Structure for M.Sc. IT – CBCS Programme

Semester-I

COURSE NO.	SUBJECT CODE	COURSE TYPE	SUBJECT	CREDIT
101	23032	CORE	Digital Computer Organization	04
102	23033	CORE	Advanced Java Programming	04
103	23034	CORE	Web Technology & Tools	04
104	23035	CORE	Cryptography & Network Security	04
105(A)	23036	CORE	Practical- I	04
105(B)	23037	CORE	Practical-II	04
			TOTAL	24

M.Sc IT | **Course: Digital Computer Organization** | Course No: 101

Semester: 01 | Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 | Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Processors, Memory and Input / Output.**	**15**	**18**
	• Instruction Execution • CPU organization • Overview of Microprocessor chips, memory chips & Buses • Example of a typical Microprocessor chip and a memory chip • ISA bus, PCI bus, Universal Serial Bus (USB), Architecture of PC with multiple type of buses • I/O chips		
Unit-2	**Gates and Boolean Algebra**	**15**	**18**
	• Gates • Boolean Algebra, Truth Tables • Preparing truth table for given circuit • Preparing circuit for given truth table (SOP & POS) • De Morgan's Theorems, Gate Minimization		
Unit-3	**Basic Digital Logic Circuits**	**15**	**17**
	• Integrated circuits. • Combinational Circuits - Encoder, Decoder, Multiplexer, De-Multiplexer, comparator. • Arithmetic Circuits - Half adder, Full adder, Binary adder, Binary adder/ Subtractor.		
Unit-4	**Memory Elements & Counters**	**15**	**17**
	• Flip flops – SR Flip Flop, D-Flip Flop, JK Flip Flop • Registers – Storage Registers with Parallel Input & Serial Input, Shift Registers, Universal Register • Counters – Synchronous & Asynchronous Counters, Ripple Counter, Counters with Increment & Decrement Facility		

Reference Books

1. Tanenbaum A. S. : Structured Computer Organization, Prentice-Hall of India Pvt. Ltd.
2. Malvino A. P.: Digital Computer Electronics, Tata McGraw, Hill Pub. Co. Ltd.
3. Thomas Bartee : Computer Architecture & Logic Design Tata McGraw, Hill Pub. Co. Ltd.
4. Pal Chaudhuri : Computer Organization and Design, Prentice-Hall of India Pvt. Ltd.

M.Sc IT	**Course: Advanced Java Programming**	Course No: 102
Semester: 01	Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		
Credits: 04		Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Active Window Toolkit**	**15**	**18**
	• Fundamental of Window ,Frame Windows • Frame Window in AWT • Graphics, Color, Font Metrics • Controls – Labels, Button, Check Box, Scrollbar, Text area and TextField		
Unit-2	**Multithreading and Applet Programming**	**15**	**18**
	• Threading-Main Thread, Creation, isAlive(),join(),sleep(),Synchronization • Life Cycle of Applet , Passing Parameters to Applet • Event Delegation Model or Technique • Event Classes		
Unit-3	**Swing And Its Components**	**15**	**17**
	• Introduction, Features of Swing • Difference between AWT and Swing • JApplet • JFrame and JPanel • Layout Managers: FlowLayout, SpringLayout, BoxLayout • JLabel, JButton, JTextField • JCheckBox, JRadioButton • JComboBox, JList • JMenu, JDialog		
Unit-4	**JDBC Connectivity using MS-Access**	**15**	**17**
	• JDBC Architecture • Steps of Database Connectivity and Database Operation: Insert, Update ,Delete • Statement and ResultSet Object • Display Records using JTable Component		

Reference Books

1. The Complete Reference Java By Herbert Schildt Publisher: TMH
2. Programming in Java By Sachin Malhotra & Saurabh Choudhary Publisher:OXFORD University Press
3. Programming With Java A Primer By E-Balaguruswami

