VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 501/ Subject: Cloud Computing

Effective From: June, 2014

Credits	4	Total Hrs:	4

Objective:	To provide comprehensive and in-depth knowledge of Cloud Computing Concepts, technologies, architecture applications and implementations.
Prerequisite:	Web Services, DBMS concepts, Networking

1. Introduction
   - 1.1 Grid Computing
   - 1.2 Cluster Computing
   - 1.3 Cloud Computing (NIST Model)
     - 1.3.1 Evolution
     - 1.3.2 History, Properties, characteristics & Disadvantages

2. Cloud Computing Architecture
   - 2.1 Cloud Computing Stack
     - 2.1.1 Comparison with traditional architecture
   - 2.2 Service Models
     - 2.2.1 Infrastructure as a Service (IaaS)
     - 2.2.2 Platform as a Service (PaaS)
     - 2.2.3 Software as a Service (SaaS)
   - 2.3 Deployment Models
     - 2.3.1 Public Cloud
     - 2.3.2 Private Cloud
     - 2.3.3 Hybrid Cloud
     - 2.3.4 Community Cloud

3. Infrastructure as a Service (IaaS)
   - 3.1 Introduction to Virtulization
     - 3.1.1 Hypervisors, Machine Image, Virtual Machine
   - 3.2 Resource Virtualization
     - 3.2.1 Server, Storage, Network
   - 3.3 Amazon EC
   - 3.4 Eucalyptus

4. Platform as a Service (PaaS)
   - 4.1 Introduction to Service Oriented Architecture (SOA)
   - 4.2 Cloud Platform
     - 4.2.1 Computation
     - 4.2.2 Storage
   - 4.3 Microsoft Azure
   - 4.4 SalesForce.com's Force.com

5. Software as a Service (SaaS)
   - 5.1 Web Services
   - 5.2 Web OS

6. Cloud Security
   - 6.1 Infrastructure Security
   - 6.2 Data Security and Storage
   - 6.3 Identity & Access Management
   - 6.4 Access Control
   - 6.5 Authentication in Cloud

7. Cloud Databases (DbaaS)
   - 7.1 Amazon SimpleDB & RDS
   - 7.2 Azure Table Service & SQL Azure
   - 7.3 BigTable
   - 7.4 Oracle Cloud

References:

1	Cloud Computing Principles and Paradigms	Rajkumar Buyya, James Broberg, Andrzej M. Goscinski	Wiley, 2011
2	Cloud Computing : Principles, Systems and Applications	Nikos Antonopoulos, Lee Gillam	Springer 2012
3	Enterprise Cloud Computing : Technology, Architecture, Applications	Gautam Shroff	Cambridge University Press 2010
4.	Cloud and Virtual Data Storage Networking	Greg Schulz	Auerbach, 2011
5.	Cloud Security : A Comprehensive Guide to Secure Cloud Computing	Ronald L Krutz, Russel Dean Vines	John Wiley & Sons, 2010
6.	Cloud Computing Bible	Barrie Sosinsky	Wiley India, 2011
7.	Cloud Computing	David Crookes	TMH Education 2012
8.	Cloud Computing : Implementation, Management and Security	James F RAnsome, John W Rittinghouse	CRC Press, 2009
9.	Amazon Cloud Computing with Java	Aditya Yadav	Lulu.com, 2010
10.	Grid and Cloud Database Management	Fiore, SAndro, Aloisio, Giovanni	Springer, 2010
11.	Building a Database Cloud for Dummies	Michael Wessler	John Wiley & Sons, 2012

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 502 / Subject: Artificial Intelligence and Knowledge Based Systems

Effective From: June, 2014

Credits	4	Total Hrs:	4

Objective:	To acquaint students with concepts of Artificial Intelligence and its applications.
Prerequisite:	Data Structures, Information Systems

1. Introduction to Artificial Intelligence
   - 1.1. What is AI
   - 1.2. Applications of AI
   - 1.3. Introduction to Expert System
   - 1.4. Applications of expert systems

