**Who am I**

First generation college student. I have completed by bachelors in mechanical engineering and recently am finishing up my masters in mechanical engineering.

**What are my qualifications?**

My academic qualifications consist of me completing my bachelor’s degree in mechanical engineering as well as finishing up my master’s degree in mechanical engineering. I have taken courses that relate to the technical knowledge that you expect an engineer to have but I have taken courses in statistics, reliability analysis and have taken programming courses.

Outside of my academics I have obtained a lean six sigma green belt. I have had worked with public utilities such as Southern California Edison and Southern California Gas Company.

**Experience**

I have a bachelor’s degree in mechanical engineering and have experience in collecting data and analyzing data to create reports. During my time at Southern California Edison, I assisted in the gathering and analyzing data from field survey of company assets to identify trends and create reports for senior management. I have traveled across the service territory to conduct these audits.

In my current role in the Southern California Gas Company, I have continued to hone my skills in streamlining work processes and in data analysis and reporting. I have automated data scraping of public websites such as the California and federal legislation and enforcement actions from regulatory bodies to track and summarize complex and evolving policy and legislative actions. I have worked on several projects that involved creating and analyzing large data sets to identify key trends and insights with have included the impact of proposed rulemaking from regulatory bodies as well as state and federal legislation. I have also developed strong communication and presentation skills, which have allowed me to effectively communicate complex data to stakeholders at all levels of the organization.

I am excited about the opportunity to bring my skills and experience to your team. I am confident that my analytical abilities, attention to detail, and strong work ethic will enable me to make meaningful contributions to your organization.

**Why Walmart**

Commerce is everywhere. People have to shop in order to obtain things to ensure and enjoy their daily lives. Walmart is a huge commerce company with many retail stores across the nation. The though of Walmart being able to essentially coordinate the flow of goods, from sourcing to distributing it to their stores in such a way where I am able to find the things, I want to buy is interesting.

**Supply Chain Management**

**What is Supply chain management**

The handling of the entire production of a good or service. From the procurement of a raw materials to processes of a good to the delivery of that good to a consumer.

(sourcing -> manufacturing -> delivery-> sale)

**What is safety stock**

Safety stock is an item quantity that held in inventory to reduce the risk that item will run out of stock. (buffer stock)

**What is the point of safety stock**

You need safety stock in order to mitigate against the hazard of demand and the hazard of not being able to stock the item in time (supply uncertainty/).

**What is lead time?**

Lead time is the time it takes to get supplied.

**What increases lead time uncertainty?**

Supply uncertainty can be caused by transport issues, quality issues, pandemic, theft.

**What is seasonality?**

The demand of a product that undergoes a predictable cyclic variation.

Ex. Demand of Umbrellas in rainy season, Christmas spending

Note. Quasi-seasonality are holidays like Mother’s Day, easter that falls on different days each year

**Statistics**

**If you have a problem with low volumes**

Min/max method

**Higher volumes**

Assume Normal distribution but other distribution can work to (binomial distribution, poison distribution)

**What is root cause analysis**

Discover the underlying cause for an effect we observe and experience by following the chain of events and effects to pinpoint the problem.

* What happened
* Why it happened.
* How to prevent it

**Hoe to do a root cause analysis**

* Define the problem
* Collect data
* Map out the events
* Solve the root of the problem

**What is motion analysis**.

Muda of motion has to do why the physical action someone has to take to complete a process. It can be the amount someone has to click to finish an application or how many steps someone has to take to move one object to another.

How to solve motion problems

* Automate repetitive work
* Placement of materials, rooms, devices

**How to bring a product to market**

1. Know the product (planning)
   1. Understand if there are any regulations and legislation that are needed to be complied with at any stage of the process.
   2. Identify what/who you need. Suppliers, manufacturers, distributors and retailers.
2. Source materials
   1. Raw materials that are needed to create the product
3. Manufacturing processes
   1. Understand the manufacturing in order to coordinate the activities needed to transform the raw materials to a finished good.
4. Coordinate the delivery of the goods
   1. Coordinate and schedule delivery optimize transportation
5. Manage return services
   1. Handle consumer complaints, defective goods, unwanted goods

