

**CMS COLLEGE OF SCIENCE & COMMERCE
(AUTONOMOUS)**

(Affiliated to Bharathiar University)

An ISO 9001: 2008 Certified Institution and Re-accredited at the

'A' level with a CGPA of 3.53 out of 4 by NAAC

Chinnavedampatti, Coimbatore - 641 049

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1 M.Sc. (Information Technology)

SCHOOL OF COMPUTER SCIENCE

SYLLABUS

SCHEME OF EXAMINATION (CBCS)

2015 Onwards

SCHOOL OF COMPUTER SCIENCE

INTRODUCTION:

Applications of computer is one of the thrust areas in science and technology. In appreciation of its growing importance in business and visualizing the career prospects. The curriculum of this course is framed with theoretical concepts in information technology and the students are capable of meeting the ever-changing challenges, having earnestly qualified themselves to be well ahead of time in the IT world.

The training imparted aims to prepare young minds for the challenging opportunities in the IT industry with a global awareness rooted in the Indian soil, nourished and supported by experts in the field.

OBJECTIVES:

Visualizing on futuristic scenario the two year Master in Information Technology spotlights the era of mass diffusion of computers in IT world.

Four semesters, with one paper in the final semester being an exposure to the real-time project, the course magnifies the minds of the students to explore & push forward, enrich & enable their potential through ample logical reasoning, analytical ability and group discussions to make their way towards developing technical and managerial skills. In order to develop the caliber of each individual, students are trained in logical and lateral thinking to establish them as well-grounded individuals

1. **Eligibility:** Candidates seeking admission to the first year course will be required to possess: A pass in B.Sc. (Computer Science/Electronics/Software Systems)/B.C.A./B.Sc. (Applied Science - Information Technology/ Computer Technology)/ B. Sc. (CT / IT).

2. **Duration of the Course:** The course is offered on a full-time basis. The course consists of three semesters of course work and laboratory work and the fourth semester consists of a project work.

3. **Regulations:** The general Regulations of the Bharathiar University is Choice Based Credit System programme are applicable to this programme.

4. **The Medium of Instruction and Examinations:** The medium of instruction and Examinations will be in English.

5. **Practical Examinations & Project Work:** Candidates taking Practical Examinations and Project work should submit bonafide record note book and project report in the prescribed format.

Defaulters will not be entertained for practical examination or project viva-voce.

DISTRIBUTION OF THE MARKS AND CREDITS UNDER CBCS

PART	SUBJECT	No of Papers	Marks @	Credits
III	Core Subjects	17\$	1700	68
	Elective Subjects	3	300	12
	Mini Project	1	50	2
	Project	1	200	8
	Add on course	2#	Grade	-
	Total	24	2250	90

Note:

@ Includes 25/40 % continuous assessment marks for theory and practical subjects respectively.

\$ In core subjects both theory and practical should be included wherever applicable.

No Continuous Internal assessment for these subjects and no end semester Examinations

(Evaluation is based on the performance of Case study/field work...)

The following parameters are considered throughout study period.

- i)** Regularity of Attendance
- ii)** Active participation in classes/Camps/Games (College/District//University)
- iii)** Exemplary awards/certificates/prizes
- iv)** Other Social Components (Blood Camp, Fine Arts etc)

CMS COLLEGE OF SCIENCE& COMMERCE, COIMBATORE - 641 049

(Autonomous)

M.Sc. INFORMATION TECHNOLOGY

SCHEME OF EXAMINATION - CBCS PATTERN

(For the students admitted during the academic year 2015Onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations				Credit
				Dur. In hrs	CIA	ESE	Total marks	
Semester - I								
III	13A	Programming in C#	4	3	25	75	100	4
III	13B	Data Warehousing	4	3	25	75	100	4
III	13C	Advances in Software Engineering	4	3	25	75	100	4
III	13D	Data Analytics	4	3	25	75	100	4
III	13E	Elective I:	4	3	25	75	100	4
III	13P	Programming in C# Lab	5	3	40	60	100	4
III	13Q	Data Analytics Lab	5	3	40	60	100	4
Semester - II								
III	23A	Cryptography	5	3	25	75	100	4
III	23B	ASP.net	5	3	25	75	100	4
III	23C	PHP and MYSQL	4	3	25	75	100	4
III	23E	Elective II :	5	3	25	75	100	4
III	23P	PHP and MYSQL Lab	5	3	40	60	100	4
III	23Q	ASP.net Lab	5	3	40	60	100	4
		Add On Course-I (Business English)	1	-	-	-	Grade	-

CMS COLLEGE OF SCIENCE& COMMERCE, COIMBATORE - 641 049**(Autonomous)****M.Sc. INFORMATION TECHNOLOGY****SCHEME OF EXAMINATION - CBCS PATTERN**

(For the students admitted during the academic year 2015- 2016 onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations			Total marks	Credit
				Dur. In hrs	CIA	ESE		
Semester - III								
III	33A	J2EE Programming	4	3	25	75	100	4
III	33B	Cyber Security	4	3	25	75	100	4
III	33C	Cloud Computing	3	3	25	75	100	4
III	33D	Programming in Mobile computing	4	3	25	75	100	4
III	33E	Elective III :	4	3	25	75	100	4
III	33P	Programming in J2EE Lab	5	3	40	60	100	4
III	33Q	Programming for Mobile computing Lab	5	3	40	60	100	4
		Add On Course-II (Soft Skill)	1	-	-	-	Grade	-
	33V	Mini Project and Viva Voce <i>(Project Report - 30 marks; Viva-Voce - 20 marks)</i>	-	-	-	50	50	2
Semester - IV								
III	43V	Project and Viva - Voce <i>(Project Report - 150 marks; Viva-Voce - 50 marks)</i>	-	-	-	200	200	8
		Total					2250	90

LIST OF GROUP ELECTIVE PAPERS

List of Elective Papers		
Elective - I	A	Data Compression
	B	Distributed Data Base Management Systems
	C	Enterprises Resource Planning
Elective - II	A	Artificial Intelligence
	B	Compiler Design
	C	Wireless Networks
Elective - III	A	Embedded Systems
	B	Digital Image Processing
	C	Object Oriented Analysis and Design

* No Continuous Internal Assessment (CIA). Only End Semester Examinations.

Evaluation of Add On Course will be based on the performance of Case Study / Field Work and Viva-Voce. No End Semester Examinations (ESE).

Course	M.Sc. Information Technology						
Subject Code	13A	Subject Title	Programming in C#			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description	This subject deals with the basic concepts of C#						

UNIT I

Classes and Objects: Classes - System. Object class-Structures-Interfaces: Defining and implementing an interface- Extending interfaces-Interface casting- The is and as operators- Overriding Interface implementations.

UNIT II

Inheritance: Understanding inheritance - Implementation inheritance: Abstract class and methods- Virtual methods-Overloading methods and operators-Access modifiers-calling base class constructors-Delegates and Events.

UNIT III

Threading: Need for Multithreading- Thread synchronization-Thread safety in Windows Forms-Files and Streams: Working with Files and Directories- The Stream Class-Compressions for Stream Objects.

UNIT IV

Exception Handling: Handling exceptions-creating custom exceptions-Language Integrated Query (LINQ): Architecture - LINQ to Objects-LINQ to Dataset- LINQ to XML- LINQ to SQL

UNIT V

Application development using C#: Developing Windows Applications: The Project- Adding print capability-Deploying the application - Developing ASP.NET Web Applications: Data Binding - Building responsive applications using AJAX.

TEXT BOOK:

1. C# 2008 - Programmer's Reference, Wei-Meng Lee, Wiley India Pvt Ltd.

REFERENCES:

1. Programming C# 3.0, Jesse Liberty and Donald Xie, O'REILLY, Fifth Edition, 2009.
2. C# 2.0 -The Complete Reference, Herbert Schildt, Tata McGraw Hill Publishing, Second Edition, 2006.

