



CHOICE BASED CREDIT SYSTEM
Credit and Semester System Syllabus

BACHELOR OF SCIENCE - INFORMATION TECHNOLOGY (B.Sc.(IT))

Semester-III (SY)

Course No.	Course Type	Subject	Credit
B.Sc.(IT)-EC-301	ELECTIVE	DISASTER MANAGEMENT	02
B.Sc.(IT)-FC-302	FOUNDATION	ENGLISH	02
B.Sc.(IT)-CC-303	CORE	DATA AND FILE STRUCTURE USING C	03
B.Sc.(IT)-CC-304	CORE	PROGRAMMING IN C++	03
B.Sc.(IT)-CC-305	CORE	SYSTEM ANALYSIS AND DESIGN	03
B.Sc.(IT)-CC-306	CORE	OPERATING SYSTEM-I	03
B.Sc.(IT)-CC-307	CORE	PRACTICAL (BASED ON 303 AND 304)	12
Total			28

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: B.Sc.(IT)-CC-303, B.Sc.(IT)-CC-304, B.Sc.(IT)-CC-305, B.Sc.(IT)-CC-306



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT		Course: Data And File Structure Using C	Course No: B.Sc IT-CC-303	
Semester: 03		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
Unit-1	Introduction to data structure , sorting and Searching	12	18	
	<ul style="list-style-type: none">• Data Structure – Definition• Classification of Data Structure• Primitive and Composite data types represent Data Structure• Conditional & repeat statements• Representation of an Array• Sparse Matrix• Bubble sort, Selection sort• Quick Sort, Merge Sort• Insertion Sort, Shell Sort• Linear Search, Binary Search			
Unit-2	Stack and Queue	11	18	
	<ul style="list-style-type: none">• Stack – Introduction , Operations of stack , Implementation of stack, Applications, Implementation of stack (Using array & linklist)• Conversion of stack – Infix to Postfix using manually, and stack for parenthesis and Non-parenthesis• Queue – Introduction ,Types of queue, Implementation of Queue (Using Array & Link list)• Operations of simple and circular Queue.			
Unit-3	Linked List , Tree and Graph	11	17	
	<ul style="list-style-type: none">• Comparison of array & Link List• Types of Link list , Representation of linked list• Operations on Single and Doubly Linked Lists• Operations on Circular Linked Lists			
Unit-4	Tree and Graph	11	17	
	<ul style="list-style-type: none">• Introduction on Tree ,Types of tree , binary trees.• operations on tree (Create and delete)• Tree traversal method and algorithm (recursive only)• Introduction to Graph, Types of graph, Graph definitions			
Reference Books				
<ol style="list-style-type: none">1. Data Structures and Program design in C - R. Kruse C.L. Tondo and B. Leung - PHI, 1997.2. Data & File Structure: Tremblay & Sorenson3. Expert in Data Structure with C: R. B. Patel (Second or above editions)				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Programming in C++ Course No: B.Sc IT-CC-304			
Semester: 03		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Fundamental of Programming and OOP Concept	12	18
	<ul style="list-style-type: none">• Introduction of OOP, OOP V/s POP• Concept of OOP – Object, Class, Inheritance, Encapsulation, Polymorphism, Abstraction ,Message Passing• Structure Of C++ Program• Tokens in C++• Data type, Constant, Variable, Statement & Operators• Input/output statements• Declaration & Creation of Class and Object• Function – Member function, Inline function, Friend function• Constructor – Types of constructor, characteristics of constructor, constructor overloading, Destructor		
Unit-2	Operator overloading and Type conversion	11	18
	<ul style="list-style-type: none">• Basic of operator overloading• Types of operator overloading-Unary, Binary• Operator overloading using member function & friend function• Type conversion• Categories of type conversion		
Unit-3	Inheritance & Polymorphism	11	17
	<ul style="list-style-type: none">• Inheritance• Types of inheritance• *this pointer• Polymorphism (Compile time and Run time polymorphism)• Pure virtual function		
Unit-4	File Handling and exception handling	11	17
	<ul style="list-style-type: none">• Concepts Stream class and its function• File stream class structure and operation• Sequential and random access file• Command line arguments• Exception handling		
Reference Books			
<ol style="list-style-type: none">1. E-Balaguruswami: Object Oriented Programming with C++ Mc Graw-Hill2. Robert Lafore: Object Oriented Programming with C++ Galgotia Publications.3. Rajaraman: Object Oriented Programming with C++ New age International			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT	Course: System Analysis And Design	Course No: B.Sc IT-CC-305	
