

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

**COURSE CURRICULUM
COURSE TITLE: INDUSTRIAL MANAGEMENT
(COURSE CODE 3350501)**

Diploma Programme in which this course is offered	Semester in which offered
Chemical Engineering	5 th Semester

1. RATIONALE

Diploma chemical engineer has to manage the production as a responsible chemical technician and first line supervisor in the industries. They have to apply principles and techniques of management to utilize the human resources and manage the processes and operations in best possible way. They have to optimize the resource utilisation and apply the managerial aspects in cost reduction and different problem solving activities. Hence the course has been design to develop these competencies and its associated cognitive, practical and effective domain learning out comes.

2. LIST OF COMPETENCY

The course should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency

- **Apply managerial skills to enhance efficiency of production.**

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

- Manage human resources using system and organization concepts
- Manage Inventory applying concepts of material management
- Control and monitor production by applying management techniques
- Plan and implement projects applying management techniques
- Perform and use value analysis for cost reduction

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P) C	Examination Scheme				Total Marks 100
L	T	P		Theory Marks		Practical Marks		
				ESE	PA	ESE	PA	
3	0	0	3	70	30	00	00	

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; ESE - End Semester Examination; PA - Progressive Assessment

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit I Concept of System and Management	1a. Explain concepts of system 1a.1 State Types of systems	1.1 Definition of system
		1.2 Types of systems
		1.3 System parameters
		1.4 System variable
		1.5 System behavior
	1b. Discuss management and Explain its functions	1.6 Fundamentals of management 1.7 Functions of management
Unit II Organization Structure and Organizational Dynamics	2a. Describe management structure 2b. Explain various factors for structure 2c. Describe various management processes	2.1 Definition, Goals, Factors considered in formulating structure
		2.2 Division of labor, Scalar and functional processes, Span of control, Delegation of authority, Centralization and Decentralization
	2d. Classify the organization 2e. Apply SWOT analysis of organizational structure 2f. Explain factors affecting Organizational culture	2.3 Types, advantages, disadvantages, flexibility and applications of organization structure
		2.4 Organizational culture and factors affecting organization culture
	2g. Discuss moral and relate it with productivity 2h. Identify factors affecting job satisfaction	2.5 Moral: factors affecting moral
		2.6 Relationship between moral and productivity
		2.7 Effect of high and low moral
		2.8 Job satisfaction, factors influencing job satisfaction
Unit III Material Management	3a. Discuss importance of material management	3.1 Definitions, Functions, Importance of material management, Relationship with other departments
	3b. Explain purchase procedure and system	3.2 Objectives of purchase, Purchase systems, Purchase procedure, Terms and various forms used in purchase department
	3c. Classify stores 3c.1 List out various functions of storekeeping 3d. Compare methods of storekeeping	3.3 Functions of storekeeping classification of stores as centralized and decentralized with their advantages, disadvantages and application
	3e. Describe functions of storekeeper 3f. List Types of records types of storage equipment	3.4 Functions of store keeper, Types of records maintained by store, various types of storage equipment, Codification of stores
	3g. Discuss Objectives of inventory control and derive expression for EOQ 3h. Distinguish inventory analysis and inventory models	3.5 Definition of inventory control, objectives of inventory control, Derivation of expression for EOQ, ABC analysis, other modern methods of analysis
		3.6 Inventory models such as Willson's model, Replenishment model, Two bin model

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit IV Management Techniques	4a. Explain objectives and applications of PPC and CPM , PERT	4.1 Meaning, features, objectives of (1) PPC(Production, planning and control) (2) CPM(Critical path method) (3) PERT(Programme Evaluation and Review Technique)
	4b List out functions of PPC	4.2 Functions of PPC with necessary forms used in it
	4c Calculate critical ratio using Gantt charts	4.3 Types of productions, Calculation of Economic Batch Quantity (EBQ), Critical ratio scheduling and Gantt charts
	4d. Draw network diagram and determine its critical path	4.4 Different terms used in network diagram by CPM/PERT
	4e. Determine floats and explain crashing of network	4.5 Draw network diagram for a real life project containing 10-15 activities, Computation of LPO, EPO 4.6 Determination of critical path on network 4.7 Floats, its types and determination of floats 4.8 Crashing of network and its application
	4f. Describe concept of value analysis with its importance and various method	4.9 Concept of value analysis, important methods used in value analysis, VA flow diagram
Unit V Factory Act and Laws	5a. Describe various provisions of Factory act and its important provisions	5.1 Factory act and its important provisions
		5.2 Workman Compensation Act its important provisions
		5.3 Industrial Dispute Act and its important provisions

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Concept of System and Management	4	02	05	00	7
II	Organization Structure and Organizational Dynamics	08	05	06	03	14
III	Material Management	13	07	07	07	21
IV	Management Techniques	13	06	07	08	21
V	Factory Act and Laws	04	03	02	02	7
Total		42	23	27	20	70

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities. These could be individual and group based.

- i. Course/topic based presentation
- ii. Group discussion

8. SPECIAL INSTRUCTIONAL STRATEGY (If Any)

- i. Give real life or fabricated case studies related to different managerial problems faced in chemical industries and ask students to identify reasons for problem and suggest probable solutions. Have Group Discussions on these solutions.
- ii. Show motivational videos related to human resource management.
- iii. Use role play method to teach proper methods of dealing patiently with difficult subordinates/colleagues/ Seniors.

9. SUGGESTED LEARNING RESOURCES

A. List of Books:

Sr. No.	Title of Books	Author	Publication
1	Factory Management & business organization	A.S Deshpande	Vora & Co. Publishers Pvt. Ltd., Mumbai, 1962
2	Business organization & management	M.C.Shukla	S. Chand & Co., New Delhi, 1970
3	Industrial Engineering & Management	O. P. Khanna	Dhanpat Rai Publications, New Delhi, 1980
4	CPM & PERT principles and Applications	L.S.Srinath	3 rd Edition Affiliated East-West Press Private Limited, New Delhi, 1971

B. List of Software/Learning Websites

- i. www.idc.iitb.ac.in/~chakku/dm/06_Pert%20cpm.ppt
- ii. www.clib.dauniv.ac.in/E-Lecture/PERT-CPM.pdf
- iii. www.pitt.edu/~super7/30011-31001/30961.ppt
- iv. www.newagepublishers.com/samplechapter/001386.pdf
- v. www.unesco.org/education/aladin/paldin/pdf/course02/unit_14.pdf
- vi. www.du.ac.in/fileadmin/DU/Academics/course_material/EP_08.pdf

10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. J. R. Vadher**, Lecturer in Chemical Engineering, Sir B.P.T.I Bhavnagar
- **Prof. S. K. Charola**, Lecturer in Chemical Engineering, Sir B.P.T.I Bhavnagar,
- **Prof. P. H. Shukla**, Lecturer in Chemical Engineering, Sir B.P.T.I Bhavnagar
- **Prof. N. N. Hansalia**, Lecturer in Chemical Engineering G. P. Rajkot

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Abhilash Thakur**, Associate Professor, Department of Applied Sciences
- **Dr. Bashirullah Shaikh**, Assistant Professor, Department of Applied Sciences