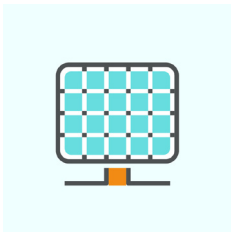


# Certified Beginner in Supply Chain



Handbook



## **MODULE ONE INTRODUCTION TO MATERIALS MANAGEMENT**

OPERATING ENVIRONMENT  
Order Qualifiers and Order  
Winners; Manufacturing Strategy.

THE SUPPLY CHAIN CONCEPT  
Supply Chain Concepts; Supply  
Chain Metrics; Conflicts in  
Traditional Systems.

WHAT IS MATERIALS  
MANAGEMENT?  
Work-in-Process; Manufacturing  
Planning and Control; Physical  
Supply/Distribution.

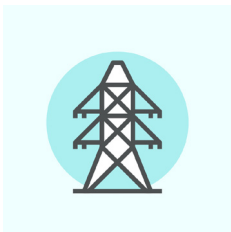
The Production Plan; The Master  
Production Schedule; The Master  
Requirements Plan; Purchasing  
and Production Activity Control;  
Capacity Management.

SALES AND OPERATIONS  
PLANNING

MANUFACTURING  
RESOURCE PLANNING

ENTERPRISE RESOURCE  
PLANNING

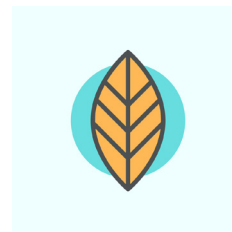
MAKING THE PRODUCTION  
PLAN  
Establishing Product Groups;  
Basic Strategies; Developing a  
Make-to-Stock Production Plan;  
Developing a Make-to-Order  
Production Plan; Resource  
Planning.



## **MODULE TWO PRODUCTION PLANNING SYSTEM**

MANUFACTURING  
PLANNING AND CONTROL  
SYSTEM

The Strategic Plan; The Strategic  
Business Plan (Business Plan);



## **MODULE THREE MASTER SCHEDULING**

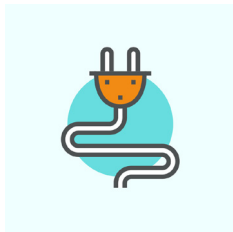
RELATIONSHIP TO  
PRODUCTION PLAN

DEVELOPING A MASTER  
PRODUCTION SCHEDULE

Preliminary Master Production Schedule; Rough-Cut Capacity Planning; Resolution of Differences; Master Schedule Decisions; Planning Horizon

## PRODUCTION PLANNING, MASTER SCHEDULING, AND SALES

The MPS and Delivery Promises; Projected Available Balance; Time Fences; Error Management.



## MODULE FOUR MATERIAL REQUIREMENTS PLANNING

Nature of Demand; Objectives of MRP; Linkages to Other Manufacturing Planning and Control Functions; MRP Software; Inputs of the Material Requirements Planning System

BILLS OF MATERIAL  
Bill of Material Structure; Where-Used and Pegging Reports; Uses for Bills of Material

MATERIAL REQUIREMENTS  
PLANNING PROCESS  
Exploding and Offsetting; Gross and Net Requirements; Releasing

Orders; Basic MRP Record; Capacity Requirements Planning; Low-Level Coding and Netting; Multiple Bills of Material

USING THE MATERIAL  
REQUIREMENTS PLAN  
Managing the Material  
Requirements Plan.



## MODULE FIVE CAPACITY MANAGEMENT

DEFINITION OF CAPACITY

CAPACITY PLANNING  
Planning Levels

CAPACITY REQUIREMENTS  
PLANNING  
Inputs

CAPACITY AVAILABLE  
Measuring Capacity; Levels of Capacity; Determining Capacity Available; Demonstrated Capacity

CAPACITY REQUIRED (LOAD)  
Time Needed for Each Order;  
Load; Work Center Load Report  
SCHEDULING ORDERS  
MAKING THE PLAN



## **MODULE SIX PRODUCTION ACTIVITY CONTROL**

Planning; Implementation;  
Control; Manufacturing Systems

DATA REQUIREMENTS  
Planning Information; Control  
Information

ORDER PREPARATION

SCHEDULING  
Manufacturing Lead Time;  
Scheduling Techniques; Operation  
Overlapping; Operation Splitting

LOAD LEVELING

SCHEDULING IN A  
NONMANUFACTURING  
SETTING

SCHEDULING BOTTLENECKS

THEORY OF CONSTRAINTS  
AND DRUM-BUFFER-ROPE  
Manage the Constraint; Improve  
the Process; Scheduling with the  
Theory of Constraints