Semester: 03	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	System Concepts and System Development Life Cycle (SDLC)	12	18
	<ul style="list-style-type: none">• Introduction to System, Characteristics & Elements of system.• Major System concepts and Types of System.• System Analysis, Role of System Analyst.• Information & Information System, CBIS.• System users.• Requirement analysis and Determination.• System Design Technique.• System Development.• System Testing.• System Implementation and Evaluation.		
Unit-2	Structured System Analysis and Design Method	11	18
	<ul style="list-style-type: none">• Introduction to SSADM.• Need of Structured Analysis and Design.• System survey.• Structured analysis.• Structured design.• Advantage of SSADM.		
Unit-3	Input / Output Design, Fact Gathering Techniques and implementation	11	17
	<ul style="list-style-type: none">• Input - Data capture objectives, Data verification and validation.• Interactive screen design.• Output - Design principles of output, Output objectives and types.• Fact Gathering Techniques–Interviewing, Questionnaires, Record inspection, Observations.• Implementation Method - parallel systems, direct conversation, pilot system, phase-in.		
Unit-4	Analysis and Design Tools	11	17
	<ul style="list-style-type: none">• DFD: Logical and Physical DFD.• Decision tables.• Decision Tree.• Data Dictionary.• HIPO chart and Structured English.• Case Study		
Reference Books			
<ol style="list-style-type: none">1. James A Senn: Analysis and Design of Information Systems, McGraw Hill Intl. Std. Edn2. S. Parthasarthy & B. W. Khalkar : System Analysis & Design 1st Edition, Master Ed.Cons.3. Yourdon E. and Constantine L. L : Structured Analysis & Design Yourdon press NY			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc. IT Semester: 03 Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Theory Sessions per Week: 03	Course: Operating System - I Type of Course : Core Course Teaching Hours: 45 Hours	Course No: B.Sc IT-CC-306 Credits: 03	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Basic of Operating System. And Operating System Types & Structure.	12	18
	<ul style="list-style-type: none">• Definition and Function of operating systems.• Evolution of operating system: Batch system, Multi programmed system, time sharing and PCs• Introduction to basic terms & batch processing system: Jobs, Processes files, command interpreter.• Operating System Component – Services, System calls and system programs• Operating system types-Desktop System, Real time systems, Multiprocessor System, parallel, distributed system, cluster system• Operating system structure-monolithic layered, virtual machine & Client server.		
Unit-2	Process Scheduling	11	18
	<ul style="list-style-type: none">• Process states, Queuing diagram, Interrupt mechanism.• Schedulers and Dispatcher• Scheduling algorithms (FIFO, SJF, Priority, RR) with Performance evaluation		
Unit-3	Threads & Deadlocks	11	17
	<ul style="list-style-type: none">• Threads - Concept of single & multithreads, Benefits of threads – Types of threads.• Deadlock: safe and unsafe state, Necessary conditions to occur deadlock, Deadlock Prevention, avoidance, detection, and recovery		
Unit-4	Memory Management	11	17
	<ul style="list-style-type: none">• Definition, Logical and Physical address Map.• Memory allocation: Contiguous Memory allocation – Internal and External fragmentation.• Paging: Principle of operation – Page allocation – Hardware support for paging Protection and sharing – Disadvantages of paging.• Segmentation		
Reference Books <ol style="list-style-type: none">1. Silberschatz, Galvin and Gange: Operating System Concepts, Wesley.2. Tanenbaum A.S., “Modern Operating Systems”, 4th Edition, PHI, 20013. Stalling W, “Operating Systems”, 6th edition, Prentice Hall India.			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT			
		Course: Practical	Course No: B.Sc IT-CC-307
Semester: 03 Type of Course: Core Course			
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 12 Practical Sessions per Week: 12		Teaching	
Hours:180Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Practical Based on 303	90	50
Unit-2	Practical Based on 304	90	50



BACHELOR OF SCIENCE - INFORMATION TECHNOLOGY (B.Sc.(IT))

Semester-IV (SY)

