STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086

BACHELOR OF COMPUTER APPLICATIONS

SYLLABUS

(Effective from the academic year 2015-2016)

BIG DATA ANALYTICS

CODE: 15CS/UI/BD23 **CREDITS: 3**

OBJECTIVES OF THE COURSE

- To understand the significance of big data analytics as the next wave for businesses looking for competitive advantage
- To understand the financial value of big data analytics
- To explore the tools for working with big data

Unit 1

1.1 Introduction

Significance - Big Data Reaches Deep - Data Continue to Evolve - Data and Data Analysis Are Getting More Complex - Big Data and the Business Case - Realizing Value - The Rise of Big Data Options - Beyond Hadoop - Big Data characteristics - Volume, Veracity, Velocity, Variety

1.2 Big Data Analytics Applications

Social Media Command Center - Product Knowledge Hub - Infrastructure and Operations Studies - Product Selection, Design, and Engineering - Location-Based Services - Online Advertising

Unit 2

2.1 Architecture Components

Massively Parallel Processing (MPP) Platforms - Unstructured Data Analytics and Reporting - Big Data and Single View of Customer/Product - Data Privacy Protection - Real-Time Adaptive Analytics and Decision Engines

2.2 Advanced Analytics Platform

Real-Time Architecture for Conversations - Orchestration and Synthesis Using Analytics Engines - Discovery Using Data at Rest - Integration Strategies

Unit 3

3.1 The Nuts and Bolts of Big Data

The Storage Dilemma - Building a Platform - Bringing Structure to Unstructured Data - Processing Power - Choosing among In-house, Outsourced, or Hybrid Approaches

3.2 Security, Compliance, Auditing, and Protection

Pragmatic Steps to Securing Big Data - Classifying Data - Protecting Big Data Analytics - Big Data and Compliance - The Intellectual Property Challenge - The Evolution of Big Data - Big Data - The Modern Era- Today, Tomorrow, and the Next Day - Changing Algorithms

Unit 4

4.1 Implementation of Big Data Analytics

Revolutionary, Evolutionary, or Hybrid - Big Data Governance - Integrating Big Data with MDM - Journey, Milestones and Maturity Levels - Analytics Business Maturity Model

4.2 Best Practices for Big Data Analytics

Start Small with Big Data- Thinking Big - Avoiding Worst Practices - The Value of Anomalies - Expediency versus Accuracy - In-Memory Processing - Bringing It All Together **-** The Path to Big Data - The Realities of Thinking Big Data - Hands-on Big Data - The Big Data Pipeline in Depth - Big Data Visualization - Big Data Privacy

Unit 5

5.1 Big Data Tools and Techniques

Understanding Big Data Storage - A General Overview of High Performance Architecture – HDFS - Map Reduce and YARN Expanding the Big Data Application Ecosystem - Zookeeper –Hbase-Hive-Mahout

TEXT BOOKS

Dr. Sathi, Arvind. *Big Data Analytics: Disruptive Technologies for Changing the Game*, 1st ed. IBM Corporation, 2013.

Loshin, David. *Big Data Analytics from Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph*, 1st ed. Elsevier, 2013.

Ohlhorst, Frank J. *Big Data Analytics: Turning Big Data into Big Money*. Wiley publications, 2012.

BOOKS FOR REFERENCE

Warden, Pete. *Big Data Glossary*. O'Reilly, 2011.

Zikopoulos, Paul, Dirk deRoos, Krishnan Parasuraman, Thomas Deutsch , James Giles and David Corrigan. *Harness the Power of Big data – The big data platform*. McGraw Hill, 2012.

WEB RESOURCES

http://www.sas.com/en_us/insights/analytics/big-data-analytics.html/

http://www-01.ibm.com/software/data/infosphere/hadoop/what-is-big-data-analytics.html/

PATTERN OF EVALUATION

End Semester Examination:
Total Marks: 100 **Duration: 3 hours**

Section A - 20 x 1 = 20 (Answer all the questions)
(10 Multiple choice questions and 10 Fill in the Blanks)
Section B - 5 x 2 = 10 (Answer all the questions)
(1 question from each unit)
Section C - 8 x 5 = 40 (8 out of 10)
(2 questions from each unit)
Section D - 3 x 10 = 30 (3 out of 5)
(1 question from each unit)

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SYLLABUS

(Effective from the academic year 2015 – 2016)