M.Sc IT | **Course: Web Technology & Tools** | Course No: 103

Semester: 01 | Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 | Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Basics of CSS**	**15**	**18**
	• What is CSS? Advantages of CSS, CSS Structure and Syntax. • Types of CSS: Internal, External, Inline. • CSS Color, Background and Border. • CSS Margin, Padding, Height and Width. • CSS Text, Fonts. CSS Icons and Links. • CSS List and Tables. • CSS Pseudo Class and CSS Pseudo Elements.		
Unit-2	**Introduction to JQuery**	**15**	**18**
	• What is Jqury?, Use of Jquery in Web Designing, Adding Jquery in Your page. • Jquery Syntax, Events in Jquery • JQuery Functions:hide(), show(), toggle(),fadeIn(), fadeOut(), fadeToggle(), fadeTo(). • JQuery Sliding Method: slideDown(), slideUp(), slideToggle(),animate(), Stop(). • Add Element, Remove Element, Add Class and Remove Class.		
Unit-3	**Introduction to Boostrap**	**15**	**17**
	• What is Boostrap, History of Boostrap, Benefits of Boostrap, How to Add Bootstrap in to the Page. • Boostrap Properties for Text/Typography • <h1>…<h6>, <small>, <mark>, <kbd>, <code>,<dl>, <abbr> . • Boostrap for Table , Boostrap for Image • Boostrap for Alerts,		
Unit-4	**Bootstrap 2**	**15**	**17**
	• Boostrap Buttons, Boostrap Buttons Group. • Boostrap Glyphicons, Boostrap Progress bar. • Boostrap Pagination, Pager. • Boostrap Form.		

Reference Books

1. Mastering HTML, CSS & JavaScript Web Publishing by Laura, Rafe & Jennifer, BPB Publication
2. Bootstrap – by Jake Spurlock, O'Reilly Publication

M.Sc IT **Course: Cryptography & Network Security** Course No: 104

Semester: 01 Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to encryption techniques**	**15**	**18**
	• Concept of Encryption and Decryption, Importance of Encryption • Basic Types of Encryption – One-time Pad, End-to End and Link Encryption • Advantages and Disadvantages of All Methods of Encryption • Symmetric Cipher Model – Cryptography, Cryptanalysis • Cryptographic keys –Private key and Public key		
Unit-2	**Network Security Fundamental**	**15**	**18**
	• Concept of Security Based on Network, OSI Security Architecture –Security Attack, Security Mechanism and Security Service • Types of Security Attacks – Active and Passive Attacks • Security Services - Authentication, Access Control, Data • Confidentiality and Data Integrity • Security Mechanism –Specific Security Mechanism		
Unit-3	**E-Mail, IP Security**	**15**	**17**
	• S/MIME. • Benefits of IP Security • IP Security Architecture • IP Security Services • Application of IP Security.		
Unit-4	**Network Device Security, Firewall & Wireless Network**	**15**	**17**
	• Switch,Bridge, Router • Network Hardening • Administrative Practices • Centralizing Account Management • Introduction to Firewall • Additional Firewall Function • Introduction to Virtual Private Network • VPN Protocol • Introduction to Wireless Network Security		

Reference Books

• Cryptography and Network Security, - William Stallings Person – Printice Hall Publication

M.Sc IT	**Course: Practical -I**	Course No: 105(A)
Semester: 01	Type of Course : Core Course	
Marking Scheme: External Examination: 100 + Internal Evaluation : 0 =100		
Credits: 4		Teaching Hours Per Week: 08

	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Practical -I : Practical Based on 102 (Advanced Java Programming)**	**120**	**100**

Practical Based on 102(Advanced Java Programming) Questions Wise Distribution	Marks/ Weight
Q-1	**40**
Q-2	**30**
Q-3	**30**
TOTAL MARKS	**100**

M.Sc IT	**Course: Practical - II**	Course No: 105(B)
Semester: 01	Type of Course : Core Course	
Marking Scheme: External Examination: 100 + Internal Evaluation : 0 =100		
Credits: 4		Teaching Hours Per Week: 08

	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Practical - II : Practical Based on -103 (Web Technology & Tools)**	**120**	**100**

Practical Based on -103 (Web Technology & Tools) Questions Wise Distribution	Marks/ Weight
Q-1	**40**
Q-2	**30**
Q-3	**30**
TOTAL MARKS	**100**

