



Structure for M.Sc. IT – CBCS Programme

**Semester-I**

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
M.Sc.IT 101	CORE	Digital Computer Organization	06
M.Sc.IT 102	CORE	Advance Java Programming	06
M.Sc.IT 103	CORE	Web Application Development Using	06
M.Sc.IT 104	CORE	Practical Based On 102 and 103	12
TOTAL			30

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: M.Sc.IT-101, M.Sc.IT -102, M.Sc.IT -103



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
**(With effect from Academic Year: 2017-18)**

M.Sc IT <b>Course: Digital Computer Organisation</b> Course No: M.Sc IT-101			
Semester: 01      Type of Course : Core Course			
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100      Credits: 06			
Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	Gates and Boolean Algebra	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction to Gates</li><li>• Boolean Algebra and truth tables</li><li>• Preparing truth table for given circuit</li><li>• Preparing circuit for given truth table (SOP &amp; POS)</li><li>• De Morgan's Theorems</li><li>• Universal Gates</li></ul>		
<b>Unit-2</b>	<b>Basic Digital Logic Circuits</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Integrated circuits.</li><li>• Encoder, Decoder</li><li>• Multiplexers</li><li>• Demultiplexer</li><li>• Comparators.</li></ul>		
<b>Unit-3</b>	<b>Arithmetic Circuits</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Shifters</li><li>• Adders: Half adder, Full adder</li><li>• Subtractors :Half subtractor,Full subtractor</li><li>• Binary adder, binary adder/ subtractor</li></ul>		
<b>Unit-4</b>	<b>Memory Units</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Latches</li><li>• Flip-Flops</li><li>• Registers(Shift, Buffer, Controlled )</li><li>• Counters( Synchronous,asynchrnous)</li></ul>		
<b>Unit-5</b>	<b>Processor,Memory and Computer Buses</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Instruction Execution</li><li>• CPU organization</li><li>• Parallel Instruction Execution</li><li>• RISC V/S CISC Processor</li><li>• Computer Buses: Bus Width, Arbitration, Clocking, Operations</li></ul>		
<b>Reference Books</b>			
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			



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
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M.Sc IT		<b>Course: Advance Java Programming</b>	Course No: M.Sc IT-102	
Semester: 01		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06		
		Teaching Hours Per Week: 06		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
<b>Unit-1</b>	<b>Java Programming</b>	<b>18</b>	<b>14</b>	
	<ul style="list-style-type: none"><li>• History Of Java, Buzzword, ByteCode, JVM, Class Path, Overview of NetBeans Editor</li><li>• Inheritance and its types ,Polymorphism</li><li>• Package and Interface</li><li>• Exception Handling Techniques</li></ul>			
<b>Unit-2</b>	<b>Multithreading and Applet Programming</b>	<b>18</b>	<b>14</b>	
	<ul style="list-style-type: none"><li>• Threading-Main Thread, Creation, isAlive(),join(),sleep(),Synchronization</li><li>• Life cycle of Applet , Passing Parameters to Applet</li><li>• Event Delegation Model or Technique</li><li>• Event Classes</li></ul>			
<b>Unit-3</b>	<b>Swing</b>	<b>18</b>	<b>14</b>	
	<ul style="list-style-type: none"><li>• Introduction, Features of Swing, Difference between AWT and Swing</li><li>• JApplet</li><li>• JFrame and JPanel</li><li>• Layout Managers: FlowLayout, SpringLayout, BorderLayout</li></ul>			
<b>Unit-4</b>	<b>Swing Components</b>	<b>18</b>	<b>14</b>	
	<ul style="list-style-type: none"><li>• JLabel, JButton, JTextField</li><li>• JCheckBox, JRadioButton</li><li>• JComboBox, JList</li><li>• JMenu, JDialog</li></ul>			
<b>Unit-5</b>	<b>JDBC Connectivity using MS-Access</b>	<b>18</b>	<b>14</b>	
	<ul style="list-style-type: none"><li>• JDBC Architecture</li><li>• Steps Of Database Connectivity and Database operation: insert,update,delete</li><li>• Statement and ResultSet object</li><li>• Display Records using JTable component</li></ul>			
<b>Reference Books</b>				
1. <b>The Complete Reference Java By Herbert Schildt Publisher: TMH</b>				
2. <b>Programming in Java By Sachin Malhotra &amp; Saurabh Choudhary Publisher:OXFORD University Press</b>				
3. <b>PROGRAMMING WITH JAVA A PRIMER By E-Balaguruswami</b>				



