Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for MCA V Semester under Regulations 2015
Branch: Master of Computer Applications

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	**P15MCA501**	Cloud Computing	3	0	0	3
2	**P15MCA502**	C# and .NET Programming	3	0	0	3
3	**P15MCA702**	**Elective -** Mobile Communications	3	0	0	3
	P15MCA706	**Elective -** Database Tuning				
	P15MCA713	**Elective -** Business Intelligence				
4	**P15MCA707**	**Elective -** E – Learning Techniques	3	0	0	3
	P15MCA711	**Elective -** User Interface Design				
5	**P15MCA715**	**Elective** - Management Information Systems	3	0	0	3
	P15MCA725	**Elective -** Green Computing				
Practical						
6	**P15MCA503**	Cloud Computing Laboratory	0	0	4	2
7	**P15MCA504**	C# and .NET Programming Laboratory	0	0	4	2
8	**P15MCA505**	Mini Project	0	0	4	2
					Total Credits	**21**

Approved by

Chairman, MCA BOS	**Member Secretary, Academic Council**	**Chairperson, Academic Council & Principal**
Dr.G.M.Kadhar Nawaz	**Dr.R.Shivakumar**	**Dr.S.R.R.Senthil Kumar**

Copy to:-
Director, Fifth Semester MCA Students and Staff, COE

P15MCA501 - CLOUD COMPUTING

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Understand Cloud computing its services and virtualization techniques.
- Explain the concept of cloud database and analyze the various categories of cloud risks with its security concerns.
- Describe the different cloud implementation types
- Discuss the storage and testing in cloud
- Describe the building of own cloud.

UNIT I - OVERVIEW OF CLOUD COMPUTING 8

Evolution of cloud Computing - Introduction to Cloud Computing – Types of Services – Comparison of Services – Virtualization techniques – Cloud architecture – A case study – Load balancing.

UNIT II – DATABASE AND SECURITY 9

Cloud databases and File systems – Cloud Disaster Recovery – Cloud security and existing security solutions – Handling threats in Cloud – Cloud middleware and best practices.

UNIT III – CLOUD IMPLEMENTATION TYPES 8

Private Cloud computing – Role of cloud: Big data – IoT – Mobile storage – Infrastructure – Applications – CRM.

UNIT IV – TESTING AND STORAGE IN CLOUD 12

Cloud testing – Advanced cloud application and supporting services – Cloud optimized storage: scalability – Replications options – Data archiving methods – Physical storage facilities: Data center operations – Virtual and physical storage – Planning and designing data centers – Data monitoring strategies - Case Study: Demo of Cloud Techniques.

UNIT V – BUILDING YOUR OWN CLOUD 8

Consideration before adopting cloud architecture – Development and environments for service development – Best practices– Economics of choosing a cloud platform for an organization – Consumer services case studies.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Apply the service models and deployment models used in cloud computing in real time.
- Experiment the databases of cloud, VM security challenge and describe the need of middleware in cloud services offerings in real time scenarios.
- Demonstrate the details of testing and storage in cloud computing environment.
- Demonstrate the application of CRM in cloud computing.
- Illustrate all the strategies needed to build own cloud.

REFERENCES

1. Rishabh Sharma ,"Cloud Computing – Fundamentals , Industry approach and trends" ,Wiley Pub, 1st Edition 2015.
2. Barrie Sosinsky , " Cloud Computing Bible " , Wiley pub , 2011.
3. Buyya, Selvi ,Vecchiola" Mastering Cloud Computing – Foundations and application programming ",TMH Pub, 1st Edition, 2013
4. Gautam Shroff, Enterprise Cloud Computing Technology Architecture Applications, Cambridge University Press (14 October 2010) [ISBN: 978-0521137355]
5. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach, McGraw-Hill Education; 1 edition (1 November 2009) [ISBN: 0071626948]
6. Liz Kao, Jon Paz , "Salesforce.com for dummies " , Wiley , 6th Edition , 2016.
7. Dan Appleman,"Advanced Apex Programming", 2nd Edition ,2013 , Desaware Publishing.
8. Website : cloud.oracle.com

P15MCA502 - C# AND .NET PROGRAMMING

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Explain how C# fits into the .NET platform and analyze the basic structure of a C# application.
- Discuss the object oriented aspects of C#.
- Develop applications using C# on .NET
- Design and develop Web based applications on .NET
- Understand the foundations of CLR execution.

UNIT I - INTRODUCTION TO C# 9

Introducing C#, Understanding .NET, overview of C#, Literals, Variables, Data Types, Operators, checked and unchecked operators, Expressions, Branching, Looping, Methods, implicit and explicit casting, Constant, Arrays, Array List, String, String Builder, Structure, Enumerations, boxing and unboxing.

UNIT II – OBJECT ORIENTED ASPECTS OF C# 9

Class, Objects, Constructors and its types, inheritance, properties, indexers, index overloading, polymorphism, sealed class and methods, interface, abstract class, abstract and interface, operator overloading, delegates, events, errors and exception.

UNIT III – APPLICATION DEVELOPMENT ON .NET 9

Building windows application, Creating our own window forms with events and controls, menu creation, inheriting window forms, SDI and MDI application, Dialog Box(Modal and Modeless), accessing data with ADO.NET, DataSet, typed dataset, Data Adapter, updating database using stored procedures, SQL Server with ADO.NET

UNIT IV – WEB BASED APPLICATION DEVELOPMENT ON .NET 9

Programming web application with web forms, ASP.NET introduction, validating controls in ASP.NET, working with XML and .NET, Creating Virtual Directory and Web Application, session management techniques, web.config, web services, passing datasets, returning datasets from web services, MVC web application.

