20PEB324					Big Data Analytics and Internet of Things in Upstream Oil and Gas Industry					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
2	0	0	2	2	25	50	25	--	--	100

COURSE OBJECTIVES

- Develop an understanding of the big data in oil and gas upstream industry
- Improve skills for handling and processing big data of the whole upstream oil and gas upstream industry.
- Enhance knowledge base of IoT applications in Oil and Gas upstream industry
- Improve knowledge and skills to interpret data in a virtual environment for effective engineering operations and management

Unit I **Hours: 6**

Big Data Analytics: Big data definition, Big data methodology, Big data Processing

IoT: Definition of "IoT", IoT with reference to Oil and Gas upstream industry

Unit II **Hours: 6**

Big data in Upstream Oil and Gas Industry: Big data in exploration, Drilling, Reservoir Engineering and Production; Processing and application methodology.

Unit III **Hours: 7**

IoT in Upstream Oil and Gas Industry is fuelling productivity: Improvements through automation and AI for optimizing operation time, enhancing safety, maximize efficiency; 3D virtual modelling with Drone Technology, Video Surveillance technology,

Unit IV **Hours: 7**

Maximize Asset Performance and Enable People: Analysis big data with blockchain, Enable effective collaboration and efficient management to reduce unplanned downtime and increase asset utilization, Digital Transformation by Improving Workforce Productivity, cyber security measures.

Max <30 Hrs>

COURSE OUTCOMES

On completion of the course, student will be able to

CO1- Understand the big data and correlate it with the oil and gas upstream industrial activities.

CO2- Demonstrate an understanding of handling and processing big data of oil and gas upstream industry.

CO3- Demonstrate application of IoT in various areas of Oil and Gas upstream industrial activities.

CO4- Apply the knowledge and techniques of IoT for effective industrial operational activities.

CO5- Create logical algorithm for using IoT for monitoring and operational efficiency.

CO6- Analyse situation through interpretation of data of virtual environment for effective engineering operations and management

TEXT / REFERENCE BOOKS

1. Internet of Things and Data Analytics Handbook; Hwaiyu Geng Print ISBN:9781119173649 |Online ISBN:9781119173601 |DOI:10.1002/9781119173601; © 2017 John Wiley & Sons, Inc
2. Artificial Intelligence & Data Mining Applications in the E&P Industry (Digital Edition) Edited by Shahab D. Mohaghegh, Saud M. Al-Fattah, and Andrei S. Popa, 2011 Adobe® Digital Edition ISBN: 978-1-61399-064-3 Society of Petroleum Engineers
3. Applied Statistical Modeling and Data Analytics: A practical Guide for Petroleum Geosciences ; Srikanta Mishra and Akhil Datta-Gupta Elsevier
4. Harness Oil and Gas Big Data with Analytics: Optimize Exploration and Production with Data-Driven Models; KeithHholdaway, Wiley

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs.**

PART A: Part A/Question: <Short Notes, Problems, Numerical> **20 Marks**

PART B:<Justification, Criticism, Long answers, Interpretation > **80 Marks**