STELLA MARIS COLLEGE (AUTONOMOUS) – CHENNAI – 600 086

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS

(Effective from the academic year 2015 - 16)

BIG DATA ANALYTICS USING R

CODE: 15CS/PE/BD14 **CREDITS: 4**

L T P: 3 0 2

TOTAL TEACHING HOURS: 65

OBJECTIVES OF THE COURSE

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

Unit 1 **(15 hrs.)**

1.1 Introduction

Big Data - Significance, Evolving Data, Complexity of Data and Data Analysis, Big Data and the Business Case - Realising Value - Big Data Options - 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

1.3 Basics of R

Need for R - Data set - Creation, Understanding, Data structures, Data input - Graphs - Example, Graphical Parameters, Adding text, Customise Axes and Legends, Combining Graphs

Unit 2 **(15 hrs.)**

2.1 Basic Data Management

Working Example - Creating a new Variable - Recording Variables - Renaming Variable - Missing Values - Date Value - Type Conversion - Sorting Data - Merging Dataset, Subsetting Datasets

2.2 Advanced Data Management

Challenge - Numerical and Character Functions - Solution for Data Management Challenge - Control Flow - User Written Functions - Aggregation and Restructuring

Unit 3 **(14 hrs.)**

3.1 Basic Methods in R

Basic graphs - Bar Plots - Pie Charts – Histograms - Kernel Density Plots - Box Plots - Dot Plots - Basic Statistics - Descriptive, Frequency and Contingency Tables

Unit 4 **(14 hrs.)**

4.1 Learning Big Data Analytics with R

Data analytics Project Lifecycle - Identifying the Problem, Designing Data Requirement, Preprocessing Data, Performing Analytics over Data, Visualising Data, Understanding Data Analytics Problems- Exploring Web pages Categorisation, Identifying the Problem, Designing Data Requirement, Preprocessing Data, Demonstration on performing Analytics over Data using Hadoop, Visualising Data

4.2 Understanding Big Data with Machine Learning

Introduction to Machine Learning - Supervised Machine Learning algorithms - Linear Regression with R, Logistic Regression with R - Unsupervised Machine Learning algorithm – Clustering – Clustering with R

4.3 Importing and Exporting Data From Various DBs

Importing Data into R - Exporting Data from R - Understanding MySQL - Understanding Excel

4.4 Classification and Clustering

Regression – Linear Regression, Logistic Regression, Clustering – k-Means Clustering

Unit 5 **(7 hrs.)**

5.1 Time Series Analysis

Using R for Time Series Analysis- Time Series Analysis, Reading Time Series Data, Plotting Time Series, Decomposing Time Series, Forecast using Exponential Smoothing, ARIMA models

5.2 Social Network Analytics

Social Network Definitions - Social Network Metrics - Social Network Learning - Relational Neighbor Classifier - Probabilistic Relational Neighbor Classifier - Relational Logistic Regression - Collective Interferencing - Egonets

TEXT BOOKS

Ohlhorst, Frank J. *Big Data Analytics: Turning Big Data into Big Money*.Wiley 2012. (Unit 1.1)

Dr. Arvind Sathi.*Big Data Analytics: Disruptive Technologies for Changing the Game*.IBM Corporation.2013. (Unit 1.2)

Kabacoff, Robert I. *R in action*. Manning, 2011. (Unit1.3, 2, 3)

Prajapati, Vignesh. *Big Data Analytics with R and Hadoop*. Packt, 2013. (Unit 4.1, 4.2)

Zhao, Yangchang. *R and Data Mining: Example and Case studies*. Elsevier, December, 2012. (Unit4.3)

Baesens, Bart. *Analytics in Big Data World.*Wiley, 2014(Unit 5.2)

BOOKS FOR REFERENCE

James, Gareth, Daniela Witten, Trevor Hastie, Robert Tibshirani. *An Introduction to Statistical Learning with Applications in R*. Springer, 2013.

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

WEB RESOURCES

http://a-little-book-of-r-for-time-series.readthedocs.org/en/latest/index.html - Unit 5

PATTERN OF EVALUATION
Continuous Assessment:
Total Marks: 50 **Duration: 90 mins.**

Theory – 25 marks
Practical – 25 marks
Section A - 3 x 5 = 15 marks (3 out of 4)
Section B **-** 1 x 10 = 10 marks (1 out of 2)

Third Component:

Seminars
Quiz
Open book tests
Group discussion
Assignments
Case Study

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

Theory – 50 marks Duration – 1 ½ hrs.
Practical – 50 marks Duration – 1 ½ hrs.
Section A- 5 x 2 = 10 marks (Answer all the questions)
(1 question to be set from each unit)
Section B - 4 × 5 = 20 marks (4 out of 6)
Section C **-** 2 ×10 = 20 marks (2 out of 3)

(Questions for forty marks towards Section B and Section C should be set such that equal weightage is given to all units)

STELLA MARIS COLLEGE (AUTONOMOUS) – CHENNAI – 600 086

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS

(Effective from the academic year 2015 - 16)

WEB DESIGNING

CODE: 15CS/PE/WD14 **CREDITS: 4**

L T P: 2 0 3

TOTAL TEACHING HOURS: 65

OBJECTIVES OF THE COURSE

- To develop an interactive design structure and produce special visual expressions
- To build data driven website using Drupal

Unit 1 **(15 hrs.)**

1.1 Photoshop

Design Principles - Starting to work in Adobe Photoshop - Using the Tools, Using Options bar and other panels, Undoing Actions, Customizing the workspace - Basic Photoshop Corrections - Working with selections - Layer basics - Correcting and Enhancing Digital Photographs – Masking - Advanced Compositing - Working with 3D Images - Preparing Files for the Web

Unit 2 **(15 hrs.)**

2.1 Flash

Introduction - Flash Player, File types, Workspace, Tools Panel - Property Inspector - Panels and Panel Groups – Timeline - Drawing tools - Line, Pen, Smart Shapes – Text – Filters - Working with Colors – Gradients - Custom Colors – Layers - Free Transform – Using Symbols and Library – Masking - Deco Tool, Working with Imported Files