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
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M.Sc IT <b>Course: Web Application Development Using PHP</b> Course No: M.Sc IT-103			
Semester: 01		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06	
Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	Introduction	<b>18</b>	<b>14</b>
	Fundamental of APACHE Server. Concept of Wamp & Xampp Server. History & Versions of PHP Features of PHP Introduction to PHP Programming.		
<b>Unit-2</b>	Introduction to Java Script	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Variable and Data Type Types of Operators Conditional Statements, looping Statements</li><li>• Array, Functions ,Events ,Message Box ,Objects Based Programming</li><li>• Validation of form using JavaScript ,Different types of effects in designing using JavaScript</li></ul>		
<b>Unit-3</b>	Basic PHP	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction to PHP, PHP Variables</li><li>• Operators in PHP</li><li>• Conditional Statements &amp; looping Statements in PHP</li><li>• Array , Types of Array</li><li>• Functions – UDF and Built in Functions.</li></ul>		
<b>Unit-4</b>	Form Handling	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Handling form with GET &amp; POST, Cookies, Session, Server variable</li><li>• Regular Expressions in PHP, Functions used in Regular Expressions, Symbols used in Regular Expressions</li><li>• Exception Handling</li><li>• Object Oriented concept in PHP</li></ul>		
<b>Unit-5</b>	<b>Interaction between PHP &amp; MySQL</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• PHP-MySQL Architecture</li><li>• PHP API</li><li>• Creating &amp; Connecting Database using Wamp Server</li><li>• Executing DML Commands.</li><li>• Overview of CMS-WordPress</li></ul>		
<b>Reference Books</b>			
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.			



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M.Sc IT	<b>Course: Practical Based on 102 and 103</b>	Course No: M.Sc IT-104	
Semester: 01	Type of Course : Core Course	Credits: 12	
Marking Scheme: External Examination: 100		Teaching Hours Per Week: 12	
	<b>Detailed Syllabus</b>	<b>Teaching Hours</b>	<b>Marks/Weight</b>
<b>1</b>	<b>Paper 102:Advance Java Programming</b>	<b>90</b>	<b>50</b>
<b>2</b>	<b>Paper 103:Web Application Development Using PHP</b>	<b>90</b>	<b>50</b>



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Structure for M.Sc. IT – CBCS Programme

**Semester-II**

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
M.Sc.IT 201	CORE	Object Oriented Analysis And Design	06
M.Sc.IT 202	CORE	Mobile Application Development Using Android	06
M.Sc.IT 203	CORE	Linux Operating System And Shell Programming	06
M.Sc.IT 204	CORE	Practical Based On 202 and 203	12
TOTAL			30

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: M.Sc.IT-201, M.Sc.IT -202, M.Sc.IT -203



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
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M.Sc IT	<b>Course: Object Oriented Analysis and Design</b>	Course No: M.Sc IT-201	
Semester: 02	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06	
Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>Introduction to object oriented modeling</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction</li><li>• Characteristics and benefits</li><li>• OOAD tools introduction</li><li>• Object Oriented Analysis</li><li>• Analysis Techniques</li></ul>		
<b>Unit-2</b>	<b>Unified Modeling Language</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Object model Notation</li><li>• Basic Concept</li><li>• structural Diagram</li><li>• Behavioral Diagrams</li><li>• Modeling With Objects</li></ul>		
<b>Unit-3</b>	<b>Object Oriented Design</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Overview of system design</li><li>• Braking system into subsystem, Concurrency Identification</li><li>• Management of data store</li><li>• Controlling event between objects</li><li>• Handling Boundary Condition</li></ul>		
<b>Unit-4</b>	<b>Object Design</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Object Design processing, Steps and solution</li><li>• Choosing algorithms and data structure</li><li>• Defining Classes</li><li>• Controls and its implementation</li><li>• Inheritance, Association, and Object Representation</li></ul>		
<b>Unit-5</b>	<b>Modeling and implementation strategies</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Object Modeling.</li><li>• Dynamic Modeling</li><li>• Functional Modeling</li><li>• Implementation Strategies</li><li>• Case Study</li></ul>		
<b>Reference Books</b>			
1. Object Oriented Analysis and Design by James Rumbaugh, Michael Blaha, William Premerlain, Frederick Eddy, William Lorenzen			
2. Object-Oriented Analysis and Design', John Deacon, Addison-Wesley			
3. Object-oriented Analysis And Design by Andrew Haigh Tata Mcgraw Hill			