UNIT V – CLR AND .NET FRAMEWORK 9

Assemblies, Versioning, Attributes, reflection, viewing meta data, type discovery, reflection on type, marshalling, remoting, Introduction to LINQ.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Gain a comprehensive understanding of the philosophy and architecture of C-Sharp programming
- Learn how to implement web applications using web forms, including programs that interact with databases.
- Attain a detailed knowledge of the building blocks of Web application, including C-Sharp, ASP.NET, Web Services
- To develop Rich Internet Web applications by using C#, ASP.NET, ADO.NET
- Deploy web application using ADO.NET

REFERENCES

1. E. Balagurusamy, "Programming in C#", Tata McGraw-Hill, 3 edition 2010
2. Jesse Liberty, "Programming C# 4.0", Sixth Edition, O'Reilly, 2010.
3. Herbert Schildt, "The Complete Reference: C# 4.0", Tata Mc Graw Hill, 2012.
4. Christian Nagel et al. "Professional C# 2012 with .NET 4.5", Wiley India, 2012.
5. Andrew Troelsen , "Pro C# 2010 and the .NET 4 Platform, Fifth edition, A Press, 2010.
6. Kogent Learning Solutions Inc ".NET 4.5 Programming 6-in-1" Black Book, Dreamtech Press, 2013.
7. Dr. Ashutosh Kumar Bhatt , Kamlesh Padaliya, "C # PROGRAMMING with .Net Framework", Bharti Publications; 1ST edition, 2016

P15MCA503 - CLOUD COMPUTING LABORATORY

		L	T	P	C	M
P15MCA503	**Cloud Computing Laboratory**	**0**	**0**	**4**	**2**	**100**

Course Objectives:

- Relate the application of cloud computing with real time.
- Develop mobile application that interacts with cloud.
- Develop sample programs in any of the on demand CRM in the market
- Create applications in CRM in a very short time without any developmental cost.
- Develop custom applications in CRM

List of Programs:

Develop the following programs in CRM.

1. Create developer account with the following specifications in a CRM
    - Create objects and required fields to maintain the student database in cloud.
    - Create formula fields to calculate total marks, Grade and the result.
    - Apply validation rules when entering marks more than the certain criteria.

2. Create developer account with the following specifications in a CRM
    - Create Employee object, Manager Object and leave object and its required fields.
    - Submit leave request to respective staff using approval process email alert.
    - Notify the student and update the leave object fields when the leave request is approved or rejected.

3. Create developer account with the following specification in a CRM
    - Create an application for Insurance Company.
    - Create object and required fields.
    - Send the notification to user when due date is reached using workflow email alert.
    - Send the notification to the user when amount due paid using workflow email alert.

4. Create developer account with the following specification in a CRM
    - Create student object with required fields.
    - Load the given date using data loader tool. (Data will be provided by CSV format in excel sheet.)
    - Export the data using data loader with the given criteria.
    - Change the exported record values and update it in object.

5. Develop a Login android application that communicates with cloud to store the data.

6. Develop a blood group informer application in android that communicates with cloud to store the data.

7. Create a trigger to achieve the below scenario. (Scenarios can be changed if we need.)

- Create a custom object called Customer address details.
- Create two address fields called Billing address and Shipping Address.
- Create a checkbox called copy billing address to shipping Address.
- When saving record if user enter the checkbox value to true copy the billing address to shipping address.
- Events can be: Before insert, Before Update.

8. Create a trigger to achieve the below scenario.
    - Create custom object called employee to calculate salary with some required fields.
    - create employee email field on custom object
    - When a salary record is created or updated send an email alert to the employee using apex triggers
    - Events: After insert, After Update.

9. Create Custom object called Student table with the few fields called Student name, address, Department, Marks, Total, and Grade
    - Create Visualforce page to get the student details from visualforce pages using custom controller.
    - Add few basic validation rules in visualforce page.
    - Write the test class to achieve minimum 75% of code coverage.
10. Create Custom object called Employee table with the few fields called Employee name, address, Department, Phone number, and Salary.
    - Create sample records using Salesforce standard layout.
    - Display all the records in visualforce page using custom controller and iterative components (Pageblock table and Data table)
    - Write the test class to achieve minimum 75% of code coverage.

Course Outcomes:

- Create real time developer account applications in CRM.
- Illustrate the implementation of triggers for a real time application in CRM
- Develop sample android applications that communicate with cloud to store the data.
- Illustrate the implementation of Visualforce pages in CRM.
- Create sample records in CRM and manipulate these records for a given real time scenario.

P15MCA504 - C# AND .NET PROGRAMMING LABORATORY

		L	T	P	C	M
P15MCA504	**C# and .Net Programming Laboratory**	**0**	**0**	**4**	**2**	**100**

COURSE OBJECTIVES:

The student should be made to:

- Learn to develop a Window based ,Web based application and Console based application
- Gain a working knowledge of the C# programming language and learn how to build object-oriented applications using C#.
- Acquire a working knowledge of creating rich internet Web applications using the .NET Framework and Visual Studio.
- Configure and deploy a Microsoft ASP.NET Web application.
- Learn how to implement web applications using web forms, including programs that interact with databases.

