



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
(With effect from Academic Year: 2016-17)

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

Semester-I (FY)

COURSE NO.	COURSE	S	CREDIT	Elective course
B.Sc.(IT)-EC-101	ELECTIVE	From list	2	• LEARNING FROM WORLD LEADERS
B.Sc.(IT)-FC-101	FOUNDATIO	From list	2	
B.Sc.(IT)-CC-101	CORE	Fundamental of IT	3	
B.Sc.(IT)-CC-102	CORE	Introduction of C Language	3	• CULTURE AND CIVILIZATION
B.Sc.(IT)-CC-103	CORE	Open Office	3	• HEALTH EDUCATION
B.Sc.(IT)-CC-104	CORE	Computer Oriented Mathematics	3	
B.Sc.(IT)-CC-105	CORE	* Practical (Based on B.Sc.(IT)-CC-	6	Foundation Course
B.Sc.(IT)-CC-106	CORE	* Practical (Based on B.Sc.(IT)-CC-	6	• COMMUNICATI ON SKILLS
TOTAL			28	(NO OPTION IS AVAILABLE)



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
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B.Sc.(IT)	Course:- Fundamental Of IT	Course No: B.Sc.(IT)-CC-101
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction to computers	09	14
	Definition of computer Block Diagram of computer Characteristics of computer Generation of computer Digital computer, mini, micro, mainframe, super Hybrid compute		
Unit-2	Computer Peripherals	09	14
	Input Devices: Keyboard, Mouse, Joystick, Track ball, Touch Screen, OCR, OMR, MICR & OBR, Light pen, Scanner, Output Devices (All): Visual Display Unit (VDU), LCD, Plasma, Printers: Impact, Non Impact, Plotter, Storage Devices & Type of Memory: RAM, ROM, PROM, EPROM, EEPROM, cache memory, CDs, DVD, BRD, Pen Drive		
Unit-3	Concepts in information & Processing	09	14
	An overview of information technology applications, Difference between Data & Information, Information system, Value of Information, Quality of Information Software Concepts: Types of Software, Programming Languages, Software (Its Nature & Qualities), Programming Languages.		
Unit-4	Internet technology & World wide web	09	14
	Introduction to Web, Internet requirement, Internet - A global Network, Host & Terminals, TCP/IP, Common protocols used in Internet, World wide web, Web browsers, Internet addresses, Domain names, Basic concepts of HTML, Web Search engines Electronic Mail		
Unit-5	Overview Computer Language & OS	09	14
	What is machine level language, What is assembly level language, What is high level language. (Note: there is no any comparison in between these language) (Just) Definition of Assembler, compiler & interpreter Operating Systems: History & Evolution, A Brief History of Linux, A Brief History of MSDOS, A Brief History of Windows System		

Reference Books:

1. Computer Fundamentals-P.K. Sinha
2. Fundamentals Of Computers, 3rd Edition -V. Rajaraman



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
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B.Sc.(IT)	Course: Introduction of C Language	Course No: B.Sc.(IT)-CC-102
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Programming Language Fundamentals	09	14
	Flowchart and Algorithm Introduction to programming language and types of programming language Concept of Editor, Compiler, Interpreter, Translator, Assembler Getting started with C:History, Structure of C program, Compilations & linking C program Character Set, Keywords, Identifier, Data Type, Variable and Constant		
Unit-2	Programming Constructs	09	14
	Formatted Input and output statements Operators Decision making and Branching (If, if-else, switch etc) Looping construct (While loop, Do..While loop, For loop etc) Break, Continue, go to and exit		
Unit-3	Array and sorting searching technique	09	14
	Introduction of array Declaration and initialization of 1-D and 2-D arrays Programming using 1-D and 2-D Array Sorting method(selection, bubble), Searching method (linear, Binary)		
Unit-4	Character, String Handling and Built-in Function	09	14
	Declaration and initialization of string and character data Character and string operation Character and String handling Function Built-in Function: math's, input output function etc		
Unit-5	Functions	09	14
	Concept of modular programming Elements of function, Type of Function Declaration, Calling, and Defining a function. Passing Array and string as function argument		

Reference Books

1. Programming in ANSI 'C' – Balaguruswamy: TMH.
2. Let Us C By Yasvant Kanitkar
3. Mulish Cooper : The Spirit of C, Jaico Pub. House, 19th Edition-1999