2.2 Animation

Frames and Key Frames - Tweening - Motion, Classic, Shape - Motion Guide - Onion Skinning - Animating in 3D

Unit 3 **(10 hrs.)**

3.1 Action Script in Flash

Introduction - Placing ActionScript - Code Snippet Panel - Actions Panel - Script Assist - Adding and Removing Actions - Adding Actions to Frames- stop () Action Event Handlers - Adding Sound to Movies - Delivering the Final Movie

Unit 4 **(13 hrs.)**

4.1 Drupal

The Front End - Drupal's Public Interface - Menu structure, Main menu, Management menu, Navigation menu, User menu, Modules, Blocks and Regions - Using Drupal's Site Building Tools - The Default Drupal Themes - Working with the Default Modules Working with Blocks - Working with the Menus Manager - Drupal Content Types and Fields – Using CSS - Controlling How Content Is Created, Formatting Content and Media - Working with Images, Using WYSIWYG Editors - Managing the front page of your site

Unit 5 **(12 hrs.)**

5.1 Ubercart

Implementing ecommerce with Ubercart

BOOKS FOR REFERENCE

Adobe Creative Team. *Adobe Photoshop CS6 Classroom in a Book*.

Gerantabee, Fred and AGI Creative Team. *Adobe Flash Professional CS6 Classroom*.

Duckett, Jon.*HTML & CSS: Design and build websites*. John Wiley & Sons.

Dunwoodie, Brice, Ric Shreves. *Drupal 7 bible*. John Wiley & Sons.

PATTERN OF EVALUATION

Continuous Assessment

Total Marks : 50

- Practical Test: 50 marks
- Project: Developing a Web site - 50 marks
  - Designing a Theme using Photoshop – 15 marks
  - Animating contents – 20 marks
  - Developing front end using Drupal - 15 marks

End Semester Examination:

Project work will be assessed by the course teacher and external examiner for 50 marks

Evaluation Components

Project - 40 marks

Viva-voce – 10 marks

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS

(Effective from the year 2015 – 2016)

SECURITY ISSUES IN INFORMATION TECHNOLOGY

CODE : 15CS/PE/SI14 **CREDITS : 4**

L T P : 4 1 0

TOTAL TEACHING HOURS : 65

OBJECTIVES OF THE COURSE

- To facilitate an understanding of concepts of security issues in Information Technology
- To identify security vulnerabilities and protect target applications

Unit 1 **(15 hrs.)**

1.1 Overview of System and Network Security

Building a Secure Organisation - Obstacles to Security - Ten Steps to Building a Secure Organisation - Don't Forget the Basics - Preparing for the Building of Security Control Assessments

1.2 Cryptography

Introduction – Encryption - Famous Cryptographic Devices – Ciphers - Modern Cryptography - Working of AES - Selecting Cryptography - The Process

1.3 Detecting, Preventing and Guarding against Intrusion

Detecting System Intrusion - Preventing System Intrusions - Guarding Against Network Intrusion

Unit 2 **(15 hrs.)**

2.1 Internet and Intranet Security

Internet Protocol Architecture - An Internet Threat Model-Defending Against Attacks on the Internet - Internet Security Checklist – Botnet Overview – Smartphones – Tablets - Intranet

2.2 Security Considerations

Plugging the Gaps - NAC and Access Control - Measuring Risk - Audits - Authentication and Encryption

2.3 Network Security

Wireless Network Security - Shielding the Wire: Network Protection - Weakest Link in Security - User Training - Documenting the Network - Change Management

2.4 Disaster Recovery

Rehearse the-Inevitable - Disaster Recovery - Controlling Hazards - Physical and Environmental Protection - Know Your Users - Personnel Security - Protecting Data Flow - Information and System Integrity - Security Assessments - Risk Assessments - Intranet Security Checklist

Unit 3

3.1 Wireless Network Security **(12 hrs.)**

Cellular Networks - Wireless Ad Hoc Networks - Security Protocols – WEP - Secure Routing – ARAN – SLSP – ING - Introduction to Wireless Sensor Network

3.2 Cellular Network Security

Overview of Cellular Networks - The State of the Art of Cellular Network Security - Security Management System – Principles of Information Security - Roles and Responsibilities of Personnel - Security Policies and Controls – Information Security Management Standards – Firewalls

Unit 4 **(12 hrs.)**

4.1 Cyber, Network, and Systems Forensics Security and Assurance

Cyber Forensics-Analysis of Data - Cyber Forensics in the Court System - Understanding Internet History - Temporary Restraining Orders and Labor Disputes – NTFS - First Principles - Hacking a Windows XP Password - Network Analysis - Cyber Forensics Applied - Testifying as an Expert - Beginning to End in Court - Cyber Forensics and Incident Response - Securing E-Discovery and Network Forensics

Unit 5 **(11 hrs.)**

5.1 Securing Cloud Computing Systems

Cloud Computing Essentials - Examining the Cloud Layers - Software as a Service (Saas) - Managing Risks in the Cloud - Platform as a Service (Paas) - Securing the Platform - Infrastructure as a Service (Iaas) - Leveraging Provider - Specific Security Options - Achieving Security in a Private Cloud - Meeting Compliance Requirements - Preparing for Disaster Recovery

5.2 Fault Tolerance and Resilience in Cloud Computing Environments

Introduction Cloud Computing Fault Model -Basic Concepts on Fault Tolerance - Different Levels of Fault Tolerance in Cloud Computing - Fault Tolerance against Crash Failures in Cloud Computing - Fault Tolerance against Byzantine Failures in Cloud Computing - Fault Tolerance as a Service in Cloud Computing

TEXT BOOKS

Vacca, John R. *Computer and Information Security Handbook*. 2nd ed.
Whitman, Michael E., Herbert J. Mattord. *Principles of Information Security*.5th ed.

BOOK FOR REFERENCE

Pfleeger, Charles P. and Shari Lawrence Pfleeger. *Security in Computing,* 4th ed.

