

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


Semester: VI	Credits: 3+1	Subject Code: BC62201	Lectures: 48
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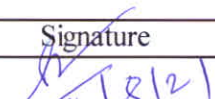
Course Outcomes:

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

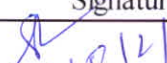
Unit 1: Introduction to recent trends	02
<ul style="list-style-type: none"> • Artificial Intelligence • Data Warehouse • Data Mining • Spark • Distributed Database 	

Unit 2: Artificial Intelligence and AI Search Techniques	16
<ul style="list-style-type: none"> • Introduction& Concept of AI • Applications of AI • Artificial Intelligence <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> ○ Water Jug Problem ○ Tower of Hanoi ○ Missionaries & Cannibal Problem • Blind Search Techniques <ul style="list-style-type: none"> ○ BFS ○ DFS ○ DLS 	

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<ul style="list-style-type: none"> ○ Iterative deepening Search ○ Bidirectional Search ○ Uniform cost Search ● Heuristic search techniques <ul style="list-style-type: none"> ○ Generate and test ○ Hill Climbing ○ Best First search ○ Constraint Satisfaction ○ Mean-End Analysis ○ A* ○ AO* 	
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Unit 3: Data Warehousing and Data Mining	20
<ul style="list-style-type: none"> ● Introduction to Data warehouse <ul style="list-style-type: none"> ○ 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 <ul style="list-style-type: none"> ○ Need ○ Data Cleaning ○ Data Integration & Transformation ○ Data Reduction ● Accuracy Measures: <ul style="list-style-type: none"> ○ Precision ○ Recall ○ F-measure ○ confusion matrix ○ cross-validation, bootstrap ● Data Mining Techniques ● Frequent item-sets and Association rule mining\ <ul style="list-style-type: none"> ○ Apriori algorithm ○ FP tree algorithm ● Graph Mining: Frequent sub-graph mining ● Software for data mining <ul style="list-style-type: none"> ○ R ○ Weka ○ Sample applications of data mining 	

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<ul style="list-style-type: none"> • Introduction to Text Mining <ul style="list-style-type: none"> ○ Web Mining, ○ Spatial Mining ○ Temporal Mining 	
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Unit 4: Spark	10
<ul style="list-style-type: none"> • 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

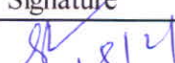
Reference Books:


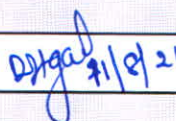
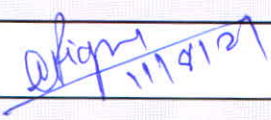
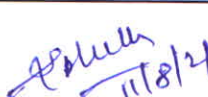
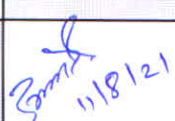
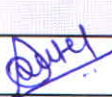
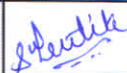
- Elaine Rich, Kevin Knight *Artificial Intelligence*, Tata McGraw Hill, 2nd Edition
- Jiawei Micheline Kamber *Data Mining Concepts and Techniques*, Morgan Kauf Mann Publishers.
- John Zelle, *Python Programming: An introduction to computer 3rd Edition*
- Padma Priya Chitturi, *Apache Spark for Data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

Websites:

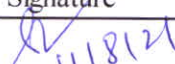
- www.w3school.com



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Head of the Department	Ms Smita Borkar		 11/8/21
Faculty*	Asst Prof. Deepali Gupta	 11/8/21	
Faculty*	Asst Prof Monika Rajguru		 11/8/21
Subject Expert (Outside SPPU)	Dr.Sachin Bhoite	 11/8/21	
Subject Expert (Outside SPPU)	Dr. Sagar Jambhorkar		 11/8/21
VC Nominee	Prof Anjum Patel		
Industry Expert	Ms. Shrutika wayal		
One Alumni***	Ms. VidhiThakkar		



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