IMPLEMENTATION

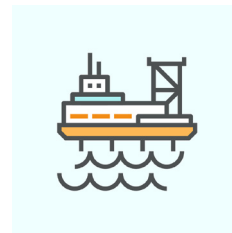
CONTROL

Input/Output Control; Operation  
Sequencing

PRODUCTION REPORTING

PRODUCT TRACKING

MEASUREMENT SYSTEMS



## **MODULE SEVEN PURCHASING**

Purchasing and Profit Leverage;  
Purchasing Objectives;  
Outsourcing; Purchasing Cycle

ESTABLISHING  
SPECIFICATIONS  
Quantity Requirements; Price  
Requirements; Functional  
Requirements

FUNCTINAL SPECIFICATION  
DESCRIPTION  
Description by Brand; Description  
by Specification; Engineering  
Drawings; Miscellaneous  
Attributes

SELECTING SUPPLIERS  
Sourcing; Factors in Selecting  
Suppliers; Identifying Suppliers;  
Final Selection of Supplier

PRICE DETERMINATION  
Basis for pricing; Competitive  
Bidding; Price Negotiation

IMPACT OF MATERIAL  
REQUIREMENTS PLANNING  
ON PURCHASING

ENVIRONMENTALLY  
RESPONSIBLE PURCHASING  
Reduce; Reuse; Recycle

EXPANSION OF PURCHASING  
INTO SUPPLY CHAIN  
MANAGEMENT

SOME ORGANIZATIONAL  
IMPLICATIONS OF SUPPLY  
CHAIN MANAGEMENT  
Savings can Be Substantial



## **MODULE EIGHT FORECASTING AND DEMAND MANAGEMENT**

DEMAND MANAGEMENT

DEMAND FORECASTING

CHARACTERISTICS OF  
DEMAND

Demand Patterns; Stable Versus

Dynamic; Dependent Versus  
Independent Demand

PRINCIPLES OF FORECASTING

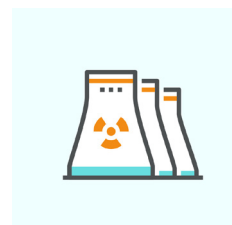
COLLECTION AND  
PREPARATION OF DATA

FORECASTING TECHNIQUES  
Qualitative Techniques;  
Quantitative Techniques; Extrinsic  
Techniques; Intrinsic Techniques

SOME IMPORTANT INTRINSIC  
TECHNIQUES  
Moving Averages; Exponential  
Smoothing

SEASONALITY  
Seasonal Index; Seasonal  
Forecasts; Deseasonalized  
Demand

TRACKING THE FORECAST  
Forecast Error; Mean Absolute  
Deviation; P/D Ratio



## **MODULE NINE INVENTORY FUNDAMENTALS**

AGGREGATE INVENTORY  
MANAGEMENT

## ITEM INVENTORY MANAGEMENT

### INVENTORY AND THE FLOW OF MATERIAL

### SUPPLY AND DEMAND PATTERNS

### FUNCTIONS OF INVENTORIES

Anticipation Inventory;  
Fluctuation Inventory (Safety  
Stock); Lot-Size Inventory;  
Transportation Inventory; Hedge  
Inventory; Maintenance, Repair,  
and Operating, (MRO) Supplies

### OBJECTIVES OF INVENTORY MANAGEMENT

Customer Service; Operating  
Efficiency; Item Cost; Carrying  
Costs; Ordering Costs; Stockout  
Costs; Capacity-Associated Costs

### FINANCIAL STATEMENTS AND INVENTORY

Balance Sheet; Income Statement;  
Cash Flow Analysis; Return on  
Investment; Financial Inventory  
Performance Measures; Methods  
of Evaluating Inventory; Control  
Based on ABC Classification.



## MODULE TEN ORDER QUANTITIES

Stockkeeping Unit (SKU); Lot-  
Size Decision Rules; Costs

### ECONOMIC ORDER QUANTITY

Assumptions; Development of  
the EOQ Formula; Trial-and-  
Error Method; Economic Order  
Quantity Formula; How to Reduce  
Lot Size

### VARIATION OF THE EOQ MODEL

Monetary Unit Lot Size;  
Noninstantaneous Receipt Model

### QUANTITY DISCOUNTS

### ORDER QUANTITIES FOR FAMILIES OF PRODUCT WHEN COSTS ARE NOT KNOWN

PERIOD ORDER QUANTITY  
Practical Considerations When  
Using the EOQ.



