**POLYMER ENGINEERING**

The **Training Elements** of a student in Polymer Engineering Technology major entering coop program in a company should include some or all of the following:

1. **Safety and Security Procedures**

* To understand the general safety rules and regulations in the company.
* To understand the specific safety concerns inside the chemical/production plant.
* Know the toxicity and hazardous information for different chemicals used during the polymerization processes
* Know the safety issues related to the operation of polymerization reactors and plastic production/processing.

1. **Monomer Production Plants**

* Understand various petrochemical conversion processes for production of different monomers from their precursors
* Know the process of monomer production, purification and storage.

1. **Polymerization/Chemical Plants**

* Understand the different processes for industrial production of polymers.
* Know the different types of polymerization processes.
* To understand the preparation procedures for catalysts used during polymerization
* To know the different types of reactors used for polymerization reactions.
* To know the different polymerization techniques used for polymer production.

1. **Polymer Characterization and Testing**

* Recognize various testing standards, methods and procedures for polymer/ plastic testing.
* Understand various characterization tools for identification of polymers and their additives.
* Understand structure-property relationship for various polymers from their testing and characterization results.
* Identify the requirements for quality control of polymers and polymer products.
* Carry out the quality control tests and analysis for polymer/plastic samples.

1. **Plastic Production, Polymer Processing and Polymer Recycling Plants**

* Understand various plastic production processes such as injection molding and extrusion.
* Know the operation parameters and optimization for polymer processing lines.
* Carry out the startup and shutdown during plastic production.
* Know the troubleshooting procedures during operation failure.
* Carry out the maintenance for the polymer processing machines and production lines.

Understand the recycling process for polymers.