Course	M.Sc. Information Technology						
Subject Code	13B	Subject Title	Data Warehousing			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description		The Subject describes needs of data warehousing, planning and project management, architectural components, principles of dimensional modeling and ETL techniques. To provide students with a clear understanding of data warehousing techniques.					

UNIT I

Compelling need for data warehousing: Escalating need for strategic information – Operational versus decision-support systems – Data warehousing, viable solution- Definition. Data warehouse, the building blocks: Defining features – Data warehouses and data marts – Overview of the components. Trends in data warehousing: Significant trends.

UNIT II

Planning and project management: Planning data warehouse – The data warehouse project. Defining the business requirements: Dimensional analysis – Requirement gathering methods – Requirements definition.

Requirements as the driving force for data warehousing: Data design – The architectural plan – Data storage specifications – Information delivery strategy.

UNIT III

The architectural components: Understanding data warehouse architecture – Distinguishing characteristics – Architectural framework – Technical architecture – Infrastructure supporting architecture.

The significant role of metadata: Why metadata is important – Metadata types by functional areas – Business metadata – Technical metadata – How to provide metadata.

UNIT IV

Principles of dimensional modeling: From requirements to data data design – The STAR schema – STAR schema keys – advantages of the STAR schema.

Dimension modeling: Updates to dimension tables – Miscellaneous dimensions – The snowflake scheme – Aggregate fact tables – Families of STARS.

UNIT V

Data Extraction, Transformation and Loading: ETL Overview – Data extraction – Data transformation – Data loading – ETL Summary.

Text Book:

1. Paulraj Ponniah, ‘ Datawarehousing Fundamentals, A Comprehensive guide for IT professionals’, 2001, WILEY INDIA Edition.

Reference Book:

1. Anahory, ‘Datawarehousing in real world’, 2004, Pearson Education.

Course	M.Sc. Information Technology						
Subject Code	13C	Subject Title	Advances in Software Engineering			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 onwards		Credits				4
Objective & Subject Description		On Successful Completion of this subject the students should have understood Software Engineering techniques and will have opportunities to improve their technical writing and software development skills. This Subject deals with various areas of Software Engineering, project management and testing.					

UNIT - I :

Advanced topics in software engineering: Formal methods : Basic concepts - deficiencies of less formal approaches - mathematics in software development - formal methods concepts - Mathematical preliminaries: sets and constructive specification - set operators - logic operators - sequences -applying mathematical notations for formal specification - formal specification languages - using Z to represent an example s/w component - the ten commandments of formal methods. Object oriented analysis: Object oriented analysis - domain analysis - generic components of the OO analysis model - The OOA process -The object relationship model - The object behavior model

UNIT - II:

Object -Oriented design: Design for object oriented systems - the system design process - the object design process - design patterns - object oriented programming. Object oriented testing : Broadening the view of testing - testing OOA and OOD models -Object oriented testing strategies - test case design for OO software - testing methods applicable at the class level - interclass test case design.

UNIT - III :

Cleanroom s/w engineering: The cleanroom approach - functional specification - cleanroom design - cleanroom testing. Component based s/w engineering : Engineering of component based systems - the CBSE process - domain engineering - component based development - classifying and retrieving components -economics of CBSE.

UNIT - IV :

Client/Server s/w engineering: The structure of client/server systems - s/w engineering for c/s systems - analysis modeling issues - design for c/s systems - testing issues. Web engineering: The attributes of web-based applications - the web process - A framework for webE - formulating / analyzing web-based systems - design for web based applications - testing web-based applications - management issues

UNIT - V :

Reengineering: Business process reengineering - software reengineering - reverse engineering - restructuring - forward engineering - economics of reengineering. Computer-aided software engineering: What is CASE? - building blocks for CASE - a taxonomy of CASE tools - integrated CASE environments - the integration architecture - the CASE repository. The road ahead.

Text Book:

1. Roger .S .Pressman, Software Engineering, TMH Publisher, Fifth Edition, 2010.

Reference Books:

1. Walts S. Humphrey, A Discipline for Software Engineering, Pearson Education Publisher, 2001.
2. Ian Somerville, Software Engineering, Pearson Education Publication, Sixth Edition, 2001.
3. Richard Fairley, Software Engineering Concepts, Tata McGraw-Hill Edition, 2001.
4. Mike Cottrell, Bob Hughes, Software Project Management, Fifth edition 2009.

Course	M.Sc. Information Technology						
Subject Code	13D	Subject Title	Data Analytics			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2013 onwards		Credits				4
Objective & Subject Description		To provide knowledge about big data and various techniques to handle big data. To make the student become aware of big data analytic tools to make them experts in handling big data.					

UNIT -I

Introduction - Evolving Tools And Techniques - How Twitter Monitors Million of Time Series - Data Analysis - Just one Component of The Data Science - Workflow- Tools and Training - The Analytic Lifecycle and Data Engineers - Data Analysis Tools Target Non experts - Visual Analysis And Simple Statistics- Big Data and Advertising - In The Trenches - Volume, Velocity And Variety- Tightly Integrated Engines Streamline Big Data Analysis - Interactive Query Analysis- SQL Directly On Hadoop -Data Scientist Tackle The Analytic Lifecycle- Exploratory SQL Queries- Aggregations - Joins - Hamiltonian Monte Carlo- Big Data- Memory And Storage.

Unit -II

An Integrated Data Stack Boosts Productivity - Multiple Tools And Languages Can Impede- Reproducibility and Flow- Some Tools that Cover a Range of Data Science Tasks- Large Scale Data Collection and Real Time Analytic using - Redis-Return to Acid -Foundation DB- a new Generation of No. Sql- Data Science Tools: Fast, Easy to use and Scalable- SQL is alive and Well- Business Intelligence Reboot-Scalable Machine Learning and Analytics are going.

Unit -III

Google Spanner is all about Time-The Evolution of Persistence at Google- ofs Improves Performance of Hadoop File System.- How Accessible isyYour Data- Another Serving of Data Skepticisim- Bigdata is Dead ,Long Live Big Data : Thoughts Heading to Strata- New Ethics for a new World- Why Big Data is big :The Digital Nervous System- Big Data is the New Printing Press- The Veil of Ignorance- Three Kinds of Big Data- Enterprise Bi.

Unit -IV

On The Powers and Perils of Preemptive Government- Big Data Comes to the Big Screen- Business Has Been about Scale- Why Software Changes Business - Injecting Noise- Mistraining The Algorithms- Making other attacks more effective-Five Big Data Predictions- Emergence of A Big Data Architecture- Hadoop is Not The Only Fruit- Data Governance Comes Into Focus- In The 2012, Election Big Data Driven Analysis and Campaigns were the Big Winners- Health Care.

Unit -V

Moving to the open Health Care Graph- Genomics and Privacy at the Crossroads- Data Sharing Drives Diagnoses - At Intense Lesson in Code Sharing- Synapse as a Platform- Making Government Health Data Personal Again- The Premises and Promise of Smart - Did The Conference Promote More Applications- Quantified Sel Fto Essential Self: Mind and Body as Partners in Health.

