

Master of Computer Applications (MCA)

Group Learning Session (GLS) – Course Syllabus

The **GLS** is a method of teaching-learning process among the peers that helps the bright students to perform far better than usual and the weaker students to improve their academic performance. The students are divided into various groups with **4 to 5 members per group**. It consists of one bright student; two or three average performers and others are slow learners. The subject teacher will give one or two topics to the group one day before the GLS class.

All the students will be asked to read that topic and the group leader will prepare strongly to teach his/her peers. On the day of GLS class, the group leader will teach his/her peers with tips and tricks on how they remember the concept and represent. This helps the other students to learn easily.

Courses that followed GLS are:

SEMESTER I

- Problem Solving and Programming
- Computer Organization and Architecture
- Database Management Systems
- Mathematical Foundations of Computer Science
- Operating Systems

SEMESTER II

- Data Structures and Algorithms
- Object Oriented Programming with Java
- Software Engineering
- Computer Networks
- Statistics and Numerical Methods

SEMESTER III

- Advanced Java Programming
- Web Technologies
- Machine Learning
- Information Security
- Big Data Analytics

SEMESTER IV

- Cloud Computing
- Internet of Things
- Deep Learning
- Mobile Application Development
- Project Work

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Detailed Syllabus

P23CAT24 – Big Data Analytics L:3 T:0 P:0 C:3

YEAR / SEM II / III	CREDITS 3	TOTAL PERIODS 45
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COURSE OBJECTIVES

- To explore the fundamental concepts of big data analytics
- To learn to analyze big data using intelligent techniques
- To understand various search methods and visualization techniques
- To learn various techniques for mining data streams
- To understand importance and challenges facing big data

UNITS

UNIT I – INTRODUCTION TO BIG DATA (9 HRS)

Characteristics, evolution, definition and challenges of big data. Traditional BI vs. Big Data. Analytics classification, technology landscape and terminologies.

UNIT II – INTRODUCTION TO HADOOP (9 HRS)

Introducing Hadoop, RDBMS vs Hadoop, distributed computing challenges, history and overview of Hadoop, use cases, Hadoop distributors, processing and ecosystem interaction.

UNIT III – HADOOP DISTRIBUTED FILE SYSTEM (9 HRS)

HDFS design, concepts, basic operations, Java interface, reading/writing data, anatomy of file read/write, limitations.

UNIT IV – MAPREDUCE FUNDAMENTALS (9 HRS)

MapReduce framework features, working, Map/Reduce functions, optimization techniques, input formats, custom record reader, combiner, partitioner, phases, and sample application development.

UNIT V – PIG AND HIVE (9 HRS)

Pig architecture, Pig Latin basics, operators and functions. Hive services, data types, built-in functions, Hive DDL.

COURSE OUTCOMES

- ✓ CO1 – Understand what Big Data is, its importance and various sources of data
- ✓ CO2 – Describe the elements of big data — volume, variety, velocity, and veracity
- ✓ CO3 – Define distributed and parallel computing for big data
- ✓ CO4 – Understand MapReduce and its qualities, including advanced MapReduce concepts
- ✓ CO5 – Design and implement technologies for processing big data using Pig and Hive

TEXT BOOKS

1. Tom White, "Hadoop: The Definitive Guide", 4th Ed., O'Reilly, 2015

REFERENCE BOOKS

1. Bart Baesens, "Analytics in a Big Data World", Wiley, 2014

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2. Seema Acharya & Subhasini Chellappan, "Big Data Analytics", Wiley, 2015

2. Michael Minelli et al., "Big Data, Big Analytics", Wiley, 2013

Impact Analysis on GLS

GLS Implementation Results – University Examination Performance

1 – Big Data Analytics

Year / Sem	I/ II
Course Title	Big Data Analytics
University Result 23–24	90
University Result 24–25	92

2–INDUSTRY 4.0

Year / Sem	II/ III
Course Title	INDUSTRY 4.0
University Result 24–25	90
University Result 25–26	Expected ↑