23.3.0 OPERATIONS MANAGEMENT

23.3.1 Introduction

This module unit is intended to equip the trainee with the knowledge, skills and attitudes that will enable him/her effectively plan and manage the procurement functions in an organisation

23.3.2 General Objectives

By the end of the module unit, the trainee should be able to:

a) explain the concept of operations management
b) describe the role of materials management in product development process
c) discuss the relationship between production planning and control
d) recognise the role of materials management in production operations
e) outline the need for the efficient maintenance of plant and equipment
f) explain the importance of location and layout in operations management
g) explain the need for new technologies in operations management for effective materials usage

23.3.3 Module Unit Summary and Time Allocation

Code	Sub-Module Units	Content	Total (Hours)
23.3.01	Introduction to Operations Management	• Concept of operations management • Transformation process in operations management • Product versus service operations • Role of materials management	2

Code	Sub-Module Units	Content	Total (Hours)
23.3.02	Product Development and Design	• Need for product development • Sources of new product ideas • Stages in product development • Role of purchasing in product development and design	15
23.3.03	Production Planning and Control	• Meaning of production planning and control • Interface between material need, plant and equipment maintenance, production planning and control • Factors to be considered when planning for material to be used in production • Production planning techniques	15
23.3.04	Production Systems	• Types of production systems • Factors that influence the choice of production systems	12
23.3.05	Plant and Equipment Maintenance	• Need for plant and maintenance and repair • Reasons for equipment maintenance • Ways of plant and equipment maintenance and repair • Types of plant and equipment maintenance • Factors to be considered when planning for plant and equipment maintenance and repair • Costs involved in plant and equipment maintenance • Role of purchasing in plant and equipment maintenance and repair	15

Code	Sub-Module Units	Content	Total (Hours)
23 3.06	Location and Layout in Operations Management	• Factors that determine the location of operating units • Location analysis tools • Types of factory/plant layout	12
23 3.07	Technologies in Operations Management	• Concept of benchmarking • Flexible manufacturing systems • Computer Aided designs • Computer Integrated manufacturing system • Lean performance	15
23 3.08	Emerging Issues and Trends in Operation Management	• Emerging issues and trends in operations management • Challenges posed by the emerging trends and issues in operations management • Coping mechanisms challenges posed by the emerging trends and issues in operations management	4
Total			90

23.3.01	**INTRODUCTION TO OPERATIONS MANAGEMENT**		- Performance objectives for the operations function
	Theory	23.3.01T2	Transformation process in operations - Input stage - Conversion stage (production system) - Output stage
23.3.01T	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to: a) explain the concept of operations b) describe the transformation process in operations c) distinguish between manufacturing and service operations d) explain the roles of materials management in business organisations.	23.3.01T3	Manufacturing versus service operations - Product characteristics - Service characteristics
		23.3.01T4	Role of materials management in an organisation
			Practice
		23.3.01P	*Specific Objective* By the end of the sub-module unit, the trainee should be able to design the input, transportation output model
23.3.01C	**Competence** The trainee should have the ability to design the input, transportation output model	23.3.01P1	*Content* Designing the input, transportation output model
23.3.01T1	*Content* Concept of operations - Meaning of operations management - Meaning of Operations management		*Suggested Teaching/Learning Resources* - Text books - Chalk-board - Case-study

	Suggested Teaching/Learning Activities - Discussion - Explanation - Note-taking - Observation *Suggested Evaluation Methods* - Oral tests - Assignments	23.3.02C	Competence The trainee should have the ability to identify sources of ideas and material for new product development
		23.3.02T1	*Content* Need for product development - Changes in consumer tastes - Changes in technology - Competition
23.3.02	**PRODUCT DEVELOPMENT AND DESIGN**		
	Theory	23.3.02T2	Sources of new product ideas - Internal sources - Customers - Distributors - Suppliers
23.3.02T	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to a) explain the need for product development b) identify the sources for ideas for product development c) describe the stages in product development d) explain the role of purchasing in product development and design.	23.3.02T3	Stages in product development - Idea generation - Screening and analysis - Development - Testing - Commercialization
		23.3.02T4	Role of purchasing and supply in product development and design - Provision of information on new components available - Provision of information on possible components

- Identification of potential supply partners
- Advising on cost and availability of materials required
- Developing preliminary supply options

Practice

23.3.02P *Specific Objective*
By the end of the sub-module unit, the trainee should be able to illustrate the process of product development

Content

23.3.02P1 Illustration of the process of product development

Suggested Teaching/Learning Resources
- Text books
- Chalk-board
- Computer
- Case-study

Suggested Teaching/Learning Activities
- Discussion
- Explanation
- Note-taking
- Demonstration

Suggested Evaluation Methods
- Oral tests
- Assignments

23.3.03 **PRODUCTION PLANNING AND CONTROL**

Theory

23.3.03T *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
a) explain the meaning of production planning and control
b) interface between production planning and control
c) explain the various factors to be considered when planning for materials to be used in production
d) evaluate the various production planning techniques.