PATTERN OF EVALUATION

Continuous Assessment:
Total Marks: 50 **Duration: 90 mins.**

Section A - 5 ×2 = 10 marks (Answer all the questions)
Section B - 4 ×5 = 20 marks (4 out of 5)
Section C - 2 ×10 = 20 marks (2 out of 3)

Third Component:
Seminars
Case studies
Group Discussions
Assignments
Quiz

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

Section A - 10 x 2 = 20 marks (Answer all the questions)
(2 questions to be set from each unit)
Section B - 6 × 5 = 30 marks (6 out of 8)
(Atleast 1 question from each unit)
Section C - 5 ×10 = 50 marks (5 out of 7)
(Atleast 1 question from each unit)

STELLA MARIS COLLEGE (AUTONOMOUS) – CHENNAI – 600 086

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS

(Effective from the academic year 2015 - 16)

COMPUTER ARCHITECTURE

CODE: 15CS/PE/CA14 **CREDITS: 4**

L T P: 4 1 0

TOTAL TEACHING HOURS: 65

OBJECTIVES OF THE COURSE

- To introduce Digital Logic Design
- To provide an understanding of Organisation and Architecture of a computer

Unit 1 (13 hrs.)

1.1 Digital Logic Circuits

Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Product of Sum Simplification, Don't Care Condition

1.2 Data Representation

Data Types, Complements, Fixed Point Representation, Floating point Representation, Other Binary Codes, Error Detection Codes

Unit 2 (12 hrs.)

2.1 Register Transfer and Micro Operations

Register Transfer Language, Register transfer, Bus and Memory Transfers, Arithmetic Logic Shift Unit

2.2 Basic Computer Organisation and Design

Instruction Codes, Computer Registers, Computer Instructions, Instruction Cycle - Memory Reference Instruction - Input and Output Interrupt - Design of Basic Computer

Unit 3 (13 hrs.)

3.1 Programming the Basic Computer

Machine Language, Assembly Language, Assembler, Program Loops

3.2 Micro Programmed Control

Control Memory, Address Sequencing, Design of Control Unit

3.3 Central Processing Unit

General Register Organisation, Stack Organisation, Instruction Formats, Addressing Modes, Data Transfer and Manipulation

Unit 4 (15 hrs.)

4.1 Pipeline and Vector Processing

Parallel processing - Pipelining - Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline-Vector Processing - Array Processors

4.2 Computer Arithmetic

Addition and Subtraction, Multiplication Algorithms, Division Algorithms, Floating Point Arithmetic Operations

Unit 5 **(12 hrs.)**

5.1 Input-Output Organisation

Input – Output Interface, Asynchronous Data Transfer, Modes of Transfer, Direct Memory Access

5.2 Memory Organisation

Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory

TEXT BOOK

Mano,Morris. *Computer System Architecture,* Prentice Hall of India, 3rd ed.

BOOKS FOR REFERENCE

Jr, Charles H. Roth. *Fundamentals of Logic Design*, 4th ed. Mumbai : Jaico Publishing House, 1992.

Mano,Morris. *Digital Design*, Prentice Hall of India, 1997.

Patterson,David A. and John L. Hennessy. *Computer Organisation and Design: The Hardware/Software interface.* 2nd ed. Morgan Kaufmann, 2002.

Stallings,William. *Computer Organisation and Architecture–Designing for Performance*. 6th ed. Pearson Education, 2003.

PATTERN OF EVALUATION

Continuous Assessment:
Total Marks: 50 **Duration: 90 mins.**

Section A - 5 ×2 = 10 marks (Answer all the questions)
Section B - 4 ×5 = 20 marks (4 out of 5)
Section C - 2 ×10 = 20 marks (2 out of 3)

Third Component:

Seminars
Quiz
Open book tests
Group discussion
Assignments
Problem solving

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

Section A - 10 x 2 = 20 marks (Answer all the questions)
(2 questions to be set from each unit)
Section B - 6 × 5 = 30 marks (6 out of 8)
(Atleast 1 question from each unit)
Section C - 5 ×10 = 50 marks (5 out of 7)
(Atleast 1 question from each unit)

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS

(Effective from the academic year 2015 - 16)

GAME PROGRAMMING

CODE: 15CS/PE/GP14 **CREDITS: 4**

L T P: 2 0 3

TOTAL TEACHING HOURS: 65

OBJECTIVES OF THE COURSE

- To understand the concepts of Game design and development using Flash and ActionScript
- To enable the learning processes, mechanics and issues in Game Design
- To enable the students to develop games

Unit 1 **(12 hrs.)**

1.1 Programming Foundations - How to Make a Video Game

Laying the foundation - Writing your first program - Publishing the SWF file

1.2 Making Objects

Understanding Interactive Objects - Drawing the first page - Creating a Character, using Buttons

Unit 2 **(14 hrs.)**

2.1 Programming Objects

Displaying the First Page of the Storybook - Programming Buttons - Understanding Events and Event listeners - Programming Storybook Buttons

2.2 Controlling Movie Clip Objects

Movie Clip Properties - Controlling Movie Clip Timelines

Unit 3 **(13 hrs.)**

3.1 Decision Making

Designing a GUI - Building a Simple Guessing Game - Learning more about Variables, Making Decisions, Polishing up

3.2 Controlling a Player Character

Controlling a Player Character with the Keyboard - Setting Screen Boundaries – Scrolling

Unit 4 **(13 hrs.)**

4.1 Bumping into Things

Changing a Dynamic Text Field - Triggering a Change of State - Reducing a Health Meter - Updating a Score - Picking up and Dropping Objects – Drawbacks of hitTestObject - Using hitTestPoint - Creating Objects with Block Movement – Working with Axis - Based Collision Detection

4.2 Object-Oriented Game Design

Introducing Object-Oriented Programming

Unit 5 **(13 hrs.)**

5.1 Platform Game - Physics and Data Management

Natural Motion using Physics

TEXT BOOK

Rex van der Spuy. *Foundation Game Design with Flash*. Apress, 2009.

BOOK FOR REFERENCE

Peters, Keith. *Foundation Action Script 3.0 Animation: Making Things Move!*. Apress, 2007.

