COURSE BOOK

Duration of Semester	11 Sep 2023 To 06 Jan 2024	# of Lecture Hours/ Week	4
Degree	BE	Dept-Sem-Sec	CS-7-A
Course Name	BIG DATA AND ANALYTICS	Course Code	18CS72
IA Marks	40	Exam Marks	60
Exam Hours	3	Credits	4
Name of the Faculty	Mr Akshatha S A	# of Lecture Hours	50

Time Slot

Mon	09:20 AM - 10:15 AM	Thu	10:15 AM - 11:05 AM
Tue	11:20 AM - 12:15 PM	Fri	-
Wed	02:50 PM - 03:40 PM	Sat	09:20 AM - 10:15 AM

Lesson Plan And Execution

Source Material List

TEXT 1	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164966, 9353164966
TEXT 2	Douglas Eadline, "Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem", 1stEdition, Pearson Education, 2016. ISBN-13: 978-9332570351
REF 1	Tom White, "Hadoop: The Definitive Guide", 4th Edition, O#Reilly Media, 2015.ISBN-13: 978-9352130672
REF 2	Boris Lublinsky, Kevin T Smith, Alexey Yakubovich, "Professional Hadoop Solutions", 1stEdition, Wrox Press, 2014ISBN-13: 978-8126551071
REF 3	Eric Sammer, "Hadoop Operations: A Guide for Developers and Administrators",1stEdition, O'Reilly Media, 2012.ISBN-13: 978-9350239261
REF 4	Arshdeep Bahga, Vijay Madisetti, "Big Data Analytics: A Hands-On Approach", 1st Edition, VPT Publications, 2018. ISBN-13: 978-0996025577

Course Objective List

1	Understand fundamentals of Big Data analytics
2	Explore the Hadoop framework and Hadoop Distributed File system
3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data
4	Employ MapReduce programming model to process the big data
5	Understand various machine learning algorithms for Big Data Analytics, Web Mining and Social Network Analysis

Course Outcome List

1	Understand fundamentals of Big Data analytics.
2	Investigate Hadoop framework and Hadoop Distributed File system
3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data
4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools
5	Use Machine Learning algorithms for real world big data
6	Analyze web contents and Social Networks to provide analytics with relevant visualization tools

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
Module 1									
1	P	11 Sep 2023	Big Data			0 hour: 55 min		Lecture	
1	E	11 Sep 2023	Big Data	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 55 min	UNDERSTAND	Lecture	
2	P	12 Sep 2023	Scalability and Parallel Processing			0 hour: 55 min		Lecture	
2	E	12 Sep 2023	Scalability and Parallel Processing	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 55 min	UNDERSTAND	Lecture	
3	P	13 Sep 2023	Designing Data Architecture			0 hour: 50 min		Lecture	
3	E	14 Sep 2023	Designing Data Architecture	Raj Kamal and Preeti Saxena,	CO 1	0 hour: 50 min	UNDERSTAND	Lecture	

Period	Plan/Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				"Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
4	P	14 Sep 2023	Data Sources			0 hour: 50 min		Lecture	
4	E	15 Sep 2023	Data Sources	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 50 min	UNDERSTAND	Lecture	
5	P	16 Sep 2023	Quality			0 hour: 55 min		Lecture	
5	E	21 Sep 2023	Quality	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw	CO 1	0 hour: 55 min	UNDERSTAND	Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Hill Education, 2018 ISBN: 9789353164 9353164966					
6	P	18 Sep 2023	Pre-Processing and Storing			0 hour: 55 min		Lecture	
6	E	25 Sep 2023	Pre-Processing and Storing	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 55 min	UNDERSTAND	Lecture	
7	P	19 Sep 2023	Data Storage and Analysis			0 hour: 55 min		Lecture	
7	E	30 Sep 2023	Data Storage and Analysis	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 55 min	UNDERSTAND	Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
8	P	20 Sep 2023	Big Data Analytics Applications and Case Studies			0 hour: 50 min		Lecture	
8	E	30 Sep 2023	Big Data Analytics Applications and Case Studies	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 1	0 hour: 50 min	UNDERSTAND	Lecture	

Module 2

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
9	P	27 Sep 2023	Introduction, Hadoop and its Ecosystem			0 hour: 50 min		Lecture	
9	E	3 Oct 2023	Introduction, Hadoop and its Ecosystem	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 2	0 hour: 50 min	UNDERSTAND	Lecture	
10	P	28 Sep 2023	Hadoop Distributed File System, MapReduce Framework and Programming Model			0 hour: 50 min		Lecture	