LIST OF PROGRAMS

1. Develop and generate a Window application for student Information System using Branching statements
2. Develop a console based application using Interface.
3. Design a Windows application to count the Number of Words, Number of Characters, Number of Numerals, and Number of Special Characters using Methods, Arrays and Strings.
4. Create and develop an Arithmetic calculator using Structures and Enumerations.
5. Design and develop a window form application for Employee management system.
6. Create and Design a C# Window form application to find the area of Triangle, Circle and Rectangle using polymorphism.
7. Using Inheritance concepts, Develop a window based application to declare a base class Course and derived classes BA Course, B.Com Course and B.Sc Course. Print Hall ticket for the students in these courses.
8. Create and design a Scientific Calculator widget window form application with CGPA calculations.
9. Design and develop an online bookstore using window application.
10. Develop a window application and integrate Multimodule assembly to perform the arithmetic operations.
11. Design and implement a website for creating a Web registration form using ASP.NET.
12. Create a Campus registration form and perform data access tasks with ADO.NET.

COURSE OUTCOMES:

- Design, document, code and test small C# console and GUI applications.
- Design, document, code and unit test class libraries as part of a larger project.
- To create and develop a ADO.NET database application.
- To create simple web applications and window applications.
- To choose an engineering approach to solving problems, starting from the acquired knowledge of programming

P15MCA505 – MINI PROJECT

		L	T	P	C	M
P15MCA505	**Mini Project**	**0**	**0**	**4**	**2**	**100**

Every student is required to carry out in-house Mini Project work under the supervision of a faculty member of the department. The students can do a project in a group of size between 3 and 4. The guide shall monitor progress of the student continuously. A candidate is required to present the progress of the Mini Project work once in a month during the semester at an appropriate time decided by the Department. There will a final presentation of the Mini Project work at the end of the semester. It is recommended that Mini Project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution.

The purpose of the project is to motivate them to work in emerging / latest technologies, help the student to develop ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories, this project will helps the student make ease and provides enough experience to carry out the larger project in the fifth and sixth semester.

OBJECTIVES

- Application of knowledge and techniques learnt in theoretical classes for developing the software for real problems.
- Gives an insight into the working of the real organizations/companies.
- Gaining deeper understanding in specific functional areas.
- Helps in exploring career opportunities in their areas of interest.

Mini Project involves requirement analysis, feasibility analysis, Database design, coding, testing, implementation and maintenance.

MINI PROJECT PROPOSAL (SYNOPSIS) STRUCTURE

Mini Project proposal should be prepared in consultation with the guide. It should clearly state the objectives and environment of the proposed Mini Project to be undertaken. Ensure to include the following items while submitting your Mini Project synopsis. Mini Project synopsis may contain 10-20 pages and sequence of contents strictly should be in the following order:

1. Cover and Title page
2. Synopsis Approval Performa duly filled and signed by the student
3. Index
4. Acknowledgement
5. Introduction and objective of the Mini Project
6. Analysis (Feasibility Study, DFD 0 Level, 1- Level and 2 Level / ER Diagram etc)
7. H / W and S / W Requirement
8. Table and Structure, Number of Modules, Detail of Modules, Data Structure
9. Types of Reports
10. Scope of future application

COMMUNICATION OF SYNOPSIS APPROVAL

A list of approved synopsis will be put on the notice board of the Institute as per the dates mentioned in the activity schedule. In case of non approval, the suggestions for reformulating the Mini Project will be communicated to the student. Students can resubmit the modified synopsis to Project In-Charge of the Department of Master of Computer Applications as per the specified time given in activity schedule.

MINI PROJECT REPORT STRUCTURE

The Mini Project should be prepared in consultation with the guide and may contain 100-150 pages (including coding). Mini Project Report should strictly follow the points given below:

Details

1. Cover and Title page
2. Synopsis Approval Certificate
3. Index
4. Acknowledgement
5. Certificate of Originality
6. Introduction / Aims and Objective
7. System Analysis
   Identification of Need
   Preliminary Investigation
8. Feasibility Study
   8.1. Technical Feasibility
   8.2. Economic Feasibility
   8.3. Operational Feasibility
9. Analysis (Feasibility Study, DFD 0 Level, 1- Level and 2 Level / ER Diagram, and Data structure, Table structure etc)
10. S / W Engineering Paradigm applied
11. S / W & H / W Requirement Specification
12. System Design
13. Screen Shots
14. Coding
15. Validation Checks
16. Implementation and Maintenance
17. Testing (Testing techniques and Testing strategies)
18. System Security measures
19. Various types of Reports / Modules
20. Pert Chart / Gantt Chart
21. Future scope of the Mini Project
22. Bibliography / References / Glossary
23. Original Copy of the Approved Synopsis

SUBMISSION OF A MINI PROJECT REPORT

Only one Copy of the Mini Project report in bound form is to be submitted to the Project In-Charge of the Department of Master of Computer Applications. Another copy of the Mini Project Report must be retained by the student which should be produced before the examiner at the time of the Viva-voice.