Course No.	Course Type	Subject	Credit
B.Sc.(IT)-EC-401	ELECTIVE	NANOMATERIALS & NANOTECHNOLOGY	02
B.Sc.(IT)-FC-402	FOUNDATION	ENGLISH	02
B.Sc.(IT)-CC-403	CORE	WINDOW PROGRAMMING USING VB.NET	03
B.Sc.(IT)-CC-404	CORE	DATABASE CONCEPT AND TOOLS	03
B.Sc.(IT)-CC-405	CORE	COMPUTER NETWORK	03
B.Sc.(IT)-CC-406	CORE	OPERATING SYSTEM-II	03
B.Sc.(IT)-CC-407	CORE	PRACTICAL (BASED ON 403 AND 404)	12
Total			28



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Window Programming Using VB.NET Course No: B.Sc IT-CC-403			
Semester: 04		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction and Basic Controls	12	18
	<ul style="list-style-type: none">• .Net Framework, Common Language Runtime• Feature & Advantages of CLR.• JIT & It's Types : Pre-JIT, Econo-JIT, Normal-JIT• Introduction to Integrated Development Environment (IDE)• Programming Construct – Variable, Datatype, Type Casting, control structure, looping statement, array, function & procedure, Exception Handling.• Console Application• Introduction of form.• Label, Textbox, Button.• Link Label, Combo box, List box, Checkbox, Radio button, Scrollbar.• Timer Control, Group box, Panel• Event Handling, Method & Property of controls.		
Unit-2	Advance Control	11	18
	<ul style="list-style-type: none">• MDI & SDI form, Main Menu Strip & Context Menu.• Rich text box, Picture box, Date time Picker.• Track bar, Notify Icon, Progress Bar, Tool tip• Built In Dialog box (Open File Dialog, Save File Dialog, Color Dialog, Font Dialog, Folder Browser Dialog)		
Unit-3	Database Connectivity	11	17
	<ul style="list-style-type: none">• ADO.Net Architecture.• Create database using MS Access and accessing database using server explorer.• Database connectivity using programming code.• Database binding with Data Grid View & combo box.• Crystal Report.		
Unit-4	Object Oriented Programming	11	17
	<ul style="list-style-type: none">• Class, Object & it's characteristics• Inheritance, Polymorphism.• Function Overloading• Properties: Read Only Properties, Write Only Properties, ReadWrite Properties• Constructor & Destructor.		
Reference Books			
<ol style="list-style-type: none">1. Steven Holzner: Visual Basic .NET Programming Black Book DeramTech Press.2. Rod Stephens: Visual Basic 2005 Programmer's			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT		Course: Database Concept & Tools	Course No: B.Sc IT-CC-404	
Semester: 04		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
UNIT-1	DBMS AND RDBMS CONCEPTS And INTRODUCTION TO ORACLE SERVER	12	18	
	<ul style="list-style-type: none">• Overview of DBMS and RDBMS• Three schema Architecture• Data models :Hierarchical Model, Network model, Relational model• Object relational model• ORACLE Server & Instances• Database Structure & Space Management• Memory & Process Structure• Client Server Architecture – Distributed Database Processing• How Oracle Works• Dr. E.F.Codd's Rules			
UNIT-2	BASIC SQL*PLUS	11	18	
	<ul style="list-style-type: none">• Basic Data Types of ORACLE• Data Definition Language (DDL)• Data Manipulation Language (DML)• Transaction Processing Language (TPL)• Data Constraints AND Types of Data Constraints• Inbuilt Functions and Oracle Operators.			
UNIT-3	ADVANCE SQL*PLUS	11	17	
	<ul style="list-style-type: none">• Grouping of Data• Sub queries and Types of Sub queries• Join and types of join• Schema and Schema object: View, Sequence, index, synonyms.			
UNIT-4	INTRODUCTION TO DBA	11	17	
	<ul style="list-style-type: none">• Role of DBA.• Users: Creating a new user, grant command, deleting user.• Privileges: System privileges, object privileges, Assigning object privileges to a user, Viewing User & privileges, revoking a system & an object privileges.• Role: Creating a role, Granting privileges & roles to a role, granting role to a user, viewing the role of a user.			
Reference Books				