23.3.03C **Competence**
The trainee should have the ability to apply production planning and control techniques

	Content	*Suggested Teaching/Learning Resources*
23.3.03T1	Meaning of terms - Production planning - Control	- Text books - Chalk-board - Exercise books - Manila papers - Felt pen
23.3.03T2	Interfacing between production planning and control	
23.3.03T3	Factors to be considered when planning for materials to be used in production	*Suggested Teaching/Learning Activities* - Discussion - Explanation - Note-taking - Observation
23.3.03T4	Production planning techniques - Capacity planning - Loading, sequencing and scheduling - Network analysis - MPR I and MRP II - Enterprise Resource Planning - Just in Time (JIT) - Gantt Chart - Standardization	*Suggested Evaluation Methods* - Assignments - Oral tests
	Practice	
23.3.03P	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to: a) draw a Gantt chart b) prepare a production schedule.	
	Content	
23.3.03P1	Drawing a Gant charts	
23.3.03P2	Production schedules	

23.3.04	**PRODUCTION OPERATIONS/SYSTEMS**	
	Theory	
23.3.04T	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to: a) explain the various types of production systems b) discuss the various factors influencing the choice of production system.	

23.3.04C **Competence**
The trainee should have the ability to plan and manage material flow for each type of production system

Content

23.3.04T1 Types of production systems
- Project
- Jobbing
- Batch
- Mass
- Process

23.3.04T2 Factors that influence the choice of production system

Practice

23.3.04P *Specific Objective*
By the end of the sub-module unit, the trainee should be able to identify types of production systems in a class discussion

Content

23.3.04P1 Class presentation on production systems

Suggested Teaching/Learning Resources
- Text books
- Chalk-board
- Case-study

Suggested Teaching/Learning Activities
- Discussion
- Explanation
- Note-taking
- Observation

Suggested Evaluation Methods
- Question and answer

23.3.05 **PLANT AND EQUIPMENT MAINTENANCE**

Theory

23.3.05T *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
a) explain the need for plant and equipment maintenance
b) discuss the reasons for plant and equipment maintenance and repair
c) describe ways of plant and equipment maintenance and repair
d) explain the types of plant and equipment maintenance
e) explain factors to be considered when planning for plant and equipment maintenance

	f) discuss the various costs involved in plant and equipment maintenance g) discuss the role of purchasing in plant and equipment maintenance.		- To enable product or service quality and customer satisfaction be achieved through correctly adjusted serviced and operated equipment
		23.3.05T2	Reasons for equipment maintenance - Due to natural wear and tear - Changes in service requirements - Technological obsolescence
23.3.05C	**Competence** The trainee should have the ability to prepare a plant and equipment maintenance schedule		
		23.3.05T3	Ways of plant and equipment maintenance and repair
	Content		
23.3.05T1	Need for plant and equipment maintenance - To maximize the useful life of the plant and equipment - To keep the plant and equipment safe and prevent the development of safety hazards - To minimize the total production or operating costs directly attributed to equipment service and repair - To maximize production/operations capacity from the given equipment resources	23.3.05T4	Types of plant and equipment maintenance - Reactive - Proactive
		23.3.05T5	Factors to be considered when planning for plant and equipment maintenance - Keeping pace with changing technology - Economic life of the plant and equipment
		23.3.05T6	Costs involved in plant and equipment maintenance - Fixed costs - Variable costs

23.3.05T7	Role of purchasing in plant and equipment maintenance - Negotiations for actual purchase of maintenance equipment - Liaising with maintenance staff to ensure that information regarding cost, availability and delivery times is available in respect to critical items - Initiate a policy of standardization to avoid holding a variety of 'critical spares' - Suggesting alternative items for maintenance - Minimize administration and storage costs	23.3.05P1	*Content* Liaise with maintenance staff in an organisation to ensure that information regarding cost, availability and delivery times is available in respect to critical items *Suggested Teaching/Learning Resources* - Chalk-board - Computer - LCD - Case-study *Suggested Teaching/Learning Activities* - Discussion - Explanation - Note-taking - Demonstration - Observation *Suggested Evaluation Methods* - Assignments - Examination