MINI PROJECT EVALUATION

As per the norms Mini Project Report shall be evaluated by the examiner at the end of the semester. However there will be continuous monitoring of the Mini Project progress report during the semester and distribution of marks shall be as follows:

Sessional	Semester End Exam
5 reviews – 30 (6 marks for each review) Documentation – 20 Viva - 10	Viva - 10 Project Evaluation – 30
Total - 100	

LIST OF BROAD AREAS OF APPLICATION AND RELATED TOOLS

TECHNOLOGY Visual Studio 2008, .NET Framework 3.5

FRONT END /GUI Tools Visual Basic 6, Power Builder, X-Windows, VC++,

Oracle Developer 2000

RDBMS/BACK END Sybase, SQL, SQL Server 2008, Oracle 10g

LANGUAGES C, C++, JAVA, VC++, C# 3.5

INTERNET TECHNOLOGIES HTML, DHTML, CSS, Java Script, DOM, JQuery, AJAX, ASP, ASP .NET, XML, Perl &CGI Script, SWING, JSP, Java Beans, Java Servlets, COBRA, UML, EDA, Broadvision, ATG, XSL, NET Dynamics, Silver Stream, Cold Fusion etc.

WEB SERVER IIS, APACHE, TOMCAT, J2EE etc.

REPORTING Crystal Report XI

NETWORKING TECHNOLOGIES ATM, Frame Relay, TCP/IP, SNMP, GSM, VOIP, PPP, IP-PSTN, SONET/SDH

WIRELESS TECHNOLOGIES Blue Tooth, 2G, 3G, ISDN, EDGE, Wi-fi

REALTIME OS/EMBEDED SKILLS QNX, LINUX, OSEK, DSP, VRTX, RTXC, Nucleus

OPERATING SYSTEMS WINDOWS XP/VISTA/7, WINDOWS SERVER 2008, DOS, LINUX SUN, VRTX, SOLARIS, HP/UX, PSOS, IRIX

PROJECT MANAGEMENT TOOLS: JIRA

APPLICATIONS Financial / Manufacturing / Multimedia /Computer Graphics Instructional Design / Real-time application software / DBMS / Internet / Intranet / Computer Networking Communication Software / E-Commerce / ERP / MRP / TCP/IP Internals / Routing Protocols, Socket Programming Implementation of Switches and Routers.

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Develop software for real time problems.
- Analyze the functional areas of a given problem.
- Discover team-building skills required to support successful performance
- Synthesize a given real time problem
- Use the latest technologies in the project.

P15MCA702 - MOBILE COMMUNICATIONS

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Understand the basic concept of mobile communications and Wireless transmission.
- Be familiar with functionalities of Medium Access Control (MAC) Layer and Telecommunications Systems.
- Identify the need of Broadcast systems and differentiate the functionalities of Wireless LAN technologies.
- Understand the functionality of Network layer in Mobile communications.
- know the concepts of traditional and classical Transmission control protocol in transport layer

UNIT I - INTRODUCTION & WIRELESS TRANSMISSION **7**

Introduction: Applications - Short History of wireless communication - Wireless transmission: Frequencies for radio transmission – Signals – Antennas - Signal propagation – Multiplexing – Modulation - Spread Spectrum - Cellular systems.

UNIT II – MEDIUM ACCESS CONTROL & TELECOMMUNICATION SYSTEMS **12**

Medium Access Control: Motivation for a specialized MAC – SDMA – FDMA – TDMA – CDMA -Comparison of S/T/F/CDMA - Telecommunications systems: GSM – DECT – TETRA - UMTS and IMT-2000 .

UNIT III – BROADCAST SYSTEMS & WIRELESS LAN **12**

Broadcast systems: Overview – Cyclical repetition of data – Digital audio broadcasting - Video broadcasting – Convergence of broadcasting and mobile communications - Wireless LAN: Infrared vs. Radio transmission - Infrastructure and ad-hoc network - IEEE 802.11 – HIPERLAN – Bluetooth.

UNIT IV – MOBILE NETWORK LAYER **7**

Mobile network layer: Mobile IP – Dynamic host configuration protocol – Mobile ad-hoc networks.

UNIT V- MOBILE TRANSPORT LAYER **7**

Mobile Transport Layer: Traditional TCP – Classical TCP improvements – TCP over 2.5/3G wireless networks – Performance enhancing proxies

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Explain the basics of mobile telecommunication system.
- Choose the required MAC and Telecommunication systems for given application.
- Relate the need for the Broadcast systems and infrastructure for Wireless LAN.
- Identify the problems and provide solutions for mobile communication at network layer
- Identify the improvements in classical TCP over Traditional TCP and provide solution for problems occur in Transport layer.

REFERENCES

1. Jochen Schiller, "Mobile Communications", Pearson Education, Second Edition, 2009. (UNIT – I, II, III, IV and V).
2. Prasant Kumar Pattnaik-Rajib Mall-"Fundamentals of Mobile Computing"-PHI Learning Pvt. Ltd-New Delhi – 2012.
3. K. AshokeTalukder, RoopaYavagal, Mobile Computing: Tata McGraw Hill, 2005.
4. Uwe Hansmann, LotharMerk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, 2003.
5. William.C.Y.Lee,"Mobile Cellular Telecommunications-Analog and Digital Systems", Second Edition,Tata Mc Graw Hill Edition ,2006

P15MCA706 - DATABASE TUNING

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Understand the tuning of the application on database management system, operating system, and hardware.
- Understand about the performance criteria for choosing a database management system
- Learn about the principles underlying any tuning puzzle.
- Understand and use suitable troubleshooting mechanisms for tuning databases.
- Learn the tuning techniques and capacity planning for e-commerce applications

UNIT I - INTRODUCTION 9

Review of Relational Databases – Relational Algebra - Locking and Concurrency Control – Correctness Consideration – Lock Tuning – Logging and the Recovery Subsystem – Principles of Recovery – Tuning the Recovery Subsystem – Operating Systems Considerations – Hardware Tuning.