<ol style="list-style-type: none">1. Ivan Bayross: SQL/PLSQL, The Programming Language of ORACLE, BPB Publication2. Learn Oracle 8i. By Jose A. Ramalho. Published by: BPB3. SQL in 21-Days - Techmedia				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
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B.Sc IT		Course: Computer Network	Course No: B.Sc IT-CC-405	
Semester: 04		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
Unit-1	Introduction & Transmission Media And Optical Fiber Communication & Satellite Communication	12	18	
	<ul style="list-style-type: none">• Communication System• Analog & Digital Data• Communication Channel• Twin Wire and Co-axial cable, Fiber Optic• Radio Waves & Microwaves• Optical Source & Light Detectors• Propagation in Fiber• Basic of Routing• FDDI & DQDB• Satellite Link and Satellite Communication			
Unit-2	Data Networks & Data Communication System	11	18	
	<ul style="list-style-type: none">• Circuit Switching & Packet Switching• PABX• Facsimile (Fax)• Introduction to ISDN• Multiplexing – FDM, TDM & WDM			
Unit-3	Network Topology, Architecture & Standards	11	17	
	<ul style="list-style-type: none">• LAN,WAN, MAN• Basic Network Topologies• Ethernet, Token Bus & Token Ring• IEEE Standards 802 For LAN and MAN• Introduction to Bluetooth			
Unit-4	Network Protocol and Firewall	11	17	
	<ul style="list-style-type: none">• ATM & X.25 Protocol• Inter-W• Bridges, Routers And Brouters, Gateways• Repeaters, Modems, Hubs and Switches• Firewall			
Reference Books				
<ol style="list-style-type: none">1. Andrews Tananbaum: Computers Networks, PHI2. Michel and Miller: Introduction to Digital Data Communication3. James Martin: Telecommunication and Compute				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT		Course: Operating System - II	Course No: B.Sc IT-CC-406	
Semester: 04		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
Unit-1	File & I/O Management	12	18	
	<ul style="list-style-type: none">• File Concept, Characteristics of file, File operations, File system structure• Access Methods - Sequential , direct and Index sequential• Directory Structure - single level, two level, tree level, Directory operations.• Overview of I/O System, Application of I/O Interface, I/O hardware and subsystem.• Disk scheduling algorithm (FIFO, SSTF, SCAN, CSCAN)			
Unit-2	Distributed Operating system	11	18	
	<ul style="list-style-type: none">• Introduction and need for distributed OS• Architecture of Distributed OS• Models of distributed system• Remote procedure Calls• Distributed shared memory			
Unit-3	Introduction to Linux Operating System And File Structure & Commands	11	17	
	<ul style="list-style-type: none">• Introduction to Linux Operating System• History, Advantage & Disadvantage of Linux Operating System.• Application area of Linux Operating System.• Linux Flavors• Desktop Environment – Xwindow, KDE & GNOME.• File system hierarchy standard.• Linux architecture, Shell & its types.• File & directory Command• Process command, User command, Misc. Command			
Unit-4	Shell Script	11	17	
	<ul style="list-style-type: none">• Introduction to Vi Editor• Mode of Vi Editor• Shell Variable, Shell Operator• Structure Language – Control structure, Iterating Statement and Array			
Reference Books				
<ol style="list-style-type: none">1. Silberschatz, Galvin and Gange: Operating System Concepts, Wesley.2. Tanenbaum A.S., “Modern Operating Systems”, 4th Edition, PHI, 20013. Stalling W, “Operating Systems”, 6th edition, Prentice Hall India.4. Sumitabha Das: Concepts and Application of UNIX 4th edition Tata McGraw Hill5. Yashwant Kanitkar: Unix Shell Programing, BPB Publication				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT			
Course: Practical		Course No: B.Sc IT-CC-407	
Semester: 03 Type of Course: Core Course			
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 12		Practical Sessions per Week: 12	
		Teaching Hours:180Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Practical Based on 403	90	50
Unit-2	Practical Based on 404	90	50



