



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Information Technology

Choice Based Credit System (CBCS) in the light of NEP-2020

M. Tech CSE (BDA)/BDA

SEMESTER- III (2025-27)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MTCSDS301	DCC	Social Media Analytics	60	20	20	30	20	3	0	2	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1. Equip students with fundamental knowledge of social media analytics.
2. Enable learners to interpret, analyze, and utilize social media data effectively.
3. Familiarize students with key tools and techniques for analyzing social media performance.
4. Develop practical skills for tracking online consumer behavior and digital campaign success.
5. Encourage strategic decision-making through data-driven insights from social platforms

COURSE OUTCOMES:

Upon completion of the subject, students will be able to:

1. Understand the importance and application of social media analytics in modern business contexts.
2. Gain hands-on experience with analytics tools and metrics.
3. Develop strategies for optimizing social media campaigns based on data analysis.
4. Interpret consumer behavior and engagement trends using analytical techniques.
5. Create actionable reports to enhance brand presence and ROI

SYLLABUS

UNIT I

9 HOURS

Introduction to Social Media Analytics: Basics of social media platforms and their significance. Overview of social media analytics: scope and importance. Types of data: structured, unstructured, and semi-structured. Ethical considerations and privacy concerns social media analytics.

UNIT II

9 HOURS

Data Collection and Visualization: Data scraping and APIs for social media platforms. Tools for data collection: Google Analytics, Hootsuite, etc. Visualizing data: Dashboards, charts, and graphs. Understanding key performance indicators (KPIs) for social platforms.

UNIT III

9 HOURS

Analytical Techniques and Tools: Sentiment analysis and natural language processing. Social network analysis (SNA), Predictive analytics for social trends, Tools: Tableau, Power BI, Netlytic

UNIT IV

9 HOURS

Campaign Monitoring and Optimization: Measuring campaign effectiveness: reach, engagement, impressions.

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A/B testing and experimentation in social media campaigns. Competitive analysis on social media platforms. Case studies of successful and failed campaigns.

UNIT V

9 HOURS

Advanced Topics and Future Trends: Social media listening and brand reputation management, Impact of artificial intelligence and machine learning, Predictive models for viral content, Future of analytics: AR/VR, Metaverse, and beyond.

TEXTBOOKS:

- "Social Media Analytics: Techniques and Insights for Extracting Business Value Out of Social Media" by Matthew Ganis & Avinash Kohirkar.

REFERENCE:

- "Advanced Analytics and AI" by Tony Boobier.
- "Analyzing Social Media Networks with NodeXL" by Derek Hansen, Ben Shneiderman, and Marc A. Smith.
- "Big Data and Social Science: Data Science Methods and Tools" by Ian Foster et al.

LIST OF PRACTICALS

- Perform sentiment analysis on Twitter data using Python or R.
- Track and analyze engagement metrics for a brand's Instagram campaign.
- Examine audience demographics (age, location, etc.) for a specific brand page on Facebook or Instagram Insights.
- Study how engagement metrics change based on the time posts are published.
- Identify trending keywords in a domain using tools like Google Trends or basic Excel functions.

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MTCSBDA302	DCC	Big Data & Hadoop	60	20	20	30	20	3	0	2	4

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COURSE OBJECTIVES:

The student will have the ability to:

1. Introduce the idea of artificial neural networks and their architecture
2. Introduce techniques used for training artificial neural networks
3. Enable the design of an artificial neural network for the classification
4. Enable design and deployment of deep learning models for machine learning problems

COURSE OUTCOMES:

Upon completion of the subject, students will be able to:

1. Able to understand the mathematics behind the functioning of artificial neural networks
2. Able to analyze the given dataset for designing a neural network-based solution
3. Able to carry out the design and implementation of deep learning models for signal/image processing applications
4. Able to design and deploy simple TensorFlow-based deep learning solutions to classification problems

SYLLABUS

UNIT I

9 HOURS

Introduction: Big Data, Need, Dimensions of Big Data, Data explosion in the industry, Various implementations of Big Data, Different technologies to handle Big Data, Traditional systems and problems. Introduction to Hadoop, its architecture, characteristics, Hadoop Ecosystem, Hadoop Flavors – Apache, Cloudera, Hortonworks

UNIT II

9 HOURS

HDFS: HDFS daemons and architectures, data flow, HDFS master- slaves, HDFS APIs, Hadoop HDFS Web UI, and HDFS explorer.

UNIT III

9 HOURS

MapReduce: Issues before MapReduce and its evolution, Components, Execution Flow, Optimizations of Jobs. Anatomy of MapReduce, Hadoop MapReduce data types, Developing custom data types using Writable & Writable Comparable, InputFormat in MapReduce, InputSplit as a unit of work, How Partitioners partition data, Customization of RecordReader, Moving data from mapper to reducer – shuffling & sorting, Distributed cache and job chaining.

UNIT IV

9 HOURS

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Hive: Architecture, HQL queries, Hive DDL and DML, Schema Design, Schema-on-Read vs Schema-on-Write in Hive. **Pig:** The need for a high-level query language - Apache Pig, How Pig complements Hadoop with a scripting language, What is Pig, Pig execution flow, Different Pig operations like filter and join, Compilation of Pig code into MapReduce, Comparison - Pig vs MapReduce

UNIT V

9 HOURS

Big Data Analytics and Future Trends: Data Processing with Hadoop Tools: Case studies on data analysis, Integration with Machine Learning and AI: Hadoop with Spark and other platforms, Security and Privacy in Big Data, Emerging Trends in Big Data: Edge computing, real-time analytics, and IoT integration, Challenges and Future Scope of Big Data Technologies.

TEXTBOOKS:

1. "Hadoop: The Definitive Guide" by Tom White – A comprehensive guide to understanding and working with Hadoop, often referred to as the "Hadoop Bible."
2. "Big Data and Hadoop" by V.K. Jain – Covers the fundamentals of Big Data processing and Hadoop ecosystem components with practical examples.

REFERENCE:

1. "Hadoop in Practice" by Alex Holmes – Offers practical use cases and examples for building and deploying Hadoop solutions..
2. "Data Science and Big Data Analytics" by EMC Education Services – A detailed guide to analyzing Big Data using various tools and techniques.

LIST OF PRACTICALS

1. Hadoop Single-Node Setup: Install and configure a single-node Hadoop cluster on your local machine.
2. File Operations in HDFS: Perform operations like uploading, downloading, deleting, and listing files in the Hadoop Distributed File System (HDFS).
3. File Operations in HDFS: Perform operations like uploading, downloading, deleting, and listing files in the Hadoop Distributed File System (HDFS).
4. Data Analysis with Apache Hive: Create and query tables in Hive to analyze structured data stored in HDFS..
5. Data Ingestion Using Apache Sqoop: Transfer data between a MySQL database and HDFS using Sqoop.
6. Data Cleaning with Apache Pig: Use Pig scripts to clean and transform raw data stored in HDFS.
7. Analyze Web Server Logs: Use MapReduce or Hive to analyze web server logs and extract insights such as IP addresses with the most requests.

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