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
**(With effect from Academic Year: 2017-18)**

M.Sc IT <b>Course: Mobile Application Development Using Android</b> Course No: M.Sc IT-202			
Semester: 02		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			Credits: 06
Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>Introduction to Android</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• History of Mobile Software Development</li><li>• The Android Platform and Android SDK</li><li>• Anatomy of an Android applications</li><li>• Android terminologies</li></ul>		
<b>Unit-2</b>	<b>Android Application Design Essential</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Application Context, Activities, Services, Intents</li><li>• Component of Android Manifest File and Application Resources</li><li>• Receiving and Broadcasting Intents</li><li>• Configuring android manifest file, registering activities and other application components, working with permissions, working with resources.</li></ul>		
<b>Unit-3</b>	<b>Android User Interface Design Essentials</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introducing android views and layouts, displaying text with Text-view,</li><li>• Retrieving data from users, using buttons, check boxes and radio groups,</li><li>• 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.</li></ul>		
<b>Unit-4</b>	<b>Animation and Content Provider</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction of animations and types in Android.</li><li>• Drawing and Working with Animation</li><li>• Working with bitmaps</li><li>• Sharing Data Between Applications with Content Providers</li></ul>		
<b>Unit-5</b>	<b>Using Common Android APIs</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Managing data using SQLite</li><li>• Using Android Networking APIs</li><li>• Using Android Web APIs using web view</li><li>• Using Android Telephony APIs using SMS, making and receiving phone call</li></ul>		
<b>Reference Books</b>			
<ol style="list-style-type: none"><li>1. Android Wireless Application Development By Lauren Darcey and Shane Conder, Pearson Education, 2<sup>nd</sup> ed. (2011)</li><li>2. Beginning Android Application Development By Wei-Meng Lee, Wrox Publication</li><li>3. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd(2009)</li></ol>			





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M.Sc IT		<b>Course: Linux Operating system and Shell Programming</b> Course No: M.Sc IT-203	
Semester: 02		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06	
		Teaching Hours Per Week: 06	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>Introduction</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• History of Unix Operating System Definition of Kernel, Shell, File, Process, System Calls.</li><li>• Linux Operating System, Features of Unix and Linux Operating System,</li><li>• Concept of Open source software, Application area of Linux Operating System</li><li>• Various Linux Flavors</li><li>• Desktop Environment : (a) X Window Basics (b) KDE Basics (c) GNOME Basics</li><li>• Terms and condition of Copying, Distribution, and Modifications (Linux &amp; GNU)</li><li>• Advantages and Disadvantages of Linux</li></ul>		
<b>Unit-2</b>	<b>File Structure and Linux Shells.</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Understanding File system hierarchy standard.</li><li>• Directory Commands</li><li>• File and Directory commands:</li><li>• Understanding Job (process).</li><li>• Process Commands:</li><li>• User commands:</li><li>• Misc Commands</li></ul>		
<b>Unit-3</b>	<b>User Management</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• GUI user management tools: User admin and KUser</li><li>• Password file, Managing user environment</li><li>• Adding and removing users with useradd, usermod and userdel</li><li>• Managing groups, Controlling access to directories and file using chmod</li></ul>		
<b>Unit-4</b>	<b>Networking concepts &amp; Server configuration</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Basics of network system, Basics of TCP/IP Networking, IP address, IP address</li><li>• class and mask, port number, DNS, NFS server configuration</li><li>• Telnet and FTP server fundamentals</li><li>• Basics of Samba server: Installation and configuration</li></ul>		
<b>Unit-5</b>	<b>Bash Shell Programming</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction to Vi Editors</li><li>• Introduction to Shell : Korn, Bash, and C Shell with their difference</li><li>• Variables in shell, how to print or access values in shell, echo command.</li><li>• Shell arithmetic, commands and command line arguments, I/O redirection</li><li>• Structured language construct: if, else, else - if, case statement, loops in shell,</li><li>• Arrays, Command line argument.</li></ul>		
<b>Reference Books</b>			
Richard Petersen: The complete reference – 6th edition – McGraw Hill			
2. Sumitabha Das: Concepts and Application of UNIX 4th edition – Tata McGraw Hill			
3. Peter Nortons's: Complete Guide to Linux, Techmedia			
4. Yashwant Kanitkar: Unix Shell Programing, BPB Publication			



