



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Master of Business Administration (Part-Time), 4th Semester
Specialization: Production and Operations Management
Subject Name: Materials Management
Subject Code: 5549932

1. Learning Outcomes:

Learning Outcome Component	Learning Outcome (Learner will be able to)
Business Environment and Domain Knowledge (BEDK)	<ul style="list-style-type: none"> • <i>Apply</i> Theory of Constraints (TOC), capacity planning and Production Activity Control (PAC). • <i>Apply</i> Master Scheduling and the Master Production Schedule (MPS).
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions (CBPI)	<ul style="list-style-type: none"> • <i>Demonstrate</i> competency in effective utilization of materials in manufacturing and service organization. • <i>Demonstrate</i> competency in the practical application of materials management principles in industrial inventory systems. • <i>Determine</i> requirements and keep priorities current using Material Requirement Planning (MRP) and Bills of Material.
Global Exposure and Cross-Cultural Understanding (GECCU)	<ul style="list-style-type: none"> • <i>Develop</i> the zeal for keeping a continuous track of innovations in materials management globally.
Social Responsiveness and Ethics (SRE)	<ul style="list-style-type: none"> • <i>Prioritize</i> and critically <i>analyze</i> ethical issues in purchasing and negotiations.
Effective Communication (EC)	<ul style="list-style-type: none"> • <i>Describe</i> and <i>defend</i> best practices in materials management.
Leadership and Teamwork (LT)	<ul style="list-style-type: none"> • <i>Influence</i> teams for effective decision making and coordinate to effect purchase at minimum cost.

LO – PO Mapping: Correlation Levels:

1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High), “-“= no correlation

Sub. Code: 5549932	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
LO1: <i>Assess</i> on application of Theory of Constraints (TOC), capacity planning and Production Activity Control (PAC), Master Scheduling and the Master Production Schedule (MPS).	3	2	2	1	1	1	-	2	3
LO2: <i>Discuss</i> and <i>debate</i> on competency required in effective utilization of materials in manufacturing and service organization.	2	2	3	-	3	-	-	2	2
LO3: <i>Discuss</i> and <i>debate</i> on competency required in the practical application of materials management principles in industrial inventory systems.	3	2	-	2	3	-	-	2	2



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L04: Determine requirements and keep priorities current using Material Requirement Planning (MRP) and Bills of Material.	1	1	1	1	3	1	-	1	1
L05: Critically evaluate global materials management practices.	-	-	1	1	1	-	3	-	-
L06: Prioritize and critically analyze ethical issues in purchasing and negotiations	2	2	2	3	1	1	-	1	1
L07: Describe and defend best practices in materials management.	2	2	2	3	1	-	-	2	1
L08: Critically analyze practices to Influence teams for effective decision making and coordinate to effect purchase at minimum cost.	2	2	2	3	1	-	-	2	1

2. Course Duration: The course duration is of **40 sessions of 60 minutes each.**

3. Course Contents:

Module No:	Contents	No. of Sessions	70 Marks (External Evaluation)
I	<p>Materials Management:</p> <ul style="list-style-type: none"> • The Operating environment • Meaning, objectives and functions of materials management • Costs involved • Advantages of integrated materials management • Concept of stores and warehousing <p>Classification and codification of materials:</p> <ul style="list-style-type: none"> • Need for classification and identification • Classification of materials • Nature and process of Codification systems • Codification systems <ul style="list-style-type: none"> ○ Arbitrary, numerical, Mnemonic, Decimal, Brisch, Kodak • Stores vocabulary, marking of stores <p>Standardization, Simplification and Specialization:</p> <ul style="list-style-type: none"> • Objectives of specification • Characteristics of specification 	10	18



