Logistics and Supply Chain Management in Integrated Systems Engineering

Logistics is the science of design, control, and maintenance of the effective and efficient flow of resources, service, manufactured goods, personnel, and information. While this science is important in government, military and humanitarian relief, it is frequently used in manufacturing environments in the supply chain.

The supply chain is the network of resources, people and activities that take part in the manufacture and delivery of a service or product. It includes the purchasing and shipping of raw materials, intermediate storage, production and distribution of finished and partially-finished goods.

The Industrial Engineer typically focuses on certain aspects of logistics in the supply chain. These include:

- Transportation of raw materials to the manufacturer
- Handling and storage of raw materials
- Production and storage of goods
  - Scheduling and control of jobs and activities
  - Management of the labor force
- Warehousing of finished goods
- Delivery of product to the customer
- Design of various portions of the supply chain that include raw material and distribution networks, production, and warehouse facilities
- Design and control of information flow

Each of these areas requires specialized methods for developing and creating effective and efficient solutions, which are usually based on mathematical theories and methods. Research in the Integrated Systems Engineering Department involves applications in most of these areas. We also have a growing research focus in humanitarian logistics, which involves disaster preparedness, relief response operations, and evacuation planning.