UNIT II – OPTIMIZING INDEXES 9

Types of Queries - Data Structures - B-tree - B+ Tree –Hash Structures – Bit Map Indexes – Clustering Indexes – Non Clustering Indexes – Composite Indexes – Hot Tables – Comparison of Indexing and Hashing Techniques.

UNIT III – QUERY OPTIMIZATION 9

Techniques – Tuning Relational Systems – Normalization – Tuning Normalization – Clustering Two Tables – Aggregate Maintenance – Record Layout – Query Tuning – Triggers – Client Server Mechanisms – Objects – Application Tools and Performance – Tuning the Application Interface – Bulk Loading Data – Accessing Multiple Databases.

UNIT IV – TROUBLESHOOTING 9

Query Plan Explainers – Performance Monitors – Event Monitors – Finding Suspicious Queries – Analyzing a Query's Access Plan – Profiling a Query Execution – DBMS Subsystems – Data Ware housing Tuning.

UNIT V – CASE STUDIES 9

Tuning E-Commerce Applications – E-Commerce Architecture – Tuning E-Commerce Architecture -Transaction Chopping – Time Series Databases – Understanding Access Plans – Configuration Parameters – Oracle - SQL Server - DB2UDB – Distributed Database - Implementation.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Gain knowledge on the significance of database tuning.
- Optimize queries for tuning databases.

- Develop tuning based E-Commerce applications.
- Classify modern & futuristic database applications based on size and complexity
- Critique how advanced databases differ from traditional databases.

REFERENCES

1. Dennis Shasha and Philippe Bonnet, "Database Tuning, Principles, Experiments, and Troubleshooting Techniques", Morgan Kaufmann, An Imprint of Elsevier, 2005. (Unit 2, 3, 4, 5)
2. Mittra, Sitansu S, "Database Performance Tuning and Optimization Using Oracle" Springer, 2003.
3. Bill Padfield, Darl Kuhn, Sam R. Alapati, "Oracle Database 12c Performance Tuning Recipes: A Problem-Solution Approach", APress, December 2013.
4. M.TamerOzsu, Patrick Valduriez and S.Sridhar, "Principles of Distributed Database Systems", Pearson Education, 2007.
5. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", McGraw Hill, 6thEdition, 2011. (Unit 1)
6. Thomas Connoly and CarlolynBegg, "Database Systems, A Practical Approach to Design, Implementation and Management", Third Edition, Pearson Education, 2003.

P15MCA713 - BUSINESS INTELLIGENCE

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Understand the fundamentals of BI from an enterprise context and Gain a basic knowledge of the significance digital data, types of digital data.
- Gather a deeper insight of OLAP, OLTP, BI- definition, need, history, Value chain.
- Identify the areas and problems that BI can solve and understand the need of Data Integration.
- Gain the knowledge of Data modeling techniques, types of Data model and the need of Measures & metrics in Data science.
- Understand the need of Enterprise Reporting and identify the BI importance ahead.

UNIT I - BUSINESS VIEW OF IT APPLICATIONS &INTRODUCTION TO DIGITAL DATA 9

Business View of Information Technology Applications: Business Enterprise Organization, Functions and Core Business Processes – Key purpose of Using IT in Business – The Connected World : Characteristics of Internet-ready IT applications – Enterprise Applications - Information Users and their Requirements. Types of Digital data: Getting to Know Structured Data, Unstructured Data, Semi-Structured Data.

UNIT II – EVOLUTION OF BUSINESS INTELLIGENCE 9

Introduction to OLTP (On-Line Transaction Processing) and OLAP (On-Line Analytical Processing) – Different OLAP Architecture - OLTP Vs OLAP-Data Model for OLTP and OLAP – Role of OLAP tools in the BI architecture –A peek into the OLAP operations in Multidimensional Data. Getting Started with Business Intelligence: Business Intelligence (BI) Defined – Evolution of BI – Need for BI – BI for Past, Present and Future – BI Value Chain.

UNIT III – BASICS OF BI & DATA INTEGRATION 9

BI Definitions and Concepts: BI Component Framework – Who is BI for – BI Users –BI roles and responsibilities – Best practices in BI – Complete BI Professional. Data Integration: Need for Data Warehouse – Definition of Data Warehouse, Data Mart, ODS –Ralph Kimball's Approach vs Immon's Approach – Goals of Data Warehouse – Extract, Transform, and Load – What is Data Integration – Data Integration Technologies – Data quality – Data Profiling. Case Study - Kettle Software Introduction to ETL using Pentaho data Integration.

UNIT IV – DATA MODELING& MEASURES, METRICS AND PERFORMANCE MANAGEMENT 9

Multidimensional data model: Introduction - Data Modeling Basics – Types of Data Model – Data Modeling Techniques - Fact and dimension tables– Typical Dimensional Models - Dimensional modeling Life Cycle. Measures, Metrics, KPI's and Performance Management: Understanding Measures and Performance – Measurement System Terminology – Navigating a Business Enterprise, Role of Metrics and Metrics Supply Chain – "Fact-based Decision Making" and KPI's – KPI usage in Companies –Connecting the Dots: Measures to Business Decisions and Beyond. Case Study: Creating cubes using Microsoft Excel.

