SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR
M.Sc. (Mobile Technology)
(Under Choice Based Credit Scheme)
Semester – II

M. Sc. (Mobile Technology) – 2nd Semester Syllabus

Effective From: 2017-2018

PS02CMBT21	Mobile Network Architecture
PS02CMBT22	Distributed Application Development Technology
PS02CMBT23	JAVA Programming
PS02CMBT24	Mobile Web Applications
PS02CMBT25	Practical based on PS02CMBT22 and PS02CMBT23

Elective:

PS02EMBT21 Security in Computing
PS02EMBT22 Mobile Value Added Services

Paper No: PS02CMBT21
Paper Title: MOBILE NETWORK ARCHITECTURE

Unit 1: Basics of Networking Architecture
Introduction to telecommunication, Blocks of wireless transmitter & receiver, Need for communication protocol, Low mobility supported wireless phones, Cellular mobile communication, Wireless channels, Digital modulation techniques: Amplitude shift keying, Frequency shift keying, Phase shift keying, Multiple Access Techniques: Code Division Multiple Access, Orthogonal Frequency Division Multiple Access

Unit 2: GSM System
Overview of GSM Network Architecture, PLMN and Network Operators, GSM PLMN Services, GSM Interface, GSM Subscriber & Equipment Identity

Unit 3: GPRS System
GPRS Architecture, Protocol, Air – interface physical layer, Packet data transport across layers, Channel Coding, Cell Re-selection, Radio environment monitoring, Dual transfer mode, EDGE, Advancements

Unit 4: Mobile Phone Generations
3G Networks, UTRAN Architecture, UMTS Protocol, UE Protocol, Procedures in UE, 4G Wireless technology, IEEE 802.16 System, 4G Mobile system

Text Books:
1. Mobile Handset Design, Sajal K. Das, John Wiley & Sons
2. Mobile Networks Architecture by Andre Perez, Wiley, March 2012

Reference Books:
1. Wireless and Mobile Data Networks, Aftab Ahmed, John Wiley & Sons
2. Wireless & mobile Network Architectures, Yi – Bing, Lin, Jason Yi - Bing, John Wiley & Sons

Paper No: PS02CMBT22
Paper Title: DISTRIBUTED APPLICATION DEVELOPMENT TECHNOLOGY

Unit-1: Overview

.Net Framework, The ASP.NET Page structure, ASP.NET Page Directives, ASP.NET Page Events, dealing with post back, Web service architecture, Creating Sample web service

Unit- 2: Web Server Controls

Standard Controls: Label, Literal, TextBox, Button, LinkButton, ImageButton, HyperLink, Dropdownlist, ListBox, CheckBox, CheckBoxList, RadioButton, RadioButtonList, Calendar, AdRotator, Panel, Hidden Fields, File Upload
Validation Conrol: Understanding Validation Control, Client/Server side Validation, Requiredfield validator, Comparevalidator, Rangevalidator, RegularExpression, Validationsummary,
Master Page: Basic of Master Page, Coding of Master Page, Coding of content Page, Specifying Default Content in Master Page, Programmatically assigning master Page.
Website Navigation : SiteMapPath, Menu, TreeView

Unit-3 DataBase Connectivity

Using SQL DataSource Control, GridView, DetailView, Form View and List View.
Database management with ADO.NET: Common ADO.NET task, NameSpace, Connection, Command, DataReader, Parameter, DataList, ListView.

Unit 4: Recent trends in Web application

Introduction of Silverlight,
Creating Standalone Silverlight project, Creating Simple Silverlight page
Introduction to MVC
MVC architecture, Creating sample web application with MVC

Text Books:

1. Professional ASP.NET 4 in C# and VB. Bill Evjen Scott Hanselman, Devin Radar, Wrox
2. Pro Silverlight 4 in C#, Matthew MacDonald, Apress
3. Beginning ASP.NET 4 in C# 2010, Matthew MacDonald, Apress

Reference Books:

1. Silverlight 4 Unleashed, Laurent Bugnion, Pearson.
2. Professional ASP.NET MVC 5, Wrox Publication
3. MSN Library

Paper No: PS02CMBT23
Paper Title: JAVA Programming

Unit 1: Introduction to Java

Origin & Features of Java language, Java development Kit & Java packages
Class, Object, Memory management, Polymorphism in Java, Inheritance, Overloading and overriding in Java.

