	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Bachelor of Technology in Mechanical Engineering**	Year of Regulation	**2018**
Department	**Mechanical Engineering**	Semester	**VI**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
ME 372	**Industry 4.0 and Six Sigma Engineering**	**2**	**0**	**0**	**2**	**50**	**50**	**100**	**200**

Course Objectives		Course Outcomes		
	To introduce the basics of Industry 4.0 and Sustainability Assessment of Manufacturing Industry		CO1	Explain the Trends In Industry 4.0 and Sustainability Assessment of Manufacturing Industry(Understanding)
	To Explain the Significance of Learn production system		CO2	Make use of lean Production system. (Understanding)
	To apply the concepts of smart factories for industry 4.0		CO3	Make use of the smart factories for industry 4.0(Application)
	To develop an ability to analyse the different technique and models in six sigma		CO4	Analyse the different techniques and models of six sigma(Analysis)

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**2**	**3**	**3**	**2**	**1**	**3**	**3**	**0**
2	CO2	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**0**
3	CO3	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**3**	**2**	**3**	**2**	**3**	**3**	**0**
4	CO4	**3**	**2**	**2**	**3**	**1**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**0**

SYLLABUS

No.	Content	Hours	COs
I	**Overview** History – Industrial Revolution - Introduction to Industry 4.0 - Profound and Systematic Change – Trends In Industry 4.0	**02**	**CO1**
II	**Industry 4.0: Sustainability Assessment of Manufacturing Industry** Sustainability – Supply Chain Management- Information and Communication Technology- Introduction To Emerging Issues	**04**	**CO1**
III	**Industry 4.0: Lean Production System** Lean Production System – Types of Waste- Significance of Learn production system	**04**	**CO1** **CO2**
IV	**Industry 4.0: Smart Factories** Introduction to Smart Factories – Need of Smart Factory- Component of Smart Factory.	**04**	**CO1** **CO3**
V	**Six Sigma** History of Six Sigma - Implementing Six Sigma, Customer Expectations and Needs, Linking Six Sigma Projects to Strategies, Attributes of Good Metrics, Using Resources Wisely, Project Management Using The Dmaic and Dmadv Models, The Define Phase, The Measure Phase, Measurement System Analysis, Analyzing Data: Value Streams and Dealing With Variations, Analyzing Data: Designed Experiments, The Improve Phase, The Control Phase.	**10**	**CO4**
	Total Hours	**24**	

Essential Readings

1. Klaus Schwab, The Fourth Industrial Revolution, Portfolio Penguin
2. Alasdair Gilchrist, Industry 4.0: The Industrial Internet of Things, Apress; 1st Ed. Edition
3. N A Siddiqui, Introduction to Six Sigma, New Age International Private Limited; First edition.

Supplementary Readings

1. Elena G. Popkova, Yulia V. Ragulina, Aleksei V. Bogoviz, Industry 4.0: Industrial Revolution of the 21st Century, Springer, 1sted 2019 edition.