UNIT V – Basics of Enterprise Reporting &Future of BI **9**

Basics of Enterprise Reporting: Reporting Perspectives common to all levels of Enterprise – Report Standardization and Presentation Practices - Enterprise Reporting characteristics in OLAP world – Balanced Scorecard – Dashboards – Create Dashboard – Scorecards vs Dashboards – Reporting Analysis. Future of BI: Understanding BI and Mobility – BI and Cloud Computing – BI for ERP systems – Social CRM and BI. Case Study: Enterprise reporting using MS Access / MS Excel.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Demonstrate the fundamentals of BI and categorize the data as of the requirement.
- Differentiate between OLTP & OLAP and identify the need of BI.
- Establish the basic skill of BI for any application data and integrate it for profiling.
- Exhibit data modeling technique for any application and integrate the Metrics, Measures and Performance.
- Design and implement the required reporting for any application.

REFERENCES

- RN Prasad and Seema Acharya, "Fundamental of Business Analytics", Wiley India Pvt. Ltd, 2012.
- John Boyer, Bill Frank, Brian Green, Tracy Harris, and Kay Van De Vanter "Business Intelligence Strategy: A Practical Guide for Achieving BI Excellence", IBM Corporation, 2010.
- Carlo Vercellis, "Business Intelligence: Data Mining and Optimization for Decision Making", Wiley Publications, 2009.
- Swain Scheps "Business Intelligence for Dummies", Wiley Publishing Inc, 2008.
- Cindi Howson "Successful Business Intelligence: Secrets to making BI a killer App", McGraw Hill, 2008.
- Elizabeth Vitt, Michael Luckevich, StaciaMisner "Business Intelligence: Making Better Decisions Faster", Microsoft Press, 2002.

P15MCA707 - E – LEARNING TECHNIQUES

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Apply knowledge about modern technology for learning.
- Develop and acquaint with the e-Learning Tools.
- Learn technologies involved in e-learning application development.
- Become aware of the current business potential of e-learning based business.
- Gain the knowledge of open source tools like moodle.

UNIT I - INTRODUCTION 9

Introduction – Understanding ICT - Impact of ICT on learning - ICT makes a difference in learning - ICT as an enabler - The relationship between ICT and e-learning - Challenges in e-learning adoption - E-learning: Definitions - Characteristic features of e-learning – Evolution - Different uses of e-learning - Academic e-learning and corporate e-learning: Differences.

UNIT II – E-LEARNING FRAMEWORK AND ANALYSIS 9

Introduction - The need for a holistic framework - Significance of process orientation in the framework - Visual Communication Design - Instructional Design - Working with Instructional Design models - Role of an instructional designer in e-learning - E-learning technologies - Significance of analysis - Need for holistic analysis - Informed decision making in different contexts Getting started with analysis.

UNIT III – DESIGN AND DEVELOPMENT 9

The relationship between analysis and design - The significance of design - Developing the instructional and visual strategy - Three levels of design decision making - Bloom's taxonomy – cognitive, affective and psychomotor domains - Working with content – visual strategy - The strategy in action – prototyping

Getting started with design - The development process - Pre-production – Production - Post-production

Assessments - Types of content development processes - Getting started with content development.

UNIT IV – DELIVERY AND EVALUATION 9

Introduction - Significance of this phase - Delivery options - Emerging trends in e-learning delivery - Modes of delivery - Content delivery process illustrated with an LMS - Significance of the evaluation phase - Conducting summative evaluation - Kirkpatrick's model for summative evaluation - Evaluation and ROI.

UNIT V – OPENSOURCE E-LEARNING APPLICATION 9

Moodle 2.0 E-Learning Course Development – Features - Architecture - Installation and configuring site - Adding static course material - Evaluating student.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Apply the Standard approach to planning and one can use in their organization.
- Work with technologies involved in e-Learning Applications.
- Design and Develop e-Learning Application and working with e- Learning tools.
- Evaluate e-learning programmes and estimate the ROI
- Create and Deliver e-learning courses in Moodle software.

REFERENCES

1. Madhuri Dubey, " Effective E-learning: Design, Development and Delivery",University Press 2011 edition. (Unit 1,2,3,4)
2. Moodle 2.0 E-Learning Course Development by William Rice, 2012, Packet publishing (Unit V).
3. Bryn Holmes, John Gardner, " E-Learning - Concepts and Practice", SAGE Publications,2012.
4. Caroline Haythornthwaite, Richard Andrews," E-learning Theory and Practice", SAGE Publications,2011
5. William Horton,"E-Learning by design", John Wiley & Sons, 2011.

P15MCA711 - USER INTERFACE DESIGN

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Learn the fundamental concepts, terms and technologies used in User interface design
- Introduce the Interface design methodologies and evaluation process.
- Construct the 3D Virtual environment.
- Understand the Natural languages in computing and usability of interaction devices.
- Know the importance of quality of services and to know the preparation of the user manuals.

UNIT I - USABILITY OF INTERACTIVE SYSTEMS 9

Introduction - Usability Requirements - Usability Measures - Usability Motivations - Universal Usability - Guidelines, Principles, and Theories - introduction - Guidelines - Principles - Theories - Object-Action Interface Model.

UNIT II – DEVELOPMENT PROCESSES 9

Managing Design Processes - Introduction - Organizational Design to Support Usability – The Three Pillars of -Design - Development Methodologies - Ethnographic Observation - Participatory Design - Evaluating Interface Designs: Expert Reviews - Usability Testing and Laboratories - Survey Instruments – Acceptance Tests - Evaluation During Active Use - Controlled Psychologically Oriented Experiments – Software Tools : Introduction - Specification Methods - Interface-Building Tools.