Advanced Programming Concepts

Exception handling, I/O & File management, Multithreading, JDBC

Unit 2: Implementation Advanced Programming Concepts using Visual Programming

Introduction, Event handling, Visual programming using AWT, Advanced Visual programming using JFC

Unit 3: Web Programming

Applets design, Servlets / JSP, Network programming

Unit 4: Advanced Concepts-I & II

Java Beans, RMI & CORBA, Java mail API

Text Books:

1. Pravin Jain, "The class of Java" {erarspm Education (2010)
2. Cay S Horstmann, Gary Cornell, "Core Java 2, Volume 1- Fundamentals" Perarson Education (8th Edition- 2008)

Reference Books:

1. Patrick Naughton: Complete Reference – TMH
2. Daniel Joshi and Paul Vorobeiu: The Java 1.1 Programmer – Comdex Times
3. C. Thomas: Introduction to Object Oriented Programming with Java - TMH
4. Naughton: The Java Hand Book – TMH
5. The Complete Reference JAVA, 7th Edition, Herbert Schildt.

Paper No: PS02CMBT24
Paper Title: MOBILE WEB APPLICATIONS

Unit - 1: Web Architecture
World Wide Web, Basics of WWW, Web Application, Web Application Architecture, Web Server, Web Server Features, Web Application Server.

Unit -2: Web Technologies and Standards
HTTP, HTML, HTML Tags, CSS (Cascading Style Sheets), XML, introduction to Cookies, Dynamic Web Pages and CGI Script, Java Script and Java Script Features, Java Servlets, Java Web Components, J2EE, MVC Framework, PHP, AJAX and AJAX Standards.

Unit -3: Mobile Web Architecture, Standards and Tools
Mobile Internet Access, Mobile Web Browser Evolution, Mobile Web Standards and development time, WAP and WAP Standards, XHTML, WML and WMLScript, Mobile Web Development Approaches, Content Adaption and Adaption Strategies, How to recognize end user device, Device Detection in PHP, Tools Available for mobile web development, Conversion Engines, Emulators, Mobile Web Checkers.

Unit -4: Dynamic Content, Python, Web Services
What is Dynamic Content?, What is RSS?, What is Feed?, Mobile Advertising Motivation, Dynamic Mobile Advertising, Python Features and Limitations, Python usage in Mobile, Python on Android, Introduction to Web Service Architecture, WSDL, Enterprise SOA Architecture, XML tags and Examples, DTD with Examples, DOM (Document Object Model) using JavaScript, SMS Application

Text Book:
1. Mobile Web Development by Nirav Mehta, Packt Publishing, 2008

Reference Books:
1. Next Generation Wireless Applications: Creating Mobile Applications in a Web 2.0 and Mobile 2.0 World by Paul Golding, John Wiley & Sons, 2008
2. Head First Mobile Web by Lyza Danger Gardner, Jason Grigsby, 2011

Paper No: PS02CMBT25
Paper Title: Practical based on PS02CMBT22 and PS02CMBT23

Paper No: PS02EMBT21
Paper Title: SECURITY IN MOBILE COMPUTING

Unit-1: Mobile Security
Introduction to Mobile Network Security: Mobile Security Basics. Third Party Intrusion. Mobile Security Attacks. Mobile OS Security. Authentication Mechanisms. Security Feature study in Mobile OS, Mobile Network and Application Security: Mobile Application Security. Secure Socket Laye, Firewalls.
Mobile Database Application Security:
Database Security – I – Database Security Issues, Threats, Security
Mechanisms. Flow Control, Database Security and DBA, SQL Security.
Database Security – II – Access
Control, Multilevel Security, Statistical Database. Security

Unit 2: Information Security and Security Trends
Security Management: Security Management Responsibilities. Top-Down Approach, Fundamental Principles of Security, Introduction to Security: Security Issue. Areas of Security, Hacking: Evolution of Hacking, Hacking and Attacking. Internet and Web Activities, Two-Tier Architecture: Database Roles. A Layered Approach. An Architectural View. Politics and Laws.