Structure for M.Sc. IT – CBCS Programme

Semester-II

COURSE NO.	SUBJECT CODE	COURSE TYPE	SUBJECT	CREDIT
106	23038	CORE	Object Oriented Analysis & Design	04
107	23039	CORE	Web Application Development using PHP	04
108	23040	CORE	Mobile Application Development using Android	04
109	23041	CORE	Enterprise Data Management & ERP	04
110(A)	23042	CORE	Practical-I	04
110(B)	23043	CORE	Practical-II	04
			TOTAL	24

M.Sc IT **Course: Object Oriented Analysis & Design** Course No: 106

Semester: 02 Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**System Design, System Testing & Implementation**	**15**	**18**
	• Introduction to Database. • System Development in Database Environment • Design of Database – Normalization • Principles of Software Design • System Testing • Testing Strategies -Types of System Testing • Level of Testing • System Conversion Methods – Parallel, Direct cut over, Pilot & Phase-in method.		
Unit-2	**Object Oriented Model**	**15**	**18**
	• What is Object Oriented Model? • Characteristics of OOM – Class & Object Link & Association, Generalization & Inheritance. • Benefits of OOM • Introduction to OOA & Advantages & Disadvantages of OOA		
Unit-3	**Object Oriented Analysis & Design**	**15**	**17**
	• Analysis Techniques – Object Modeling, Dynamic Modeling & Functional Modeling. • Object Design Process, Steps & Solution • Breaking System into Sub System & Managing Data Store. • Implementation Strategies		
Unit-4	**Object Oriented Analysis & Design Tool –UML**	**15**	**17**
	• Fundamental of UML –Associations, Multiplicity, Qualified Association, Reflexive Association, Inheritance & Generalization, Dependencies • Component of UML – Class Diagram, Object Diagram, Use Case Diagram, Activity Diagram		

Reference Books

1. James A Senn: Analysis and Design of Information Systems, McGraw Hill Intl. Stdt. Edn2.
2. Yourdon E. and Constantine L. L : Structured Analysis & Design Yourdon press NY 3.
3. Object Oriented Analysis and Design by James Rumbaugh, Michael Blaha, William Premerlain, Frederick Eddy, William Lorensen

M.Sc IT **Course: Web Application Development Using PHP** Course No: 107

Semester: 02 Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**15**	**18**
	• Fundamental of APACHE Server. • Concept of Wamp & Xampp Server. • History & Versions of PHP • Features of PHP • Introduction to PHP and PHP Programming. • PHP Variables • Operators in PHP • Conditional Statements & Looping Statements in PHP • Array , Types of Array • Functions – UDF and Built in Functions.		
Unit-2	**Introduction to Java Script**	**15**	**18**
	• Variable and Data Type Types of Operators Conditional Statements, looping Statements • Array, Functions ,Events ,Message Box ,Objects Based Programming • Validation of Form using JavaScript ,Different Types of Effects in Designing using JavaScript		
Unit-3	**Form Handling**	**15**	**17**
	• Handling Form with GET & POST, Cookies, Session, Server variables • Regular Expressions in PHP, Functions used in Regular Expressions, Symbols used in Regular Expressions. • Exception Handling • Object Oriented Concept in PHP		
Unit-4	**Interaction between PHP & MySQL**	**15**	**17**
	• PHP-MySQL Architecture • PHP API • Creating & Connecting Database using Wamp Server • Executing DML Commands. • Overview of CMS-WordPress		

Reference Books

1. Ivan Bayross,Sharanam Shah:PHP 5.1 For Beginners,Sh off Publishers & Distributors(SPD)
2. Janet Valade: PHP5 & MYSQL Projects,Wiley Dreamtech
3. Dave W. Mercer: Beginning PHP5,Wiley India Edition
4. Steven Holzer:The Complete Reference PHP,Tata McGRAW-HiLL,New Delhi.