UNIT III – INTERACTION STYLES 9

Direct Manipulation and Virtual Environments- Introduction - Examples of Direct Manipulation - Discussion of Direct Manipulation - 3D Interfaces - Tele operation - Virtual and Augmented Reality - Menu Selection, Form Filling, and Dialog Boxes - Introduction - Task-Related Menu Organization - Single Menus - Combinations of Multiple Menus - Content Organization - Fast Movement Through Menus - Data Entry with Menus: Form Filling, Dialog Boxes, and Alternatives - Audio Menus and Menus for Small Displays.

UNIT IV – COMMAND AND NATURAL LANGUAGES 9

Introduction - Functionality to Support Users' Tasks - Command-Organization Strategies - The Benefits of Structure Naming and Abbreviations - Natural Language in Computing - Interaction Devices : Introduction - Keyboards and Keypads - Pointing Devices - Speech and Auditory Interfaces - Displays-Small and Large - Printers - Collaboration : Introduction - Goals of Collaboration - Asynchronous Distributed Interfaces: Different Time, Different Place - Synchronous Distributed Interfaces: Different Place, Same Time - Face-to-Face Interfaces: Same Place, Same Time.

UNIT V – DESIGN ISSUES **9**

Quality of Service : Introduction - Models of Response-Time Impacts - Expectations and Attitudes - User Productivity - Variability in Response Time - Frustrating Experiences - Balancing Function and Fashion : Introduction - Error Messages - Non anthropomorphic Design - Display Design - Window Design - Color . User Manuals, Online Help, and Tutorials : Introduction - Paper Versus Online Manuals - Reading from Paper Versus from Displays - Shaping the Content of the Manuals - Online Manuals and Help - Online Tutorials, Demonstrations, and Guides - Online Communities for User Assistance - The Development Process . Information Search and Visualization: Introduction - Search in Textual Documents and Database Querying - Multimedia Document Searches - Advanced Filtering and Search Interfaces - Information Visualization.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Design a usable and compelling user-interface given a set of requirements and available technologies.
- Demonstrate the knowledge and ability to apply the design principles, techniques and technologies to the development of creative User Interface.
- Construct the 3D virtual environment with several menu organization components.
- Become familiar with the Natural language in computing.
- Develop expertise necessary for successful completing a quality project with manuals and help.

REFERENCES

1. Ben Shneiderman, Catherine plaisant, "Designing the User Interface" Pearson Addision Wesely , IV th Edition, 2004.
2. Wilbert O. Galitz , The Essential Guide to User Interface Design : An Introduction to GUI Design Principles and Techniques 3rd Revised edition John Wiley and Sons Ltd, 17 Apr 2007.
3. Avram Joel Spolsky, "User Interface Design for Programmers", Apress; 1st ed. 2001. Corr. 2nd printing 2006 edition (25 January 2006).
4. Ian Clifton, Android User Interface Design: Implementing Material Design for Developers (Addison-Wesley Usability and Hci Series) Addison Wesley; 2 edition (19 November 2015).
5. Soren Lauesen, "User Interface Design: A Software Engineering Perspective, Addison Wesley (12 November 2004).

P15MCA715 - MANAGEMENT INFORMATION SYSTEMS

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Provide students with basic concepts in information system and the benefits with these systems in modern society
- Manage the data resources.
- Understand functional business systems and E- commerce
- Identify several methods to enhance and develop information systems and to manage the information system recourses.
- Know the ethical and social challenges in IT.

UNIT I - FOUNDATION CONCEPTS & INFORMATION TECHNOLOGIES **9**

Foundations of information systems in Business – The components of information systems-fundamental of strategic advantage –using information technology for strategic advantage – Computer hardware – computer software.

UNIT II – RESOURCE MANAGEMENT & TELECOMMUNICATIONS AND NETWORKS **9**

Managing data resources – Technical foundations of database management – The networked enterprise – telecommunication network alternatives.

UNIT III – BUSINESS APPLICATIONS **9**

Enterprise business systems – functional business systems – Electronics commerce fundamentals- E-commerce applications and issues – Decision support in business- artificial intelligence technologies in business.

UNIT IV – DEVELOPMENT PROCESS **9**

Developing business systems- IS development-Web system-the system approach- the system development cycle-prototyping-starting the systems development process- system analysis-system design-end user development. Implementing business systems – Implementation-implementing new systems- Evaluating hardware and software and services-other implementation activities- managing organizational change.

UNIT V – MANAGEMENT CHALLENGES **9**

Security, ethical and social challenges of IT – Security management of Information technology – managing information technology – managing global IT.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Define the concepts and definition of the information systems
- manage data resources
- Construct an E- commerce application
- Implement a new business system with required hardware and software
- Use the security mechanism and manage the Information technology.

REFERENCES

1. James A.O'Brien, " Introduction to information systems", Tata McGraw-Hill Edition, 12 th edition, 2012.
2. R. G. Murdick, J. E. Ross and J. R. Clagget, "Information Systems for Modern Management", third edition by PHI – 1994.
3. James O Brien and George M. Marakas, "Enterprise Information Systems", 15thed., McGraw Hill – 2010.
4. Laudon & Laudon, "Management Information Systems", 10th Edition, Prentice Hall – 2007.
5. Raymond McLeod & George Schell, "Management Information Systems",10th ed, Prentice Hall 2006.

