HW02_Marim Elhanafy_201803468

by Marim Elhanafy

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College of Engineering

GENG 107 – L53: Engineering Skills and Ethics

Fall 2022

Assignment #2

Submitted To:

Dr. S M Muyeen

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The four engineering fields of which I will discuss are electrical engineering, civil engineering, chemical engineering, and mechanical engineering.

1) Electrical Engineering:
   - a branch of engineering that focuses on the research, development, and usage of machinery, gadgets, and systems that rely on electricity, electronics, and electromagnetism.
   - Four specialized courses in electrical engineering:
     - Machines
     - Electronics
     - Digital signal processing
     - Network analysis
   - Two companies with job opportunities for electrical engineers:
     1. Micron Technology: the main role of electrical engineers is to find innovative memory solutions that transform how the world uses information.
     2. IBM: the main role of electrical engineers is to be responsible for producing and selling computer hardware, middleware, and software, and providing hosting and consulting services in areas ranging from mainframe computers to nanotechnology.
   - My dream is to work for Stryker Corporation, which is a leader in the medical technology field, I know that there is tough competition, but I am sure that my university tooled me with the main courses needed; however, in order to be superior, I have to take some complementary courses such as analogue electronics, principles of microengineering, clinical engineering and physiological systems, medical imaging and physics, and future healthcare and computer-aided diagnostics.
2) Civil engineering:
   - The focus of the professional engineering discipline for design, construction, and maintenance of the built environment, including public works like roads, bridges, canals, dams, airports, sewage systems, pipelines, building structural elements, and trains.

- Four specialized courses in civil engineering:
    - Structural analysis
    - Soil mechanics
    - Concrete technology
    - Surveying
- Two companies with job opportunities for civil engineers:
    1. Arup: the main role of civil engineers is to develop a truly sustainable built environment.
    2. Atkins: the main role of civil engineers is to design, manage, and consult engineering projects.
- One of the companies I might work for as a civil engineer is Arcadis, which is a large consultancy that focuses on environmental and sustainability projects, its goal is to improve urban living. Transportation, sustainable buildings, green construction, and construction management are some of the courses that might increase my cv to work there.

3) Chemical engineering
- a field of engineering that is concerned with creating and manufacturing goods using chemical procedures. This includes creating tools, frameworks, and procedures for processing chemicals, combining, compounding, and refining raw materials.
- Four specialized courses in chemical engineering:
    - Cell Biology
    - Fluid mechanics
    - Heat, mass, and momentum
    - Thermodynamics
- Two companies with job opportunities for chemical engineers:
    1. BASF: the main role of chemical engineers is to combine economic success with environmental protection and social responsibility.
    2. DowDuPont: the main role of chemical engineers is making specialty chemicals like advanced plastics, adhesives, and enzymes for end markets including cars, consumer goods, and electronics.

- For chemical engineering, one of my plans is to work in ExxonMobil, an oil and gas multinational corporation, the largest refiner of petroleum products. To enhance my opportunity to work there I will take some courses such as material processing, industrial technology, and renewable energy.

4) Mechanical engineering:
   - A field of engineering that is concerned to use a combination of materials science, engineering physics, and mathematical principles in order to design, analyze, construct, and maintain mechanical systems.
   - Four specialized courses in mechanical engineering:
     - Fluid dynamics
     - Robotics
     - Thermodynamics and heat transfer
     - Materials science
   - Two companies with job opportunities for mechanical engineers:
     1. National Aeronautics and space administration (NASA): the main role of mechanical engineers is to design, develop, build, and test mechanical and thermal sensors and devices including tools, engines, and machines. These are essential systems in exploring the unknown in air and space, innovating for the benefit of humanity, and inspiring the world through discovery. Mechanical engineers are involved in projects like satellite and airborne missions.
     2. Google: the main role of mechanical engineers is to organize the world's information and make it universally accessible and useful.
   - For mechanical engineering, I would like to work in the world’s ranking 3rd of top mechanical companies in the world in 2020, Boeing. I am interested in designing and manufacturing airplanes, and satellites, and to work there I am planning to take some courses like aviation electronics technology (avionics), aeronautical operations and maintenance, air and defense (computing), and aviation maintenance.

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GRADEMARK REPORT

FINAL GRADE

10/10

GENERAL COMMENTS

Instructor

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