Text Book:

1. O'reilly Media, Inc., Big Data Now, First Edition, United States of America, 2014.

Reference Book

2. Paul Zikopoulos, Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, IBM Chris, 2012.

Course	M.Sc. Information Technology						
Subject Code	13P	Subject Title	Programming in C# Lab			Semester	I
Internal Max:	40	External Max :	60	Total Marks	100	Hr. / Week	5
For the Batch	2015 onwards		Credits				4

Case studies:

1. Notepad application
2. Online Library Management
3. Airline Reservation System

Course	M.Sc. Information Technology						
Subject Code	13Q	Subject Title	Data Analytics Lab			Semester	I
Internal Max:	40	External Max :	60	Total Marks	100	Hr. / Week	5
For the Batch	2015 onwards		Credits				4

Case studies:

Case study 1:

Perform the following :

1. sort the data using combination of various fields.
2. Filter the data based on certain criteria.
3. Do conditional formatting
4. prepare the charts
5. perform the what if analysis
6. use solver tool to find optimal solution for decision problems.

Case study 2:

1. Download data from any data repository related to sales of various products.
2. convert in to excel worksheet.
3. Create a pivot table for data summarization and do comparisons.

Case study 3:

- Distinguish between the various types of sampling and see record sampling in action (Random, Fixed Interval).
- Discover statistics such as z score and normal distribution to pinpoint the most unusual entries. Visualize sample results in a variety of graphs and charts to select samples with pictures.
- Use different filtering depending on whether the sample is being used depending on the whether the sample focuses on errors, control concerns or fraud.
- Evaluate sample results to determine whether sampling risk limits have been exceeded.
- Get started with and quickly maximize Pivot Tables, turning them into effective data mining tools able to unearth almost any audit finding.
- Utilize percentiles, strata, and other simple statistical tools in graphs for assessing whether an item is unusual
- Use named ranges for auto-formatting an entire Pivot Table area or graph range so that the graph range will auto-update based on the data in that sheet
- Learn how to obtain an entire data set for a Pivot Table that dynamically recalculates itself as you add data

Course	M.Sc. Information Technology						
Subject Code	13E	Subject Title	Elective I (A) - Data Compression			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description		The subject describes various compression techniques, Huffman coding & Arithmetic coding, Dictionary techniques, and Scalar and vector quantization. To provide students with a clear understanding of data compression techniques.					

UNIT I

Compression techniques - Modeling and coding. Mathematical preliminaries for lossless compression: Models - Coding.

UNIT II

Huffman coding: The Huffman coding algorithm - Adaptive Huffman coding - Golomb codes - Rice codes - Tinstall codes - Application of Huffman coding. Arithmetic coding: Coding a sequence - Generating a binary code - Comparison of Huffman and arithmetic coding.

UNIT III

Dictionary Techniques: Static dictionary - adaptive dictionary - Applications-File compression - UNIX compress - Image Compression- The Graphics Interchange Format (GIF). Context-based compression: Prediction with partial match - The burrows-wheeler transform - Associative coder of Buyanovsky(ACB) - Dynamic markov compression. Lossless image compression: Introduction - CALIC - JPEG-LS - Multi resolution approaches.

UNIT IV

Mathematical preliminaries for lossy coding: Distortion criteria - models. Scalar Quantization: The quantization problem - Uniform quantizer - adaptive quantization - non uniform quantization - entropy-coded quantization.

UNIT V

Vector quantization: Advantages of vector quantization over scalar quantization - The Linde-Buzo-Gray algorithm - tree structured vector quantizers - structured vector quantizers. Differential encoding: Introduction -The basic algorithm - Prediction in DPCM - Adaptive DPCM.

Text Book:

1. Khalid Sayood, Introduction to Data Compression, Morgan Kaufmann Publishers, 2006.

Reference Books:

1. David Salomon, Data Compression- The complete reference, Springer publications, 3rd Edition, 2004.

Course	M.Sc. Information Technology						
Subject Code	13E	Subject Title	Elective I (B) - Distributed Data Base Management Systems			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description	The subject describes levels of distribution transparency, queries handling, transactions management, reliability, R* project, etc. To provide students with a clear understanding of distributed databases.						

UNIT I

Distributed Databases, An Overview: Features of distributed versus centralized databases -Why distributed databases? - Distributed database management systems. Levels of Distribution transparency - Reference architecture for distributed databases - Types of data fragmentation - Distribution transparency for read-only applications - Distribution transparency for update applications - Distributed database access primitives. Distributed database design: A framework for distributed database design - the design of database fragmentation - the allocation of fragments.

UNIT II

Translation of global queries to fragment queries: Equivalence transformations for queries - transforming global queries into fragment queries - distributed grouping and aggregate function evaluation. Optimization of access strategies: A framework for query optimization - join queries - general queries.

UNIT III

The management of distributed transactions: A framework for transaction management - supporting atomicity of distributed transactions - concurrency control for distributed transaction - architectural aspects of distributed transactions. Concurrency control: Foundations of distributed concurrency control - Distributed deadlocks - Concurrency control based on timestamps - optimistic methods for distributed concurrency control.

UNIT IV

Reliability: Basic concepts - non blocking commitment protocols - reliability and concurrency control - determining a consistent view of the network - detection and resolution of inconsistency - checkpoints and cold restart. Distributed database administration: Catalog management in distributed databases - authorization and protection.

UNIT V

The R* project: Architecture of R* - Compilation, execution, and recompilation of queries - view management - protocols for data definition and authorization in R* - Transaction management - terminal management. Other homogeneous distributed database systems: DDM - Distributed - INGRES . Heterogeneous Distributed Database Systems: Problems of Heterogeneous distributed databases - MULTIBASE - DDTS.

Text Book:

1. Stefano Ceri, Giuseppe Pelagatti, 'Distributed Databases, Principles & Systems', McGraw-Hill Publications, 2000.

Reference Books:

1. Chanda Ray, 'Distributed Database Systems', Palgrave Publications, 2000.

Course	M.Sc. Information Technology						
Subject Code	13E	Subject Title	Elective I (C) - Enterprise Resource Planning			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description	To gain knowledge in data warehousing, data mining techniques and algorithms.						

UNIT - I

Enterprise An Overview: Definition-Integrated management Information-Business Modeling-Integrated data model. Introduction to ERP: Introduction-History of ERP- Reasons for the growth of the ERP market-Advantages of ERP.

UNIT - II

ERP and Related Technologies : Introduction - Business Process Engineering - Data Warehousing- Data mining - On-line Analytical Processing - Product Life Cycle Management PLM - CRM - Geographical Information System- Internets & Extranets. Business Intelligence BI - introduction to E-commerce & E-Business.

UNIT - III

ERP Implementation Life cycle: Introduction - objectives - Different phases of ERP implementation. Implementation methodologies: Introduction - Managing the implementation - implementation strategy - risk assessment - budget - cost-ERP implementation Hidden costs.

UNIT - IV

ERP Modules: Introduction to ERP resource planning system -Functional Modules - Finance-plant maintenance - quality management - materials management- Human resources.

UNIT - V

ERP case Studies: SAP at Tata Steel (TISCO)-IQMS at Sturgis Molded Products (SMP) - SAP at Co-Operative Bulk Handling ltd. (CBH) - INTUITIVE at Iarcimedics- MATRIX ERP Mani Group-JD EDWARDS at Hindustan Petroleum - ORACLE at qualcomm CDMA Technologies.

Text Book:

1. Alexix Leon - Enterprise Resource Planning, Tata McGraw Hill Publishing Company Ltd., 2010.

Reference Book:

1. Parag Diwan, Sunil Sharma, Enterprise Resource Planning, Excel Books, 2002.
2. Vinodkumar Garg, N.K.Venkatakrishnan, Enterprise Resource Planning Concepts and Practice, Prentice Hall India, 2003.

Course	M.Sc. Information Technology						
Subject Code	23A	Subject Title	Cryptography			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2015 onwards		Credits				4
Objective & Subject Description	To enable the students to learn and get adequate knowledge about cryptography and network security.						

