

**RECENT TRENDS IN IT
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[CORE COURSE TYPE]**

Semester: VI

Credits: 3+1

Subject Code: BC62201

Lectures: 48

Course Outcomes:

At the end of this course, the learner will be able to,

- Introduce upcoming trends in Information technology
- Study Eco friendly software development concepts
- Generalize the fundamental concepts of Artificial Intelligence
- Evaluate the performance of various data mining task
- Recognize and identify Data analytics using Spark Programming

Unit 1: Introduction to recent trends

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- Artificial Intelligence
- Data Warehouse
- Data Mining
- Spark
- Distributed Database

Unit 2: Artificial Intelligence and AI Search Techniques

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- Introduction & Concept of AI
- Applications of AI
- Artificial Intelligence
 - Intelligent Systems
 - Knowledge –based Systems
 - AI Techniques
- Early work in AI & related fields.
- Defining AI problems as a State Space Search
- Search and Control Strategies
- Problem Characteristics
- AI Problem:
 - Water Jug Problem
 - Tower of Hanoi
 - Missionaries & Cannibal Problem
- Blind Search Techniques
 - BFS
 - DFS
 - DLS



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- Iterative deepening Search
- Bidirectional Search
- Uniform cost Search
- Heuristic search techniques
 - Generate and test
 - Hill Climbing
 - Best First search
 - Constraint Satisfaction
 - Mean-End Analysis
 - A*
 - AO*

Unit 3: Data Warehousing and Data Mining

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- Introduction to Data warehouse
 - Structure of Data Warehouse
 - Advantages & uses of Data Warehouse
 - Architecture of Data Warehouse
 - Multidimensional data model
- OLAP Vs. OLTP
- OLAP Operations
- Types of OLAP
- Servers: ROLAP versus MOLAP versus HOLAP
- Introduction to Data Mining
- Data mining Task
- Data mining issues
- Data Mining versus Knowledge Discovery in Databases Data Mining Verification vs. Discovery
- Data Pre-processing
 - Need
 - Data Cleaning
 - Data Integration & Transformation
 - Data Reduction
- Accuracy Measures:
 - Precision
 - Recall
 - F-measure
 - confusion matrix
 - cross-validation, bootstrap
- Data Mining Techniques
- Frequent item-sets and Association rule mining
 - Apriori algorithm
 - FP tree algorithm
- Graph Mining: Frequent sub-graph mining
- Software for data mining
 - R
 - Weka
 - Sample applications of data mining



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- Introduction to Text Mining
 - Web Mining,
 - Spatial Mining
 - Temporal Mining

Unit 4: Spark

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- Introduction to Apache Spark
- Spark Installation
- Apache Spark Architecture
- Components of Spark
- Spark RDDs
- RDD Operations: Transformation & Actions
- Spark SQL and Data Frames
- Introduction to Kafka for Spark Streaming

#12 hours for Library work, assignments, practical or field work

Recommended Text Books:

- Nilsson, Elsevier *Artificial Intelligence: A new Synthesis*
- Sandy Ryza, *Advanced Analytics with Spark*, O'REILLY

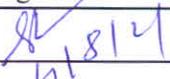
Reference Books:

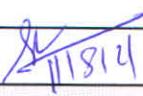
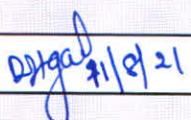
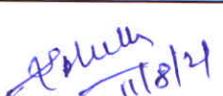
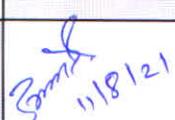
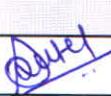
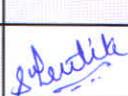
- Elaine Rich, Kevin Knight *Artificial Intelligence*, Tata McGraw Hill, 2nd Edition
- Jiawei Micheline Kamber, *Data Mining Concepts and Techniques*, Morgan Kaufmann Publishers.
- John Zelle, *Python Programming: An introduction to computer* 3rd Edition
- Padma Priya Chitturi, *Apache Spark for Data Science Cookbook*

Websites:

- www.w3cschool.com



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Head of the Department	Ms Smita Borkar		
Faculty*	Asst Prof. Deepali Gupta		
Faculty*	Asst Prof Monika Rajguru		
Subject Expert (Outside SPPU)	Dr. Sachin Bhoite		
Subject Expert (Outside SPPU)	Dr. Sagar Jambhorkar		
VC Nominee	Prof Anjum Patel		
Industry Expert	Ms. Shrutiika wayal		
One Alumni***	Ms. Vidhi Thakkar		



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