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M.Sc IT	<b>Course: Practical Based on 202 and 203</b>	Course No: M.Sc IT-204	
Semester: 02	Type of Course : Core Course	Credits: 12	
Marking Scheme: External Examination: 100		Teaching Hours Per Week: 12	
	<b>Detailed Syllabus</b>	<b>Teaching Hours</b>	<b>Marks/Weight</b>
<b>1</b>	<b>Paper 202: Mobile Application Development Using Android</b>	<b>90</b>	<b>50</b>
<b>2</b>	<b>Paper 203: Linux Operating system and Shell Programming</b>	<b>90</b>	<b>50</b>



Structure for M.Sc. IT – CBCS Programme

**Semester-III**

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
M.Sc.IT 301	CORE	Data Warehousing and Data Mining	06
M.Sc.IT 302	CORE	Programming in Python	06
M.Sc.IT 303	CORE	NoSQL Database : MongoDB	06
M.Sc.IT 304	CORE	Practical Based On 302 and 303	12
TOTAL			30

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: M.Sc.IT-301, M.Sc.IT -302, M.Sc.IT -303



**MAHARAJA KRISHNAKUMARSINHI BHAVNAGAR UNIVERSITY**  
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**(With effect from Academic Year: 2017-18)**

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
M.Sc IT <b>Course: Data Warehousing and Data Mining</b> Course No: M.Sc IT-301 Semester: 03                      Type of Course : Core Course Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100                      Credits: 06 Teaching Hours Per Week: 06			
<b>Unit-1</b>	<b>INTRODUCTION OF DATAWAREHOUSE AND DATA MART</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Operational and Informational systems.</li><li>Concept of Data warehouse ,Characteristics of Data Warehouse</li><li>DBMS vs. data warehouse</li><li>Data warehouse system architecture ( Two and Three-Tiered)</li><li>Concept of Data Mart , Usage of Data Mart</li><li>Security in Data Mart</li><li>Data warehouse and Data Mart</li></ul>		
<b>Unit-2</b>	<b>ONLINE ANALYTICAL PROCESSING</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>OLTP AND OLAP SYSTEM</li><li>OLTP VS OLAP</li><li>TYPES OF OLAP: ROLAP, MOLAP,HOLAP</li><li>Comparison of ROLAP,MOLAP,HOLAP</li></ul>		
<b>Unit-3</b>	<b>ETL and Data Mining</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Concept of ETL(Extract,Transformation and Loading of Data )</li><li>Comparison and contradiction of various ETL tools</li><li>Data Mining-Definition and Functionalities</li><li>Classification of DM Systems</li><li>DM task primitives</li><li>Integration of a Data Mining system with a Database or a Data Warehouse</li><li>Issues in DM</li><li>KDD Process</li></ul>		
<b>Unit-4</b>	<b>Data Mining Techniques</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Data Mining techniques</li><li>Data Processing (Data Cleaning, Integration and Transformation, Reduction)</li><li>Data mining Primitives and DMQL</li><li>Designing GUI based on a DMQL</li><li>Architecture of Data Mining System</li></ul>		
<b>Unit-5</b>	<b>Advance Data Mining</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Mining Text Data</li><li>Mining Spatial Databases</li><li>Mining WWW</li><li>Mining sequence Data: Time-Series, Symbolic Sequences, and Biological Sequences</li><li>Mining graphs and Network</li><li>Data Mining application and trends</li></ul>		