CHOICE BASED CREDIT SYSTEM
Credit and Semester System Syllabus

BACHELOR OF SCIENCE - INFORMATION TECHNOLOGY (B.Sc.(IT))

Semester-V (TY)

Course No.	Course Type	Subject	Credit
B.Sc.(IT)-EC-501	ELECTIVE	IT PROJECT MANAGEMENT	02
B.Sc.(IT)-FC-502	FOUNDATION	ENGLISH	02
B.Sc.(IT)-CC-503	CORE	WEB PROGRAMMING-I Using PHP	03
B.Sc.(IT)-CC-504	CORE	ADVANCE DATABASE CONCEPT AND TOOLS	03
B.Sc.(IT)-CC-505	CORE	SOFTWARE ENGINEERING	03
B.Sc.(IT)-CC-506	CORE	MANAGEMENT INFORMATION SYSTEM	03
B.Sc.(IT)-CC-507	CORE	PRACTICAL (BASED ON 503 AND 504)	12
Total			28



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.SC IT			
Course: IT PROJECT MANAGEMENT Course No: B.SC IT-EC-501			
Semester: 05		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Credits: 02			
Theory Sessions per Week: 02		Teaching Hours: 30 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Introduction AND IT Project	8	18
	<ul style="list-style-type: none"> - Definition of the project - Project specification and parameters. - Goals of IT Project Management. - Project management life cycle - Introduction to types of Project. - Overview of Project Planning. - Project Analysis. - Software Estimation. 		
Unit-2	Activity Planning	8	18
	<ul style="list-style-type: none"> - Project Management Activity. - Project Coast Estimation. - Project Planning. - Project Scheduling. 		
Unit-3	Risk Management	7	17
	<ul style="list-style-type: none"> - Risk Management: Resource Allocation –Monitoring and control. - Team Management. - Role and Responsibilities in Project Team - Project Tracking. 		
Unit-4	Case Study	7	17
	<ul style="list-style-type: none"> - Institute Management System, Inventory - Management System, Hospital Management System, - Hotel Management System, Etc..... 		
Reference Books			
<ol style="list-style-type: none"> 1. John J. Rakos, “Software Project Management”, 1998, Prentice Hall 2. Walker Royce, “Software Project Management”, 2001, Pearson Education. 3. Roger S. Pressman, “Software Engineering”, 2001, McGraw Hill. 4. Jack T. Marchewka, Information Technology Project Management,4th Edition. 5. Mike Cotterell, Bob Hughes- Software Project Management- McGraw Hill 5th Edition. 			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT	Course: Web Programming – I Using PHP	Course No: B.Sc IT-CC-503	
Semester: 05	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction To PHP and Basic PHP	12	18
	<ul style="list-style-type: none">• Fundamental of APACHE Server.• Concept of Wamp & Xampp Server.• History & Versions of PHP• Features of PHP• Introduction to PHP Programming.• Introduction to PHP, 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	11	18
	<ul style="list-style-type: none">• 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	11	17
	<ul style="list-style-type: none">• Handling form with GET & POST, Cookies, Session, Server variable• 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	11	17
	<ul style="list-style-type: none">• PHP-MySQL Architecture• PHP API• Creating & Connecting Database using Wamp Server• Executing DML Commands.		
Reference Books			
1. Ivan Bayross, Sharanam Shah: PHP 5.1 For Beginners, Shroff Publishers & Distributors (SPD)			
2. Janet Valade: PHP5 & MYSQL Projects, Wiley Dreamtech			
3. Dave W. Mercer: Beginning PHP5, Wiley India Edition			
4. Steven Holzner: The Complete Reference PHP, Tata McGRAW – HiLL, New Delhi			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Advance Database Concept & Tools Course No: B.Sc IT-CC-504			
Semester: 05		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	PL/SQL-I	12	18
	<ul style="list-style-type: none">• Introduction of PL / SQL Blocks, PL/SQL Engine, PL/SQL Programming• How PL / SQL work, Control structure of PL/SQL.• Cursor: Introduction of Cursor, types of Cursor, Declaring Cursor, Attributes of Cursor, Accessing cursor, Closing Cursor.• Exception Handling: Introduction of Exception Handling, Predefine Exception, Undefine Exception, User Define Exception.		
Unit-2	PL/SQL-II and Oracle Utility	11	18
	<ul style="list-style-type: none">• Stored Procedure: Creating and Executing Stored Procedure• Function: Creating and Executing Function• Trigger: Components of trigger, types of trigger, creating a trigger.• Locking: Implicit and explicit locking• Database Backup (Hot and Cold Backup) and Recovery• Types of Failure• Data structure used for Database recovery• Import and export• SQL LOADER Utility		
Unit-3	Advance Database Concept	11	17
	<ul style="list-style-type: none">• Data Models: Post-Relational Data Model, object oriented Data Model, Dimensional Data Model• OODM and previous Data models – similarities and differences• Features for Object Oriented system• OODBMS – pros and cons		
Unit-4	Database Security	11	17
	<ul style="list-style-type: none">• Introductory terms – privacy, database security, database integrity.• authorization• Security and Integrity threats – Accidental and Intentional• Security policies – Access control, Information flow• Access types• Identification and Authentication		