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	<ul style="list-style-type: none"> • Development of specifications • Problems in specifications • Definition of standards • Different dimensions and levels of standards • Benefits of standardization • Advantages of variety reduction • Techniques of variety reduction <ul style="list-style-type: none"> ○ Sales contribution analysis ○ Consumption analysis ○ Renard Series • Simplification <p>Warehousing:</p> <ul style="list-style-type: none"> • Warehousing management <ul style="list-style-type: none"> ○ Warehouse activities ○ Space utilization and accessibility (simple numerical) ○ Stock location ○ Order picking and assembly • Control and Security • Inventory Management and Control Techniques • Inventory record accuracy and tolerance (theory) • Technology applications (Bar codes, RFID) 		
II	<p>Overview Manufacturing Planning and Control Systems: (materials management perspective)</p> <ul style="list-style-type: none"> • Strategic business plan • Production plan • Master production schedule • Material requirements plan • Purchasing and production activity control <p>Master Production Schedule: (numerical)</p> <ul style="list-style-type: none"> • Developing a master production schedule • Master schedule decisions • MPS and delivery <p>Materials Planning:</p> <ul style="list-style-type: none"> • Value analysis <ul style="list-style-type: none"> ○ Make or buy • Techniques <ul style="list-style-type: none"> ○ Requirement based on past consumption ○ Materials Requirement Planning <p>Materials Requirement Planning:</p> <ul style="list-style-type: none"> • Definition, Objectives • Bills of Material • Structure of Bills of Material • Advantages and uses of Bills of Material • Gozinto matrix / graph • Techniques of MRP 	10	18



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	<ul style="list-style-type: none"> ○ Exploding and offsetting ○ Gross and net requirements ○ Releasing Orders ○ Low level coding and netting ● Use of past consumption data 		
III	<p>Production Activity Control:</p> <ul style="list-style-type: none"> ● Data requirements ● Planning files <ul style="list-style-type: none"> ○ Item master file, product structure file, routing file and work center master file. ● Control files <ul style="list-style-type: none"> ○ Shop order master file and the shop order detail file. ● Manufacturing Lead Time ● Scheduling techniques <ul style="list-style-type: none"> ○ Forward and backward scheduling ○ Infinite and finite loading ● Reducing manufacturing lead time <ul style="list-style-type: none"> ○ Operation overlapping and operation splitting ● Bottlenecks <ul style="list-style-type: none"> ○ Managing bottlenecks ● Theory of constraints, Drum-Buffer-Rope <p>Stores and Stores keeping:</p> <ul style="list-style-type: none"> ● Objectives, functions, features, benefits ● Physical stock verification methods ● Layout of stores, receipt section, Goods Receipt Note ● Types of stores ● Types of storage equipment 	10	17
IV	<p>Materials Handling:</p> <ul style="list-style-type: none"> ● Introduction ● Classification of Material handling equipment ● Manual handling ● Mechanized handling <p>Purchasing:</p> <ul style="list-style-type: none"> ● Objectives ● Purchasing cycle ● Purchasing specifications ● Supplier selection ● Price determination ● Impact of MRP on purchasing 	10	17
V	<p>Practical:</p> <ul style="list-style-type: none"> ● Students should be made to visit manufacturing units to understand their materials planning and management. ● Students can be given a simulation assignment for managing materials for a manageable process. 	---	(30 marks CEC)



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4. Pedagogy:

- ICT enabled Classroom teaching
- Case study
- Practical / live assignment
- Interactive class room discussions

5. Evaluation:

Students shall be evaluated on the following components:

	Internal Evaluation	(Internal Assessment- 50 Marks)
A	• Continuous Evaluation Component	30 marks
	• Class Presence & Participation	10 marks
	• Quiz	10 marks
B	Mid-Semester examination	(Internal Assessment-30 Marks)
C	End –Semester Examination	(External Assessment-70 Marks)

6. Reference Books:

No.	Author	Name of the Book	Publisher	Year of Publication / Edition
1	Steve Chapman, Tony K. Arnold, Ann K. Gatewood, Lloyd M. Clive	Introduction to Materials Management	Pearson	8 th (2016)
2	A. K. Chitkale, R. C. Gupta	Materials Management: A Supply Chain Perspective (Text and Cases)	Pearson	2014
3	P. Gopalakrishnan, Abid Haleem	Handbook of Materials Management	PHI	2015 / 2 nd
4	P. Gopalakrishnan	Purchasing and Materials Management	McGraw Hill	2017
5	Ashfaque Ahmed	The SAP Materials Management Handbook	Auerbach Publications	2014 / 1 st
6	Prem Vrat	Materials Management: An Integrated Systems Approach	Springer	2016 / 1 st

Note: Wherever the standard books are not available for the topic appropriate print and online resources, journals and books published by different authors may be prescribed.

7. List of Journals / Periodicals / Magazines / Newspapers / Web resources, etc.

1. Journal of Purchasing and Materials Management
2. Journal of Purchasing and Supply Management
3. Indian Journal of Materials Science
4. Materials Management Review Magazine
5. Indian Institute of Materials Management – www.iimm.org
6. Materials Management: Overview, Products & Services - <https://opsdog.com/industries/materials-management>