**Reference Books**

1. Data Mining – Concepts & Techniques; Jiawei Han & Micheline Kamber – First Indian Reprint 2002, Morgan Kaufmann publication.
2. Data Warehousing in the Real World; Sam Anahory & Dennis Murray; 1997, Pearson
3. Data Mining Techniques; Arun Pujar; 2001, University Press; Hyderabad.
4. Data Mining; Pieter Adriaans & Dolf Zantinge; 1997, Pearson
5. Data Warehousing, Data Mining and OLTP; Alex Berson, 1997, McGraw Hill.  
Data warehousing System; Mallach; 2000, McGraw



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M.Sc IT		<b>Course: Programming in Python</b>		Course No: M.Sc IT-302	
Semester: 03		Type of Course : Core Course			
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06			
		Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight		
Unit-1	<b>Introduction</b>	<b>18</b>	<b>14</b>		
	<ul style="list-style-type: none"><li>The Process of Computational Problem Solving, Python Programming Language</li><li>Python Data Types: Expressions, Variables and Assignments, Strings, List, Objects and Classes, Python Standard Library.</li><li>Imperative Programming: Python programs, Execution Control Structures, User-Defined Functions, Python Variables and Assignments, Parameter Passing.</li></ul>				
Unit-2	<b>Text Files</b>	<b>18</b>	<b>14</b>		
	<ul style="list-style-type: none"><li>Strings, Formatted Output.</li><li>Files, Errors and Exception Handling.</li><li>Execution and Control Structures: if Statement, for Loop, Two Dimensional Lists, while Loop, More Loop Patterns, Additional Iteration Control Statements.</li><li>Containers and Randomness: Dictionaries, Other Built-in Container Types, Character Encoding and Strings, Module random, Set Data Type.</li></ul>				
Unit-3	<b>Object Oriented Programming</b>	<b>18</b>	<b>14</b>		
	<ul style="list-style-type: none"><li>Fundamental Concepts, Defining a New Python Class</li><li>User-Defined Classes, Designing New Container Classes Overloaded Operators, Inheritance, User-Defined Exceptions.</li><li>Namespaces: Encapsulation in Functions, Global versus Local Namespaces, Exception Control Flow, Modules and Namespaces.</li></ul>				
Unit-4	<b>Objects and Their Use</b>	<b>18</b>	<b>14</b>		
	<ul style="list-style-type: none"><li>Software Objects, Turtle Graphics.</li><li>Modular Design: Modules, Top-Down Design, Python Modules.</li><li>Recursion: Introduction to Recursion, Examples of Recursion.</li><li>Run Time Analysis, Searching, Iteration Vs Recursion, Recursive Problem Solving, Functional Language Approach.</li></ul>				
Unit-5	<b>Python GUI Programming (Tkinter)</b>	<b>18</b>	<b>14</b>		
	<ul style="list-style-type: none"><li>Graphical User Interfaces: Basics of tkinter GUI Development. Event-Based tkinter Widgets, Designing GUIs, OOP for GUI.</li><li>The Web and Search: The World Wide Web, Python WWW API.</li><li>String Pattern Matching, Database Programming in Python.</li></ul>				
<b>Reference Books</b>					
1. John V Guttag, "Introduction to Computation and Programming Using Python", Prentice Hall of India					
2. Ljubomir Perkovic, "Introduction to Computing Using Python: An Application Development Focus", Wiley, 2012.					
3. Charles Dierbach, "Introduction to Computer Science Using Python: A Computational Problem-Solving Focus", Wiley, 2013					