Reference Books

1. Ivan Bayross: SQL/PLSQL, The Programming Language of ORACLE, BPB Publication
2. Learn Oracle 8i. By Jose A. Ramalho. Published by: BPB
3. SQL in 21-Days – Techmedia
4. Bipin C. Desai – An Introduction to Database Systems
5. Avi Silberschatz, Henry F. Korth, S. Sudarshan – Database System Concepts, McGraw-Hill
6. Raghu Ramakrishnan, Johannes Gehrke – Database Management System, Tata McGraw Hill



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT		Course: Software Engineering	Course No: B.Sc IT-CC-505	
Semester: 05		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
Unit-1	Introduction and Software Requirements Analysis & Specifications	12	18	
	<ul style="list-style-type: none">• Introduction to Software Engineering & Approaches of Software Engineer• Software(S/W) & Nature of S/W• Software Development Process Models – Water Fall Model, Prototyping, Iterative Enhancement, Spiral Model• Software Requirements – Need For SRS, Requirement Process• Role of SRS• Problem Analysis – Informal Approach, Structured Analysis, Object Oriented Modeling• Requirement Specifications• Validation & Verification			
Unit-2	Planning & Design of Software.	11	18	
	<ul style="list-style-type: none">• Team Structure, Quality assurance plan• Risk Management, System Design principles, Module level concepts, Coupling & Cohesion• Design Methodology, Structure Chart• Functional approach vs. Object oriented approach.			
Unit-3	Coding & Testing	11	17	
	<ul style="list-style-type: none">• Programming Practice, Testing Fundamentals• Top Down & Bottom Up Approach for Coding & Testing• Testing Fundamentals – Error, Fault, Failure• Levels of Testing• Test cases & Test criteria• Types of testing – Black Box, White Box & Grey Box			
Unit-4	Case Study	11	17	
	<ul style="list-style-type: none">• Case study<ol style="list-style-type: none">1. Student Management System2. Hotel Management System3. Airline Reservation System4. Inventory Management System5. Payroll Management System.			
Reference Books				
<ol style="list-style-type: none">1. Pankaj Jalote: An Integrated Approach to Software Engineering, Narosa Publication2. Roger Pressman: Software Engineering, McGraw-Hill Publication				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Management Information System Course No: B.Sc IT-CC-506 Semester: 05 Type of Course : Core Course Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Credits: 03 Theory Sessions per Week: 03 Teaching Hours: 45 Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction to Management Information Systems and The Structure of MIS	12	18
	<ul style="list-style-type: none">• MIS Concepts –EIS, DSS, MRS, TPS and OIS• Concept of Organization, Management and Information• Information – Meaning, Uses and Cost of Information• The need for Information system• Types of organizational Information: TPS, MRS, DSS, EIS, OIS• Characteristics of MRS• Reports by MRS – Report’s forms: Scheduled(Periodic) Report, Exception Report, Demand Report• Characteristics of DSS• Characteristics of EIS.		
Unit-2	Information needs for strategic planning	11	18
	<ul style="list-style-type: none">• Concept of value streams and strategy• Characteristics of information – cost, accessibility, reliability, security• Strategies for competitive advantages – differentiation, cost leadership, focus.• Information usage for strategic advantage• International strategy		
Unit-3	Introduction of Enterprise Resource Planning (ERP)	11	17
	<ul style="list-style-type: none">• Concept of Enterprise Management System (EMS) and ERP• ERP Architecture and EMS model• ERP Basic Features• Characteristics of ERP solutions and benefits of ERP• ERP solution evaluation		
Unit-4	Development of MIS plan and Quality and Privacy issues	11	17
	<ul style="list-style-type: none">• Contents of MIS plan• MIS plan is linked to the business plan• Classification of information – organizational, functional, knowledge, decision support and operational• Management of Quality in MIS		
Reference Books			
<ol style="list-style-type: none">1. Management Information System By K.C. Laudon. and J.P. Laudon. PHI2. Management Information System By V.S.Bagad3. Management Information System By Sadagopan			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Practical Course No: B.Sc IT-CC-507			
Semester: 05 Type of Course: Core Course			
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 12 Practical Sessions per Week: 12 Teaching Hours:180Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Practical Based on 503	90	50
Unit-2	Practical Based on 504	90	50



