SITA2602	BIG DATA ANALYTICS LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

COURSE OBJECTIVES
- To configure Big Data Ecosystem
- To work with No SQL Databases
- To process job scheduling
- To Analyse and Interpret Data
- To visualize the data insights

To learn, deploy and execute programs on the following technologies.
1. No SQL (using Cassandra/MongoDB/Spark)
2. Hadoop – Map Reduce Programs / Commands / Job Scheduling
3. HDFS
4. YARN
5. Working with Pig and Hive
6. Visualization (using Tableau Cloud)

COURSE OUTCOMES:
CO1: Able to setup Hadoop in a Cloud / Cluster environment
CO2: Process and schedule the tasks in the Hadoop platform
CO3: To configure nosql databases in the big data ecosystem
CO4: Selection of right visualization method based on the intended audience
CO5: Creates a dashboard and story based on the data analysis
CO6: Test and evaluate the data models

SITA3004	USER INTERFACE DESIGN AND IMPLEMENTATION	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES
- To explain hypertext and style sheet languages.
- To apply Responsive Web Design Framework and features.
- To illustrate the basics of JavaScript, jQuerry and allied scripting languages for Web design.
- To build Server side JS frameworks
- To design client side JS frameworks

UNIT 1 UI DESIGN   **9Hrs.**
HTML5: What is HTML5 - Features of HTML5 – Semantic Tags – New Input Elements and tags - Media tags (audio and video tags) – Designing Graphics using Canvas API - Drag and Drop features – Geolocation API - Web storage (Session and local storage).
CSS3: What is CSS3 – Features of CSS3 – Implementation of border radius, box shadow, image border, custom web font, backgrounds - Advanced text effects(shadow) - 2D and 3D Transformations - Transitions to elements - Animations to text and elements.

UNIT 2 RESPONSIVE WEB DESIGN (RWD)   **9 Hrs.**
Responsive Design: What is RWD – Introduction to RWD Techniques – Fluid Layout, Fluid Images and Media queries - Introduction to RWD Framework. Twitter Bootstrap – Bootstrap Background and Features - Getting Started with Bootstrap - Demystifying Grids – OffCanvas - Bootstrap Components - JS Plugins – Customization.

UNIT 3 INTRODUCTION TO JAVASCRIPT AND JQUERY   **9 Hrs.**
Introduction - Core features - Data types and Variables - Operators, Expressions and Statements - Functions & Scope - Objects - Array, Date and Math related Objects - Document Object Model - Event Handling – Browser Object Model - Windows and Documents - Form handling and validations. Object-Oriented Techniques in JavaScript - Classes – Constructors and Prototyping (Sub classes and Super classes) – JSON – Introduction to AJAX. Introduction – jQuery Selectors – jQuery HTML - Animations – Effects – Event Handling – DOM – jQuery DOM Traversing, DOM Manipulation – jQuery AJAX.

UNIT 4 INTRODUCTION TO SERVER-SIDE JS FRAMEWORK – NODE.JS   **9 Hrs.**
Introduction - What is Node JS – Architecture – Feature of Node JS - Installation and Setup - Creating web servers with HTTP (Request & Response) – Event Handling - GET & POST implementation - Connect to SQL Database using Node JS – Implementation of CRUD operations.

UNIT 5 INTRODUCTION TO CLIENT-SIDE JS FRAMEWORK   **9 Hrs.**
Introduction to Angular 4.0 - Needs & Evolution – Features – Setup and Configuration – Components and Modules – Templates – Change Detection – Directives – Data Binding - Pipes – Nested Components. Template - Model Driven Forms or Reactive Forms - Custom Valuators. Introduction to ReactJS - React Components- Build a simple React component- React internals -Component inter communication- Component composition- Component styling.

Max. 45 Hours

COURSE OUTCOMES :
On Completion of course the student will be able to
  CO1: Develop web pages and style sheets using HTML and CSS3 respectively.
  CO2: Design responsive websites with RWD techniques.
  CO3: Apply JavaScript and allied scripting languages for implementing object models and functions.
  CO4: Demonstrate Serve Side JS Framework for application development.
  CO5: Use Client Side JS Framework for redefining the application development.
  CO6: Develop User Interface Designs using the frameworks

TEXT/REFERENCE BOOKS:
1. Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel, "Internet and World Wide Web - How to Program", Fifth Edition, Pearson Education, 2011.
2. Achyut S Godbole and Atul Kahate, "Web Technologies", Second Edition, Tata McGraw Hill, 2012.
3. Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.
4. David Flanagan, "JavaScript: The Definitive Guide, Sixth Edition", O'Reilly Media, 2011
5. Bear Bibeault and Yehuda Katz, "jQuery in Action", January 2008
6. Web link for Responsive Web Design - https://bradfrost.github.io/this-is-responsive/
7. Ebook link for JavaScript - https://github.com/jasonzhuang/tech_books/tree/master/js
8. Krasimir Tsonev, "Node.js by Example Paperback", May 2015
9. Web link for Node.js : https://nodejs.org/en/

10. Artemij Fedosejev "React.js Essentials" (http://pepa.holla.cz/wp-content/uploads/2016/12/React.js-Essentials.pdf.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100   Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice   20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks   80 marks

		L	T	P	Credits	Total Marks
SITA3009	**CYBER FORENSICS AND CYBER LAW**	3	0	0	3	100

COURSE OBJECTIVES
- To introduce Cyber Forensic Theory and cyber laws.
- To understand the concept of data and recovery evidence for different platforms.
- To designed Forensics Investigation and laws.
- To understand the concepts of cyber security and legal systems of information technology.
- To gain knowledge on reverse engineering and cracking techniques.

