



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3171512

Semester – VII

Subject Name: ADVANCE MANUFACTURING

Type of course: Professional Elective

Prerequisite: Nil

Rationale:

In the world of globalisation, customer demands for variety of products with high quality at affordable price. To sustain in stiff competition and deliver products on time, industries are needed to accommodate new managerial philosophy and automated machinery to reduce time of production and cost. The ability to rearrange the existing machineries and to adopt quick change in product variety and demand give a knife edge to industries. Looking to the need of industries, this course is offered to make students competent to operate advanced manufacturing systems.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Enterprise Resource Planning Role of management information system, MIS & Production/ operation system, Decision making information system, Information value & measuring the information value, Assessing information needs Identification & development of information sources, design & development of information flow network. Different ERP modules and their Implementation procedures, Role of ERP in productivity improvement, ERP for different types of manufacturing systems, Software and Hardware need for ERP implementation	13
2	Logistic and Supply Chain Management Role of supply chain, Different models of supply chain management, Optimization of transport Network, Zero inventories, E-manufacturing, E-commerce	08
3	Japanese Manufacturing Systems Japanese approach for productivity improvement; Concepts like JIT, KANBAN systems, KAIZEN Philosophy, Manufacturing Improvement techniques such as SMED, POKAYOKE, JIDOKA, TPS, 5S.	10



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4	Value Analysis and Value Engineering Introduction, Concept of value analysis, Definition of value analysis, Objectives of value analysis, Difference between value analysis and value engineering, When to apply value analysis, Stages in value analysis, Techniques of value analysis and value engineering, Un-necessary costs, Test for value analysis, Advantages of value analysis	10
5	AMS in industries. Evolution of transformation and manufacturing systems. Components, working and features of Computer Numerical Control (CNC) machine.	04
	Total Hours	45

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	15	40	25	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's 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.

Reference Books:

1. Enterprise resource Planning: Concepts and Practice By Garg & Venkitakrishnan
2. ERPWARE- ERP Implementation Framework BY Garg & Venkitakrishnan
3. Logistics & Supply Chain Management By Christopher
4. Logistics Engineering & Management By Blanchard
5. Frontiers of E- Commerce By Kalakota
6. Electronic Commerce- A Manager's Guide BY Kalakota
7. Design and Manufacturing By Surender Kumar
8. Kaizen- The Key to Japanese Success By Masaki Imai
9. Japanese Manufacturing Systems By R.J. Schonberger(Ref.)
10. Toyota Production System By Ohno Taiichi



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Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Overall understanding of advance manufacturing integration	20
CO-2	Apply Enterprenure resource planning to industry	15
CO-3	Develop logistic and supply chain management for manufacturing firm	15
CO-4	Apply Japanese manufacturing system to improve productivity	25
CO-5	Application of value analysis and value engineering in manufacturing	15

List of Experiments:

Experiments based on above contents and should include below mentioned topics.

1. Identify the type of layouts used in selected industries and identify the faults in that layout and suggest improvements.
2. Study Different ERP modules and their Implementation procedures.
3. Study Different models of supply chain management.
4. Quantify advantages of JIT and concurrent engineering industries considering various factors.
5. Generate material requirement planning for appropriate product available in Workshop-floor.
6. Discuss KAIZEN Philosophy.
7. Case study on value analysis and engineering

List of Open Source Software/learning website:

1. www.nptel.ac.in