GUJARAT TECHNOLOGICAL UNIVERSITY

SUBJECT NAME: BigData & High Performance Computing Solution (Major Elective – I)
SUBJECT CODE: 3715503
Semester I

Type of course:

Prerequisite:

1. Database Technologies
2. Computer Architcture

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE(E)	PA (M)	ESE	PA(I)	
3	2	0	4	70	30	30	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment;

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Big Data Fundamentals - Big Data Overview, 3Vs of Data - Volume, Velocity, Variety, Big Data Challenges, Application Areas ,Application Tools and Platforms	6	10
2	Designing and building big data applications , Big data architecture, Distributed Computing platforms, Security and Data Privacy, Multi-core scalability, Parallel and Distributed Processing	7	20
		7	
3	Distributed Processing and Data Storage, Hadoop Framework, HDFS and data managements using HDFS, Mapreduce Framework and programming		20
4	Introduction to Modern databases-NoSQL, NewSQL, NoSQL Vs RDBMS databases, Advantages & Tradeoffs, Working with MongoDb	6	10
5	Big Data Applications and Case Study- Big Data in Scientific applications, Big data in Healthcare	6	10

References

1. Big Data Application Architecture Q & A: A Problem-Solution Approach, Nitin Sawant and Himanshu Shah Apress 2013 ISBN:9781430262923

2. Too Big to Ignore: The Business Case for Big Data., Phil Simon, John Wiley & Sons, ISBN:9781118638170
3. Big Data Analytics: From Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph David Loshin, Morgan Kaufmann Publishers ,ISBN:9780124173194
4. Big Data Management, Technologies, and Applications , Wen-Chen Hu and Naima Kaabouch (eds) IGI Global ,ISBN:9781466646995

Course Outcome:

After learning the course the students should be able to:

1. Demonstrate the basic operation in big data
2. Architectures used in big data are discussed
3. Study about Big data processing language Hadoop
4. Describes about the modern databases
5. Case Studies in big data are analysed

List of Experiments: (with Open Ended Problems)

1. Designing and building big data applications ,
2. Implementing Security and Data Privacy, Multi-core scalability
3. Distributed Processing and Data Storage,
4. Hadoop Framework, HDFS and data managements using HDFS, Mapreduce Framework and programming,
5. Databases-NoSQL, NewSQL, NoSQL Vs RDBMS databases,
6. Big Data Applications and Case Study- Big Data in Scientific applications,
7. Big data in Healthcare