UNIT 1   **9 Hrs.**
Cyber Forensic Basics- Cyber Forensic Basics- Introduction to Cyber Forensics, Storage Fundamentals, File System Concepts, Data Recovery, Operating System Software and Basic Terminology.

UNIT 2   **9 Hrs.**
Data and Evidence Recovery- Introduction to Deleted File Recovery, Data Recovery Tools, Data Recovery Procedures and Ethics, Preserve and safely handle original media, Document a "Chain of Custody", Complete time line analysis of computer files based on file creation, file modification and file access, Recover Internet Usage Data, Recover Swap Files/Temporary Files/Cache Files, Introduction to Encase Forensic Edition, Forensic Tool Kit (FTK) etc,

UNIT 3   **9 Hrs.**
Cyber Forensics Investigation- Introduction to Cyber Forensic Investigation, Investigation Tools, eDiscovery, Digital Evidence Collection, Evidence Preservation, E-Mail Investigation, E-Mail Tracking, IP Tracking, E-Mail Recovery, Encryption and Decryption methods, Search and Seizure of Computers, Recovering deleted evidences, Password Cracking.

UNIT 4   **9 Hrs.**
Cyber Laws- Introduction to IT laws & Cyber Crimes – Internet, Hacking, Cracking, Viruses, Virus Attacks, Pornography, Software Piracy, Intellectual property, Legal System of Information Technology, Social Engineering, Mail Bombs, Bug Exploits, and Cyber Security etc.

UNIT 5   **9 Hrs.**
Cyber Security- Introduction to Cyber Security, Implementing Hardware Based Security, Software Based Firewalls, Security Standards, Assessing Threat Levels, Reporting Cyber-crime, Operating System Attacks, Application Attacks, Reverse Engineering & Cracking Techniques and Financial Frauds

COURSE OUTCOMES:
On completion of the course the student will be able to
CO1: Understand the definition of computer forensics fundamentals.
CO2 : Describe the types of computer forensics technology.
CO3 : Analyse various computer forensics systems.
CO4 : Illustrate the methods for data recovery, evidence collection and data seizure.
CO5 : Summarize duplication and preservation of digital evidence.
CO6 : To apply the concepts in engineering system.

Max. 45 Hours

TEXT / REFERENCE BOOKS :
1. ChristofPaar, Jan Pelzl, Understanding Cryptography: A Textbook for Students and Practitioners,2nd Edition, Springer's, 2010
2. Ali Jahangiri, Live Hacking: The Ultimate Guide to Hacking Techniques & Countermeasures forEthical Hackers & IT Security Experts, Ali Jahangiri, 2009
3. Computer Forensics: Investigating Network Intrusions and Cyber Crime (Ec-Council Press Series: Computer Forensics), 2010.
4. Guide to Computer Forensics and Investigations Perfect Paperback, by Christopher Steuart , Bill Nelson , Amelia Phillips, 2013.
5. Digital Forensic and Cyber Crime Hardcover – 2016, by R K Jha.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100   Exam Duration:3 Hrs.
Part A: 10 question of 2 marks each – No choice   20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks   80 marks

SITA3010	NATURAL LANGUAGE PROCESSING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES
- To learn the fundamentals of natural processing
- To understand the way to measure one or more qualities of an algorithm or a system
- To gain knowledge of the linguistics concerned with the interactions between computers and human.
- To learn knowledge representation and reasoning.
- To learn the techniques in logic model, Theoretic semantics and Symbolic computation.

UNIT 1 INTRODUCTION 9 Hrs.

Introduction and challenges of natural language processing, Phases in natural language processing, An outline of English syntax - Grammars and parsing - Features and Augmented Grammar.

UNIT 2 SYNTACTIC PROCESSING 9 Hrs.

Grammar for natural language - Toward efficient parsing - Ambiguity resolution - Statistical Methods, Feature Structure

UNIT 3 SEMANTIC INTERPRETATION 9Hrs.

Semantic and logical form - Linking syntax and semantics - Ambiguity resolution - Other strategies for semantic interpretation - Scoping for interpretation of noun phrases, Semantic attachments-Word senses, Relations between the senses.

UNIT 4 CONTEXT AND WORLD KNOWLEDGE 9 Hrs.

Knowledge representation and reasoning - Using World Knowledge, Discourse Structure, Local discourse context and reference.

UNIT 5 WORLD KNOWLEDGE AND SPOKEN LANGUAGE9 Hrs.

Using world knowledge - Discourse structure - Defining conversational agent - An introduction to logic model - Theoretic semantics - Symbolic computation - Speech recognition and spoken Language, Applications: Machine Translation, Information Retrieval.

Max. 45 Hours

COURSE OUTCOMES:

On completion of the course, student will be able to

CO1 : Understand NLP problems and its literature survey.

CO2 : Understand language models.

CO3 : Describe automated natural language generation and machine translation.

CO4 : Learn the natural language generation.

CO5 : Analyze and compare the use of different statistical approaches for different types of NLP applications.

CO6 : Implement the techniques in information retrieval..

TEXT / REFERENCE BOOKS:

1. Richard M Reese, ─Natural Language Processing with Java, OReilly Media, 2015.

2. Nitin Indurkhya and Fred J. Damerau, ─Handbook of Natural Language Processing, Second Edition,Chapman and Hall/CRC Press, 2010.

3. Daniel Jurafsky, James H. Martin─Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech, Pearson Publication, 2014.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. marks:100   Exam Duration:3 Hrs.

Part A: 10 question of 2 marks each – No choice   20 marks

Part B: 2 questions from each unit of internal choice, each carrying 16 marks   80 marks