

Operations Management

MNGT4240

(Elective)

Course aims / objectives:

At a fundamental level, any business or organisation is concerned with delivering value to its customers or clients. The 'operations' of a company are the direct processes that a company uses to create value: they involve transforming inputs of some sort into outputs. *Operations management* is the task of managing these processes. Each company or organisation will have a unique set of operations, whether this is dealing with phone calls at a call centre, manufacturing cardboard from recycled paper, running room service in a hotel or dealing with passengers of an airline. Operations Management teaches the tools and frameworks that apply in any operation.

This course is about the fundamentals of operations management, covering both service industries and manufacturing. The aim is to give you a set of frameworks and concepts you can use to understand the operations functions and strategies of any company.

The course content is organised into four sections:

- **Processes.** These are at the heart of operations management. Even though there is enormous variety in these processes, there are a number of important ideas that will apply in any operation.
- **Achieving excellence.** What does it mean to have high quality operations and how can this be achieved? Answering these questions will take us beyond purely quality issues and we will see how lean operations aim to eliminate all forms of waste within operations.
- **Supply Chain.** We deal with the movement of materials through the *supply chain*. We will consider the control of inventory and the way in which coordination between supply chain partners can be achieved.
- **Projects.** Most of the course focuses on processes that are carried out repeatedly. In this section, however, we will consider projects that are by their nature individual and unique. The operational challenges in managing projects are quite different from those involved in managing repeated processes, and involve careful planning of inter-related activities.

Topics include:

Module 1: Introduction to Operations

- The nature of operations
- Competitive priorities
- Operations characteristics
- Different types of operation

Module 2: Process Analysis

- Understanding operations as processes
- Process characteristics
- Capacity
- Balancing workloads and assembly lines

Module 3: Queues

- What causes queues: variability and high utilisation
- Little's law
- Analysing queues with random arrivals

Module 4: Managing for Quality

- Total quality management: Excellence for customers

- Achieving quality processes
- Process variability
- Control charts for process improvement
- Averaging over a sample
- Data involving counts

Module 5: Lean Operations

- The lean approach
- Controlling operations
- Lean operations at Toyota

Module 6: Managing Inventory

- Elements of inventory systems
- Economic Order Quantity
- Demand Uncertainty
- Inventory ordering policies
- Risk pooling

Module 7: Supply Chains

- Mapping the supply chain
- Supplier-buyer relationships
- Supply chain coordination

Module 8: Project Management

- What is a project?
- Project scheduling and critical paths
- Identifying risk
- Modelling the effect of risk – Monte Carlo methods
- Monitoring project progress through earned value