CLOUD COMPUTING

CODE: 15CS/UI/CC23 **CREDITS : 3**

OBJECTIVES OF THE COURSE

- To understand the current trends and basics of cloud computing
- To introduce cloud architecture and services concepts
- To facilitate the learning of security issues in cloud computing and collaboration of cloud services

Unit 1

1.1 Defining Cloud Computing

Cloud Types - The NIST model - The Cloud Cube Model - Deployment models - Service models - Benefits of cloud computing - Disadvantages of Cloud Computing - Assessing the Role of Open Standards

1.2 Cloud Architecture

Exploring the Cloud Computing Stack – Composability - Infrastructure-Platforms - Virtual Appliances - Communication Protocols – Applications - Connecting to the Cloud

Unit 2

2.1 Services and Applications by Type

Defining Infrastructure as a Service (IaaS) - Defining Platform as a Service (PaaS) - Defining Software as a Service (SaaS) - Defining Identity as a Service (IDaaS) - Defining Compliance as a Service (CaaS)

2.2 Platforms

Understanding Abstraction and Virtualization -Using Virtualization Technologies - Load Balancing and Virtualization-Understanding

Unit 3

3.1 Exploring Platform as a Service

Defining Services -Application development - Using PaaS Application Frameworks – Drupal - Eccentex AppBase 3.0 – LongJump – Squarespace – WaveMaker - Wolf Frameworks

3.2 Understanding Cloud Security

Securing the Cloud-Securing Data-Establishing Identity and Presence

Unit 4

4.1 Understanding Service Oriented Architecture

Introducing Service Oriented Architecture - Event-driven SOA or SOA 2.0 - Defining SOA Communications - Managing and Monitoring SOA - Relating SOA and Cloud Computing

4.2 Moving Applications to the Cloud

Applications in the Clouds - Applications and Cloud APIs

Unit 5

5.1 Cloud services Collaboration

Collaborating on Calendars - Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files

TEXT BOOKS

Sosinsky ,Barrie. *Cloud Computing Bible.* Wiley.

Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online. Que Publishing, 2009.

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SYLLABUS
(Effective from the academic year 2015-2016)

WIRELESS SENSOR NETWORKS

CODE: 15CS/UI/WN23 **CREDITS: 3**

OBJECTIVES OF THE COURSE

- To introduce the importance of Wireless Sensor Networks to students
- To enable an understanding of the technology behind WSNs

Unit 1

1.1 Introduction and Overview of Wireless Sensor Networks

Introduction - Overview of the Technology

1.2 Applications of Wireless Sensor Networks

Introduction – Background - Range of Applications - Examples of Category 2 WSN Applications - Examples of Category 1 WSN Applications - Another Taxonomy of WSN Technology

Unit 2

2.1 Basic Wireless Sensor Technology

Introduction - Sensor Node Technology - Sensor Taxonomy - WN Operating Environment - WN Trends

2.2 Wireless Transmission Technology and Systems

Introduction - Radio Technology Primer - Available Wireless Technologies

Unit 3

3.1 Medium Access Control Protocols for Wireless Sensor Networks

Introduction – Background - Fundamentals of MAC Protocols - MAC Protocols for WSNs-Sensor - MAC Case Study

Unit 4

4.1 Routing Protocols for Wireless Sensor Networks

Introduction – Background - Data Dissemination and Gathering - Routing Challenges and Design Issues in Wireless Sensor Networks - Routing Strategies in Wireless Sensor Networks

4.2 Transport Control Protocols for Wireless Sensor Networks

Traditional Transport Control Protocols - Transport Protocol Design Issues- Examples of Existing Transport Control Protocols - Performance of Transport Control Protocols

Unit 5

5.1 Network Management for Wireless Sensor Networks

Introduction - Network Management Requirements-Traditional Network Management Models - Network Management Design Issues - Example of Management Architecture - MANNA-Other Issues Related to Network Management

5.2 Operating Systems for Wireless Sensor Networks

Introduction - Operating System Design Issues - Examples of Operating Systems

TEXT BOOKS

Sohraby, Kazem, Daniel Minoli and Taieb Znati. *Wireless Sensor Networks: Technology, Protocols, and Applications.* Wiley, 2007.

REFERENCE BOOKS

Khan Shafiullah, Al-Sakib Khan Pathan and Nabil Ali Alrajeh. *Wireless Sensor Networks: Current Status and Future Trends. CRC Press, 2012.*

PATTERN OF EVALUATION

End Semester Examination

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