UNIT I

Security goals - Cryptographic attacks - Services and Mechanism - Techniques. Traditional Symmetric-Key Ciphers: Introduction - Cryptanalysis - Substitution Ciphers: Mono alphabetic Ciphers - Caesar Cipher - Polyalphabetic Cipher: Autokey Cipher - Playfair Cipher - Hill Cipher - Rotor Cipher.

UNIT II

Transposition Cipher: Keyless transposition Ciphers - Keyed transposition cipher - Double transposition cipher. Introduction to modern Symmetric-Key Ciphers: Modern Block Ciphers - Components of a Modern Block Cipher: D-boxes - S-Boxes. Modern Stream Ciphers: Synchronous Stream Cipher - One-Time pad - Feedback shift Register.

UNIT III

Data Encryption Standard(DES): Introduction - DES Structure - DES weakness - Multiple DES Advanced Encryption Standard(AES): Introduction - Transformation - Key Expansion - The AES Cipher. Asymmetric-Key Cryptography: Introduction - RSA cryptosystem: Introduction - Procedure.

UNIT IV

Message Integrity and Message Authentication: Message Integrity -Message Authentication - Cryptographic Hash Function: Introduction - SHA 512. Digital Signature: Comparison - Process - Services - Attacks on Digital Signature - Digital Signature Schemes: RSA Digital signature scheme - Digital Signature Standard.

UNIT V

Network Security: Security at the application layer - E-mail - PGP - Scenarios - Key rings - PGP certificates - Security at the transport Layer: SSL Architecture - Security at Network layer: Two modes - Two security protocols - Security association - Security policy.

Text Book:

1. Behtouz A. Forouzan, Debdeep Mukhopadhyay, Cryptography and Network Security, McGraw Hill Education, 2013.

Reference Books:

1. William Stallings, Cryptography and Network Security - Principles and Practices, Prentice Hall, 2005.
2. Christof Paar, Jan Pelzl, Bart Preneel , Understanding Cryptography: A Textbook for Students and Practitioners , Springer , First Edition, 2010.

Course	M.Sc. Information Technology						
Subject Code	23B	Subject Title	ASP.Net			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr. /Week	5
For the Batch	2015 onwards		Credits				4
Objective & Subject Description	This course presents the concepts of .Net Framework and ASP.NET programming. On successful completion the students should have understood the Principles of .NET framework and to develop ASP.NET applications.						

UNIT - I

Introduction to ASP.net - .net framework- CLR-Common type system -.net framework class library- IDE environment- application state – session state-view state.

UNIT - II

Control class-Web control class – label – textbox – list box – dropdown list – view control- tree view control – sitemap path control – creating static menu – dynamic menu – add rotator control – xml control.

UNIT - III

Base Validators class - Validation Controls- Required Field Validators-Comparison Validator-Range Validator- Regular Expression validator- Custom Validators – Validation Summary-using menu class :menu control-menu display properties-menu styles.

UNIT - IV

ADO.net –entity framework-Data binding using data bound controls- SQL data source - Working with data Grid view control- Working with details view control- form view control.

UNIT - V

Introduction to web service- Infrastructure of asp.net web service-code model of asp.net web service – asp.net AJAX and web service – securing web service.

Case study: online reservation system, banking system.

Text Book:

1. ASP.NetBlack Book Published by Dream Tech Press,3rd edition, 2009.

Reference Book:

1. ASP.NetComplete Reference Published by McGraw-Hill Companies, 4th edition, 2002.
2. “Visual Basic.Net programming Bible” bill evjen, Jason beres et al, 2007.

Course	M.Sc. Information Technology						
Subject Code	23C	Subject Title	PHP and MY SQL			Semester	II
Internal Max:	25	External Max :	75	Total Marks	GRADE	Hr. / Week	4
For the Batch	2015 onwards		Credits				4
Objective & Subject Description	This course presents the introduction to open source tools. To enable the students to learn the introduction of web application tool PHP & MySQL and understand the concepts of PHP & MYSQL						

UNIT - I

What is PHP? Why use PHP? Embedding PHP with HTML, Enhancing further, PHP Language Basics: Using variable in PHP, understanding Data types, operator and expressions. Making decisions: Simple decision with if statements, switch, ternary operator, do..while loop, for statement, break, loop skip iteration, nested loop, Function: calling functions, working with variable functions, own functions references, recursive functions

UNIT - II

Arrays: creating and accessing array elements, looping through arrays, multi-dimensional array, manipulating array. Strings: Creating and accessing strings, searching strings, replacing text within strings and formatting strings

UNIT - III

Handling HTML forms with PHP: HTML forms work, capture form data with PHP, multi value fields, web forms with PHP, storing PHP variables in forms, create file upload forms, redirecting PHP

UNIT - IV

Introducing Database and SQL: Deciding how to store data, quick play with MYSQL, connecting to MYSQL from PHP, retrieving data from MYSQL with PHP

UNIT - V

Manipulating MYSQL data with PHP insert, update, delete records. Working with files and directories: understanding files and directories, getting information on files, opening and closing files, reading files and writing files , file permissions, Copying ,renaming and deleting files, working with directories Case Study: Building a text editor (to be given as assignment)

Text Book :

1. Matt Doyle , Beginning PHP 5.3, Wunley India Edition,2012

Reference Books :

1. VikramVaswani, A beginners Guide PHP, Tata Mcgraw Hill,2009.
2. Guide to PHP, Lawpoint Lp Computer series, 2007.
3. Larry Ullman , PHP 6 and MySQL 5, Pearson Education,2008.

Course	M.Sc. Information Technology						
Subject Code	23C	Subject Title	PHP and MY SQL Lab			Semester	II
Internal Max:	40	External Max :	60	Total Marks	GRADE	Hr. /Week	5
For the Batch	2015 onwards		Credits				4

Case Studies:

1. Student database management
2. Hotel management system
3. Building a text editor

Course	M.Sc. Information Technology						
Subject Code	23Q	Subject Title	ASP.Net Lab			Semester	II
Internal Max:	40	External Max :	60	Total Marks	GRADE	Hr./Week	5
For the Batch	2015 onwards		Credits				4

Case Studies:

1. Develop a window application to process student marks.
2. Develop a window application to process for employee payroll system.
3. Library management system using ADO.net

Course	M.Sc. Information Technology						
Subject Code		Subject Title	Add On Course - I Business English			Semester	II
Internal Max:	-	External Max :	-	Total Marks	GRADE	Hr./Week	1
For the Batch	2013 onwards		Credits				-
Objective & Subject Description	On successful completion of this subject, the students should know basics of communication know listening & speaking and writing skills, know grammar. This subject introduces oral and written communication concepts from basic to advanced levels.						

UNIT - I

Communication: What is Communication?- the process, importance, barriers, effects of bad communication – talk about MTI.

UNIT - II

Conversation :Polite conversation – Communication – non verbal communication – Introducing Oneself – Asking questions – polite replies – praising – complimenting others.

UNIT - III

Listening – How to be a better listening. Presentation skills: preparation – delivery.

UNIT - IV

Effective Communication: Clarity, grammar, sounds, being polite, Listening, Presentation. Learning to organize content/ ideas, importance of clarity

UNIT - V

Poor Writing Practices – Principles of good writing – Parallel Structure – Politically correct Writing.

TEXT BOOK:

1. Harry Chambers and Harry E Chambers, "Effective communication Skills for Scientific and Technical Professionals", Paperback Dec 2000.

REFERENCE BOOK:

1. Paul J., Donoghue and Mary E Siegel ", Are you Listening? Keys to successful Communication", Indiana, Sorin Books 2005.

Course	M.Sc. Information Technology						
Subject Code	23E	Subject Title	Elective II(A) - Artificial Intelligence			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description		This subject deals with various AI Concepts and Methodologies. On successful completion of the course the students must have enriched knowledge regarding heuristic search and knowledge representation expert systems.					