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
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<b>M.Sc IT</b> <b>Course: NoSQL Database:MongoDB</b> Course No: M.Sc IT-303 Semester: 03                      Type of Course : Core Course Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100                      Credits: 06 <span style="float: right;">Teaching Hours Per Week: 06</span>			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>NoSQL Database</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"> <li>• Concept of NoSQL Database.</li> <li>• History of NoSQL Database</li> <li>• Benefits of NoSQL Database</li> <li>• Types of Nosql Database:CouchDB,MongoDB,Cassandra,Hbase</li> <li>• NoSQL V/S SQL Database</li> <li>• Uses of NoSQL in Industry</li> </ul>		
<b>Unit-2</b>	<b>MongoDB Basic-I</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"> <li>• Introduction of MongoDB.</li> <li>• Data Modeling in MongoDB</li> <li>• Basic terms :Database,Collection,Document.</li> <li>• MongoDB Datatypes</li> <li>• Create and Drop Database</li> <li>• Create and drop collection</li> <li>• Insert,Update and delete Document</li> <li>• Querying Document</li> <li>• MongoDB v/s RDBMS</li> </ul>		
<b>Unit-3</b>	<b>Advance MongoDB</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"> <li>• Projection,Limiting ,Sorting Records</li> <li>• Indexing,Aggregation.</li> <li>• Concept of GridFS</li> <li>• Storing files in GridFS</li> <li>• Serving files from GridFS</li> <li>• Reading files in chunks</li> </ul>		
<b>Unit-4</b>	<b>MongoDB Connectivity Using PHP</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"> <li>•Connect and Select Database.</li> <li>•Create Collection</li> <li>•Insert Document</li> <li>•Find Document</li> <li>•Update Document</li> <li>•Delete Document</li> </ul>		
<b>Unit-5</b>	<b>Database Management</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"> <li>• Database Administration</li> <li>• Security and authentication::Authentication Basic,How Authenticatio works</li> <li>• Replication and Sharding</li> <li>• Backup and Restore Database</li> <li>• Deployment</li> </ul>		



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
**(With effect from Academic Year: 2017-18)**

**Reference Books**

1. MongoDB the definitive guide - O'Reilly Kristina Chodorow & Michal Dirolf
2. MongoDB in Action - Kyle Banker Manning Sheltar Island.
3. The definitive guide to MongoDB - NoSQL Database for cloud and desktop computing. -
4. Apress - Eelco Plugge, Peter membrey and Tim Hawkins
5. PHP and MongoDB Web Development Beginners guide - Rubayeet Islam - Open Source

M.Sc IT	<b>Course: Practical Based on 302 and 303</b>	Course No: M.Sc IT-304	
Semester: 03	Type of Course : Core Course	Credits: 12	
Marking Scheme: External Examination: 100		Teaching Hours Per Week: 12	
	<b>Detailed Syllabus</b>	<b>Teaching Hours</b>	<b>Marks/Weight</b>
<b>1</b>	<b>Paper 302: Programming in Python</b>	<b>90</b>	<b>50</b>
<b>2</b>	<b>Paper 303: NoSQL Database:MongoDB</b>	<b>90</b>	<b>50</b>





Structure for M.Sc. IT – CBCS Programme

**Semester-IV**

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
M.Sc.IT 401	CORE	Cryptography And Network Security	06
M.Sc.IT 402	CORE	Management Information System	06
M.Sc.IT 403	CORE	Project	18
TOTAL			30

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: M.Sc.IT-401, M.Sc.IT -402



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
**(With effect from Academic Year: 2017-18)**

M.Sc IT <b>Course: Cryptography and Network Security</b> Course No: M.Sc IT-401			
Semester: 04    Type of Course : Core Course			
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100    Credits: 06			
Teaching Hours Per Week: 06			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>Introduction to encryption techniques</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Concept of Encryption and decryption, importance of encryption</li><li>• Basic types of encryption – one-time pad, end-to end and link encryption,</li><li>• advantages and disadvantages of all methods of encryption</li><li>• Symmetric cipher model – Cryptography, cryptanalysis</li><li>• Cryptographic keys –Private key and public key</li></ul>		
<b>Unit-2</b>	<b>Network Security Fundamental</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Concept of Security based on Network, OSI Security Architecture –</li><li>• Security Attack, Security Mechanism and Security service</li><li>• Types of Security Attacks – Active and Passive Attacks</li><li>• Security Services - Authentication, Access Control, Data</li><li>• Confidentiality and Data integrity</li><li>• Security Mechanism –Specific Security mechanism</li></ul>		
<b>Unit-3</b>	<b>E-Mail, IP Security</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• S/MIME.</li><li>• Benefits of IP Security</li><li>• IP Security Architecture</li><li>• IP security Services</li><li>• Application of IP Security.</li></ul>		
<b>Unit-4</b>	<b>Network Device Security</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Switch</li><li>• Bridge, Router</li><li>• Network Hardening</li><li>• Administrative Practices</li><li>• Centralizing Account Management</li></ul>		
<b>Unit-5</b>	<b>Firewall &amp; Wireless Network</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>• Introduction to firewall</li><li>• Additional Firewall Function</li><li>• Introduction to Virtual Private Network</li><li>• VPN Protocol</li><li>• Introduction to Wireless Network Security</li></ul>		
<b>Reference Books</b>			
1.Cryptography and Network Security, - William Stallings Person – Printice Hall Publication			