WEB RESOURCES

www.makeflashgames.com/
www.kongregate.com/labs
www.asgamer.com/
www.as3gametuts.com/

PATTERN OF EVALUATION
Continuous Assessment

Total Marks : 50

- Practical Test: 50 marks
- Project - Interactive Game Development – 50 marks
    - Story board of the game to be created along with background, Character formation and animation using movie clips – 25 marks
    - Creating Game for the above storyboard, implementing concepts of player movement and gravity – 25 marks

End Semester Examination:

Project work will be assessed by the course teacher and external examiner for 50 marks

Evaluation Components

Project - 40 marks
Viva-voce – 10 marks

STELLA MARIS COLLEGE (AUTONOMOUS) – CHENNAI – 600 086
MASTER OF SCIENCE (INFORMATION TECHNOLOGY)
SYLLABUS
(Effective from the academic year 2015 - 16)

MOBILE COMPUTING AND APP DEVELOPMENT

CODE: 15CS/PE/MC14 **CREDITS: 4**
L T P: 3 0 2
TOTAL TEACHING HOURS: 65

OBJECTIVES OF THE COURSE

- To expose the students to various operating systems, protocols for mobile computing and App Development
- To enable students to develop and deploy mobile applications

Unit 1 **(8 hrs.)**

1.1 Operating Systems for Mobile Computing
Operating System Responsibilities in Mobile Devices – Managing Resources - Providing Different Interfaces - Mobile O/S – Special Constraints and Requirements – Windows Mobile- iOS – Android – BlackBerry

1.2 Mobile Application Development and Protocols
Mobile devices as Web Clients – WAP - J2ME - Android – History, Versions, SDK, Environment, Features - Application Components - Software Stack Structures - Advantages

1.3 Mobile Commerce
Applications of M-Commerce – B2C Applications - B2B Applications – Structure of Mobile Commerce – Pros and Cons of M-Commerce – Mobile Payment Systems – Mobile Payment Schemes – Security Issues

Unit 2 **(17 hrs.)**

2.1 Setting up an Android Development Environment
Installing the Android Developer Tool - Installing the Android SDK - Using ADT Tools from the Command Line - Creating Android Virtual Devices

2.2 Anatomy of android application
Creating an Example Android Application

2.3 Activities and Intents
Activities and Activity Lifecycle - Activity State Changes – Example - Saving and Restoring UI State - Intents- Explicit and Implicit Intents - Example

2.4 Android User Interface
Creating Views and Viewgroups - Layouts- Linear, Table, Relative, Absolute, Frame -Views – List, Grid, Scroll - Changing screen orientation - Creating GUI – Button, Text, Checkbox, Radio, Menus

Unit 3 **(15 hrs.)**

3.1 Event Handling

ClickListener – FocusChangeListener – TouchListener - MenuItemClickListener LongClickListener

3.2 Building Apps for Content Sharing

Sending and Receiving Simple Data to and from other Apps, Sharing Files

Unit 4 **(15 hrs.)**

4.1 Database Programming

SQLite - SQLite Classes – Cursor - SQLite Database - SQLite Queries – Create, Insert, Select, Update and Delete - Connecting to a Remote Database using MySQL/PHP

Unit 5 **(10 hrs.)**

5.1 Enhancing User Interface

Notification - Action Bar – Dialogs – Search - Styles and Themes – Defining, using Inheritance, Android Themes, Default Styles and Themes - Android SMS

TEXT BOOKS

Prasant Kumar Pattnaik, Rajib Mall. *Fundamentals of Mobile Computing*, 2012. PHI Learning Private Limited.

Neil Smyth, *Android App Development Essentials - First Edition*, 2014.

Jason Wei, *Android database programming*.

Paul Deitel, Harvey Deitel, Abbey Deitel. *Android™ for Programmers: An App-Driven Approach*. Prentice Hall.

BOOKS FOR REFERENCE

Dave Smith and Jeff Friesen, *Android Recipes: A Problem – Solution Approach.*

Marko Gargenta. *Learning Android.* O'Rielly.

WEB RESOURCES

https://developer.android.com/training/index.html

http://www.mkyong.com/tutorials/android-tutorial

http://www.vogella.com/tutorials/AndroidSQLite/article.html#databasetutorial_database

http://www.tutorialspoint.com/android/android_php_mysql.htm

PATTERN OF EVALUATION
Continuous Assessment:
Total Marks: 50 **Duration: 90 mins.**

Theory – 25 marks
Practical – 25 marks
Section A - 3 x 5 = 15 marks (3 out of 4)
Section B - 1 x 10 = 10 marks (1 out of 2)

Third Component:
Quiz
Assignment
Debugging
Seminar
Mini Project-Mobile App Development

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

Theory – 50 marks Duration – 1 ½ hrs.
Practical – 50 marks Duration – 1 ½ hrs.
Section A- 5 x 2 = 10 marks (Answer all the questions)
(1 question to be set from each unit)
Section B - 4 × 5 = 20 marks (4 out of 6)
Section C - 2 ×10 = 20 marks (2 out of 3)

(Questions for forty marks towards Section B and Section C should be set such that equal weightage is given to all units)

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086

Post Graduate Elective Course offered by the Department of Computer Science to M.A. / M.Sc. / M.Com. DEGREE

SYLLABUS

(Effective from the Academic Year 2015-2016)

ADVANCED OFFICE TOOLS

CODE: 15CS/PE/AO24 **CREDITS: 4**

LTP: 4 0 0

TOTAL TEACHING HOURS: 52

OBJECTIVE OF THE COURSE

- To familiarize students with various features of Word, Excel, PowerPoint and FrontPage

Unit 1 (10 hrs.)

1.1 Word Processing Basics

Working with Documents and Template - Managing Compatibility – Navigation – Printing - Page Layouts – Styles – Formatting - Using Clipboard – Find – Replace - Go to – Watermarks - Custom Margins - Page Orientation - Language Tools - Autocorrect and Auto format – Inserting Objects – Pictures, Shapes, Hyperlinks, Cross References, Word arts, Text boxes, Page Numbers, Tables, Charts and Smart art, Setting up the document with Sections, Headers, Footers and Columns

Unit 2 (10 hrs.)