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
(With effect from Academic Year: 2016-17)

B.Sc.(IT)	Course: Open Office	Course No: B.Sc.(IT)-CC-103
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction	09	14
	Introduction to personal computers : Characteristics of computer, Types of computer Overview of Basic Operation System : Introduction of Dos and Windows operating system Introduction to editors : DOS – Internal and External Commands Windows Environment : Desk top, file, folders, icons, Window explorer, control panel, Windows Accessories		
Unit-2	Word Processing Package	09	14
	Introduction to word processing, Examples of some popular WP packages. Uses of word processors, Word Processor – Examples – Uses of WP. Creation, editing, formatting of Documents. Global Search & Replacement of text. Special printing features, Mail merge Facilities, Spelling checker, Table facility, Templates, advanced features. Inserting Pictures, Drawing and Equation, Macros.		
Unit-3	Spreadsheet Package-I	09	14
	Introduction to Spreadsheet Examples of some popular Spreadsheet packages. User of spreadsheet packages. Building Spreadsheet using formulas, conditional calculations, and built-in functions. Use of Conditional Formatting through formula or in-built function Writing macros and spreadsheet menus to build a user-interface		
Unit-4	Spreadsheet Package-II	09	14
	Graph-plotting facilities, Use externally created data lies in the spreadsheet packages. What-if analysis, protection facility, Pivot Tables, Operation on tables. Macros with its all options (Creating, running and Saving in the worksheet(s) with Data with spreadsheets) Application of Spreadsheets		
Unit-5	Presentation Package	09	14
	Preparing presentation, Formatting Slides. Slide transition, adding special effects Inserting Pictures, Sound and Chart. Slide Design Animation in Slide		



Reference Books

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| <ol style="list-style-type: none">1. Office-2007- BPB Publication2. Office-2007 Bible: John Walenbach, Herb Tyson3. Teach yourself Visually MS office 2007 – sherry kinkoph |
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MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
(With effect from Academic Year: 2016-17)

B.Sc.(IT)	Course: Computer Oriented Mathematics	Course No: B.Sc.(IT)-CC-104
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Set and function	09	14
	SET THEORY: Introduction to set theory, basic definition Methods of representation of a set Operations on set (union, intersection, complement of set, difference of sets, symmetric difference, Cartesian product of sets) Properties of set operation (cumulative, associative, distributive, De Morgan's law) FUNCTION: Definition, Domain, co-domain, range, one-to-one function, onto function, Composite function and inverse of a function.		
Unit-2	Vector and Matrices	09	14
	Vector: Definition of Vector, Addition and Subtraction of Vectors Magnitude of a Vector, Unit Vectors, Dot Product and Cross Product. Matrices: Definition of a Matrix, Equal matrices, Diagonal element of a matrix, Row matrix, Column Matrix, Symmetric Matrix, Skew-Symmetric Matrix, Orthogonal Matrix, Diagonal Matrix, Identity Matrix. Operation on a Matrix (Addition, Subtraction and Multiplication) Inverse of a Matrix, Rank of a Matrix, Solution of Linear Equations using Matrices		
Unit-3	Permutation, Combination & Algorithms	09	14
	Meaning of permutation, Formula of permutation, Permutation of n-different things, Permutation of similar things, Permutation of repeated things, Circular Permutation Combination: Meaning of Combination, Formula of Combination. Algorithm: Set Operations. Vector Addition, Subtraction and Dot Product. Algorithm: Matrix Addition, Matrix Multiplication. Algorithm: Permutation & Combination.		



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Unit-4	Sequence and Series	09	14
	Introduction Arithmetic Progression Formula for Sum to n Terms of an A.P. Geometric Progression Sum to n Terms of a G.P. Arithmetic – Geometric Progression (A.G.P.) Harmonic Progression (H.P.) Sum of First n Natural Numbers, Their Squares and Cubes		
Unit-5	Graph Theory	09	14
	Introduction to Graph, Vertices, Edges, Loops, Parallel Edges, Simple Graph, Finite Graph, Adjacent vertices, Incidence between vertex and edge, Degree of a vertex, Isolated Vertex, Pendant Vertex, Null Graph. Isomorphism, Labeled Graph, Unlabeled Graph. Walk, Closed Walk, Open Walk, Simple Path, Circuit, Connected Graph, Operation on Graph (Union, Intersection and Complement). Tree Definition, Rooted Tree, Binary tree and its properties, Uses of Binary Tree. Level of a tree. Matrix Representation of a Tree (Incidence Matrix and Adjacency Matrix).		

