SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)

Mechanical engineering Department

Semester/Year		VIII / 4th	Program		B.Tech VIII Sem (Mechanical)
Subject Category	OC	Subject Code:	ME-1882(C)	Subject Name:	**Introduction to Industry 4.0**

Maximum Marks Allotted						Contact Hours			Total Credits
Theory			Practical		Total Marks				
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work		L	T	P	
70	20	10	-	-	100	3	-	-	3

Prerequisites:

Course Objective:

The Objective of this course is to make students familiar with Advanced topics such as : Industry 4.0, IOT, IIOT, CPS, AI, ML, Augmented & Virtual Realities, Additive Manufacturing, Block Chain Technology, etc.

Course Outcomes: After completion of this course students will be able to :

CO1. State and define Smart Manufacturing and its Characteristics, Challenges.

CO2. Classify and Explain components of smart Manufacturing and Industry 4.0

CO3. Demonstrate IOT, IIOT, Block chain, in manufacturing

CO4. Examine the concept of AI and ML in Manufacturing, and Industrial Robot

CO5. Design and develop a 3-D product using Additive Manufacturing

UNITs	Descriptions	Hrs.	CO's
I	Introduction To Industry 4.0 : Definition of Industry 4.0, Comparison of Industry 4.0 factory and today's factory, Difference between conventional automation and industry 4.0, How is India preparing for Industry 4.0	8	CO1

II	**A Conceptual Framework for Industry 4.0:** Internet of things(IoT) & Industrial Internet of Things(IIoT), Big Data, Cyber security, Block chain, Types of Block chain network, Augmented and virtual reality, Robotics and automation, 3D Printing, Simulation, System integration, Cloud Computing,	8	CO2
III	**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.	8	CO3
IV	**The Role of Augmented Reality in the Age of Industry 4.0**: Introduction, AR Hardware and Software Technology, Benefits of Augmented Reality, Industrial Applications of AR.	8	CO4
V	**Role of 3D printers in Industry 4.0:** Introduction of Additive Manufacturing (AM), Characteristics, Classifications, Comparison of conventional manufacturing with Additive manufacturing, AM Process Chain, AM Process, Applications, AM business ideas	8	CO5
Guest Lectures (if any)			
Total Hours		40	

Text Book-

A. McEwen and H. Cassimally, Designing the Internet of Things, 1st edition,
B. Wiley, 2013, ISBN-10: 111843062X.
C. N. Vengurlekar and P. Bagal, Database Cloud Storage: The Essential Guide to Oracle Automatic Storage Management, 1st edition, McGraw-Hill Education, 2013, ISBN-10: 0071790152.
D. 3 M. Kuniavsky, Smart Things: Ubiquitous Computing User Experience Design, 1st edition, Morgan Kaufmann, 2010, ISBN-10: 0123748992.

Modes of Evaluation and Rubric

Evaluation will be continuous an integral part of the practical classes as well through external assessment.