UNIT - I

Introduction: AI Problems - What is an AI technique? - Criteria for success. Problems, Problem Spaces, Search: Defining the problem as State space search - Production Systems - Problem Characteristics - Production system Characteristics - Issues in the design of Search programs.

UNIT - II

Heuristic Search techniques: Generate and Test - Hill Climbing - Best-First Search, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT-III

Knowledge representation issues: Representations and mappings - Approaches to Knowledge representations - Issues in Knowledge representations - Frame Problem.

UNIT- IV

Using Predicate Logic: Representing simple facts in logic - Representing Instance and Isa relationships - Computable functions and predicates - Resolution - Natural deduction.

UNIT - V

Representing knowledge using rules: Procedural versus Declarative knowledge - Logic programming - Forward versus Backward reasoning - Matching - Control knowledge. Brief explanation of Expert Systems: Definition- Characteristics-architecture - Knowledge Engineering- Expert System Life Cycle-Knowledge Acquisition Strategies - Expert System Tools.

Text Book:

1. Elaine rich and Kelvin Knight, "Artificial Intelligence ", Tata McGrawhill Publication, 2nd Edition, 1991. 4th print 2008.

Reference Book:

1. Stuart Russell & Peter Norvig, Artificial Intelligence a modern Approach, Pearson Education, Second Edition, 2000.
2. George F Luger, Artificial Intelligence , 4th Edition , Pearson Education Publ, 2002.
3. V.S.Janaki Raman, K.Sarukesi, P.GopalaKrishnan, Foundations of Artificial Intelligent and Expert Systems, MacMillan India limited, 2001.

Course	M.Sc. Information Technology						
Subject Code	23E	Subject Title	Elective II(B) - Compiler Design			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2015 Onwards		Credits				4
Objective & Subject Description	This subject presents the structure of compiler & it explains the functions of each phase of a compiler. To enable the student to learn the structure of compiler. On successful completion of the subject the students should have understood the different phases of compiler.						

UNIT - I

Introduction to compiling: compilers - Analysis of source program - Phase of compiler - Cousins of compilers - Grouping of phases - Compiler construction tools. Simple one pass compiler: overview - Syntax definition. Lexical analysis: Role of a lexical analyzer - Input buffering - Specification of tokens - Recognition tokens.

UNIT- II

Syntax Analysis: Role of parser - Context free grammar - Writing a grammar - Top down parsing - bottom up parsing - LR Parsers: LR parsing algorithm - LR grammars - constructing SLR parsing table.

UNIT - III

Syntax directed definition: Construction of syntax trees - Bottom up evaluation of S-Attributed definition - L-Attributed definitions - Top down translation - Bottom-up evaluation of inherited attributes. Type checking: Type systems - Specifications of simple type checker.

UNIT - IV

Run-time environment: Source language issues - Storage organizations - Storage allocation strategies - symbol tables. Intermediate code generation: Intermediate languages - Declarations - Assignment statements.

UNIT - V

Code generation: Issue in design of code generator - The target machine - Runtime storage management - Basic blocks and flow graphs - Dag representation of basic blocks. Code optimization: Introduction - Principle source of code optimization - Optimization of basic blocks - Loops in flow graphs.

Text Book:

1. Alfred V.Aho, Ravi sethi, Jeffery D.Ullman - Compilers Principles, Techniques and Tools, Pearson Education, Second Edition, 2006

Reference Books:

1. Leland L. Beck - System Software: An introduction to systems programming, Pearson Education, Third Edition, 2009.
2. John J. Donovan - Systems Programming, Tata Mc Graw Hill Edition, 2006.

Course	M.Sc. Information Technology						
Subject Code	23E	Subject Title	Elective II(C) – Wireless Networks		Semester	II	
Internal Max:	25	External Max :	75	Total Marks	100	Hr./ Week	5
For the Batch	2015 Onwards		Credits			4	
Objective & Subject Description	This subject presents the Analog and Digital Data transmission. To enable the student to learn the satellite parameters and configuration.						

UNIT - I

Signal for Conveying Information - Analog and Digital Data Transmission – Transmission media- Multiplexing – Switching Techniques – Circuit switching –Packet Switching - Asynchronous Transfer Mode.

UNIT - II

Antennas - Propagation Modes – Fading in the Mobile Environment - The Concept of Spread Spectrum - Frequency Hopping Spread Spectrum – Code Division Multiple Access - Generation of Spreading Sequences.

UNIT - III

Satellite Parameters and Configurations - Capacity Allocation -Frequency Division-Capacity Allocation – Time Division.

UNIT - IV

Principles of Cellular Networks – Third Generation Systems – Overview of Wireless LAN Technology - Infrared LANs

UNIT - V

IEEE 802 Protocol Architecture - IEEE 802.11 Architecture and Services - IEEE 802.11 Medium Access Control – Overview of Blue Tooth

Text Book:

1. William Stallings, Wireless Communications and Networks, Pearson Prentice Hall, second Edition,2006

Reference Book

1. Wireless Communications Principles and Practice , Theodore S. Rappaport , Pearson Publication, 2nd Edition, 2011
2. T. L. Singal, Wireless Communications, Tata McGraw-Hill Education, 2010

**CMS COLLEGE OF SCIENCE & COMMERCE
(AUTONOMOUS)**

(Affiliated to Bharathiar University)

An ISO 9001: 2008 Certified Institution and Re-accredited at the

'A' level with a CGPA of 3.53 out of 4 by NAAC

Chinnavedampatti, Coimbatore - 641 049

Email: info@cmscbe.com

Website: www.cmscbe.com



2 M.Sc. (Information Technology)

SCHOOL OF COMPUTER SCIENCE

SYLLABUS

SCHEME OF EXAMINATION (CBCS)

2014 Onwards

SCHOOL OF COMPUTER SCIENCE

INTRODUCTION:

Applications of computer is one of the thrust areas in science and technology. In appreciation of its growing importance in business and visualizing the career prospects. The curriculum of this course is framed with theoretical concepts in information technology and the students are capable of meeting the ever-changing challenges, having earnestly qualified themselves to be well ahead of time in the IT world.

The training imparted aims to prepare young minds for the challenging opportunities in the IT industry with a global awareness rooted in the Indian soil, nourished and supported by experts in the field.

OBJECTIVES:

Visualizing on futuristic scenario the two year Master in Information Technology spotlights the era of mass diffusion of computers in IT world.

Four semesters, with one paper in the final semester being an exposure to the real-time project, the course magnifies the minds of the students to explore & push forward, enrich & enable their potential through ample logical reasoning, analytical ability and group discussions to make their way towards developing technical and managerial skills. In order to develop the caliber of each individual, students are trained in logical and lateral thinking to establish them as well-grounded individuals

1. **Eligibility:** Candidates seeking admission to the first year course will be required to possess: A pass in B.Sc. (Computer Science/Electronics/Software Systems)/B.C.A./B.Sc. (Applied Science - Information Technology/ Computer Technology)/ B. Sc (CT / IT).

2. **Duration of the Course:** The course is offered on a full-time basis. The course consists of three semesters of course work and laboratory work and the fourth semester consists of a project work.

3. **Regulations:** The general Regulations of the Bharathiar University is Choice Based Credit System programme are applicable to this programme.

4. **The Medium of Instruction and Examinations:** The medium of instruction and Examinations will be in English.

5. **Practical Examinations & Project Work:** Candidates taking Practical Examinations and Project work should submit bonafide record note book and project report in the prescribed format.

Defaulters will not be entertained for practical examination or project viva-voce.