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
**NAAC Accreditation Grade "B"**  
**(With effect from Academic Year: 2017-18)**

M.Sc. IT		Course: Management Information System	Course No: M.Sc. IT-402
Semester: 04		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		Credits: 06	
		Teaching Hours Per Week: 06	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
<b>Unit-1</b>	<b>Introduction to Management Information Systems</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>MIS Concepts –EIS, DSS, MRS, TPS and OIS</li><li>Concept of Organization, Management and Information</li><li>Information – Meaning, Uses and Cost of Information</li><li>The need for Information system</li></ul>		
<b>Unit-2</b>	<b>The Structure of MIS</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Types of organizational Information: TPS, MRS, DSS, EIS, OIS</li><li>Characteristics of MRS</li><li>Reports by MRS – Report’s forms: Scheduled(Periodic) Report, Exception Report, Demand Report</li><li>Characteristics of DSS</li><li>Characteristics of EIS.</li></ul>		
<b>Unit-3</b>	<b>Information needs for strategic planning</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Concept of value streams and strategy</li><li>Characteristics of information – cost, accessibility, reliability, security</li><li>Strategies for competitive advantages – differentiation, cost leadership, focus.</li><li>Information usage for strategic advantage</li><li>International strategy</li></ul>		
<b>Unit-4</b>	<b>Introduction of Enterprise Resource Planning (ERP)</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Concept of Enterprise Management System (EMS) and ERP</li><li>ERP Architecture and EMS model</li><li>ERP Basic Features</li><li>Characteristics of ERP solutions and benefits of ERP</li><li>ERP solution evaluation</li></ul>		
<b>Unit-5</b>	<b>Development of MIS plan and Quality and Privacy issues</b>	<b>18</b>	<b>14</b>
	<ul style="list-style-type: none"><li>Contents of MIS plan</li><li>MIS plan is linked to the business plan</li><li>Classification of information – organizational, functional, knowledge, decision support and operational</li><li>Management of Quality in MIS</li></ul>		
<b>Reference Books</b>			
<ol style="list-style-type: none"><li>1. Management Information System By K.C. Laudon. and J.P. Laudon. PHI</li><li>2. Management Information System By V.S.Bagad</li><li>3. Management Information System By Sadagopan</li></ol>			



**MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY**  
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M.Sc IT	Course: Project	Course No: M.Sc IT-403
Semester: 04	Type of Course : Core Course	
Marking Scheme: External Examination: 200 [Project Report 100+ Project Presentation 100]		Credits: 18
	<b>Detailed Syllabus</b>	
	<p><b>OBJECTIVE</b></p> <p>The objective of the project work is to develop quality software solution. During the development of the project, you should involve in all the stages of the software development life cycle like requirements engineering, systems analysis, systems design, software development, testing strategies and documentation with an overall emphasis on the development of reliable software systems. The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.</p>	
	<p><b>General Instruction</b></p> <p>It is expected to work on a real-life project preferably in some industry/Research and Development Laboratories/Educational Institution/Software Company. However, it is <b>not mandatory</b> for a student to work on a real-life project. The student can formulate a project problem with the help of her/his College Guide and work on it, and complete it. Use of the latest versions of the software packages for the development is desired.</p>	