questions were asked:

- WHAT IS THE JOB OUTLOOK IN THIS CAREER?
- WHAT IS THE STARTING SALARY IN THIS CAREER
- HOW MANY YEARS OF SCHOOL IS NECESSARY FOR THIS CAREER?
- WHAT KIND OF SKILS/APTITUDES WOULD MAKE YOU SUCCESSFUL IN THIS CAREER?
- WHAT ARE SOME POSSIBLE INTERNSHIPS FOR THIS CAREER?

POTENTIAL CAREERS & RATIONALES

DO NOT EDIT This section provides a comprehensive list of potential future careers as well as rationale for choosing those careers.

CHEMICAL ENGINEERING

Chemical engineering is one of the most promising career choices in the field of engineering today. According to BLS, chemical engineers can work in an array of job environments and fields including pharmaceuticals, biotechnology, manufacturing, food science, and material science. Almost every appliance or item we use every day was overseen or checked by a chemical engineer during the design and manufacturing process. Due to the wide range of job options and responsibilities, on a daily basis, chemical engineers can be working in food processing procedures, using synthetic fibers to improve clothing comfortability, and solve environmental problems (BLS).

Chemical engineering, today, is one of the highest paid engineering careers available in engineering and overall in the job market, especially in other countries. Currently, Canada provides the best opportunity for a wide variety of chemical engineering fields, all with a great job outlook. Canada has great infrastructure as a nation and according to Azent, Canada is a great place for chemical engineers to work due to the rise of

environmental and social policies and legislation that help them do their job more efficiently and with more flexibility. Other countries including New Zealand, Switzerland, Germany, and Japan have a large opening and demand of job prospects for aspiring chemical engineers. Some of the top universities to study chemical engineering include MIT, Stanford, Cambridge, and Oxford. Germany, Australia, the UK, and Sweden also have prestigious chemical engineering universities. Essentially, there is a lot of demand for this career but also provides a plethora of options to become one, which is why I want to become a chemical engineer.

Chemical engineering requires a vast amount of skills and education and they have to be able to apply concepts from physics, biology, math, and of course, chemistry. Chemical engineering requires a bachelor's degree in chemical engineering or a related field. According to AIChE, there are also five-year programs that would allow students to get both their bachelor's and master's. Acquiring a master's or Ph.D. would allow engineers to work in research, teach students, increase salary, and lessen stress or long hours. Internships, job experience, and accredit programs are also useful in highlighting one's individuality to other students and increase chances of better internships or other opportunities. Many colleges and online education courses provide these to students studying chemical engineering (AIChE).

Chemical engineering as a whole provides many career options and requires a cast skillset and job experience/internships. There are also many local colleges that offer chemical engineering, one of which, the University of Dayton, is nationally recognized for their engineering degrees (AIChE). However, the reward is worth it: high salary, great job outlook, and flexibility in career choice. A chemical engineer requires a skillset necessary to succeed and enjoying some of the classes/courses that chemical engineering revolves around is very important. Chemical engineering is very promising and taking advantage of this field is vital.

POSSIBLE INTERNSHIPS FOR POTENTIAL CAREER 1

UES, Inc, with the collaboration with the Air Force Research Lab have a position for Research Scientist in their department of Materials and Manufacturing. They are working on a project seeking to invent composites that will withstand high temperatures. Responsibilities include basic and applied research, specific procedures to create "novel polymeric and ceramic composite materials," and collaborating with the AFR.

UES Inc.
4401 Dayton Xenia Rd, Dayton, OH 45432
Person of Contact: NA
Email Address: NA
Phone Number: (937)-426-6900

Crane Co is hosting a summer co-op internship next year in 2022. In this internship, interns will learn experience and skills needed to go up in your career choice. The course is 12 weeks and will involve hands-on learning and projects directly led by the company. Pre-requisites include being a junior or senior in college going into chemical or mechanical engineering. Interns must also be able to work in a manufacturing environment and work full-time in the summer of '22.