Reference Books
<ol style="list-style-type: none">1. D. C. Sancheti, V. K. Kapoor: Business Mathematics, Sultan Chand & sons.2. Lipschutz & Marc Lipson: DISCRETE MATHEMATICS, Tata Mcgraw Hill3. Narsingh Deo: Graph Theory with application to engineering and computer science, Prentice Hall of India Pvt. Ltd



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
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B.Sc.(IT)	Course: Practical (Based on B.Sc.(IT)-CC-102)	Course No: B.Sc.(IT)-CC-105
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 06	Practical Sessions per Week: 06	Teaching Hours: 90 Hours

Unit	Detailed Syllabus	Marks/Weight
Unit-1	Practical Problem from B.Sc.(IT)-CC-102	50
Unit-2	Practical Problem from B.Sc.(IT)-CC-102	30
Unit-3	Journal <ul style="list-style-type: none">➤ Students have to prepare a hand written journal describing his /her Practical work throughout the Semester.➤ The journal must be certified by concern faculty and Principal of the College.➤ The journal will be evaluated by examiners appointed by the university.	20

B.Sc.(IT)-	Course: Practical (Based on B.Sc.(IT)-CC-103)	Course No: B.Sc.(IT)-CC-106
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 06	Practical Sessions per Week: 06	Teaching Hours: 90 Hours

Unit	Detailed Syllabus	Marks/Weight
Unit-1	Practical Problem from B.Sc.(IT)-CC-103	50
Unit-2	Practical Problem from B.Sc.(IT)-CC-103	30
Unit-3	Journal <ul style="list-style-type: none">➤ Students have to prepare a hand written journal describing his /her Practical work throughout the Semester.➤ The journal must be certified by concern faculty and Principal of the College.➤ The journal will be evaluated by examiners appointed by the university.	20



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

Semester-II (FY)

COURSE NO.	COURSE	SUBJECT	CREDIT	Elective course
B.Sc.(IT)-EC -201	ELECTIVE	From list	2	• LEARNING FROM WORLD LEADERS • CULTURE AND CIVILIZATION • HEALTH EDUCATION Foundation Course • COMMUNICATION SKILLS (NO OPTION IS AVAILABLE)
B.Sc.(IT)-FC-201	FOUNDATI	From list	2	
B.Sc.(IT)-CC-201	CORE	Principles of Digital	3	
B.Sc.(IT)-CC-202	CORE	Advanced C Programming	3	
B.Sc.(IT)-CC-203	CORE	Internet and Web	3	
B.Sc.(IT)-CC-204	CORE	Network Management & Information Security	3	
B.Sc.(IT)-CC-205	CORE	* Practical (Based on B.Sc.(IT)-CC-	6	
B.Sc.(IT)-CC-206	CORE	* Practical (Based on B.Sc.(IT)-CC-	6	
TOTAL			28	



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NAAC Accreditation Grade "B"
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B.Sc.(IT)	Course: Principal of Digital Electronics	Course No: B.Sc.(IT)-CC-201
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Gates and Boolean Algebra	09	14
	Introduction to Gates Boolean Algebra (Basic Theorem and Properties) and Truth Table Laws of Boolean Algebra Preparing Circuit from Boolean Function De - Morgan's Theorem		
Unit-2	Logic Simplification and Basic Digital Circuits	09	14
	Simplification of Boolean Algebra and Gate Minimization Preparing truth table from circuit Preparing circuit for given truth table(SOP and POS) Universal Gates [NAND and NOR Gate] Circuit implementation using Universal gates		
Unit-3	Combinational Circuits	09	14
	Integrated Circuit Encoder and Decoder Multiplexer De Multiplexer Comparator		
Unit-4	Arithmetic Circuits	09	14
	Adders : Half Adder and Full Adder Subtractors : Half Subtractor and Full Subtractor Binary Adder Binary Adder/Subtractor Shifter		
Unit-5	Registers and Counters	09	14
	Latches Flip Flop : RS Flip Flop, D Flip Flop, JK Flip Flop , T Flip Flop Registers : Buffer Register and Shift Register Counters : Asynchronous Counter (Ripple), Synchronous Counter		

