



MANUFACTURING ENGINEERING Discipline Guide

Introduction

Manufacturing Engineering is one of the newest engineering programs at UBC – making the career prospects exciting as well. Often you may also see ‘Industrial Engineering’ as university programs or which is synonymous to ‘Manufacturing Engineering’. The job scope typically focuses on the design, development, and implementation of manufacturing processes, equipment, and systems to optimize production efficiency and quality.

Manufacturing engineers work in various industries such as automotive, aerospace, electronics, medical devices, consumer goods, and more. The industry range for manufacturing is so vast. Just look around you – everything you see is manufactured!

This document is meant to provide an overview of the industries and companies that manufacturing engineers may work for. This is not a comprehensive list, as it would be impossible to fully capture all potential career paths for chemical engineers. The descriptions of each industry provided below are also generalized! The information here has been gathered through personal experience, discussion with UBC MANU alumni, and online research. They may not necessarily apply to every company in that industry.

Career paths for MANU is very broad, which is what makes it a very attractive and stable field to go in to..

Industries

There are many industries that manufacturing engineers can work in based on their interests and passion. This section is meant to provide an overview of the industries that manufacturing engineers may work for.

CONSULTING FIRMS

Engineering consulting (re: not Management consulting) is an industry where companies are your clients, and they bring to you an engineering problem. Typically, engineering consulting firms are specialized and have a patented software or niche that make them industry experts whose advice is key to solving engineering problems.

These companies can be consulting in many industries: Aerospace, Automotive, electronics, consumer goods, etc. Manufacturing Engineers can also be hired as consultants to increase productivity and six-sigma process optimization of any process line!

As MANU is almost entirely industry ambiguous (i.e., there is a career opportunity and roles in any goods-producing industry), more value is elaborated in the types of roles a MANU engineering student may consider!

MANUFACTURING ENGINEERING

Career Paths

PROCESS ENGINEER

Process engineers are responsible for designing, implementing, and optimizing manufacturing processes to improve efficiency and reduce costs. They analyze data to identify areas for improvement, develop and implement solutions, and monitor performance to ensure continued success. They work closely with production teams to ensure that processes are carried out effectively and efficiently.

QUALITY ENGINEER

Quality engineers are responsible for ensuring that products meet the necessary quality standards. They design and implement quality control measures, analyze data to identify quality issues, and work to resolve them. They collaborate with other engineers and departments to ensure that products are designed and manufactured to meet customer expectations.

INDUSTRIAL ENGINEER

Industrial engineers focus on designing and optimizing complex systems and processes in manufacturing environments. They use data analysis and modeling techniques to identify areas for improvement, reduce costs, and improve efficiency. They work closely with production teams to ensure that processes are carried out effectively and efficiently.

MATERIALS ENGINEER

Materials engineers are responsible for selecting and evaluating materials for use in manufacturing processes. They research and develop new materials, test their properties, and work to ensure that they meet quality and safety standards. They work closely with production teams to ensure that materials are used effectively and efficiently.

MANUFACTURING ENGINEER

Manufacturing engineers are responsible for designing, developing, and implementing manufacturing processes and systems to optimize production efficiency and quality. They collaborate with other engineers and departments to optimize manufacturing processes and systems. They also evaluate and select equipment and materials for manufacturing processes.

AUTOMATION ENGINEER

Automation engineers design and implement automation systems to improve manufacturing efficiency and reduce labor costs. They work with other engineers and departments to identify areas for automation, design solutions, and implement them. They also ensure that automation systems are reliable and meet safety and regulatory standards.

OTHER CAREER PATHS

Keep in mind that this list is not exhaustive! All MANU engineering students are highly competent for roles outside of manufacturing engineering (whether it's other engineering disciplines, or completely unrelated to your field of study such as Business Operations, CPEN as well). UBC gives you a fantastic network and a strong foundation in engineering skills that are vastly applicable! What is most important is having the required skills (soft and hard) to be able to learn and take on a variety of engineering projects.

Hard/Technical Skills applicable for MANU roles

PROCESS ENGINEER

Proficiency in software such as AutoCAD and SolidWorks is important for designing and optimizing manufacturing processes. Knowledge of statistical process control (SPC) and Six Sigma methodologies is also important for analyzing and improving process efficiency and quality.



MANUFACTURING ENGINEERING

QUALITY ENGINEER

Proficiency in software such as Minitab or JMP is important for statistical analysis and data visualization. Knowledge of quality management systems (QMS) such as ISO 9001 is also important for ensuring that products meet quality standards.

INDUSTRIAL ENGINEER

Proficiency in software such as MATLAB or Simulink is important for modeling and simulating complex systems. Knowledge of Lean Manufacturing and Value Stream Mapping (VSM) methodologies is also important for identifying and eliminating waste in manufacturing processes.

MATERIALS ENGINEER

Proficiency in software such as MATLAB or ANSYS is important for materials modeling and simulation. Knowledge of material testing and characterization techniques is also important for evaluating the properties of materials.

MANUFACTURING ENGINEER

Proficiency in software such as CAD and CAM software (e.g. SolidWorks, Mastercam) is important for designing and developing manufacturing processes and systems. Knowledge of Computer Integrated Manufacturing (CIM) and Manufacturing Execution Systems (MES) is also important for optimizing manufacturing processes and systems.

AUTOMATION ENGINEER

Proficiency in software such as Programmable Logic Controllers (PLCs) and Human-Machine Interfaces (HMIs) is important for designing and implementing automation systems. Knowledge of Robotics and Computer Vision systems is also important for implementing automated manufacturing processes.