P15MCA725 - GREEN COMPUTING

L	T	P	C	M
3	0	0	3	100

COURSE OBJECTIVES:

This course will enable the student to:

- Acquire basic concepts and knowledge for green computing practices.
- Identify the required software in terms of energy saving practices and sustainability in green environment.
- Gain a deeper knowledge of tools that will reduce paper waste and carbon footprint in data centers and storage mechanisms.
- Familiarize with techniques related to Green computing in terms of Networks, Protocols, Sustainability etc.
- Relate Cloud computing with Green computing and understand the basics behind it.

UNIT I - INTRODUCTION 9

Green IT: An Overview - Environmental Impacts of IT - Green IT - Holistic Approach to Greening IT - Greening IT - Applying IT for Enhancing Environmental Sustainability - Green IT Standards - Enterprise Green IT Strategy – Introduction - Green Devices and Hardware - Life Cycle of a Device or Hardware - Reuse, Recycle and Dispose.

UNIT II – GREEN SOFTWARE & DEVELOPMENT 9

Introduction - Energy-Saving Software Techniques - Evaluating and Measuring Software Impact to Platform Power – Software Tools – Introduction - Current Practices - Sustainable Software - Software Sustainability Attributes- Software Sustainability Metrics - Sustainable Software Methodology - Defining Actions - Case Study.

UNIT III – GREEN DATA CENTRES & STORAGE 9

Data Centres and Associated Energy Challenges - Data Centre IT Infrastructure - Data Centre Facility Infrastructure - IT Infrastructure Management - Green Data Centre Metrics - Data Centre Management Strategies: A Case Study - Green Data Storage - Storage Media Power Characteristics - Energy Management Techniques for Hard Disks – System Level Energy Management.

UNIT IV – GREEN NETWORKS, COMMUNICATIONS & METRICS 9

Introduction - Objectives of Green Network Protocols - Green Network Protocols and Standards - Sustainable Information Systems and Green Metrics – Introduction - Sustainability Hierarchy Models - Product Level Information - Individual Level Information - Functional Level Information - Organizational Level Information - Measuring the Maturity of Sustainable ICT.

UNIT V – GREEN CLOUD COMPUTING & ENVIRONMENTAL SUSTAINABILITY 9

Introduction - Cloud Computing Basics - Cloud Computing and Energy Usage Models - Features of Clouds Enabling Green Computing - Energy Efficiency of Cloud Computing - Green Cloud Architecture - Case Study: IaaS Provider.

TOTAL = 45 Hours

COURSE OUTCOMES:

At the end of the course the student should be able to:

- Explain and relate the basics of Green Computing for any environment.
- Develop and design softwares that are eco-friendly and sustainable.
- Demonstrate applications that adhere to Green Data Centres metrics and storage.
- Identify and apply the Protocols, Networks and Sustainability strategies to mitigate energy consumption for any application.
- Illustrate and integrate application in a cloud-computing model and Green computing techniques.

REFERENCES

1. San Murugesan, G.R.Ganagadharan, "Harnessing Green IT Principles and Practices", Wiley India Pvt, Feb 2013 Edition.
2. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, July 2011 Edition.
3. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press, June 2014 Edition.
4. Bud E. Smith, "Green Computing: Tools and Techniques for Saving Energy, Money, and Resources", Auerbach Publications, July 2013 Edition.
5. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shoff/IBM Redbook, March 2011 Edition.
6. Carl H Speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, Oct 2010 Edition.

One credit for each Lecture /Tutorial hour. One credit for two hours of Practicals.Â courses will be for a maximum of 60 marks. 100 2 Practicals 100 Continuous evaluation (i) 40 marks are allotted for record work and regular performance of the student in the lab. You've reached the end of your free preview.Â MCA (Master of Computer Applications) wef 2015-16 batch.pdf. Computer Science. Object-Oriented Programming. Semester I. Course title. Page 1 of 47. M CODE NO.Â Code No. Course Title Marks. 1. 100 2. DMC1978 Introduction to E-Learning 100 3. 100. V Semester M C A â€“ Elective IV S. No. Code No. Course Title Marks. 1. 100 2. 100 3. DMC 1982 Knowledge Management 100. V Semester M C A â€“ Elective V S. No. Code No. Course Title.Â Regulations â€“ 2009 syllabus I to VI semesters semester â€“ I computer organization DMC1911. Unit I. Half-Adder, Full Adder- Flip Flops - Sequential Circuits.Â List of electives M.C.a (master of computer applications). Page 33 of 47. DMC 1971 ADVANCED DATABASES. Rules, regulations and course contents. Department of computer science faculty of mathematical sciences. University of delhi DELHI-110007 2009 1. University of delhi examination branch. Course: master of computer applications. Check List of New Course Evaluation for AC Consideration. S.No. 1 2 3 4 5 6 7 8 9 10 11 12.Â The Master of Computer Application Programme is divided into three parts as under. Each part will consist of two semesters to be known as Semester-1 and Semester-2. Part-I Part-II Part-III.Â List of Electives for Part-III Semester V. Course No. Mca 501 mca 502 mca 503 mca 504 mca 505 mca 506. INFORMATION TECHNOLOGY CURRICULUM - SYLLABUS SEMESTER I Code No. Course Title L T P C BEN101 Technical English I BMA101 Mathematics -I BPH101 Engineering.Â 299 REGULATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN COMPUTER SCIENCE (MSc[CompSc]) (See also General Regulations) Any publication based on work approved for a higher degree should contain a reference. More information. Page 1 of 5. (Modules, Subjects) SENG DSYS PSYS KMS ADB INS IAT.