DISTRIBUTION OF THE MARKS AND CREDITS UNDER CBCS

PART	SUBJECT	No of Papers	Marks @	Credits
III	Core Subjects	17\$	1700	68
	Elective Subjects	3	300	12
	Mini Project	1	50	2
	Project	1	200	8
	Add on course	2#	Grade	-
	Total	24	2250	90

Note:

@Includes 25/40 % continuous assessment marks for theory and practical subjects respectively.

\$ In core subjects both theory and practicals should be included wherever applicable.

No Continuous Internal assessment for these subjects and no end semester Examinations (Evaluation is based on the performance of Case study/field work...)

The following parameters are considered throughout study period.

- i)** Regularity of Attendance
- ii)** Active participation in classes/Camps/Games (College/District//University)
- iii)** Exemplary awards/certificates/prizes
- iv)** Other Social Components (Blood Camp, Fine Arts etc)

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049

(Autonomous)

M.SC. INFORMATION TECHNOLOGY

SCHEME OF EXAMINATIONS CBCS PATTERN

(For candidates admitted during the academic year 2014 onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations				Credit
				Dur.Inhrs	CIA	ESE	Total marks	
Semester - I								
III	13A	Programming In C# & Asp.Net	4	3	25	75	100	4
III	13B	Data Mining	4	3	25	75	100	4
III	13C	Advanced Software Engineering	4	3	25	75	100	4
III	13D	Advanced Networks	4	3	25	75	100	4
III	13E	Elective -I	4	3	25	75	100	4
III	13P	Programming In C# & Asp.Net Lab	5	3	40	60	100	4
III	13Q	Advanced Software Engineering Lab	5	3	40	60	100	4
Semester - II								
III	23A	Cryptography & Network Security	5	3	25	75	100	4
III	23B	Web Technologies	5	3	25	75	100	4
III	23C	Business Intelligence	4	3	25	75	100	4
III	23D	Elective -II	5	3	25	75	100	4
		Add On Course - I (Business English)	1	-	-	-	Grade	-
III	23P	Web Technologies Lab	5	3	40	60	100	4
III	23Q	Business Intelligence Lab	5	3	40	60	100	4

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049

(Autonomous)

M.SC. INFORMATION TECHNOLOGY

SCHEME OF EXAMINATIONS CBCS PATTERN

(For candidates admitted during the academic year 2014 onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations				Credit
				Dur. In hrs	CIA	ESE	Total marks	
Semester - III								
III	33A	J2ee Programming	4	3	25	75	100	4
III	33B	Cyber Security	4	3	25	75	100	4
III	33C	Cloud Computing	3	3	25	75	100	4
III	33D	Programming for Mobile Computing	4	3	25	75	100	4
III	33E	Elective - III	4	3	25	75	100	4
III	33P	Programming In J2ee Lab	5	3	40	60	100	4
III	33Q	Programming for Mobile Computing Lab	5	3	40	60	100	4
		Add On Course - II (Soft Skills)	1	-	-	-	Grade	-
III	33F	Mini Project (Project Report - 30 marks; Viva-Voce - 20 marks)	-	-	-	-	50	2
Semester - IV								
III	43V	Project Viva - Voce (Project Report - 150 marks; Viva-Voce - 50 marks)				200	200	8
		Total					2250	90

LIST OF GROUP ELECTIVE PAPERS

ELECTIVE-I	A. Distributed Operating Systems B. Embedded Systems C. Enterprise Resource Planning
ELECTIVE-II	A. Service Oriented Architecture & Web Services B. Artificial Intelligence & Expert Systems C. Knowledge Management And Information Technology
ELECTIVE -III	A. Natural Language Processing B. Software Project Management C. Multimedia Systems

Course	M.Sc. Information Technology						
Subject Code	33A	Subject Title	J2EE Programming			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2014 onwards		Credits				4
Objective & Subject Description		By the end of the course, students are expected to understand J2EE as an architecture and platform for building and deploying web-based, n-tier, transactional, component-based enterprise applications. Understand the concept of Servlet and JSP as dynamic content generation technologies at web-tier and other relevant J2EE APIs and technologies.					

UNIT-I

J2EE basics: Java 2 Enterprise Edition Overview - The ABC of programming language-Taking programming language up to notch-The Beginning of Java-Java Bytecode -The Advantages of java-J2EE and J2SE- J2EE multi-tier architecture - Distributive systems - the tier - J2EE multi-tier architecture - client tier implementation - web tier implementation.

UNIT-II

The concept of JDBC:-JDBC driver types - JDBC packages-a brief overview of the JDBC process- Database connection-Associating the JDBC/ODBC bridge with the database- Statement Objects- Result sets: reading the result set.

UNIT-III

Java Servlets: Java servlet and CGI programming- A simple java servlet-Anatomy of a java servlet- Reading data from a client-Reading http request header-sending data to a client and writing the http response header-working with cookies

UNIT-IV

Java server pages: Introduction- JSP tags - variables and objects - methods - control statements - loops - tomcat -cookies - session objects.SOAP:-SOAP basics- Java API for XML messaging-Create, send and receive a point-to-point SOAP message.

UNIT-V

Enterprise JavaBeans (EJB):- The EJB container , EJB Class, EJB Interfaces-Session java bean - Entity java bean - Message driven bean-The JAR file. RMI:-Remote method Invocation concepts-Server side -Client side.

Text Books:

1. Jim Keogh - J2EE1.4 Complete Reference, Tata McGraw-Hill Publishing Company, New Delhi, Twenty First Reprint, 2008.

Reference Books:

1. Bill Dudley, Stephen Asbury, Joseph Krozak, and Kevin Wittkopf - J2EE AntiPatterns , John Wiley & Sons, Inc., First Edition, 2003.
2. Java server programming (J2EE 1.4) Black Book -KogentSolutionsInc, 2007.

Course	M.Sc.InformationTechnology						
Subject Code	33B	Subject Title	Cyber Security			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2014 onwards		Credits				4
Objective & Subject Description	On successful completion of the course the students should have: Understood the cybersecurity concepts.						

UNIT -I

Cyber security - Security: Threats to personal privacy - Fraud and Theft - Internet Fraud - Employee sabotage - Infrastructure attacks - Malicious hackers - Malicious code - Industrial Espionage. Security management: Foundations - Defense -in-depth strategy - Common Criteria Model - password management. Incident Handling: Types of Incidents - Incident handling process planning.

UNIT -II

Security Foundations: Access Control - Entities and Fundamentals of access control - Access Control Models - Access Control mechanisms - Uses of access control. Firewall and perimeters: Firewall environment - perimeter concepts - Intruders break in - understanding IP - TCP and ICMP Packets - proxy servers. Application Gateway: Firewall policy enforcement.

UNIT -III

VPNs and Remote Access: Historical evolution of VPN - VPN Basics - Needs of VPN - VPN Security essentials: Authorization - Authentication - VPN encryption. Intrusion Detection: Basic concepts. Types of IDS: Network - Host and Application based IDS - IDS structure - Core components - IDS Analysis - IDS response options - Host based vulnerability scanners.

UNIT-IV

Security Communications: Cryptography - Need - Strength - Basic Algorithm - Types of Cryptography - Cryptographic technique - cryptographic keys - Digital signatures - secret key and public key cryptographic - security Diligence: Testing concepts and applications - Diagnostic tests - key factors - security testing manual - Outsourced systems - monitoring and updating

Unit -V

Security management Issues : organization security management - Areas of Responsibility -Basic approach to policy development - Security service level Agreements : Developing SLA - Components of an SLA. Adding security to SLA equation: General and computer security - Sensitive information - Risk assessment - Safeguards - Reporting - Monitoring and Audits.

Text Book:

1. John Rittinghouse, William M. Hancock – Cyber Security Operations Handbook, Digital Press (Elsevier), First Edition, 2005.