Period	Plan/Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
10	E	9 Oct 2023	Hadoop Distributed File System, MapReduce Framework and Programming Model	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 2	0 hour: 50 min	UNDERSTAND	Lecture	
11	P	30 Sep 2023	Hadoop Yarn			0 hour: 55 min		Lecture	
11	E	11 Oct 2023	Hadoop Yarn	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	
12	P	2 Oct 2023	Hadoop Ecosystem Tools			0 hour: 55 min		Lecture	
12	E	12 Oct 2023	Hadoop Ecosystem Tools	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
13	P	3 Oct 2023	HDFS Design Features, Components			0 hour: 55 min		Lecture	
13	E	16 Oct 2023	HDFS Design Features, Components	Douglas Eadline, "Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem", 1stEdition, Pearson Education, 2016. ISBN-13: 978-933257	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	
14	P	4 Oct 2023	HDFS User Commands			0 hour: 50 min		Lecture	
14	E	17 Oct 2023	HDFS User Commands	Douglas Eadline, "Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem"	CO 2	0 hour: 50 min	UNDERSTAND	Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				1stEdition, Pearson Education, 2016. ISBN-13: 978-933257					
15	P	5 Oct 2023	Using Apache Pig, Hive, Sqoop			0 hour: 50 min		Lecture	
15	E	26 Oct 2023	Using Apache Pig, Hive, Sqoop	Douglas Eadline, "Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem", 1stEdition, Pearson Education, 2016. ISBN-13: 978-933257	CO 2	0 hour: 50 min	UNDERSTAND	Lecture	
16	P	7 Oct 2023	Flume, Oozie, Hbase			0 hour: 55 min		Lecture	
16	E	6 Nov 2023	Flume, Oozie, Hbase	Douglas Eadline, "Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem", 1stEdition, Pearson	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Education, 2016. ISBN-13: 978-933257					
Module 3									
17	P	14 Oct 2023	Introduction			0 hour: 55 min		Lecture	
17	E	7 Nov 2023	Introduction	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	
18	P	16 Oct 2023	NoSQL Data Store			0 hour: 55 min		Lecture	
18	E	8 Nov 2023	NoSQL Data Store	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 2	0 hour: 55 min	UNDERSTAND	Lecture	
19	P	17 Oct 2023	NoSQL Data Architecture Patterns			0 hour: 55 min		Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
19	E	13 Nov 2023	NoSQL Data Architecture Patterns	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 55 min	APPLY	Lecture	
20	P	18 Oct 2023	NoSQL to Manage Big Data			0 hour: 50 min		Lecture	
20	E	15 Nov 2023	NoSQL to Manage Big Data	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 50 min	UNDERSTAND	Lecture	
21	P	19 Oct 2023	Shared-Nothing Architecture for Big Data Tasks			0 hour: 50 min		Lecture	
21	E	16 Nov 2023	Shared-Nothing Architecture for Big Data Tasks	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-	CO 3	0 hour: 50 min	UNDERSTAND	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
22	P	21 Oct 2023	MongoDB			0 hour: 55 min		Lecture	
22	E	20 Nov 2023	MongoDB	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 55 min	UNDERSTAND	Lecture	
23	P	23 Oct 2023	Databases			0 hour: 55 min		Lecture	
23	E	20 Nov 2023	Databases	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 55 min	UNDERSTAND	Lecture	
24	P	24 Oct 2023	Cassandra Databases			0 hour: 55 min		Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
24	E	22 Nov 2023	Cassandra Databases	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 55 min	UNDERSTAND	Lecture	
Module 4									
25	P	31 Oct 2023	Introduction			0 hour: 55 min		Lecture	
25	E	23 Nov 2023	Introduction	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 3	0 hour: 55 min	REMEMBER	Lecture	
26	P	1 Nov 2023	Introduction			0 hour: 50 min		Lecture	
26	E	25 Nov 2023	Introduction	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and	CO 4	0 hour: 50 min	APPLY	Lecture	