2.1 Advanced Word Processing

Working with other Page features - Themes and Master Documents - Enhancing Documents with Reference features - Data Documents and Mail Merge - Table of Contents - Citations and Bibliography - Tracking and Comments - Converting to Various File Formats

Unit 3 (12 hrs.)

3.1 Spreadsheet Basics

Spreadsheet - Creating, Modifying Workbooks, Worksheets, Freezing and Locking Panes, Formatting cells, Arranging Multiple Workbook Windows, Changing workbook appearance, Working with Data and Excel Tables, Performing calculations on Data using Formula

3.2 Advanced Spreadsheet Functionalities

Working with Solver – Scenario – Sorting - Conditional Formatting - Focusing on specific Data by using Filters - Reordering and Summarising Data - Data Analytics using Pivot Table - Combining Data from Multiple Sources - Creating Charts and Graphics – Printing - Usage of VLookup - Create and Manage Dropdown List – Password Protect Workbook and Worksheets

Unit 4 **(10 hrs.)**

4.1 Presentation Tool

Benefits - Different Views - Working with Slides - Inserting contents from External Sources - Copying Slides from other Presentations - Inserting new slides from an Outline - Opening word document as a new presentation - Importing text from Web Pages - Images and Files - Working with Layout - Themes and Masters – Formatting - Correcting and improving text – Clipart - Smart art - Sizing and cropping photos – Adjusting and correcting photos - Compressing Images - Creating a photo album Layout - Linked and Embedded objects - Adding sound effects - Music and Sound Tracks - Creating Animation Effects and Transitions - Creating support materials - Security

Unit 5 **(10 hrs.)**

5.1 Designing a Static Web Page

Introduction to MS Frontpage - Planning and Organising Web site - Creating Web sites automatically - Editing basic Web page content - Using Tables and Hyperlinks in Web pages - Publishing and Maintaining Web sites - Structuring individual Web pages – Formatting - Enhancing Web pages with Animation - Creating and using Forms

BOOKS FOR REFERENCE

Bucki , Lisa A. and John Walkenbach. *Office 2013 Bible: The Comprehensive Tutorial.* 4th ed Wiley,2013.

Cox, Joyce and Joan Lambert. *Microsoft Power Point 2013 Step by Step*.1st ed, Microsoft Press 2013.

PATTERN OF EVALUATION
Continuous Assessment:

Total Marks: 50 **Duration: 50 mins.**

Practical: 50 marks

Component:

Demonstration for a given exercise
Mini Project

End Semester Examination:
Practical – 100 marks Duration – 3hrs.

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 86
MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS
(Effective from the academic year 2015 – 2016)

E-COMMERCE AND CONTENT MANAGEMENT SYSTEM

CODE: 15CS/PE/EC34 **CREDITS: 4**
L T P: 4 0 0
TOTAL TEACHING HOURS: 52

OBJECTIVES OF THE COURSE

- To understand overall framework of E-Commerce and the role of internet in modern business
- To learn the strategies for developing electronic commerce Web sites, various payment schemes and security issues in E-Commerce
- To provide hands-on experience in the implementation of E-Commerce using an open source software

Unit 1 **(10 hrs.)**

1.1 Introduction

E-Commerce - History, Overview of the Framework - E-Business Models - Network – Infrastructure - Role of Internet - E- commerce and World Wide Web

1.2 Planning for Electronic Commerce

Identifying Benefits and Estimating Costs of Electronic Commerce Initiatives - Strategies for Developing Electronic Commerce Web Sites - Managing Electronic Commerce Implementations

Unit 2 **(10 hrs.)**

2.1 Introduction to Drupal

Discovering Drupal - The Drupal Architecture - Programming Languages used - Fundamental Architecture concepts

2.2 Getting Used to the Drupal Environment

The Front End - Drupal's Public Interface- Menu structure, Main menu, Management menu, Navigation menu, User menu, Modules, Blocks and Regions - The Back End - Drupal's Admin Interface - The Management menu , The Home option, The Dashboard option, The Content option, The Structure option, The Appearance option, The People option, The Modules option, The Configuration option, The Reports option, Working, Customising the Admin Interface

Unit 3 **(10 hrs.)**

3.1 Drupal's Site Building Tools

Using Drupal's Site Building Tools - The Default Drupal Themes - Working with the Default Modules - Block, Dashboard, Image, List, Menu, Node Working with Blocks , Working with the Menus Manager - Creating and Managing Menus, Creating and Managing Menu Items

3.2 Creating New Content

Drupal Content Types and Fields - Controlling How Content Is Created, Configuring Standard Content-Item Defaults, Understanding Field Settings and Field Instance Settings, Creating New Content , Managing Existing Content, Formatting Content and Media - Working with Images - Using WYSIWYG Editors - Managing the Front Page of Your Site

Unit 4 **(12 hrs.)**

4.1 Implementing eCommerce with Ubercart

Implementing eCommerce with Ubercart - Understanding Ubercart - Obtaining and Installing Ubercart - Configuring Ubercart - Managing Cart settings, Checkout Settings, Order settings, Price Handler settings, Product settings, Store settings - Store Administration - Enhancing Ubercart

Unit 5 **(10 hrs.)**

5.1 Electronic Payment Systems

Digital Token based EPS – Smart cards – Credit cards – Risks – Designing EPS

5.2 Electronic Commerce Security

Online Security Issues Overview - Security for Client Computers – Communication Channel Security – Security for Server Computers

TEXT BOOKS

Kalakota ,Ravi and Andrew B Whinston. *Frontiers of E-COMMERCE.* 1st ed. Pearson. 2009.

Schneider , Gary P. *Electronic commerce***.** USA: Thomson learning & James T Peny Cambridge, 2001.

Shreves, Ric and Brice *Dunwoodie. Drupal 7 Bible*. 1st ed, John Wiley, 2011.