[**Some of the common supply chain topics are**](https://www.bing.com/aclk?ld=e8Xm4fXym688x15FkavFOiqDVUCUw2n5eZtuhUzwS_EZ74DiLZu7vGA_XAAhjS0awiyLveg4C-TL3mRdH9lqm7UUhnY2NbvI2hIPC0p1aoA5cMStZP-3I1vgEo9vb2i5YfOp6SQauiWiL8h2EiSwaYEU48y8d5yGXIauEPzbkF35V9yh4O&u=aHR0cHMlM2ElMmYlMmZ3d3cuZXkuY29tJTJmZW5fdXMlMmZzdXBwbHktY2hhaW4lM2ZXVC5tY19pZCUzZDEwNjUzNjIwJTI2QUEudHNyYyUzZHBhaWRzZWFyY2glMjZtc2Nsa2lkJTNkOTU5MDljMjE5ZTE3MTA5MDE3YjJmOGExYjMzZmQ3NGI&rlid=95909c219e17109017b2f8a1b33fd74b)[**1**](https://nimbuspost.com/blog/8-innovative-supply-chain-management-project-ideas-topics-for-beginners/)[**2**](https://www.upgrad.com/blog/supply-chain-management-project-ideas-topics-for-beginners/)**:**

* Inventory management: This topic deals with how to optimize the quantity and location of inventory across the supply chain to meet customer demand and minimize costs.
* Sustainability: This topic deals with how to reduce the environmental and social impact of supply chain activities, such as sourcing, manufacturing, transportation and disposal.
* Risk management: This topic deals with how to identify, assess and mitigate the potential threats and uncertainties that can disrupt the supply chain, such as natural disasters, geopolitical conflicts, cyberattacks and pandemics.
* Enterprise resource planning: This topic deals with how to integrate and coordinate the various functions and processes of the supply chain using software systems and data analytics**.**
* Ethical and social practices: This topic deals with how to ensure that the supply chain operates in a responsible and ethical manner, respecting human rights, labor standards, diversity and inclusion.

**Why LAWDP**

LAWDP has been champion in water conservation and efficiency. Especially due to the water supply shortage and the fact that with an increasing population comes a high-water demand. Los Angeles has over 3 million residents and **LAWDP** serves water and power to them. I looking for a place to grow and hold a long term career in the field of using my engineering technical to serve the public. LADWP has initiatives and programs dedicated to efficiency and water conservation. Operation NEXT is one of the newest water supply initiative dedicated to improve the overall water supply reliability by maximizing purified recycled water for Los Angeles.

Technical

**What are characteristics of a fluid?**

Volume dependent characteristics – mass, density,

Volume independent characteristics – viscosity, Temperature, Pressure

**What is Reynolds number? Characterization**

Reynolds number is the ratio of viscous forces and inertial forces.

Re < 2100 – Laminar (v near the wall is 0, velocity is parabolic)

2100 > RE < 4500 – Transitive

RE > 4500 – Turbulent (velocity is uniform)

**What is viscosity?t**

Viscosity describes the fluids’ resistance to flow.

**What is Capillary?**

Capillary describes the effect of the adhesive forces and cohesive forces of a liquid within a narrow tube. If adhesive forces dominate the fluid sticks to the tube creating a “U” Shape. If the cohesive forces dominate the fluid sticks to itself creating a upside down “U” Shape.

**What is Bernoulli EQ and assumptions?**

It’s the conservation of energy equation for a flowing fluid that is derived from the Naviar Strokes Equation. The components are Pressure + Kinetic Energy and Potential Energy.

Assumption:

1. Steady flow
2. Incompressible flow
3. Viscous forces are negligible.

**Knowledge about Pipes.**

Pipes are designated by classes that have differing Maximum allowable operating pressures. Material and coatings are used to deter corrosion in pipes. The internal roughness of a pipe affects the friction losses.

**Extended Bernoulli equation**

It’s the conservation of energy equation for a flowing fluid that is derived from the Navier Strokes Equation. The components are Pressure + Kinetic Energy + Potential Energy + head loss from the viscous forces, the minor losses from pipe fittings and the energy that can be extracted/added by turbines and pumps.

Assumption:

1. Steady flow
2. Incompressible flow

**Continuity EQ?**

Conversation of mass. Mass fluid remains constant.