Reference Books:

1. Denzyl. P. Dayal – Cyber Terrorism and Hoaxes and Law Enforcement, Dominant publishers and Distributors, First Edition, 2005.

2. Douglas. E. Comer – Internetworking with TCP/IP –Principles, Protocols and Architecture, Prentice Hall India Publication, Fifth Edition, 2008.

Course	M.Sc. Information Technology						
Subject Code	33C	Subject Title	Cloud Computing			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	3
For the Batch	2014 onwards		Credits				4
Objective & Subject Description		This course covers the most popular cloud based applications that change the way you work and collaborate online. On Successful completion of this course the students will know benefit of cloud Computing, how to manage work and personal schedules, edit digital photos and also how to use Web-based Applications to collaborate on reports.					

UNIT - I

Understanding cloud computing: An introduction to cloud computing- what it is & what it is not- History - The network is the computer: How cloud computing works. Companies in the cloud: cloud computing today. The pros and cons of cloud computing- benefits- how to develop cloud services.

UNIT - II

Cloud computing for the community- Cloud computing for the corporation- Using cloud services: collaborating on calendars, schedules, and Task management: Exploring online calendar applications- Exploring online schedule applications- Exploring online planning and task management.

UNIT - III

Collaborating on Event Management: Event Management applications - Exploring Event Management Applications - Collaborating on project Management: Exploring project Management Applications - Collaborating on databases: how it works-Exploring Web-Based Databases.

UNIT - IV

Storing and sharing Files and other Online Content: Understanding Cloud Storage- Evaluating Online File-Storage and Sharing Services-Exploring Online Book marking Services. Sharing Digital Photographs: Exploring online photo-editing Applications - Exploring Photo-Sharing Communities. Controlling it all with Web-Based Desktops.

UNIT - V

Collaborating via Web - Based Communication Tools: Evaluating Mail Services-Instant Messaging Services - Web Conferencing services. Collaborating via Social networks and Groupware: creating groups on social networks -Evaluating online Groupware- Evaluating Blogs for Collaborations.

Text Book:

1. Michael Miller, Cloud Computing Web-Based Applications That Change The Way You Work and Collaborate Online, Pearson Education, Edition-2009.

Reference Books :

1. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Cloud Computing A practical Approach, Tata McGraw Hill, Edition 2010.
2. Tim Mather, Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, O'Reilly Media, Edition-2009.

Course	M.Sc. Information Technology						
Subject Code	33D	Subject Title	Programming for Mobile Computing			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2014 Onwards		Credits				4
Objective & Subject Description	On Successful completion of the course the students can develop different mobile application in Android Operating System. The students can gather knowledge related to mobile communication and software.						

UNIT -I

What Is Android? - Obtaining the Required Tools- Creating Your First Android Application - Anatomy of an Android Application. Activities, Fragments, and Intents: Understanding Activities - Linking Activities Using Intents - Fragments - Calling Built - In Application Using Intents- Displaying Notifications.

UNIT - II

Getting to know the android user interface: Understanding the Components of a Screen- Adapting to Display Orientation - Managing Changes to Screen Orientation - Utilizing the Action Bar - Creating the User Interface Programmatically - Listening for UI Notifications Designing your user interface with views :Using Basic Views- Using Picker Views -Using List Views to Display Long Lists- List View - Understanding Specialized Fragments

UNIT - III

Displaying Pictures and Menus With Views: Using Image Views to Display Pictures - Using Menus with Views - Some Additional Views. Data Persistence: Saving and Loading User Preferences - Persisting Data to Files - Creating and Using Database .Content Provider: Sharing Data in Android - Using a Content Provider - Creating Your Own Content Providers - Using the Content Provider

UNIT - IV

Messaging :SMS Messaging - Sending E-Mail Location – Based Services :Displaying Maps - Getting Location Data - Monitoring a Location .Networking Consuming Web Services Using HTTP - Consuming JSON Services - Sockets Programming.

UNIT - V

Developing Android Services: Creating Your Own Services - Establishing Communication between a Service and an Activity - Binding Activities to Services - Understanding Threading - Publishing Android Applications: Preparing for Publishing - Deploying APK Files

Text Book:

1. Wei- Meng Lee ,Beginning ANDROID 4 Application Development, Wiley publications, First Edition, 2013.

Reference Books:

- 1.Wei- MengLee , Beginning ANDROID Tablet Application Development, Wiley publications,First Edition, 2013.

Course	M.Sc. Information Technology						
Subject Code	-	Subject Title	Add on Course - II (Soft Skills)			Semester	III
Internal Max:	-	External Max :	-	Total Marks	GRADE	Hr / Week	1
Forthe Batch	2014 Onwards		Credits				-
Objective & Subject Description	On successful completion of this subject, the students should be enriched for placement.Helps students learn to soft skills, positive attitude, body language, etiquette and manners and stress management.						

UNIT - I

Soft Skills: Introduction - What are soft skills? - Importance of soft skills - Soft skills: social, thinking, negotiating - Exhibiting your soft skills - Identifying, improving and training your soft skills - top 60 soft skills.

UNIT - II

Positive attitude: Introduction - Meaning - Features - Power of positive attitude - Developing positive attitude - Obstacles - Staying positive - Examples - Positive attitudes & its results.

UNIT - III

Body Language: Introduction - Forms of body language - Body language in interpersonal relations, industrial relations - Improving your body languages - Types of body languages.

UNIT - IV

Etiquette and manners: Introduction - Modern etiquette - Benefits - Classification - Taboo topics - Manners: Introduction - Poor manners noticed in youth - why should you practice good manners? - Practicing good manners - Professional manners - Getting along with people - Manners to get respect from others.

UNIT - V

Stress management: Introduction - Meaning - Positive/Negative aid to performance - Effects of Stress - Kinds of stress - Signs of stress - Spotting stress in you - Stress management tips.

Text Book :

1. Dr. K. Alex, Soft Skills - Know yourself & Know the world, S.Chand& Company Ltd, 2011.

Reference Books :

1. Shiv Khera, You can win, Macmillan publishers India Pvt.Ltd,2011.
2. Priyadarshipatnaik, Group Discussion & Interview Skills, Cambridge University Press India Pvt.Ltd, 2011.

Course	M.Sc.. Information Technology						
Subject Code	33P	Subject Title	Programming in J2EE Lab			Semester	III
Internal Max:	40	External Max :	60	Total Marks	100	Hr./Week	5
For the Batch	2014 onwards		Credits				4

LIST OF PRACTICALS

- 1) Develop a website for your college using advanced tags of HTML.
- 2) Design a Corporate website using Frameset tag.
- 3) Design a photo gallery using HTML tags
- 4) Display customer details using XML with XSL transformation.
- 5) Display student personal details in XML format.
- 6) Develop a J2EE application that collects the first name, last name and email address in a registration form and sends the data to a servlet that displays it.
- 7) Prepare a welcome message using servlet.
- 8) Prepare a E-resume using Servlets
- 9) Design a Purchase Order form using Html form and Servlet.
- 10) Develop a J2EE application that displays the current date & time using JSP.
- 11) Develop a web page for calculating mark percentage of a student using JSP.
- 12) Design a Purchase Order form using Html form and JSP.
- 13) Prepare a E-resume using JSP
- 14) Prepare a Employee pay slip using JSP.
- 15) Develop a web application for College administration system.

