

LNCT UNIVERSITY, BHOPAL

Programme:- BCA (AI&DA)

Semester – VII

wef: July 2025

[illegible]

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Text Books/ Reference Books:-			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Subhashini Chellappan Seema Acharya	Big Data and Analytics	1 st Edition 1996	Wiley
Benjamin Bengfort and Jenny Kim	Data Analytics with Hadoop an Introduction for Data Scientists	2016	O'Reilly
V.K Jain	Big Data and Hadoop	1 st Edition 2018	Khanna Publishing
COURSE OUTCOMES: Students will be able to			
CO1	Describe big data and use cases from selected business domains.		
CO2	Explain NoSQL big data management.		
CO3	Install, configure, and run Hadoop and HDFS and perform map-reduce analytics using Hadoop.		
CO4	Use Hadoop-related tools such as HBase, Cassandra, and Pig.		
CO5	Proficient in managing and manipulating data using Hive and uses of Spark.		

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Name of Authors	Titles of the Book	Edition	Name of the Publisher
Pieter Adriaans, Dolf & Zantinge	Data mining	1996	Addison Wesley
Sam Anahory& Dennis Murray	Data Warehousing in real world	1997	Addison Wesley
Paulraj Ponniah	Data Warehousing: Fundamentals for IT Professionals	2012, Second Edition	Wiley India Pvt Ltd.
Mark Hall, Ian Witten and Eibe Frank	Data Mining: Practical Machine Learning Tools and Techniques	2011, Third edition	Morgan Kaufmann Publisher
COURSE OUTCOMES: Students will be able to			
CO1	Understand the functionality of the various data mining and data warehousing components.		
CO2	Have a deeper understanding of database systems and their underlying theory to be able to improve the decision-making process		
CO3	Compare different approaches of data ware housing and data mining with various technologies.		
CO4	To evaluate the different models of OLAP and data preprocessing.		
CO5	To develop ability to design various algorithms based on data mining Tools and describe the designing of Data Warehousing so that it can be able to solve the root problems.		

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Name of Paper & Category		Paper Code	Theory					
			Credit			Marks		
Research Methodologies (Minor- Research Methodology)		BAI-703	L	T	J	EST	CAT	Total
			3	1	0	70	30	100
Course Objective		Equip students with the necessary skills to conduct rigorous and ethical research in their respective fields.						
Units	Contents (<i>Theory</i>)							Hours /week
I	Introduction to Research Methodology: Definition and purpose of research, Types of research (qualitative, quantitative, mixed-methods), Research process and steps. Research Problem Identification: Research problem formulation, Research questions and hypotheses, Literature review and identifying research gaps.							8
II	Research Design: Experimental design, Survey design, Case study design, Ethnographic design, Sampling techniques, Data collection methods.							8
III	Research Ethics and Legal Considerations: Ethical principles in research, Informed consent and participant rights, Institutional review boards and ethical clearance, Intellectual property rights and plagiarism.							8
IV	Research Proposal and Project Management: Research proposal writing, Project planning and scheduling, Resource allocation and management. Writing and Presenting Research: Research paper structure and organization, Academic writing style and citation guidelines, Presentation skills and techniques							8
V	Advanced Research Methodologies: Mixed-methods research, Case study research, Action research, Longitudinal and cross-sectional studies, Meta-analysis and systematic reviews.							8

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Ranjit Kumar	A Step-by-Step Guide for Beginners" by	2021	SAGE Publications
C.R. Kothari	Methods and Techniques	2013	New Age International Publishers
Prasanta Kumar Das	A Step-by-Step Guide for Scientists	2016	Springer
Deepak Chawla	Concepts and Cases	2016	Vikas Publishing House
Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams	The Craft of Research	2008	University of Chicago Press

COURSE OUTCOMES: Students will be able to

CO1	Identify research problems and formulate relevant research questions.
CO2	Develop proficiency in selecting and designing appropriate research methodologies and designs to address research questions and objectives effectively.
CO3	Ensure the responsible conduct of research and protection of participant rights.
CO4	Acquire skills in preparing well-structured research proposals, managing research projects efficiently.
CO5	Address complex research problems in various disciplines.

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Name of Paper & Category	Paper Code	Practical				
		Credit		Marks		
Programming Lab in Big Data Analytics (Major-core)	BAI-704	P	J	ESP	CAP	Total
		2	-	70	30	100

Contents (Practical):

1. Installing and configuring the Hadoop frame work. HDFS Commands,
2. Map Reduce Program to show the need of combiner
3. Map Reduce I/O Formats – Text, Key – Value
4. Map Reduce I/O Formats – NLine – Multiline
5. Installing and Configuring Apache PIG and HIVE
- 6 Sequence File Input / Output Formats
7. Distributed Cache & Map side Join, Reduce Side Join
8. Building and Running Spark Application
9. Word count in Hadoop and Spark

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Name of Paper & Category	Paper Code	Practical				
		Credit		Marks		
Major Project (Field)	BAI-705	P	J	ESP	CAP	Total
		-	10	200	100	300

Contents (Practical)

Process: - Project Guide of the project will be allotted by Director/Head of Department. Any related technology can be chosen for development of Project. It is to be done in Industry/Organization.

Evaluation parameters are:

- Problem Statement and Objective
- Technical Implementation
- Functionality and Features
- User Interface and Experience
- Data Management and Database
- Design Documentation
- Testing and Quality Assurance
- Innovation and Creativity
- Project Presentation
- Overall Project Outcome