M.Sc IT **Course: Mobile Application Development Using Android** Course No: 108

Semester: 02 Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to Android**	**15**	**18**
	• History of Mobile Software Development • The Android Platform and Android SDK • Anatomy of an Android applications • Android Terminologies		
Unit-2	**Android User Interface**	**15**	**18**
	• Application Context, Activities, Services, Intents • Component of Android Manifest File and Application Resources • Receiving and Broadcasting Intents Configuring Android Manifest file, Registering Activities and Other Application Components, Working with Permissions, Working with Resources.		
Unit-3	**Android Design Essentials**	**15**	**17**
	• Introducing Android Views and Layouts, Displaying text With Text view • Retrieving Data From Users Using buttons, Check boxes and Radio groups •Getting Dates and Times from Users, Using List view to Display Data to Users, Adjusting Progress with Seek bar, Handling user Events, Working with Dialogs, Working with Styles and Themes.		
Unit-4	**Animation and Content Provider & Using Common Android APIs**	**15**	**17**
	• Introduction of Animations and Types in Android. • Drawing and Working with Animation • Working with Bitmaps • Sharing Data Between Applications with Content Providers • Managing Data using SQLite • Using Android Networking APIs • Using Android Web APIs using web view Using Android Telephony APIs using SMS, Making and Receiving Phone Calls		

Reference Books

1. Android Wireless Application Development By Lauren Darcey and Shane Conder, Pearson Education, 2nd ed. (2011)
2. Beginning Android Application Development By Wei-Meng Lee, Wrox Publication
3. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd(2009)

M.Sc IT **Course: Enterprise Data Management & ERP** Course No: 109

Semester: 02 Type of Course : Core Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 04 Teaching Hours Per Week: 04

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to ERP**	**15**	**18**
	• Enterprise: introduction, business modeling, integrated data model, integrated management information. • Enterprise Resource Planning (ERP): introduction, history, Basic concept of ERP. Risks (All type of risks in brief).		
Unit-2	**ERP & Related Technologies**	**15**	**18**
	• Benefits of ERP, Business Process Reengineering (BPR). • Data Warehousing, Data Mining and Online Analytical Processing (OLAP). • Product Life Cycle Management (PLM). • Supply Chain Management (SCM). • Customer Relationship Management (CRM).		
Unit-3	**ERP Manufacturing Perspective**	**15**	**17**
	• MRP- Material Requirement Planning. • BOM- Bill of Material. • MRP – Manufacturing Resource Planning. • DRP- Distributed Requirement Planning. • PDM- Product Data Management. • ERP Products and Modules • Introduction to ERP Products and modules • Finance, Plant Maintenance, Quality Management, Materials Management.		
Unit-4	**ERP- Selection, Implementation, Maintenance & Evaluation**	**15**	**17**
	• ERP Package Selection ,ERP Implementation life Cycle • Introduction, Objective, Phase of Implementation. • Why does ERP Implementation Fail? • Operation of the ERP system. • ERP Maintenance Phase. • Measuring Performance of ERP. • Functional Modules of ERP Software.		

Reference Books

1. Enterprise Resource Planning – Alexis Leion - McGraw Hill Education (India)
2. Enterprise Resource Planning : Concepts & Practice – Garg, Vinodkumar, Venkitakrashnan – PHI Learning (Eastern Economy Edition)

M.Sc IT	**Course: Practical -I**	Course No: 110(A)
Semester: 02	Type of Course : Core Course	
Marking Scheme: External Examination: 100 + Internal Examination : 0 = 100		
Credits: 4		Teaching Hours Per Week: 8

	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Practical -I: Practical Based on-108 (Web Application Development Using PHP)**	**120**	**100**

Practical Based on-108(Web Application Development Using PHP)Questions Wise Distribution	Marks/ Weight
Q-1	**40**
Q-2	**30**
Q-3	**30**
TOTAL MARKS	**100**

M.Sc IT	**Course: Practical -II**	Course No: 110(B)
Semester: 02	Type of Course : Core Course	
Marking Scheme: External Examination: 100 + Internal Examination : 0 = 100		
Credits: 4		Teaching Hours Per Week: 8

	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Practical-II: Practical Based on-109 (Mobile Application Development Using Android)**	**120**	**100**

Practical Based on-109(Mobile Application Development Using Android)Questions Wise Distribution	Marks/ Weight
Q-1	**40**
Q-2	**30**
Q-3	**30**
TOTAL MARKS	**100**