## **MODULE ELEVEN INDEPENDENT DEMAND ORDERING SYSTEMS**

### **ORDER POINT SYSTEM**

#### **DETERMINING SAFETY STOCK**

Variation in Demand During Lead Time; Variation in Demand About the Average; Determining the Safety Stock and Order Point

#### **DETERMINING SERVICE LEVELS**

#### **DIFFERENT FORECAST AND LEAD-TIME INTERVALS**

#### **DETERMINING WHEN THE ORDER POINT IS REACHED**

Two-Bin System; Kanbans;  
Perpetual Inventory Record  
System

#### **PERIODIC REVIEW SYSTEM Target-Level or Maximum-Level Inventory**

**DISTRIBUTION INVENTORY**  
Decentralized System;  
Centralized System; Distribution  
Requirements Planning.



## **MODULE TWELVE PHYSICAL INVENTORY AND WAREHOUSE MANAGEMENT**

### **WAREHOUSING MANAGEMENT**

Warehouse Activities; Cube Utilization and Accessibility; Stock Location; Order Picking and Assembly

**PHYSICAL DISTRIBUTION**  
Activities in Physical Distribution; Total Cost Concept; Global Distribution; 3PLs: Third Party Logistics Providers; 4PLs: Fourth Party Logistics Providers

### **PHYSICAL DISTRIBUTION INTERFACES**

Marketing; Production

### **PACKAGING Unitization**

### **MATERIAL HANDLING**

### **PHYSICAL CONTROL AND SECURITY**

### **INVENTORY RECORD ACCURACY**

Causes of Inventory Record Errors; Measuring Inventory

Record Accuracy; Auditing  
Inventory Records

CONSIGNMENT  
INVENTORY AND VENDOR-  
MANAGEMENT INVENTORY  
(VMI)



## **MODULE THIRTEEN INTRODUCTION TO QUALITY**

WHY QUALITY

MANUFACTURING VERSUS  
SERVICE QUALITY

Dimensions of Product Quality;  
Dimensions of Service Quality

QUALITY TERMINOLOGY

HISTORY OF QUALITY

QUALITY COSTS

Prevention costs; Appraisal Costs;  
Internal Failure Costs; External  
Failure Costs

TOTAL QUALITY (TQ)

Principles of Total Quality



## **MODULE FORTEEN INTRODUCTION TO PROCESS**

UNDERSTANDING PROCESS

HISTORY

LEAN

SIX SIGMA

DMAIC

PROCESS CAPABILITY

Process Capability Ratio ( $C_p$ );  
Process Capability Index ( $cpk$ )

FACTORS AFFECTING  
PROCESS MANAGEMENT

KEY ISSUES





## **MODULE FIFTEEN TOTAL QUALITY MANAGEMENT**

WHAT IS QUALITY?

TOTAL QUALITY  
MANAGEMENT

Management Commitment;  
Customer Focus; Employee  
Involvement; Continuous  
Process Improvement; Supplier  
Partnerships; Performance  
Measures

QUALITY COST CONCEPTS  
Costs of Failure; Costs of  
Controlling Quality

VARIATION AS A WAY OF LIFE  
Patterns of Variability

PROCESS CAPABILITY  
Process Capability Index, Cp; Cpk  
Index

PROCESS CONTROL  
Control Charts; Control Limits;  
Control Charts for Attributes;  
Other Quality Control Tools

SAMPLE INSPECTION  
Sampling Plans

ISO 9000:2015

ISO 26000:2010

ISO 14001:2015

BENCHAMARKING

SIX SIGMA

THE RELATIONSHIP OF LEAN  
PRODUCTION, TQM, AND ERP



## **MODULE SIXTEEN LEAN PRODUCTION**

LEAN PRODUCTION  
Adding Value

WASTE  
Waste Caused by Poor Product  
Specification and Design; Waste  
Caused in Manufacturing; Poka-  
Yoke (Fail Safe)

THE LEAN PRODUCTION  
ENVIRONMENT  
Flow Manufacturing; Process  
Flexibility; Quality Management;  
Total Productive Maintenance;  
Uninterrupted Flow; Continuous  
Process Improvement; Supplier  
Partnerships; Total Employee  
Involvement

# MANUFACTURING PLANNING AND CONTROL IN A LEAN PRODUCTION ENVIRONMENT

Forecasting; Sales and Operations  
Planning/Production Planning;  
Master Production Scheduling;  
Material Requirements Planning;  
Inventory Management; The Push  
System; The Pull System; The  
Kanban System; Using the Kanban  
System for Process Improvement;  
Some Additional Lean Production  
Tools and Concepts

# COMPARING ERP, KANBAN, AND THEORY OF CONSTRAINTS

Enterprise Resource Planning  
(ERP); Lean Production  
(Kanban); Theory of Constraints  
(Drum-Buffer-Rope); Hybrid  
Systems