BACHELOR OF SCIENCE - INFORMATION TECHNOLOGY (B.Sc.(IT))

Semester-VI (TY)

Course No.	Course Type	Subject	Credit
B.Sc.(IT)-EC-601	ELECTIVE	Multimedia & Application	02
B.Sc.(IT)-FC-602	FOUNDATION	ENGLISH	02
B.Sc.(IT)-CC-603	CORE	WEB PROGRAMMING-II Using ASP.NET	03
B.Sc.(IT)-CC-604	CORE	OOP USING JAVA	03
B.Sc.(IT)-CC-605	CORE	DATA WARE HOUSE AND DATA MINING	03
B.Sc.(IT)-CC-606	CORE	MINI PROJECT	03
B.Sc.(IT)-CC-607	CORE	PRACTICAL (BASED ON 603 AND 604)	12
Total			28



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT. Course: Multimedia & Application Course No: B.SC IT-EC-601			
Semester: 06 Type of Course : Core Course			
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Credits: 02			
Theory Sessions per Week: 02 Teaching Hours: 30 Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Multimedia- the Concept.	8	18
	Introduction Multimedia Definition and Main properties of multimedia system Combination of media Use of multimedia in Education, Entertainment, Advertisement, etc.		
Unit-2	Components of Multimedia-1 (Text and Graphics)	8	18
	☒☒Text ☒☒Images and File Format ☒☒Graphics and File Format - ☒☒Basic concept, Digital image representation		
Unit-3	Components of Multimedia-2	7	17
	Digital Audio - Basic sound concept, representation of sound, audio formats ☒☒Basic concept of Video ☒☒Signal representation and Computer video format - ☒☒Basic concept of animation and languages		
Unit-4	Data Compression AND Multimedia Applications	7	17
	Compression technique JPEG MPEG Storage Media Application of multimedia General Design Issues Planning of multimedia Design of Multimedia		
Reference Books			
1. Multimedia: Computing, Communications and Application by Ralf Steinmetz and Klara Nahrshedt (Pearson Education Asia)			



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Web Programming – II Using ASP.NET Course No: B.Sc IT-CC-603 Semester: 06 Type of Course : Core Course Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Credits: 03 Theory Sessions per Week: 03 Teaching Hours: 45 Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction and Basic Controls	12	18
	<ul style="list-style-type: none">• Introduction of IDE.• Introduction of web forms & Page event life cycle.• Global application class & web.config file.• Advantages and features of asp.net.• State management using view state, query string, session and cookies.• Label, Button and Textbox.• List Controls:Dropdownlist, listbox, checkbox list, radiobutton list,BulletedList.• Radio button, checkbox.• File upload and Image control.• Hyperlink, table, panel and wizard		
Unit-2	Advance controls	11	18
	<ul style="list-style-type: none">• Navigation controls using menu, treeview and sitemap path.• Validation Controls• Ad Rotator• Login Controls.• Master Page, Theme and CSS.		
Unit-3	Working with Database	11	17
	<ul style="list-style-type: none">• ADO.NET architecture.• Introduction of Server Explorer and its Features.• Create database using sql server express and access with server explorer.• Connectivity using code and sql data source.• Data controls using grid view, form view, details view and data list control.		
Unit-4	AJAX & Web services	11	17
	<ul style="list-style-type: none">• Introduction of AJAX : History, Advantages, Application• AJAX architecture.• AJAX basic controls- ScriptManager, ScriptManagerProxy, UpdatePanel, UpdateProgress and timer.• Introduction of web services.• Create and deploy web services.		



Reference Books

1. Asp.net black book published by dreamtech press
2. Asp.net unleashed by stephen walther
3. Asp.net Professional Edition by Wrox Publication