Crane Co.
100 First Stamford Place, Cincinnati, Ohio
Person of Contact: NA
Email Address: NA
Phone Number: (203)-363-7300

PHYSICIAN ASSISTANT

Physician Assistants (PAs) have one of the brightest futures and satisfaction for the amount of work required. PA's work alongside other medical providers including doctors, surgeons, and nurses. They can work in a variety of work environments including outpatient clinics, urgent cares, and hospitals. A regular day's tasks can range from reviewing patient medical histories, diagnosing illness, prescribing medicine, examine patients, provide treatment, and conduct medical research and many more (BLS).

Being a physician assistant is demanding. Most of the day is spent walking, making rounds and visiting patients. It can be both physically and mentally draining. They also work 40 hours a week or more, depending on holidays, weekends, or nights. Like other medical providers, PA's may have to be on-call and ready to go in to work at any time.

Becoming a PA requires extensive college and graduate studies. Students who aspire to become a physician assistant should enter programs that include a bachelor's and work experience. Similar to other medical careers, there are numerous different avenues that can be taken to work in a certain career. Registered nurses, paramedics, and others can become PA' s after their own studies. PA programs usually range around 2 years to complete and include gaining licenses and certifications from the state. Subjects covered include pathology, anatomy, medical ethics, and physiology and specializations like family medicine, pediatrics, or emergency medicine to name a few (BLS).

For the amount of stress and work a physician assistant undergoes, the salary earned is respectable. The median yearly salary is $115,390 with the highest ten percent making $162,470 annually (BLS). On average, PA's tend to make more working in outpatient care center ($124,610) than physician offices ($113,460). Becoming a PA takes many years of education and work experience; both of which are physically and emotionally demanding. However, the benefits are substantial; patient satisfaction and salary. A physician assistant's role in a medical practice is not something to take lightly, it requires leadership and responsibility.

Physician assistants undergo vast amounts of stress and may work long hours. However, the rewards are both financial and emotional. Seeing a patient recover is the best thing a PA or any other medical provider wants to see and this kind of passion is essential to succeeding in this field. A commanding grasp of collaboration and effective communication are also vital to work alongside other doctors, nurses, or PAs. Physician assistants are readily able to find jobs and their role in the practice of medicine are crucial to the overall reputability of a medical practice.

POSSIBLE INTERNSHIPS FOR POTENTIAL CAREER 2

Provectus Healthcare Services has an opening for PA's in the Dayton area. Skills needed include schedule management, travel locally, and collaborative skills. They also offer heath and welfare benefits under medical, dental, and vision care, life insurance, and 401(k). Candidates should have a master's degree, 3-5 years' experience, and DEA registry and NCCPA certification.

Provectus Healthcare Services
Chillicothe/Washington Court House
Person of Contact: NA
Email Address: NA
Phone Number: (877)-694-8737

WellNow Urgent Care is offering an internship to NPs or PAs. They offer benefits including free urgent care visits for families, 401K's, monthly bonuses, and with scrubs provided. Responsibilities include examining, diagnosing, and treating patients of all ages with an array of diseases or injuries, document patient information in Electron Medical Record (EMR), conduct physicals, and maintain patient charts. Requirements include at least two years or emergency medicine experience and state licensure as a PA or NP.

WellNow Urgent Care
6210 Brandt Pike, Huber Heights, OH, 45424
Person of Contact: NA
Email Address: NA
Phone Number: (937)-236-8630

RESOURCES

ONLY EDIT HIGHLIGHTED SECTIONS This section provides a list of resources found during the career exploration research process (can include resources used to explore your career fields, possible internships, etc.).