Period	Plan/Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
27	P	2 Nov 2023	MapReduce Map Tasks			0 hour: 50 min		Lecture	
27	E	28 Nov 2023	MapReduce Map Tasks	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 4	0 hour: 50 min	UNDERSTAND	Lecture	
28	P	4 Nov 2023	Reduce Tasks and MapReduce Execution			0 hour: 55 min		Lecture	
28	E	29 Nov 2023	Reduce Tasks and MapReduce Execution	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 4	0 hour: 55 min	REMEMBER	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
29	P	6 Nov 2023	Composing MapReduce for Calculations and Algorithms			0 hour: 55 min		Lecture	
29	E	4 Dec 2023	Composing MapReduce for Calculations and Algorithms	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 4	0 hour: 55 min	UNDERSTAND	Lecture	
30	P	7 Nov 2023	Hive			0 hour: 55 min		Lecture	
30	E	6 Dec 2023	Hive	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 4	0 hour: 55 min	UNDERSTAND	Lecture	
31	P	8 Nov 2023	HiveQL			0 hour: 50 min		Lecture	
31	E	13 Dec 2023	HiveQL	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop,	CO 4	0 hour: 50 min	UNDERSTAND	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
32	P	9 Nov 2023	Pig			0 hour: 50 min		Lecture	
32	E	14 Dec 2023	Pig	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 4	0 hour: 50 min	UNDERSTAND	Lecture	
Module 5									
33	P	16 Nov 2023	Introduction, Estimating the relationships, Outliers			0 hour: 50 min		Lecture	
33	E	18 Dec 2023	Introduction, Estimating the relationships, Outliers	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018	CO 4	0 hour: 50 min	UNDERSTAND	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				ISBN: 9789353164 9353164966					
34	P	18 Nov 2023	Variances, Probability Distributions, and Correlations			0 hour: 55 min		Lecture	
34	E	19 Dec 2023	Variances, Probability Distributions, and Correlations	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 5	0 hour: 55 min	REMEMBER	Lecture	
35	P	20 Nov 2023	Regression analysis, Finding Similar Items			0 hour: 55 min		Lecture	
35	E	21 Dec 2023	Regression analysis, Finding Similar Items	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 5	0 hour: 55 min	UNDERSTAND	Lecture	
36	P	21 Nov 2023	Similarity of Sets and Collaborative Filtering, Frequent Itemsets and Association Rule Mining			0 hour: 55 min		Lecture	

Period	Plan/Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
36	E	23 Dec 2023	Similarity of Sets and Collaborative Filtering, Frequent Itemsets and Association Rule Mining	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 5	0 hour: 55 min	UNDERSTAND	Lecture	
37	P	22 Nov 2023	Introduction, Text mining			0 hour: 50 min		Lecture	
37	E	23 Dec 2023	Introduction, Text mining	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 5	0 hour: 50 min	REMEMBER	Lecture	
38	P	23 Nov 2023	Web Mining, Web Content and Web Usage Analytics			0 hour: 50 min		Lecture	
38	E	26 Dec 2023	Web Mining, Web Content and Web Usage Analytics	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and	CO 5	0 hour: 50 min	APPLY	Lecture	

Period	Plan/ Execu tion	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966					
39	P	25 Nov 2023	Page Rank, Structure of Web and analyzing a Web Graph			0 hour: 55 min		Lecture	
39	E	27 Dec 2023	Page Rank, Structure of Web and analyzing a Web Graph	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN: 9789353164 9353164966	CO 5	0 hour: 55 min	UNDERSTAND	Lecture	
40	P	27 Nov 2023	Social Network as Graphs and Social Network Analytics			0 hour: 55 min		Lecture	
40	E	28 Dec 2023	Social Network as Graphs and Social Network Analytics	Raj Kamal and Preeti Saxena, "Big Data Analytics Introduction to Hadoop, Spark, and Machine-Learning", McGraw Hill Education, 2018 ISBN:	CO 5	0 hour: 55 min	APPLY	Lecture	

Period	Plan/ Execution	Date	Topic	Source Materials to be Referred	Course Outcomes	Duration	Bloom's Level	Execution Methods	Learning Validation Method
				9789353164 9353164966					

Module No.	# of Classes Planned (Till Date)	Planned Effort (Till Date)	# of Classes Executed (Till Date)	Actual Effort (Till Date)	% Coverage
1	8	7hrs 5min	8	7hrs 5min	100.0
2	8	7hrs 0min	8	7hrs 0min	100.0
3	8	7hrs 10min	8	7hrs 10min	100.0
4	8	7hrs 0min	8	7hrs 0min	100.0
5	8	7hrs 5min	8	7hrs 5min	100.0
Faculty in Charge			HOD's Signature		
Signature of Principal (Remarks, If Any)					