REFERENCE BOOKS

Greenstein,,Manlyn and Miklos. *Electronic commerce*. 2nd ed, McGraw-Hill, 2002.

Laudon, Kenneth C; Traver, Carol Guercio *E-Commerce: Business, Technology, Society*. 10thed, Prentice Hall,2013

Lee, Efraim Turvan J,David kug and chung. *Electronic Commerce*. Pearson Education Asia, 2001.

Tomlinson , Todd . *Beginning Drupal.* Apress, 2010.

PATTERN OF EVALUATION

Continuous Assessment:

Total Marks: 50 **Duration: 90 mins.**

Theory – 25 marks Practical – 25 marks

Theory Pattern

Section A - 3 x 5 = 15 marks (3 out of 5)
Section B **-** 1 x 10 = 10 marks (1 out of 2)

Third Component:

Demonstration for a given exercise
Mini Project

End Semester Examination:

Total Marks: 100 marks **Duration: 3 hours**

Theory – 50 marks Duration – 1 ½ hrs.
Practical – 50 marks Duration – 1 ½ hrs.

Theory Pattern

Section A: 5 x 2 = 10 marks (Answer all the questions)
Section B: 4 x 5 = 20 marks (4 out of 6)
Section C: 2 x 10 = 20 marks (2 out of 3)
(Questions for forty marks towards Section B and Section C should be set such that equal weightage is given to all units)

STELLA MARIS COLLEGE (AUTONOMOUS) – CHENNAI – 600 086

Post Graduate Elective Course offered by the Department of Computer Science to M.A/ M.Sc. / M.Com. DEGREE

SYLLABUS

(Effective from the academic year 2015 - 16)

MULTIMEDIA

CODE: 15CS/PE/MM24 **CREDITS: 4**

L T P: 4 0 0

TOTAL TEACHING HOURS: 52

OBJECTIVE OF THE COURSE

- To acquire skills in Multimedia - Photoshop, Flash and Dreamweaver
- To enable students to develop a static web site

Unit 1 (6 hrs.)

1.1 Introduction

Overview - Definition and Applications of Multimedia - Designing a Multimedia Project - Multimedia Team - Hyper media - Story Board - Multimedia Hardware – Hardware Peripherals - Multimedia Software - Authoring Tools - File Formats - Production Standards- Data Compression

Unit 2 (15 hrs.)

2.1 Introduction to Adobe Photoshop

Features of Adobe Photoshop - Workspace basics - Menu bar, Panels, Key shortcuts, Palettes, Customizing Color Pickers and Swatches, Choosing Colors, Blending Modes, Image and Color basics - Creating, Opening and Importing images, Convert an image to Bitmap Mode

2.2 Tools

Toolbox - Selection Tools, Alteration Tools, Drawing and Selection Tools, Assisting Tools, Additional Tools - Color Boxes and Modes - Basic Image Editing Tools – Crop, Resize, Correct, Sharpen/Blur and Saving the work

Unit 3 (12 hrs.)

3.1 Introduction to Adobe Flash

Features, Flash Work Environment - Stage, Menu Bar, Drawing Tools and their Modifiers - Basic Drawing Techniques – Timeline - The Power of Layers - Learning about Symbols – Libraries - Object types - Image types - Graphics formats Colors and Resolution

3.2 Animation Techniques

Animation basics - Tweening and its types, Shape Hint, Frame-by-Frame Animation, Text Animations, Creating Guide Path, Banners, Layer Masking, Onion Skinning, Spot Light Effects, Buttons, Linking Images, Slide Shows, Adding Sound to Movies - Working with scenes - Publishing Movies

Unit 4 **(10 hrs.)**

4.1 Introduction to Adobe Dreamweaver

Features of Dreamweaver - Customizing Your Workspace - HTML Basics - Text, Lists and Tables -Working with Images-Inserting an image -Working with the Insert Panel - Copying and Pasting Images from Photoshop - Working with Navigation – Creating Internal Hyperlinks - Creating an Image-based Link - Creating an External Link - Working with Forms - Form Elements

Unit 5 **(9 hrs.)**

5.1 CSS

Introduction to CSS - HTML vs. CSS formatting - CSS Box model -Formatting text-Formatting objects, Multiples, Classes, and IDs-Working with Cascading Style Sheets - Working with Type - Using Images for Graphical Effects - Creating new CSS Rules - Creating an Interactive Menu - Modifying Hyperlink Behavior - Moving Rules to an External Style Sheet - Creating Style Sheets for other Media

5.2 Mini Project

Create a website using Dreamweaver, Photoshop and Flash

BOOKS FOR REFERENCE

AGI Creative Team. *Adobe Flash Professional CS6 Digital classroom.*1st ed, Wiley. 2012.

Dayley, Brad and DaNae Dayley .*Adobe Photoshop CS6 Bible.*1st ed, Wiley, 2012.

Adobe Creative Team The official training workbook. *Adobe Dreamweaver CS6 classroom in a book.* 1st ed Adobe Systems Press**,** 2012.

WEB RESOURCES

http://it-ebooks.info/book/2298/

http://www.adobe.com/aboutadobe/pressroom/pressmaterials/pdfs/DW_CS6_WN_20120314.pdf

http://it-ebooks.info/book/2162/

PATTERN OF EVALUATION

Continuous Assessment:
Total Marks: 50 Duration: 90 mins.

