



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3161926
Semester: VI
Subject Name: Industry 4.0

Type of Course: Elective

Prerequisite: Nil

Rationale: NA

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	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hours
1	Introduction to Industry 4.0: Introduction, core idea of Industry 4.0, origin concept of industry 4.0, Industry 4.0 production system, current state of industry 4.0, Technologies, How is India preparing for Industry 4.0	07
2	A Conceptual Framework for Industry 4.0: Introduction, Main Concepts and Components of Industry 4.0, State of Art, Supportive Technologies, Proposed Framework for Industry 4.0.	07
3	Technology Roadmap for Industry 4.0 : Introduction, Proposed Framework for Technology Roadmap, Strategy Phase, Strategy Phase, New Product and Process Development Phase.	07
4	Advances in Robotics in the Era of Industry 4.0: Introduction, Recent Technological Components of Robots- Advanced Sensor Technologies, Internet of Robotic Things, Cloud Robotics, and Cognitive Architecture for Cyber-Physical Robotics, Industrial Robotic Applications- Manufacturing, Maintenance and Assembly.	08
5	The Role of Augmented Reality in the Age of Industry 4.0: Introduction, AR Hardware and Software Technology, Industrial Applications of AR.	06
6	Obstacles and Framework Conditions for Industry 4.0 : Lack of A Digital Strategy alongside Resource Scarcity, Lack of standards and poor data security, Financing conditions, availability of skilled workers, comprehensive broadband infra- structure, state support, legal framework, protection of corporate data, liability, handling personal data.	07

Suggested Specification table with %Marks (Theory):

Distribution of Theory Marks %					
R Level	U Level	A Level	N Level	E Level	C Level



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10	20	25	25	10	10
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R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes: Students will be able to:

Sr. No.	CO statement	Marks % weightage
CO-1	Describe Industry 4.0 and scope for Indian Industry	20
CO-2	Demonstrate conceptual framework and road map of Industry 4.0	35
CO-3	Describe Robotic technology and Augmented reality for Industry 4.0	25
CO-4	Demonstrate obstacle and framework conditions for Industry 4.0	20

Reference Books:

1. Alp Ustundag and Emre Cevikcan, "Industry 4.0: Managing the Digital Transformation".
2. Bartodziej, Christoph Jan, "The Concept Industry 4.0".
3. Klaus Schwab, "The Fourth Industrial Revolution".
4. Christian Schröder, "The Challenges of Industry 4.0 for Small and Medium-sized Enterprises".

List of Open Source Software/learning website:

1. www.nptel.ac.in/