SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
M. TECH. COMPUTER SCIENCE & ENGINEERING
Semester III

Subject Category	**DE**	Subject Code:	**MCSE-301(A)**	Subject Name:	**Big Data Analysis**

Maximum Marks Allotted						Contact Hours			Total Credits
Theory			Practical		Total Marks				
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work		L	T	P	
60	**20**	**20**			**100**	**3**	**-**	**-**	**3**

Prerequisites:

Course Objective:

Course Outcomes:

UNITs	Descriptions	Hrs.	CO's
I	Introduction to Big Data: Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options, Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data - Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big data Analytics - Big data characteristics - Volume, Veracity, Velocity, Variety – Data Appliance and Integration tools – Greenplum – Informatica		
II	Data Analysis: Evolution of analytic scalability – Convergence – parallel processing systems – Cloud computing – grid computing – map reduce – enterprise analytic sand box – analytic data sets – Analytic methods – analytic tools – Cognos – Micro strategy - Pentaho. Analysis approaches – Statistical significance – business approaches – Analytic innovation – Traditional approaches – Iterative.		
III	Stream Computing: Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window - Realtime Analytics Platform(RTAP) applications IBM Infosphere – Big data at rest – Infosphere streams – Data stage – Statistical analysis – Intelligent scheduler – Infosphere Streams.		
IV	Predictive Analytics and Visualization: Predictive Analytics – Supervised – Unsupervised learning – Neural networks – Kohonen models – Normal – Deviations from normal patterns – Normal behaviours – Expert options – Variable entry - Mining Frequent itemsets - Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications.		
V	Frameworks and Applications: IBM for Big Data – Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Hbase – Impala – Analyzing big data with twitter – Big data for ECommerce – Big data for blogs.		
Guest Lectures (if any)			
Total Hours		40	

Reference Books-

1. "Big Data Analytics: Turning Big Data into Big Money" by Frank J Ohlhorst, Wiley and SAS Business Series, 2012
2. "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics" by Bill Franks, Wiley and SAS Business Series, 2012
3. "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data" by Paul Zikopoulos, Chris Eaton, Paul Zikopoulos, McGraw Hill, 2011

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Semester III

Subject Category	**DE**	Subject Code:	**MCSE-302(A)**	Subject Name:	**Advanced Software Testing**

Maximum Marks Allotted						Contact Hours			Total Credits
Theory			Practical		Total Marks				
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work		L	T	P	
60	**20**	**20**			**100**	**3**	**-**	**-**	**3**

Prerequisites:

Course Objective:

Course Outcomes:

The students would be able to

UNITs	Descriptions	Hrs.	CO's
I	Overview of the Software Testing Process: Organizing for testing, Developing the test plan, Verification Testing, Validation Testing, Analyzing and Reporting test result, Acceptance and Operational Testing, Post-Implementation Analysis. Testing in the Software Life Cycle. Test Planning and Control. Test Analysis and Design. Test Implementation and Execution.		
II	Test Techniques: Specification-Based Techniques. Structure-Based Techniques Defect-Based Techniques. Experience-Based Testing Techniques. Static Analysis Dynamic Analysis Choosing Testing Techniques. Testing of Software Characteristics: Quality Attributes for Test Analysts -Functional Testing, Usability Testing. Quality Attributes for Technical Test Analysts - Technical Testing in General, Technical Security Testing, Reliability Testing, Efficiency Testing, Maintainability Testing, Portability Testing.		
III	Testing Applications on the Web: Web Testing versus traditional testing, web systems, bug inheritance, back-end data accessing, thin-client versus thick- client processing. Mobile web application platform test. Web security testing- anatomy of an attack, attacking intents, testing goals and responsibilities, testing for security.		
IV	Process Maturity Models- CMM *, CMMI*. Testing Improvement Models - TMM (Testing Maturity Model) , TPI (Test Process Improvement Model) , CTPs (Critical Testing Processes) , (Systematic Test and Evaluation Process). Testing Tools and Automation: Testing Tool Acquisition, Testing Tool Introduction and Deployment, Testing Tool Categories. Case studies : JUnit and Selenium Testing Tools.		
V	Agile methodology is an iterative and incremental software development approach. In this section, you will learn about agile methodology and gain an understanding of Scrum and Sprint methodologies, Bug triaging meetings, and Product backlog grooming. Scrum model-sprint planning meeting-scrum master-scrum meeting.		
Guest Lectures (if any)			
Total Hours		40	

Reference Books-

1.Perry, William E., “Effective Methods for Software Testing”, Third Edition Publisher: John Wiley & Sons.

2. Rex Black; Jamie L Mitchell “Advanced Software Testing—Vol. 3” Publisher: Rocky Nook

3. Hung Q. Nguyen; Bob Johnson; Michael Hackett “Testing Applications on the Web: Test Planning for Mobile and Internet-Based Systems”, Second Edition Publisher: John Wiley & Sons

4. Petar Tahchiev; Felipe Leme; Vincent Massol; Gary Gregory “JUnit in Action” Second Edition Publisher: Manning Publications 5. David Burns; “Selenium 1.0 Testing Tools” Publisher: Packt Publishing