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	Examination Marks				Total Marks
L	T	P	C	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

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/

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