**Knowledge about Pipe Systems?**

Parallel – pipes that start and end from the same terminal. Pipes in series suffer more pressure head loss compared to a single pipe but maintain the same flow rate.

Series – pipes of differing diameters that are connected together from end. Pipes in parallel has more flow rate compare to a single pipe but maintain the same pressure head.

**What is Cavitation? Causes? Signs? Prevention?**

Cavitation is the sudden vaporization of fluid inside of the pump.

Causes:

Fluid coming in too fast.

Fluid is coming in too hot.

Signs:

Noise

Vibration

Wear and Tear of the pump bearing

Prevention:

Increase the Available,

Decrease the Required

**Knowledge of equipment**

Turbines – Extract Energy

Pumps – Adds Energy

Heat exchanger

Condensers – remove heat from vaporization of steam

Superheaters are heat exchangers that increase the energy of the steam

Reheaters are superheaters that add energy to the steam that’s already been passed through a turbine.

**Knowledge of Pumps**

Parallel – pumps that start and end from the same terminal. Pumps in series suffer more pressure head loss compared to a single pump but maintain the same flow rate.

Series – pumps of differing diameters that are connected from end. pumps in parallel has more flow rate compared to a single pump but maintain the same pressure head.

**Laws of Thermodynamics**

1st Law: Conservation of Energy. Energy is not lost or created. It simply transitions from one state to another.

2nd Law: In an isolated system, the change of entropy is always increase.

3rd Law: The change in entropy remains constant as Temperature reaches absolute 0

0th Law: Thermal equilibrium. If two systems are in equilibrium with a third system. Then the original two systems are in thermal equilibrium.

**What is enthalpy?**

**Enthalpy is all of the useful internal energy that can be used to generate work.**

**What is entropy?**

**ENtroy is the energy that can no longer be used to created useful work.**

**What is an open system, isolated system, closed system,**

Open system: There are changes in energy and mass

Closed system: Mass remains constant and There are changes in energy.

Isolated System: Mass and Energy remain constant.

**What are all the processes?**

**Isothermal**

**Isentropic**

**Adiabatic**

**Isochoric**

**Define a Power Cycle**

**Is a thermodynamics process that involves the transference of heat and work that comes in and out of the system by varying the pressure temperature and other state variables withing the system.**

**Define Carnot Cycle and processes.**

**Ideal cycle- reversible**

1-2 isentropic compression

2-3 Isothermal Expansion

3-4 isentropic Expansion

4-1 Isothermal Compression

**Define Rankine Cycle and process.**

**Steam engine. Non reversible.**

1-2 adiabatic compression in a pump:

2-3 Constant pressure heat addition in a boiler:

3-4 adiabatic expansion in a turbine:

4-1 Constant pressure heat rejection in a condenser

**Define Rankine + (with reheat) Cycle and process.**

**The optimal way of increasing boiler pressure is to reheat the vapor as it exits from a first stage turbine and redirect it to a second turbine.**

**Define Rankine ++ (regen and reheat) Cycle with processes.**

**Use regeneration to heat up the liquid before sending it to the boiler. The regen extracts steam from the turbine to provide a heat source to the regenerator.**

**Define Otto Cycle with processes.**

1-2 Isentropic compression

2-3 Constant volume heat addition

3-4 Isentropic expansion

4-1 Constant volume heat rejection

**Define Diesel Cycle with processes.**

Combustion engines. Closed system.

1-2 Isentropic compression

2-3 Constant pressure heat addition

3-4 Isentropic expansion

4-1 Constant volume heat rejection

**Define Stirling Cycle with process.**

-Ideal Cycle. Reversible. Highest efficiency. Very Expensive.

1-2 constant volume heating

2-3 isothermal Expansion

3-4 constant volume cooling

4-1 isothermal Compression

**Define Ericsson Cycle with processes.**

1-2 isothermal Expansion

2-3 Constant pressure heat addition

3-4 isothermal Compression

4-1 Constant volume heat rejection

**Brayton Cycle**

1-2 Isentropic compression

2-3 Constant pressure heat addition

3-4 Isentropic expansion

4-1 Constant pressure heat cooling