Course	Master of Information Technology						
Subject Code	33Q	Subject Title	Programming for Mobile ComputingLab			Semester	III
Internal Max:	40	External Max :	60	Total Marks	100	Hr./Week	5
For the Batch	2014 Onwards		Credits				4

LIST OF PRACTICALS

1. Design a screen and print the result in separate activity for the addition of two number using android
2. Develop an android application for login windows
3. Create an Image Gallery for Android environment
4. Develop an android application for simple calculator
5. Develop an application to send message from one mobile phone to another mobile phone
6. Develop an application to access the contact details of a mobile phone using android
7. Develop an application to switch on/off of camera from the android mobile phone
8. Develop an application to open another application available in the android mobile phone
9. Create an android application to add, delete, edit and retrieve data from the student information system.
10. Develop an android application for Employee management system

Course	M.Sc. Information Technology						
Subject Code	3E3	Subject Title	Elective III(A)- Natural Language Processing			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr. / Week	4
For the Batch	2014 onwards		Credits				4
Objective & Subject Description	This subject deals with Speech and Language Processing, Models and algorithms and Machine learning approaches. To learn about Processing Voice and to enable computers to derive meaning from human or natural language input.						

UNIT - I

Speech and Language Processing – Ambiguity – Models and algorithms – Language – Thought – Understanding – Brief history – Regular Expressions and Automata : Regular Expressions, Finite-State Automata, Regular Languages and FSAs.

UNIT - II

Morphology and Finite-State Transducers: English Morphology, Finite-State Morphological Parsing, FST Lexicon and Rules, the Porter Stemmer, Human Morphological Processing – Computational Phonology and Text-to-Speech: Speech Sounds and Phonetic Transcription, The Phoneme and Phonological Rules, Phonological Rules and Transducers, Issues in Computational Phonology – Spelling – Bayesian method – Weighted Automata.

UNIT - III

N-grams – Smoothing – Entropy: Cross Entropy for Comparing Models, The Entropy of English – HMMs and Speech Recognition: Speech Recognition Architecture – Hidden Markov models – A* Decoding – Acoustic processing – Speech recognizer – waveform Generation for Speech synthesis.

UNIT - IV

Word classes and Part-of-Speech Tagging: Part of Speech Tagging, Rules based Part of Speech Tagging, Stochastic Part of Speech Tagging, Actual Algorithms for HMM Tagging – Transformation based tagging – Context free rules and trees: Grammar Equivalence & Normal Form, Finite State & Context-Free Grammars, Grammar & Human Processing – Parsing with Context-Free Grammars: Parsing as Search, Basic Top-down Parser and its Problems, Earley Algorithm, Finite-State Parsing Methods.

UNIT - V

Representing meaning: First order predicate calculus – Semantic analysis: Syntax-Driven Semantic Analysis, Robust semantic analysis – Lexical semantics: Relations among Lexemes and Their Sense – Word Sense Disambiguation and Information Retrieval: Selection restrictions – Machine learning approaches – Dictionary based approaches – Information retrieval.

Text Book:

1. Daniel Jurafsky and James H. Martin, Speech and Language Processing, Pearson Education 2002.

Reference Books:

1. Michael W. Berry, Survey of Text Mining: Clustering, Classification and Retrieval Systems, Springer Verlag, 2003
2. James Allen, Natural Language Understanding, Benjamin Cummings Publishing Co. 1995

Course	M.Sc. Information Technology						
Subject Code	3E3	Subject Title	Elective III(B)-Software Project Management			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2014 onwards		Credits				4
Objective & Subject Description		On successful completion of this subject the students may understand the concepts of Project Management, got the skill of managing software development, Exposed to various software project management methodologies.					

UNIT - I

Introduction to Software Project Management: What is a Project? Why is Software Project Management important? , Activities covered by software project management, Plans, methods and Methodologies, Ways to categorize software project, what is management? And its control – Project Evaluation and Programme management: Project portfolio management, Evaluation of individual projects, Cost-benefit evaluation techniques, Risk evaluation, Programme management, resource allocation, Strategic programme management, Aids to programme management and its Benefits- An Overview of Project Planning.

UNIT - II

Selection of Appropriate Project Approach: Build or buy? , Choosing Methodologies and Techniques, Structure Vs speed delivery, Waterfall model, spiral model, software prototyping, Incremental delivery, Agile Methods, Atern, XP, Iterative processes, Selecting Appropriate Process Model – Software Effort Estimations: Where are estimation done? , Problems with over and under estimation, estimation techniques, Bottom-up and top-down approach, analogy estimating, Albrecht function point analysis.

UNIT - III

Activity Planning: Objectives, Project Schedules and Activities, Sequencing and Scheduling, N/w Planning Models, Time dimensions, Forward Pass, Backward Pass, Critical path and Activity Float – Risk Management: Risk, Categories of Risk, A frame work for dealing with risk, Risk: Identification, Assessment, Planning, Management, Applying PERT technique.

UNIT - IV

Resource Allocation: Introduction, Nature of Resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Path, Counting the Cost, Publishing Resource Schedule, Cost Schedules, Scheduling Sequence – Monitoring and Control: Creating the Framework, Collecting Data, Visualizing Progress, Cost Monitoring, Earned Value Analysis, Prioritize Monitoring.

UNIT -V

Working in Teams: Becoming a Team, Decision Making, Organizational Structures, Co-ordination Dependencies, Dispersed and Virtual Teams, Communication Genres, Communication Plans, Leadership – Software Quality: Software Quality in Software Planning, Importance of Software Quality, Defining Software quality, ISO 9126.

Text Book:

1. Bob Hughes And Mike Cotterell, Software Project Management – 5th Edition- TMCH,2010.

Reference Book:

1.Luckey, Joseph Phillips-.Software Project Management - For Dummies, *Publisher*, John Wiley & Sons, 2006.

Course	M.Sc. (Information Technology)						
Subject Code	3E3	Subject Title	Elective III(C) - Multimedia Systems			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2014 onwards		Credits				4
Objective & Subject Description	The objective is to demonstrate how still images, sound, and video can be digitized on the computer. The students in this course will create their own multimedia programs using software tools.						

UNIT - I

What is Multimedia : Definitions – CD ROM, DVD and Multimedia – CD ROM , DVD, Flash Drives and Multimedia – Where to use Multimedia : Multimedia in Business – Multimedia in School – Multimedia in Home – Multimedia in Public Places – Virtual Reality . Introduction to Making Multimedia: Stages of Project - Software – Hardware – Creativity - Multimedia Skills : Video specialties , Audio Specialties

UNIT - II

Text: Power of Meaning – About font and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Designing Tools – Hypermedia and Hyper text

UNIT - III

Sound: The power of sound – Multimedia system sounds – digital audio – Making MIDI Audio – Audio File Formats – MIDI Versus Digital Audio – Adding Sound to Multimedia Project – Music CDs – Production Tips.

Images: Before start to create: Plan , Organize tools, Multiple monitors – Making still image – Color – Image file formats .

UNIT - IV

Animation: The power of motion – Principles of Animation – Animation by computer – Making animations that work. Video : Using Video – How video works – Analog Display Standards – Digital Display standards – Digital Video – Video Recording and Tape formats – Shooting and Editing Video – Optimizing Video files .

UNIT - V

Basic Software Tools: Text editing and word processing tools – OC Software – Painting and Drawing Tools – Image Editing Tools – Sound Editing Tools – Animation, Video and Digital Movie Tools. Multimedia Authoring Tools: Type of Authoring Tools – Card and Page based Authoring Tools – Icon and Object based authoring tools – Time based Authoring tools .

Text Book:

1. TayVaughan ,Multimedia : Making it work , Seventh Edition ,Tata McGraw Hill Edition, 2009.

Reference Books:

1. Ranjan Parekh, Principles of Multimedia, Tata McGraw-Hill Education, 2013.
2. Ralf Steinmetz, KlaraNahrstedtm ,Multimedia Computing, Communications & Applications, Pearson Education Singapore Pvt. Ltd , 1st Edition.