



Mehran University of Engineering and Technology, Jamshoro
Department of Software Engineering

ORIGINAL SUBMITTED SYLLABUS

Title of Subject	:	Big Data Analytics
Code	:	SE860
Discipline	:	Software Engineering
Effective	:	19 PhD-IICT Batch and onwards
Pre-requisite	:	None
Assessment	:	10% Sessional 30% Mid Semester 60% Final Semester Examination
Credit Hours	:	03 + 0
Minimum Contact Hours:		42

Specific Objectives of course:

- **The objective of this course is to enhance students' skill to understand and use big data mechanisms, that occupy a key role in solving huge data analytics issues and other large-scale real-world data problems.**

Course outline:

- **Introduction**
Introduction to Big Data, motivating challenges, applications
- **Data Analysis**
Descriptive Statistics and Exploratory Data Analysis; Visualization, Summarization, Distributions and Relationships, Regression Analysis; Inference.
- **Machine Learning**
Algorithmic models of learning, Bayesian networks, Markov and Hidden Markov models, probabilistic relational models, association rules, nearest neighbor classifiers, locally weighted regression, ensemble classifiers.
- **Scalable Big Data Algorithms**
Scalability issues, Key algorithms with application; Sketching and Streaming algorithms for basic statistics, Dimension Reduction, Graph stream algorithms, Lower bounds for Sketching and Streaming, Numerical linear algebra. Algorithms for big matrices.
- **Hadoop/MapReduce**
Introduction to MapReduce/Hadoop, Introduction to Spark, Information retrieval and MapReduce, Relational database operators and MapReduce.

BOOKS RECOMMENDED

1. Hadoop: The Definitive Guide, Tom White, O'Reilly [Latest Edition]
2. Hadoop In Action, Chuck Lam, Manning [Latest Edition]
3. Data Mining: Concepts and Techniques, by Jiawei Han et al., Morgan Kaufmann [Latest Edition]
4. Tom Mitchell, Machine Learning, [Latest Edition]
5. Big Data Analytics by Parang Kulkarni, Sarang Joshi [Latest Edition]

Approval:

Board of Studies:	Res.No.02	Dated:25-09-2018
AS&RB:	Res.No.154.16(a)	Dated:04-12-2018
Academic Council:	Res.No. 94.4	Dated:27-03-2019



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