



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester

Branch: Production Technology

Subject Name: Agile and Lean Manufacturing Systems

Subject Code: 21140302

Type of course: core

Prerequisite: Zeal to learn the subject

Rationale: Manufacturing firms are increasingly adopting lean and agile systems to gain competitive advantage. Lean systems could eliminate wastes and streamline the manufacturing process. Agile systems enable the speedy production and deliver variety of products in a cost effective manner. Although many manufacturing organizations around the world have adopted a combination of lean and agile systems in practice, cohesive procedures are yet to evolve for successful implementation. In this context, this course is designed for imparting knowledge on modern manufacturing systems which are largely dominated by lean and agile manufacturing principles.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical		
			ESE (E)	PA(M)	ESE (V)	PA (I)		
3	0	0	3	50	0	0	0	50

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

Contents:

Sr. No.	Content	Total Hrs.	Module % Weightage
01	Introduction Introduction to Lean Manufacturing (LM), history of LM, advantages of LM over mass production, Just in time production, Toyota production system	10	20
02	Quality Engineering Tools Techniques & Standards: 7 QC tools, 7 New Quality Management Tools, 5S Technique, Kaizen and types of wastes, Poka-Yoke, Quality Circle, Cost of quality. (Concept, Scope, Implementation Requirements & Advantages Disadvantages and Its Applications.	12	30
03	Quality Management Tools Quality Technique, Introduction to Quality Management Standards – ISO: 9000, ISO: 14000, QS: 9000 (Concept, Scope, Implementation Requirements & Advantages Disadvantages and Its Applications.	10	20
04	Contemporary Trends in Agile Manufacturing Lean Manufacturing, Agile Manufacturing, World Class	10	30



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	Manufacturing, Total Productive Maintenance (TPM), Basic Concept, Principle, Methodology, Implementation, Scope, Advantages and Limitation of all as applicable.		
	Total	42	100

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	-	-	-

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

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO 1	To learn basic concepts lean manufacturing	20
CO 2	To understand various quality engineering tools	30
CO 3	To understand various quality management tools	20
CO 4	To study various contemporary trends in agile manufacturing	30

Reference Books:

1. Lean and agile manufacturing by S. R. Devadasan
2. Lean and Agile Supply Chains by R.V. Ramakrishnan

List of Open Source Software/learning website:

1. www.nptel.ac.in