Unit -3: Security Architecture and Design
Security Architecture: Processor. Multiprocessing. Operating System Architecture. Process Activity.
Memory Management, Memory Types, Virtual Memory, CPU Modes and Protection Rings, Operating
System Architecture, Domains, Layering and Data Hiding,
Security Design: Kernel, Security Policy, Least Privilege, Security Models, State Machine Models, Security Modes of Operation, Dedicated Security Mode, system High-Security Mode, Compartmented Security Mode, Multilevel Security Mode, Trust and Assurance, Systems Evaluation Methods, Why Put a Product Through Evaluation? Certification vs. Accreditation, Certification, Accreditation, Open vs. Closed Systems, Open Systems, Closed Systems, Enterprise Architecture

Unit -4: Android Security
Android security in data storage, internal storage, external storage, content providers. Android sandboxes applications, resource sharing through permission, creating permission, Input validation, handling user's data, web view, Handling credentials, Cryptography, Inter-process communication, binder and messenger interfaces, broadcast receivers. secure virtual machine and security in Native Code.

Text Book:
1. CISSP and CAP Pre Guide: Platinum edition by Ronald L Krutz, 2006

Reference Books:
1. Computer Crime, Investigation and the Law by Chuck Easttom and Jeff Taylor, 2010
2. CISSP Study Guide by James Michael Stewart, Ed Tittel. 2011
3. Hacking Exposed Windows: Windows Security Secrets & Solutions by Joel Scambray, 2007
4. Inside Internet Security: What Hackers Don't Want You to Know by Jeff Crume, 2000

Paper No: PS02EMBT22
Paper Title: MOBILE VALUE ADDED SERVICES

Unit -1 VAS Framework
Introduction to Mobile VAS: Introduction to Java Concepts – JDBC Concepts, Regular Expressions using JAVA, Introduction to UML Notation – UML diagrams, USECASE, TESTCASE, Introduction to Mobile VAS – Definition, Characteristics, Mobile VAS in India

Unit – 2 Short Message Service
Introduction to SMS – Definition, Basic Concepts of SMS, SMS Architecture – Components of Architecture, SMS Protocols, Gateways, Gateway Architecture, SMS Applications – SMS Based Applications – Creation, Examples, Pros and Cons, SMS Billing Models – Standard and Premium billing models, SMS charges, SMS short codes, Premium SMS

Unit 3: MMS and Voice Applications
Multimedia Messaging Service: Introduction – MMS Definition, MMS Use Cases, MMS Architecture, Interfaces, Protocols, MMS Handling, MMS message – format, SMIL, MMS Applications, billings
Voice Applications: Voice and IVR Services, Voice and IVR Applications, IVR – Definition, Architecture, Media Server Platforms, Example Architectures, Voice Services Billing.
Voice XML: Voice XML Overview, Motivation for Speech Applications, Strength and Limitations of Voice XML Applications

Unit 4: Content Based Services
CMS – Definition, Users, CMS Architecture, CMS Platforms, MCMS – Content Based Mobile Services, Mobile Content, Content Ingestion, DRM – Digital Asset Management, DRM, Subscriber Management, Storefront/UI, CMS Billing, Government/Public Sector Applications, Reporting, Marketing Tools,

Text Book:
1. Mobile Messaging Technologies and Services: SMS, EMS, and MMS by Gwenaël Le Bodic, John Wiley and Sons, 2005

Reference Books:
1. Voice application development with Voice XML by Rick Beasley, John, O'Reilly
2. Next generation wireless applications: creating mobile applications in a Web by Paul Golding
3. Short Message Service (SMS): The Creation of Personal Global Text Messaging by Friedhelm Hillebrand, John Wiley & Sons, 2010