2. Knowledge Overview
   - 2.1. Definition and importance of knowledge
   - 2.2. Overview knowledge representation
   - 2.3. Overview of knowledge organization
   - 2.4. Overview of knowledge Manipulation
   - 2.5. Overview of Knowledge Acquisition

3. Representation and Search
   - 3.1. Structured Knowledge
     - 3.1.1. Associative networks
     - 3.1.2. Frame structures
     - 3.1.3. Conceptual dependencies and scripts
   - 3.2. Object oriented representation

4. Organization and Manipulation
   - 4.1. Introduction to organization
   - 4.2. Search techniques
     - 4.2.1. Uninformed search
     - 4.2.2. Informed search
     - 4.3. Introduction to matching Techniques

5. Knowledge Acquisition
   - 5.1. Knowledge learning types
   - 5.2. General learning models
   - 5.3. Performance of learning models

6. Expert System
   - 6.1. Advantages of Expert Systems
   - 6.2. Characteristics of Expert Systems
   - 6.3. Design of Expert Systems
     - 6.3.1. Selecting Problem
     - 6.3.2. Stages in Expert systems development

6.3.3. Errors in developments
6.3.4. Expert System Software Engineering
6.3.5. Expert System Life Cycle

References:

1	Introduction to Artificial Intelligence and Expert System	Dan W. Patterson	PHI (1999)
2	Artificial Intelligence – A Modern Approach (2nd Edition 2004)	Stuart J. Russell and Peter Norvig	Pearson Education
3	Artificial Intelligence Structures and Strategies for Complex Problem Solving (4th Edition 2004)	George F. Luger	Pearson Education
4	Foundation of Artificial Intelligence and Expert Systems	V.S. Janakiraman, K. Sarukesi, P. Gopalakrishnan	Mc Millan (2002)
5	Expert Systems Principles and Programming (3rd Edition)	Giarratano & Riley	Thomson (Vikas Pulishing House)
6	Introduction to Artificial Intelligence	Rajendra Akerkar	PHI

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 503 / Subject: Advanced Java Programming

Effective From: June, 2014

Credits	4	Total Hrs:	4

Objective:	To develop programming skills using Advanced Java Concepts
Prerequisite:	Core Java

1. JDBC - Java Database Connectivity
   - 1.1 Types of JDBC Drivers
   - 1.2 Connecting to databases like Access , MySQL, SqlServer, Oracle
   - 1.3 JDBC Objects: Connection, Resultset etc.
   - 1.4 Interacting with Database using SQL Queries
   - 1.5 Calling Stored Procedures
   - 1.6 Managing Transactions
   - 1.7 JDBC Connection Pooling
   - 1.8 Handling Errors/Warning

2. Servlet
   - 2.1 Introduction to Servlets
   - 2.2 Servlet Lifecycle
   - 2.3 Error Handling
   - 2.3 Handling HTTP GET and POST requests
   - 2.4 Invoking other web resources
   - 2.5 Maintaining client state

3. Javabeans & JSP
   - 3.1 Introduction to JSP
   - 3.2 Lifecycle of JSP
   - 3.3 JSP Elements – Directives, Scriptlet, Action
   - 3.4 Using JavaBeans in JSP
   - 3.5 Using Custom Tags
   - 3.6 Reusing Content in JSP pages
   - 3.7 Introduction to JSTL
   - 3.8 Introduction to JSP Custom Tag
   - 3.9 File Upload in JSP

4. XML & Web Services
   - 4.1 Introduction to Web Services
   - 4.2 Building XML based web services with JAX-WS
   - 4.3 Building Restful web services with JAX-RS
   - 4.4 Reading/Writing XML files in Java

5. EJB - Enterprise Java Beans
   - 5.1 Introduction to EJB
   - 5.2 Introduction to Session Beans & Entity Beans
   - 5.3 Introduction to Java Persistence API

6. Introduction to MVC

References:

1	Java Servlets Programming	Jason Hunter	O'reilly
2	Developing Java Servlets	James Goodwill	Sams Techmedia
3	Java2 Complete Reference		
4	JDBC,Servlet & JSP – Blackbook	Santosh Kumar K.	
5	Expert one-to-one J2EE Development without EJB		Wrox
6	Beginning J2EE 1.4 Form Novice to Professional	James L Weaver	Apress
7	Java for web with Servlet, JSP and EJB	Budi Kurniawan	New Riders
8	Enterprise Java Beans	Richard Monson	O'Reilly

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Course Name (Semester Number)

Paper: 504 / Subject: Advanced Web Technologies

Effective From: June, 2014

Credits	**4**	**Total Hrs:**	**4**

Objective:	**To develop Web Programming Skills using ASP.Net**
Prerequisite:	**HTML, JavaScript and knowledge of .NET**

1 Introduction to C# and .NET Framework
- 1.1 HTTP
- 1.2 C# Basics & .NET Architecture

2 Web Form Fundamentals
- 2.1 HTML Server controls
- 2.2 Page Class
- 2.3 Web Configuration files

3 Web Controls
- 3.1 Common Web Server Controls
- 3.2 Specialized Web Server Controls
- 3.3 Table, Image, FileUpload
- 3.4 PostBack / Auto PostBack

4 Debugging, Tracing & Error Handling
- 4.1 Exception Handling
- 4.2 Logging Exceptions
- 4.3 Error Pages
- 4.4 Page Tracing

5 Validation and Rich Controls
- 5.1 Validation Controls
- 5.2 Rich Controls e.g.

6 State Management
- 6.1 View State, Query String
- 6.2 Cookie , Session
- 6.3 Application , Global.asax

7 Customizing & Personalizing Web Apps
- 7.1 CSS, Themes, and Master Pages
- 7.2 Portals with Web Part Pages

8 Website Navigation
- 8.1 Sitemap, Treeview, Menu Controls

9 ADO.NET Fundamentals
- 9.1 ADO.NET Architecture
- 9.2 Direct Data Access
- 9.3 Disconnected Data Access

10 Databinding & Datacontrols
- 10.1 Single-view, Repeated-Value, Data Source
- 10.2 Gridview - Formatting, Edit, Sorting, Paging, Templates
- 10.3 Detail View, Form View
- 10.4 Data Repeater Control

11 XML

- 11.1 Basics
- 11.2 XML TextWriter
- 11.3 XML TextReader
- 11.4 XML Validation

12 LINQ
- 12.1 Basics
- 12.2 LINQ to dataset
- 12.3 LINQ to SQL
- 12.4 Linq Data Source

13 Caching and Asynchronous Pages
- 13.1 Output caching
- 13.2 Data caching
- 13.3 Cache Dependencies

14 Profiles

15 Security Fundamentals
- 15.1 Basics
- 15.2 Forms Authentication
- 15.3 Windows Authentication
- 15.4 Security Controls
- 15.5 Role-Based Security

16 Web Services
- 16.1 Architecture
- 16.2 WSDL
- 16.3 SOAP
- 16.4 DISCO
- 16.5 Web Service Creation and Implementation

17 ASP.NET AJAX
- 17.1 Introduction
- 17.2 Server Callbacks / Script Manager
- 17.3 ASP.NET AJAX Server Controls
- 17.4 UpdatePanel

18 Creating Custom Control

19 Introduction to Sharepoint Portal
- 19.1 Sharepoint Services
- 19.2 Sharepoint Administration
- 19.3 Sharepoint Customization

20 3-Tier and MVC : Introduction

References:

1	Professional ASP.Net		Wrox Publication
2	ASP.net – From Novice to Professional		Wrox Publication
3	ASP.Net Bible	Mridula Parihar	
4	Designing Microsoft ASP.Net application		Microsoft Press
5	Beginning ASP.Net 2.0		Wrox Publication
6	Programming Microsoft ASP.Net		Microsoft Press
7	Beginning AJAX with ASP.Net		Wrox Publication
8	Silverlight and ASP.NET Revelaed		Apress