Theory - 25 Marks
Practical - 25 Marks

Section A - 3 x 5 = 15 marks (3 out of 4)
Section B **-** 1 x 10 = 10 marks (1 out of 2)

Third Component:
Mini Project

End Semester Examination:

Practical: 100 marks **Duration: 3 hours**

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086

POSTGRADUATE INDEPENDENT ELECTIVE COURSE OFFERED BY THE DEPARTMENT OF COMPUTER SCIENCE

SYLLABUS

(Effective from the academic year 2015-2016)

EMERGING TRENDS IN INFORMATION TECHNOLOGY

CODE: 15CS/PI/ET24 **CREDITS: 4**

OBJECTIVE OF THE COURSE

- To introduce students to the concepts and techniques of emerging trends in Information Technology

Unit 1

1.1 Introduction to Cloud Computing

Cloud Computing Overview - Applications - Intranets and the Cloud - First movers in Cloud, Benefits, Limitations, Security Concerns, Regulatory Issues

1.2 Cloud Computing Architecture

The Cloud Reference Model - Types of Clouds - Open challenges

1.3 Migrating to the Cloud

Cloud Services for Individuals - Cloud Services Aimed at the Mid-Market - Migration - Applications needed - Sending Your Existing Data to the Cloud

Unit 2

2.1 Introduction to Pervasive Computing

Pervasive Computing and Its Significance

2.2 Mobile Agent Technology

Introduction - Mobile Agent Security - Mobile Agent Platforms - Applications

2.3 Intelligent Environments

Definition and Components – Taxonomy – Trends - Limitations and Challenges - Applications and Case Studies - Smart Everyday Objects - Smart Home - Smart Office - Smart Room - Smart Car- Smart Laboratory - Smart Library

Unit 3

3.1 Robotics and AI

Overview- Being an Intelligent machine, Uses of Robots, A Brief History of Robotics, Industrial manipulators, Space robotics and the AI approach, The Challenge of the Robot - Perception vs. Reality and the Fragility of control, The Robot Simulator, The Robot – Control Inputs - Sensors, Control Outputs - Mobility – API – The goal – A Simple Model – The Control Loop, Estimating state, Go-to-goal Behavior, Avoid Obstacle Behavior, Hybrid Automata, Follow Wall Behavior, Final Control Design When Robots Fail

Unit 4

4.1 Big Data Analytics

Big Data - Overview, Significance, Stages in Data Systems - Big data vs. Regular Data - Advanced Analytics - Three Vs in Big Data - Big Data Analytics Applications - Social Media Command Center - Location-Based Services - Online Advertising - Understanding the Data Analytics Project Life Cycle - Identifying the Problem, Designing Data Requirement, Preprocessing data, Performing Analytics over Data, Visualising Data, Understanding Data Analytics Problems

Unit 5

5.1 Green Computing

Green IT Fundamentals - Business, IT and the Environment, Introduction, Information Technology and Environment, Green Enterprise Characteristics, Green Vision, Green Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Business Intelligence, Envisioning the Green Future, Green IT Strategies, Range of Impact

5.2 Green Assets

Buildings - Data Centers - Networks and Data Centers - Green Assets – Green IT Hardware, Green Data Centers

TEXT BOOKS

Buyya, Rajkumar, Christian Vecchiola and S. Thamarai Selvi. *Mastering Cloud Computing Foundations and Applications Programming*. 1st ed. USA: Elsevier, 2013. [Chapter 4].

Dr. Sathi, Arvind. *Big Data Analytics: Disruptive Technologies for Changing the Game,* MS Press, 2012. [Chapter 3]

Minelli, Michael, Michele Chambers and Ambiga Dhiraj. *Big Data Big Analytics,* New Jersey: John Wiley, 2013. [Chapter 1].

Murphy, Robin R. *Introduction to AI Robotics*. USA: MIT, 2004 [Chapter 1]

Obaidat, Mohammad S., Mieso Denko and IsaacWoungang. *Pervasive computing and Networking***.** USA: John Wiley, 2011 [Chapter 1,2 &13]

Prajapati, Vignesh. *Big Data Analytics with R and Hadoop*. UK: Packet Publishing Ltd, 2013. [Chapter 5].

Unhelkar, Bhuvan. *Green IT Strategies and Applications: Using Environmental Intelligence*. FL: CRC Press, 2011. [Chapter 1,2 & 4]

Velte, Anthony T., Toby J. Velte and RobertElsenpeter. *Cloud Computing, A Practical Approach*. 1st ed. New Delhi: McGraw-Hill, 2009. [Chapter 1, 13]

WEB RESOURCES

http://lass.cs.umass.edu/~shenoy/courses/spring13/lectures/notes/677_lec21.pdf

http://www.toptal.com/robotics/programming-a-robot-an-introductory-tutorial

PATTERN OF EVALUATION

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

Section A - 10 x 2 = 20 marks (Answer all the questions)
(2 questions to be set from each unit)
Section B - 6×5 = 30 marks (6 out of 8)
(Atleast 1 question from each unit)
Section C - 5×10 = 50 marks (5 out of 7)
(Atleast 1 question from each unit)

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086

POSTGRADUATE INDEPENDENT ELECTIVE COURSE OFFERED BY THE

DEPARTMENT OF COMPUTER SCIENCE

SYLLABUS

(Effective from the academic year 2015 - 2016)

GREEN COMPUTING

CODE: 15CS/PI/GC24 **CREDITS: 4**

OBJECTIVES OF THE COURSE

- To enable the understanding of the Principles of green computing
- To realise the importance of sustainable software development solutions
- To apply green computing to all sectors of Information Technology

Unit 1

1.1 Green IT an Overview

Introduction - Environmental Concerns and Sustainable Development - Environmental Impacts of IT - Green IT - Holistic Approach to Greening IT, Greening IT, Enterprise Green IT Strategy, Green IT Burden or Opportunity, Life Cycle of a Device or Hardware Reuse, Recycle and Dispose

Unit 2

2.1 Green Software and Sustainable Software Development

Energy - Saving Software Techniques - Computational Efficiency, Data Efficiency, Context Awareness, Idle Efficiency, Evaluating and Measuring Software Impact to Platform Power, Current practices, Sustainable Software - Software Sustainability Attributes, Software Sustainability Metrics, Sustainable Software Methodology

Unit 3

3.1 Green Data Centres and Data Storage

Data Centres and Associated Energy Challenges - Data Centre IT Infrastructure – Data Centre Facility Infrastructure - IT Infrastructure Management - Green Data Centre Metrics Centre Management Strategies - Storage Media Power Characteristics - Hard Disks, Magnetic Tapes, Solid-State Drives, Energy Management Techniques for Hard Disks - State Monitoring, Caching, Dynamic RPM, System - Level Energy Management

Unit 4

4.1 Green Networks and Communication

Introduction - Objectives of Green Network Protocols – Energy - Optimising Protocol Design, Bit Costs Associated with Network Communication Protocol, Strategies to Reduce Carbon Emissions

Unit 5

5.1 Green Cloud Computing and Environmental Sustainability

Cloud Computing - Cloud Computing Energy usage Model - Features of Clouds Enabling Green Computing - Green Cloud Architecture

TEXT BOOK

Murugesan, San, and G. R. Gangadharan. *Harnessing Green IT: Principles and Practices.* USA: Wiley, 2012.