Practice

23.3.05P	*Specific Objective* By the end of the sub-module unit, the trainee should be able to liaise with maintenance staff in an organisation to ensure that information regarding cost, availability and delivery times is available in respect to critical items

23.3.06 LOCATION AND LAYOUT IN OPERATIONS MANAGEMENT

Theory

23.3.06T *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
a) explain the factors that determine the location of operating units
b) explain location analysis tools
c) analyze and categorize the features and advantages of different layout types in terms of efficient work flow.

23.3.06C **Competence**
The trainee should have the ability to design an operating layout

Content

23.3.06T1 Factors that determine the location of operating units
- Labour
- Transportation
- Utilities
- Social
- Environment

23.3.06T2 Location analysis tools
- Analytic techniques

23.3.06T3 Factory plant layout
- Meaning of factory plant layout
- Factors considered in factory plant layout
- Types of plant layout
- Advantages and disadvantages of each plant layout

Practice

23.3.06P *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to
a) illustrate types of plant layouts
b) design an operating layout

Content

23.3.06 P1 Illustration of types of plant layout

23.3.06 P1 Designing an operating layout

Suggested Teaching/Learning Resources
- Text books
- Chalk-board
- Manila papers
- Felt pens
- Resource persons

	Suggested Teaching/Learning Activities - Discussion - Explanation - Note-taking - Observation	23.3.07C	**Competence** The trainee should have the ability to apply new technologies operations management
	Suggested Evaluation Methods - Quizzes - Assignments	23.3.07T1	*Content* Concept of bench marking - Meaning of bench marking - Types of benchmarking - Benchmarking process - Benefits of benchmarking - Limitations of benchmarking
23.3.07	**TECHNOLOGIES IN OPERATIONS MANAGEMENT** **Theory**		
23.3.07T	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to: a) explain the concept of benchmarking b) explain flexible manufacturing system c) describe computer integrated manufacturing system d) discuss the use of Computer-Aided Design (CAD) in operations management e) explain the concept of lean performance.	23.3.07T2	Flexible manufacturing systems - Meaning of flexible manufacturing systems - Advantages and disadvantages manufacturing systems
		23.3.07T3	Computer integrated manufacturing system (CIM) - Meaning of computer integrated manufacturing system - Advantages and disadvantages computer integrated system

23.3.07T4	Computer aided design (CAD) - Meaning of CAD - Advantages and disadvantages of CAD		*Suggested Evaluation Methods* - Assignments - Oral tests
23.3.07T5	Lean performance - Meaning of lean performance - Key elements of lean manufacturing - Agile production	23.3.08	**EMERGING TRENDS AND ISSUES IN OPERATIONS MANAGEMENT**
	Practice		**Theory**
		23.3.08T	*Specific Objectives* By the end of the sub-module unit, the trainee should be able to:
23.3.07P	*Specific Objective* By the end of the sub-module unit, the trainee should be able to identify new technologies in operations management		a) identify emerging trend and issues in operations management b) discuss challenges posed by the emerging trends and issues in operations management c) discuss the approaches of managing challenges posed by the emerging trends and issues in operations management
	Content		
23.3.07P1	New technologies in operations management		
	Suggested Teaching/Learning Resources - Computer - LCD - Internet - Case-study - Resource persons		
	Suggested Teaching/Learning Activities - Discussion - Explanation - Note-taking - Observation		*Content*
		23.3.08T1	Emerging trends and issues in operation management

23.3 08T2	Challenges posed by emerging trends and issues in operations management	*Suggested Teaching/Learning Resources* - Text books - Chalk-board - Computer - LCD
23.3.08T3	Management of challenges posed by emerging trends and issues in operations management	
	Practice	*Suggested Teaching/Learning Activities* - Discussion - Explanation - Note-taking
23.3.08P	*Specific Objective* By the end of the sub-module unit, the trainee should be able to identify emerging issues and trends in operation management	*Suggested Evaluation Method* - Examination - Written Report - Oral tests
	Content	
23.3.08P1	Emerging issues and trends in operations management	