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 505/ Subject: Open Source Web Based Programming

Effective From: June, 2014

Credits:	**4**	**Total Hrs:**	**4**

Objective:	**To provide basics of open source web based dynamic scripting language and its applications.**
Prerequisite:	**Knowledge of C language, HTML and SQL**

1 Introduction to Web Based Programming
- 1.1 Introduction to PHP & MySql
- 1.2 Installation of PHP and MySql
- 1.3 Language Characteristics & Features
- 1.4 Operators and Variables, Control Structures, Looping and Error handling

2 PHP functions
- 2.1 String Functions
- 2.2 Array Functions
- 2.3 Mathematical Functions
- 2.4 Graphics Library (GD Support)
- 2.5 File System Functions
- 2.6 Date and Time Functions
- 2.7 Misc. Function

3 Object Oriented Features of PHP
- 3.1 Classes and Objects
- 3.2 Use of constructors
- 3.3 Serialization
- 3.4 Inheritance

4 MySQL Database Server
- 4.1 Configuring the MySQL Server
- 4.2 MySQL Tables, Displaying MySQL Database , Adding and removing user access
- 4.3 Database connection and data processing functions

5 Ajax Basics
- 5.1 HTTP Request and Response Fundamentals
- 5.2 The XMLHttpRequest Object XMLHttpRequest Methods
- 5.3 XMLHttpRequest Properties
- 5.4 Cross-Browser Usage Sending a Request to the Server
- 5.5 PHP and Ajax Client-Driven Communication
- 5.6 Server-Side Processing Expanding and Contracting Content
- 5.7 Form Validation
- 5.8 Ajax-Based Database Querying

6 Templates : Smarty
- 6.1 Installation
- 6.2 Smarty Loops

6.3 Variables Modifiers
6.4 Caching

7 MVC
7.1 Introduction to MVC
7.2 CodeIgniter: Introduction, Features and Application Flow Chart
7.3 Controller
7.4 Views
7.5 Models
7.6 Helpers
7.7 Creating and Usage of Libraries and Drivers
7.8 **URL** Routing
7.9 Error Handling
7.10 Profiling Application

8 Advance PHP programming
8.1 XML
8.2 PHP-generated Adobe Acrobat documents
8.3 Web services

9 Self Study
9.1 Content Management System: Joomla!

References:

1	Beginning PHP, Apache, MySQL Web Development	Elizabeth Naramore, Jason Gerner , Yann Le Scouarnec, Jeremy Stolz,Michael K. Glass, Gary Mailer	Wrox Publication
2	Professional PHP Programming	Jesus Castagnetto	Wrox Press Ltd
3	Beginning PHP and MySQL: From Novice to Professional	W. Jason Gilmore	Apress
4	Beginning Ajax with PHP	Lee Babin	Apress
5	PHP and MySQL Bible	Tim Converse and Joyce Park with Clark Morgam	Wiley INDIA
6	Php: The Complete Reference	Steven Holzner	Tata Mcgraw Hill Education Private Limited
7	AJAX and PHP: Building Responsive Web Applications	Bogdan Brinzarea, Cristian Darie	packtpub
8	CodeIgniter for Rapid PHP Application Development	David Upton	packtpub
9	Professional CodeIgniter	Thomas Myer	Wrox Press Ltd
10	PHP manual	www.php.net	

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MCA (5th Semester)

Paper: 506/ Subject: Programming Skills XI

Effective From: June, 2014

Practical based on paper no 501.
Separate journal to be prepared for this subject 501.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 507/ Subject: Programming Skills XII

Effective From: June, 2014

Practical based on paper no 503.
Separate journal to be prepared for this subject 503.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 508/ Subject: Programming Skills XIII

Effective From: June, 2014

Practical based on paper no 504.
Separate journal to be prepared for this subject 504.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

MCA (5th Semester)

Paper: 509/ Subject: Programming Skills XIV

Effective From: June, 2014

Practical based on paper no 505.
Separate journal to be prepared for this subject 505.