BOOKS FOR REFERENCE

Lamb, John. *The Greening of IT: How Companies Can Make A Difference For The Environment.* 1st ed. New Delhi: Pearson, 2009.

WEB RESOURCES

http://studyhelpline.net/hot_it_topics/green_computing/Default.aspx

PATTERN OF EVALUATION

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

Section A - 10 x 2 = 20 marks (Answer all the questions)
(2 questions to be set from each unit)
Section B - 6 × 5 = 30 marks (6 out of 8)
(Atleast 1 question from each unit)
Section C - 5 ×10 = 50 marks (5 out of 7)
(Atleast 1 question from each unit)

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 86

POSTGRADUATE INDEPENDENT ELECTIVE COURSE OFFERED BY THE DEPARTMENT OF COMPUTER SCIENCE

SYLLABUS

(Effective from the academic year 2015 – 2016)

PERVASIVE COMPUTING

CODE: 15CS/PI/PC24 **CREDITS : 4**

OBJECTIVES OF THE COURSE

- To understand the characteristics and principles of pervasive computing and the solutions that are in use
- To comprehend the role of wireless protocols in shaping the future Internet
- To give an introduction to the enabling technologies of pervasive computing

Unit 1

1.1 Introduction

Introduction – Past, Present, Future - The Vine and Fig Tree Dream - Pervasive Computing – The Pervasive Computing Market – m-business – Conclusions and Challenges

1.2 Application Examples

Examples - Retail, Airline Check-in and Booking, Sales force automation, Healthcare, Tracking, Car information systems, Email access via WAP and Voice

Unit 2

2.1 Device Technology

Hardware - Human Machine Interfaces – Biometrics - Operating Systems

2.2 Device Connectivity

Protocols – Security - Device Management

Unit 3

3.1 Web Application Concepts

WWW - History, Architecture, Protocols – Transcoding - Client authentication via Internet

3.2 WAP

Introduction - Components of WAP architecture - WAP Infrastructure - WAP Security Issues - Wireless Markup Language - WAP Push

Unit 4

4.1 Voice Technology

Basics of Speech recognition - Voice Standards - Speech Applications - Speech and Pervasive computing - Security

4.2 Personal Digital Assistants

History - Device Categories - Personal Digital Assistant Operating System - Device Characteristics, Software Components, Standards - Mobile Applications

Unit 5

5.1 Architectures

Pervasive Web application Architecture, Example Applications, Access from PCs

TEXT BOOKS

Burkhardt, Jochen, Horst Henn, Stefan Hepper, Thomas Schaec and Klaus Rindtorff. *Pervasive Computing Technology and Architecture of Mobile Internet Applications.* 1st ed. Addision Wesley, 2002.

BOOKS FOR REFERENCE

Hansmann Uwe, Lothar Merk, Martin S. Nicklous, Thomas Stober. *Pervasive Computing: The Mobile World.* 2nd ed. Springer, 2003.

WEB RESOURCES

http://en.wikipedia.org/wiki/Ubiquitous_computing

http://www.cs.umanitoba.ca/~comp7840/notes/3_IntroPervasive_6up.pdf

http://www.academia.edu/2884907/An_overview_of_pervasive_computing_systems

PATTERN OF EVALUATION

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

Section A - 10 x 2 = 20 marks (Answer all the questions)
(2 questions to be set from each unit)
Section B - 6 × 5 = 30 marks (6 out of 8)
(Atleast 1 question from each unit)
Section C - 5 ×10 = 50 marks (5 out of 7)
(Atleast 1 question from each unit)

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086
MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

SYLLABUS
(Effective from the academic year 2015 – 2016)

SOFT SKILLS

CODE : 15CS/PK/SS22 **CREDITS : 2**

L T P : 2 0 0

TOTAL TEACHING HOURS : 26

OBJECTIVES OF THE COURSE

- To empower and create opportunities for self development
- To instill confidence and face challenges

Unit 1 **(6 hrs)**

Behavioural Traits

1.1 Self Awareness
1.2 Communication Skills – Verbal and Non Verbal
1.3 Leadership Qualities
1.4 Etiquette and mannerisms
1.5 Experiential Learning – Based on activities

Unit 2 **(5 hrs)**

Team Work

2.1 Interpersonal Skills
2.2 People Management
2.3 Creative Thinking
2.4 Critical Thinking
2.5 Experiential Learning – Based on activities

Unit 3 **(5 hrs)**

Time Management

3.1 Importance of time management
3.2 Planning and Prioritizing
3.3 Organizing skills
3.4 Action Plan
3.5 Experiential Learning – Based on activities

Unit 4 **(5 hrs)**

Conflict Resolution

4.1 Reasons for conflict
4.2 Consequences of conflict
4.3 Managing emotions
4.4 Methods of resolving conflicts
4.5 Experiential Learning – Based on activities

Unit 5 **(5 hrs)**

Career Mapping

5.1 Goal Setting and Decision Making
5.2 Career Planning
5.3 Resume Writing
5.4 Handling Interviews
5.5 Experiential Learning – Based on activities

Workshop on Societal Analysis

BOOKS FOR REFERENCE

Khera, Shiv, (2002), **You Can Win,** Macmillan India Ltd., Delhi.

Mishra, Rajiv K., (2004), **Personality Development : Transform Yourself,** Rupa and Co., New Delhi.

Newstrom, John W. and Scannell, Edward E., (1980), **Games Trainers Play: Experiential Learning,** Tata McGraw Hill, New Delhi.

PATTERN OF EVALUATION (Totally Internal)