SOCIETY OF ST. FRANCIS XAVIER, PILAR'S

FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to University of Mumbai)

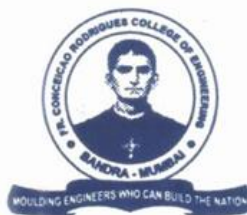**Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.**

Phone : (022) 6711 4000, 6711 4101, 6711 4104

Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

Computer Engineering
(Academic Year :2023-2024)

Course Code: CSC702	
Course Name: Big Data Analytics	
Course Teacher: Prof. Ankita Amburle	
Course Outcomes (CO): *At the End of the course students will be able to*	
CSC702.1	Discuss the key issues in big data management and its applications for business decision
CSC702.2	Apply fundamental enabling techniques Hadoop and Map Reduce to solve real world problems.
CSC702.3	Store, manage and query big data using No SQL databases.
CSC702.4	Apply advanced techniques for emerging stream analytics
CSC702.5	Explain adequate perspectives of big data analytics in recommendation and social media application
CSC702.6	Apply statistical computing techniques and graphics for analysing big data.

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S

FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

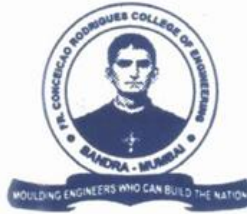*(Approved by AICTE & Affiliated to University of Mumbai)*

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104
Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

Course Lesson Plan

Sr. No.	Proposed Date	Actual Date	Topics	CO	Teacher's Remark	HoD's Remark
1	11-07-23		Syllabus, Introduction to COs, Introduction to big data			
2	12-07-23		Big Data characteristics			
3	13-07-23		Types of Big Data, Traditional vs. Big Data business approach			
4	18-07-23		Case Study of Big Data Solutions			
5	19-07-23		Concept of Hadoop			
6	20-07-23		Core Hadoop Components,Hadoop Ecosystem.			
7	25-07-23		Distributed File Systems: Physical Organization of Compute Nodes			
8	26-07-23		Large-Scale File-System Organization			
9	28-07-23		MapReduce: The Map Tasks, Grouping by Key, The Reduce Tasks, Combiners, Details of MapReduce Execution			
10	01-08-23		Coping With Node Failures, Algorithms Using MapReduce: Matrix-Vector Multiplication by MapReduce			
11	02-08-23		Relational-Algebra Operations			
12	04-08-23		Computing Selections by MapReduce, Computing Projections by MapReduce, Union, Intersection, and Difference by MapReduce Hadoop Limitations			
13	08-08-23		Introduction to NoSQL, NoSQL Business Drivers			
14	09-08-23		NoSQL Data Architecture Patterns: Key-value stores, Graph stores, Column family (Bigtable) stores, Document stores			
15	11-08-23		Variations of NoSQL architectural patterns			
	15-08-23		**Independence Day**			
	16-08-23		**Parsi New Year**			

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S

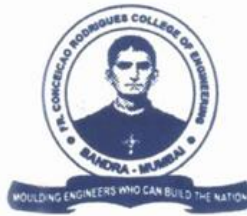**FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING**

(Approved by AICTE & Affiliated to University of Mumbai)

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104

Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

16	17-08-23		NoSQL CaseStudy:NEO4j,Apache Cassandra,Mongodb			
17	22-08-23		NoSQL solution for big data, Understanding the types of big data problems; Analyzing big datawith a shared-nothing architecture			
18	23-08-23		Choosing distribution models: master-slave versus peer- to-peer; NoSQL systems to handle big data problems.			
19	25-08-23		The Stream Data Model: A Data-Stream-Management System, Examples of Stream Sources,Stream Queries			
	29-08-23 to 31-08-23		**Unit Test-1**			
20	05-09-23		Issues in Stream Processing,Sampling Data techniques in a Stream			
21	06-09-23		Filtering Streams: Bloom Filter with Analysis			
22	08-09-23		Counting Distinct Elements in a Stream, Count-Distinct Problem, Flajolet-Martin Algorithm, Combining Estimates, Space Requirements			
23	12-09-23		Counting Frequent Items in a Stream, Sampling Methods for Streams, Frequent Itemsets inDecaying Windows			
24	13-09-23		Counting Ones in a Window: The Cost of Exact Counts			
25	15-09-23		The Datar-Gionis-Indyk-Motwani Algorithm, Query Answering in the DGIM Algorithm, Decaying Windows			
	19-09-23 to 22-09-23		Shri Ganesh Festival			
26	26-09-23		A Model for Recommendation Systems, Content-Based Recommendations			
27	27-09-23		Collaborative Filtering, Case Study: Product Recommendation			
	28-09-23		Id-E-Milad			
28	29-10-23		Social Networks as Graphs, Clustering of Social- Network Graphs			
29	03-10-23		Direct Discovery ofCommunities in a social graph			
30	04-10-23		Exploring Basic features of R, Exploring RGUI, Exploring RStudio,			

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S

FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to University of Mumbai)

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104
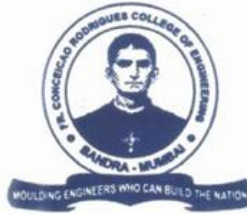Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

			Handling Basic Expressions in R, Variables in R, working with Vectors, Storing and Calculating Values in R			
	09-10-23 to 13-10-23		Unit Test-2			
31	6-10-23		Creating and using Objects, interacting with users, Handling data in R workspace			
32	13-10-23		Executing Scripts, Creating Plots, Accessing help and documentation in R.			
33	14-10-23		Reading datasets and Exporting data from R, Manipulating and Processing Data in R, Using functions instead of script, built-in functions in R.Data Visualization: Types, Applications.			
42	17-10-23		Remedial Session			
			University ESE Examination			

Text Books:
1. Cre Anand Rajaraman and Jeff Ullman ―Mining of Massive Datasets‖, Cambridge UniversityPress
2. Alex Holmes ―Hadoop in Practice‖, Manning Press, Dreamtech Press.
3. Dan Mcary and Ann Kelly ―Making Sense of NoSQL‖ – A guide for managers and the rest of us,Manning Press.
4. DT Editorial Services, ―Big Data Black Book‖, Dreamtech Press
5. EMC Education Services,‖Data Science and Big Data Analytics‖,Wiley

References books:
1. Bill Franks , ―Taming The Big Data Tidal Wave: Finding Opportunities In Huge Data StreamsWith Advanced Analytics, Wiley
2. Chuck Lam, ―Hadoop in Action‖, Dreamtech Press
3. Jared Dean, ―Big Data, Data Mining, and Machine Learning: Value Creation for Business Leadersand Practitioners, Wiley India Private Limited, 2014.

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S

FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to University of Mumbai)

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104

Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

4. Jiawei Han and Micheline Kamber, —Data Mining: Concepts and Techniques, Morgan KaufmannPublishers, 3rd ed, 2010.
5. Lior Rokach and Oded Maimon, —Data Mining and Knowledge Discovery Handbook, Springer,2nd edition, 2010.
6. Ronen Feldman and James Sanger, —The Text Mining Handbook: Advanced Approaches inAnalyzing Unstructured Data, Cambridge University Press, 2006.
7. Vojislav Kecman, —Learning and Soft Computing, MIT Press, 2010.

Course Instructor: Prof.Ankita Amburle