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT		Course: OOP Using JAVA	Course No: B.Sc IT-CC-604	
Semester: 06		Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03		
Theory Sessions per Week: 03		Teaching Hours: 45 Hours		
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight	
Unit-1	Basic of JAVA and Object - Oriented Programming Technique	12	18	
	<ul style="list-style-type: none">• Basic concept of OOP Approach-Class and object, Abstraction and Encapsulation, Inheritance and Polymorphism.• Overview of Netbeans and eclipse editor.• Java Language Basics- Byte code, Buzz Words, JVM• Data types, Operators, Control & Looping Statement, Array, and command line argument• Class and Objects, Methods• Constructor, Garbage Collection• Inheritance• Polymorphism			
Unit-2	Package, Interface and Exception Handling	11	18	
	<ul style="list-style-type: none">• Packages• Interfaces• Exception Handling			
Unit-3	Multithreading	11	17	
	<ul style="list-style-type: none">• Introduction, Main Thread , Thread Lifecycle• Thread Creation, isAlive(), join() methods• Thread Priority• Synchronization			
Unit-4	I/O In JAVA, String & Characters Methods	11	17	
	<ul style="list-style-type: none">• Introduction to I/O.• Stream Classes – ByteStream & CharacterStream.• Reading and Writing into file , Reading and writing from Console.• String Class-operation, methods.• Serialization.			
Reference Books				
1. Compete Reference Java By Herbert Schildt Publisher: TMH				
2. Programming in JAVA By E-Balaguruswami				



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT	Course: Data Warehouse & Data Mining	Course No: B.Sc IT-CC-605	
Semester: 06	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100		Credits: 03	
Theory Sessions per Week: 03		Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
UNIT-1	INTRODUCTION OF DATAWAREHOUSE AND DATA MART	12	18
	<ul style="list-style-type: none">Operational and Informational systems.Concept of Data warehouse ,Characteristics of Data WarehouseDBMS vs. data warehouseData warehouse system architecture (Two and Three-Tiered)Concept of Data Mart , Usage of Data MartSecurity in Data MartData warehouse and Data Mart		
UNIT-2	ONLINE ANALYTICAL PROCESSING	11	18
	<ul style="list-style-type: none">OLTP AND OLAP SYSTEMOLTP VS OLAPTYPES OF OLAP: ROLAP, MOLAP,HOLAPComparison of ROLAP,MOLAP,HOLAP		
UNIT-3	ETL and Data Mining	11	17
	<ul style="list-style-type: none">Concept of ETL(Extract,Transformation and Loading of Data)Comparison and contradiction of various ETL toolsData Mining-Definition and FunctionalitiesClassification of DM SystemsDM task primitivesIntegration of a Data Mining system with a Database or a Data WarehouseIssues in DMKDD Process		
UNIT-4	Data Mining Techniques	11	17
	<ul style="list-style-type: none">Data Mining techniquesData Processing (Data Cleaning, Integration and Transformation, Reduction)Data mining Primitives and DMQLDesigning GUI based on a DMQLArchitecture of Data Mining SystemMining Text DataMining Spatial DatabasesMining WWWMining sequence Data: Time-Series, Symbolic Sequences, and Biological SequencesMining graphs and NetworkData Mining application and trends		



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.
6. Data warehousing System; Mallach; 2000, McGraw



B.Sc IT Course: **Project Work** Course No: **B.Sc IT-CC – 606**
Semester: **06** Type of Course : Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Credits: 03

Detailed Syllabus

The objectives of the project is to help the student develop the ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and small business solution.

Internal Evaluation scheme: 30 Marks

Submission of project proposal
Progress Report every month (3 Progress Report)

Term End Evaluation 70 Marks:

PROJECT REPORT EVALUATION – 30 MARKS
ACTUAL PROJECT EVALUATION AND VIVA – 40 MARKS

Preparing project report

Student has to prepare project report according to given suggestive structure of project report.

Title page
Certificate of work
Acknowledgment
Table of content
Table of Figures
Chapter-1 (Introduction)
 Background, Objective, purpose , scope , applicability
Chapter-2 (Requirement And Analysis)
 Problem definition, Requirement specification, Hardware Software Requirement.
 Planning and Scheduling
Chapter-3 System design
 Over all System design using designing Tools
 Data Dictionary
 Input /Output Design
Chapter -4 Testing and implementation
 Testing Approach used
 Test cases
 Implementation Approaches
Chapter-5
 Conclusion
 Limitation of system
 Future Scope of system
 Bibliography

Student have to prepare 2 – copies of report , 1st copy has to submit in college for evaluation (must be in hard binding) and 2nd copy for personal reference.



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
(With effect from Academic Year: 2019-20)

B.Sc IT Course: Practical Course No: B.Sc IT-CC-607			
Semester: 06 Type of Course: Core Course			
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 12 Practical Sessions per Week: 12 Teaching Hours: 180 Hours			
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Practical Based on 603	90	50
Unit-2	Practical Based on 604	90	50