



# PD08

## Production Planning

### Standards

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# PD08

# Production Planning

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## Unit purpose and aim

This unit provides the fundamental knowledge required by managers in the logistics business sector involved in the flow of materials through a production process. It covers production planning as part of the logistics system and how production planning fits into a company's supply chain strategy. This unit views the logistics of production planning processes in terms of the creation of value to the customers, delivering sustainable competitive advantage and minimising waste.

## Elements

- PD08-1 The Concepts of Production Planning
- PD08-2 Fundamentals of Production Planning
- PD08-3 Current Manufacturing and Materials Planning Systems
- PD08-4 Managing Material Flows Through a Production Process

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# Element PD08-1

## The Concepts of Production Planning

### Learning Outcomes

The learner will:

1.1. Understand the elements of production planning.

1.2. Know the purpose of production planning within a supply chain.

1.3. Understand the links between production planning and sales planning and forecasting.

1.4. Understand the process of demand management.

1.5. Understand the various forecasting techniques.

### Assessment Criteria

The learner can:

1.1.1. Outline a production planning cycle.

1.2.1. Analyse service levels and costs to maximise profitability.

1.3.1. Integrate the requirements of sales planning into the production plan.

1.4.1. Implement appropriate demand management processes.

1.5.1. Select and implement an appropriate forecasting system.

## Indicative Content

Elements	Strategic and business planning; demand management; sales and operations planning; Master Production Scheduling (MPS); Rough Cut Capacity Planning (RCCP); Materials Requirements Planning (MRP); Bills of Material (BOM); Capacity Requirements Planning (CRP); Production Capacity and Control; Vendor Requirements and Control; Distribution Requirements Planning (DRP).
Purposes	Maintenance of: service levels; cost control. Achievement of: profitability; return on assets; strategic goals; required outputs.
Links	Planned sales: volumes; availability to promise. Sales and operational planning: what to make; how many; when.
Demand management	Level production and demand-chasing strategies. Effects of varying production with demand.
Forecasting techniques	Short-term forecasting: simple average; weighted average; moving averages (simple and with trend); exponential smoothing (with and without trend). Long-term forecasting: subjective: jury of executive opinion; sales force composites; user expectations. Quantitative: time series analysis; regression models (least squares and multiple regression).

# Element PD08-2

## Fundamentals of Production Planning

### Learning Outcomes

The learner will:

- 2.1. Understand Master Scheduling terminology and processes.
- 2.2. Understand the purposes and management of Rough Cut Capacity Planning (RCCP).
- 2.3. Understand the use and processing of Bills of Materials (BOM).
- 2.4. Know the purpose of Capacity Requirements Planning.
- 2.5. Know the responsibilities of Production Control.
- 2.6. Understand basic scheduling concepts.

### Assessment Criteria

The learner can:

- 2.1.1. Produce a Master Production Schedule.
- 2.2.1. Produce a Rough Cut Capacity Plan.
- 2.3.1. Construct a Bill of Materials.
- 2.4.1. Produce a Capacity Requirements Plan.
- 2.5.1. Optimise the use of manufacturing resources.
- 2.6.1. Plan the requirements of capacity, components and materials against time.

## Indicative Content

Master Scheduling	Terminology: forecast; on-hand balance; allocated stock; free stock; fixed order quantity; variable order quantity; safety stock; lead time; scheduled receipt. Process: time-phased planning; capacity requirements; materials requirements; make to stock; make to order.
Rough Cut Capacity Planning	Purposes: capacity planning needs; capacity requirements. Management: production plan testing; MPS testing; capacity planning using overall factors (CPOF); bill of labour; resource profiles; product families.
Bills of Material	Uses: product definition; documenting changes to product design; costing of material element of product; product simplification. Processing: MRP inputs; single level bills; planning bills; “where-used” reports; “pegging” reports. Management: BOM integrity; changing BOMs; one BOM-one product; multi-site BOMs.
Capacity Requirements Planning	Purposes: identify capacity requirements; time phased labour and plant requirements; imbalances in MRP system.
Production control	Responsibilities: transmit instructions to/from production operation; manage effectiveness; optimise use of manufacturing resources.
Scheduling	Concepts: sales and operational planning forecasts; production plan; time-phased planning of capacity, components and materials.



# Element PD08-3

## Current Manufacturing and Materials Planning Systems

### Learning Outcomes

The learner will:

3.1. Understand the development of manufacturing and control systems.

3.2. Understand the current manufacturing environment and the types of system currently used.

3.3. Understand the development of benchmarking and benchmarking techniques.

3.4. Know the impact of globalisation on production planning.

3.5. Understand the development of information systems to support production planning.

### Assessment Criteria

The learner can:

3.1.1. Compare the basic principles of production planning to modern manufacturing and control systems.

3.2.1. Compare the effectiveness of different systems with the basic production planning processes.

3.3.1. Plan and implement a benchmarking process in the production planning environment.

3.4.1 Analyse the implications of globalisation on production planning processes.

3.5.1. Develop a project for the implementation of information systems to support production planning processes.

## Indicative Content

Manufacturing and control systems development	Production flows; control of flows. Project Management techniques.
Current manufacturing environment and systems	Environment: make to stock; make to order; assemble to order; lean production; just-in-time; mass consumption; set-up time reduction; Kaizen; design for manufacture and assembly. Systems: Manufacturing Resource Planning (MRP II); master production scheduling and MRP II; rate-based master production scheduling; Enterprise Resource Planning (ERP); Advanced Planning and Scheduling (APS); Customer Relationship Management (CRM); MRP in JIT environment; Kanban.
Benchmarking	Analysis of performance: competing and non-competing organisations; partners. Benchmarks: customer service activities; asset utilisation. Internal audit of supply chain; external audit of supply chain.
The impact of globalisation	Forces on production; constraints on production; global sourcing; relationship enterprise.
Information systems	EDI. Enhanced Order Management and Transport Control systems. RFID technologies and Bar Coding. Current Issues in Information Systems.

# Element PD08-4

## Managing Material Flows Through a Production Process

### Learning Outcomes

The learner will:

- 4.1. Understand the need to improve production planning performance.
- 4.2. Understand the options for measuring production planning performance.
- 4.3. Know how to eliminate waste from the production planning process.
- 4.4. Understand the management and technical skills required within production planning.

### Assessment Criteria

The learner can:

- 4.1.1. Implement a process of Total Quality Management (TQM).
- 4.2.1. Identify and implement suitable performance measures.
- 4.3.1. Identify the sources of waste and the measures available to eliminate it.
- 4.4.1. Implement a process of management improvement based on modern principles.

## Indicative Content

The need for performance measures	Customer focus; Total Quality Management.
Measuring performance	Metrics: capacity utilization; on-time delivery; conformity of master schedule to the production plan; WIP inventory levels; finished goods inventory levels; conformance of actual production to the master schedule.
Waste	Types: scrap (processing); time; resources; quality (product defects); overproduction/inventory. Management control of waste: simplify; combine; eliminate. Waste reduction through MRP and JIT.
Management and technical skills	Traditional management approaches. Contemporary thinking.