Energy Analytics

1.1 Course Number: MT5603

1.2 Contact Hours: 40 Hours Credits: 11

1.3 Semester-offered: Odd Semester (July-December)

1.4 Prerequisite: Basic knowledge of Excel, R

1.5 Syllabus Committee Member: Dr Shrawan Kumar Trivedi

2. Objective:

This course provides to the professionals a basic understanding of the Data Analytics in energy domain with the opportunity to hand on the emerging data models and techniques to drive the excellence in energy sector.

3. Course Content:

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Introduction to Energy Analytics and Tools	Challenges of Data Handling in Energy Environment, Energy Industry Data. What kind of data is important for Energy Analytics? Data types (structured, unstructured, real time, discrete etc.), How does analytics play the role in Energy segment? What is usefulness of Advanced Analytics, Fundamentals of Python and background of the tool, Descriptive, diagnostic predictive and prescriptive modelling, Dashboard development	10
2	Data Preparation, Collection and Organization	HOW to get the Energy data – data sources/databases, FIELD data sources/parameters/variables, Data Management and Data Quality, Data management & Statistical modelling Measure of central tendency (Mean median, mode, standard deviation, variance), Correlation.	10
3	AI/ML in Energy Sector	Machine Learning – Application of finding the weakest inverter in the plant using relation with application, Machine Learning – Application of Energy sector.	10
4	Other Automated Data Analysis Method	Other Type of Analytical Methods	10
		Total	**40**

4. Readings

4.1 Textbook:

- Energy and Analytics: Big data & building technology integration, John J. McGowan

5 Outcome of the Course:

Students will learn about: Basics of Energy Analytics, Concepts of Data Mining, Concepts of Social Media analytics and Big Data, Cross Sectional and Time Series Data Analysis