- *Become a PA*. AAPA. (2021, October 28). Retrieved November 9, 2021, from https://www.aapa.org/career-central/become-a-pa.
    - Used this source is locating overall information on what a PA is and what they do
- *Chemical Engineers are advancing biomedicine*. AIChE. (2017, January 11). Retrieved November 9, 2021, from https://www.aiche.org/community/students/career-resources-k-12-students-parents/what-do-chemical-engineers-do/Advancing-Biomedicine.
    - Used this source to conduct further information into a specialization of chemical engineering: biomedicine development.
- Lucas, J. (2014, October 3). *What is chemical engineering?* LiveScience. Retrieved November 9, 2021, from https://www.livescience.com/48134-what-is-chemical-engineering.html#:~:text=Chemical%20engineering%20is%20the%20branch,chemicals%20to%20make%20valuable%20products.
    - Used this source to find information on what a chemical engineer is and what they do.
- *Physician assistant ranks among best jobs ... - US news money*. (n.d.). Retrieved November 9, 2021, from https://money.usnews.com/careers/best-jobs/physician-assistant.
    - Used this source to find the salary of a PA and their stress levels, work-life balance, and real explanations from PAs themselves.
- *Physician assistant*. ExploreHealthCareers.org. (2021, October 18). Retrieved November 9, 2021, from https://explorehealthcareers.org/career/medicine/physician-assistant/.
    - Used this source to find out how to become a PA.
- U.S. Bureau of Labor Statistics. (2021, September 8). *Chemical Engineers: Occupational outlook handbook*. U.S. Bureau of Labor Statistics. Retrieved November 8, 2021, from https://www.bls.gov/ooh/architecture-and-engineering/chemical-engineers.htm.
    - This source gave me extensive information on chemical engineering as a whole.
- U.S. Bureau of Labor Statistics. (2021, September 8). *Physician assistants: Occupational Outlook Handbook*. U.S. Bureau of Labor Statistics. Retrieved November 9, 2021, from https://www.bls.gov/ooh/healthcare/physician-assistants.htm.
    - This source gave me extensive information on what PAs do.
- *What do chemical engineers do?* AIChE. (2020, July 23). Retrieved November 9, 2021, from https://www.aiche.org/k-12/what-do-chemical-engineers-do.
    - This source gave many specializations chemical engineers can go into.
- *"what is a pa?"*. AAPA. (2021, October 28). Retrieved November 9, 2021, from https://www.aapa.org/what-is-a-pa/.

- This website explained different roles of a PA and where they can work.

REFLECTION

ONLY EDIT HIGHLIGHTED SECTIONS This section provides the reflection and resolution to Nathan's career exploration.

The career exploration project opened my eyes into what my careers really looked like. There was a lot of familiar information I found but also a lot of material I didn't consider or was new. YouScience was integral to my research as it told me a lot about myself and my aptitudes along with career options. This was the core to my research process as whenever I looked at career information, I visualized how my aptitudes would align with the career. Whenever I look at new careers, I find myself interpreting information differently as I think more critically about myself conducting day to day activities and using skills that I have while collaborating with others.

The research process I used to conduct my research was already familiar to me but the medium we used to write our reports was completely new to me. I had never used a logbook before or wrote internship reports in the past either. However, I do believe writing them and recording in the log book helped me look back and see what I did on a day-to-day basis. I would definitely use this medium, or elements from it, for future research projects or papers I'll write in high school and college. The most important takeaway I have is that high salary careers require extensive education and hard work compared to easier career or degree options that don't pay as well. There is also a correlation between higher job outlooks and career salary and education required. As this project ends, I have a few additional steps I need to complete. These include contacting the companies I researched for internships, going on college visits, and scheduling counselor meetings.

LOGBOOK

ONLY EDIT HIGHLIGHTED SECTIONS The following logbook was kept during Nathan's career exploration process. It details the tasks completed during this process including sources consulted, essential questions asked and answered, as well as any other information collected each day.

Date	
10/12/21	Applied SAYS strategy for a link for first career
10/19/21	Researched ten links; five for each.
10/20/21	Researched link for mini-assignment
10/21/21	Completed outline
10/22/21	Completed mini-assignment (career in foreign country)
10/25/21	Completed first draft of CER for career 1
10/26/21	Conducted peer review
10/28/21	Revised draft based off feedback
10/29/21	Began working on 2nd career report
10/30	Continued 2nd career report
11/1	Gave and received peer feedback
11/2/21	Revised based off feedback
11/3/21	Researched internships
11/4/21	Completed research log
11/7/21	Completed internships sections

11/8	Started APA citations
11/9/21	Finished APA citations
11/10/21	Began abstract and reflection
11/11/21	Finished abstract and reflection
11/12/21	Applied teacher feedback and finalized career report sections