

# BN1135 – PRINCIPLES OF OPERATIONS MANAGEMENT

**Module Number:** BN1135

**Module Title:** Principles of Operations Management

**Number of Aston Credits:** 10

**Total Number of ECTS Credits:** 5  
(European Credit Transfer)

## **Staff Member Responsible for the Module:**

**Dr William Ho**

Operations & Information Management Group  
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Availability: Please see office hours on door or group administrator, John Morley, ABS266, Extension 3236

**Pre-Requisite(s) for the Module:** None

## **Module Learning Outcomes:**

Upon successful completion of this module students will be able to:

- Illustrate the importance of developing new products and services to a firm's competitiveness;
- Apply total quality management tools to provide high-quality products and services;
- Adopt the quantitative and qualitative approaches to select a location for a manufacturing or service organisation;
- Design an efficient facility layout for manufacturing and service operations;
- Recognise the basic concepts of forecasting, and its importance within an organisation;
- Explain why companies maintain inventories, and determine how much quantity of inventories should be kept using different inventory models;
- Select appropriate aggregate planning strategies to meet forecasted demand in the intermediate future;
- Recognise the role of material requirements planning within a manufacturing organisation;
- Introduce the project management tools to organise and coordinate all activities performed in a project;

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## Module Content:

### Week 14 Introduction to Operations Management

- *Definition and importance of operations management;*
- *New challenges in operations management;*
- *Strategic operations management decisions.*

### Week 15 Products and Services Design

- *Products and services selection;*
- *Products development;*
- *Products and services design.*

### Week 16 Quality Management and Control

- *International quality standards;*
- *Principle and tools of total quality management;*
- *Statistical Process Control.*

### Week 17 Location Strategy

- *Factors that affect location decisions;*
- *Evaluating methods of location alternatives;*
- *Transportation model.*

### Week 18 Layout Strategy

- *Types of layout;*
- *Office relationship chart;*
- *Assembly line balancing.*

### Week 19 Forecasting

- *Strategic importance and steps of forecasting system;*
- *Time-series forecasting;*
- *Regression and correlation.*

### Week 20 Inventory Management

- *Functions of holding inventory;*
- *Models under conditions of certainty and uncertainty;*
- *Just-in-time system.*

### Week 21 Aggregate Production Planning

- *Capacity and demand strategies;*
- *Aggregate planning strategies;*
- *Graphical and charting method.*

### Week 22 Material Requirements Planning

- *Dependent inventory model requirements;*
- *Structure and benefits of material requirements planning;*
- *Extensions of material requirements planning.*

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## Week 23 Project Management

- *Importance of project management;*
- *Project planning, scheduling, and controlling;*
- *Project management techniques.*

## Week 24 Review and Revision

### **International Dimensions:**

In this introductory module, the international dimensions are limited to the provision of appropriate examples.

### **Corporate Connections:**

This module provides the students with a wide variety of “real world” case studies and examples in manufacturing and service areas from both national and international organisations.

### **Links to Research:**

Dr William Ho’s field of expertise includes mathematical modelling, multi-attribute analytic algorithms, artificial intelligence algorithms, operations management, and supply chain management. He has extensive experience in manufacturing process optimisation using mathematical modelling techniques and artificial intelligence algorithms. He has also developed a multi-attribute analytic framework, and successfully applied it for the supplier evaluation and logistics distribution network design problems. Since 2003, he has published 30+ research articles in the leading international journals, and two authored books. Latest findings of his research will be used as the teaching materials of the module.

### **Learning and Teaching Rationale and Methods:**

- Lectures will be used to present basic concepts, to address common problems, and to suggest general decision-making tools.
- Workshop sessions with tutorial support for individuals and small groups will be available for the development of practical skills and for working through the details of ideas that have been presented formally.
- Additional practical work and private study will be required for the students to become fluent with the techniques of operations management. Materials, including video clips showing how operations management is applied in a variety of real business, will be provided on Blackboard to guide the private study.

### **Contact and directed learning**

Lectures (one hour a week)	12 hours
Tutorials (one hour fortnightly)	5 hours
Class test	1 hour
Examination	2 hours

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## Indirect learning

Reading	25 hours
Tutorial preparation	10 hours
Test preparation	15 hours
Examination preparation	30 hours

**Total** **100 hours**

## Ethical Approval:

This module does not require any primary research and no ethical approval will be necessary.

## Assessment and Feedback Rationale and Methods:

The assessment is via a one-hour multiple choice class test (20%) during week 21, and a two-hour closed book examination (80%) at the end of term 2.

The class test aims to assess the learning objectives and skills students have acquired. This test is also used explicitly to guide students in their study and to assist them in judging their strengths and weaknesses before the final examination.

The closed book examination aims to assess whether students have understood the key techniques and can apply them to relevant examples within the context of operations management.

Formative feedback will be given to the students for their attempts to tutorial assignments, self-assessed multiple choice questions, past class test papers, past examination papers via email and/or face-to-face discussion.