Reference Books
Digital Computer Electronics – Albert Paul Malvino Digital Logic and Computer Design – M. Morris Mano



MAHARAJA KRISHNAKUMARSINHI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
(With effect from Academic Year: 2016-17)

B.Sc.(IT)	Course: Advanced C Programming	Course No: B.Sc.(IT)-CC-202
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Structure and Union	09	14
	Structure Declaration and initialization Creating variable and accessing data members Array within structure and array of structure Structure within structure Union Passing structure and union as function argument		
Unit-2	Pointer	09	14
	Declaration, initialization and arithmetic of pointers Pointer to array and structures Pointers and strings Pointers as function arguments Functions returning pointers		
Unit-3	Dynamic memory allocation and introduction to linked list	09	14
	Introduction to dynamic memory allocation, malloc() and calloc() functions, Introduction to linked list, comparison with array, Creation of singly linked list Various operations on singly linked list Singly circular linked list		
Unit-4	File Management	09	14
	Introduction to files and its significance File pointer, declaring file pointer Opening and closing a file - fopen(), fclose() Modes to open a text file "w", "r", "a", "w+", "r+", "a+". I/O operations on files, I/O functions : fread(), fwrite(), fscanf(), fprintf(), fgetc(), fputc(), fgets(), fputs(), fseek(), ftell()		
Unit-5	Pre-processors and Bit-wise operators	09	14
	Introduction to pre-processors : #define, #include Bit-wise operators Applications of bit-wise operators		

Reference Books
1. Programming In ANSI C By E. Balagurusamy, TMH Publication. 2. Understanding Pointers in C By Yashwant Kanitkar, BPB Publication 3. Programming with C, Schaums Series, TMH Publication.



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NAAC Accreditation Grade "B"
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B.Sc.IT.	Course: Internet and Web Technology	Course No: B.Sc.(IT)CC-203
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Fundamentals of Internet	09	14
	Introduction to Internet, Intranet, Extranet Introduction to Internet Connection : Dial up connection, Direct Connection, Broadband Connection Introduction to Internet address, URL, ISP Email and its protocol: SMTP, POP3, IMAP		
Unit-2	Introduction to HTML	09	14
	Basics of HTML HTML document structure tags HTML comments Text formatting tags Inserting special characters Hyperlink and its types Lists and its types Working with image		
Unit-3	Advanced HTML	09	14
	Creating Tables Developing Forms Working with frames and floating frames (iframe) Meta tags Embedded multimedia		
Unit-4	Design and Develop web pages using CSS	09	14
	Introduction to DHTML Difference between HTML and DHTML Introduction to CSS Applying stylesheet to a document : Inline stylesheet, External stylesheet, Importing stylesheet, Embedding stylesheet CSS Properties: Font, Text, Margin, Padding, Color, Border, List, Background		
Unit-5	Application of Internet	09	14
	WWW, Search Engine, Newsgroup, Audio and Video conferencing, Web Chat, IRC, FTP, Remote Login, DNS Introduction to eCommerce, eLearning, eBanking Introduction to social networking- Twitter, Facebook		

Reference Books

1. Douglas Comer:- Internet - An Introduction Prentice-Hall of India Pvt. Ltd
2. Ivan Bayross:- WEB enabled Comm. Appli. Develop. using HTML, DHTML, JAVASCRIPT
3. Thomas A. Powell:- The Complete reference HTML and CSS



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B.Sc.IT.	Course: Network Management & Information Security	Course No: B.Sc.IT.CC-204
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Introduction to Information Security	09	14
	Attributes of Information Security: Confidentiality, Integrity, and Availability. Threats & Vulnerabilities: Unauthorized Access, Impersonation, Denial of Service, Malicious Software; Trap Doors, Logic Bomb, Trojan Horses; Viruses, Worms & Bacteria; Security Strategies & Processes; Importance of Security Policies and Audits.		
Unit-2	Network Security -I	09	14
	OSI Model, Maximum Transfer Unit, IP, TCP, UDP, ICMP; ARP, RARP and DNS; Ping, Traceroute. Security Services : Message Confidentiality, Integrity, Authentication, nonrepudiation Message Confidentiality : confidentiality with symmetric key & Asymmetric key		
Unit-3	Network Security - II	09	14
	Network Attacks: Buffer Overflow, IP Spoofing, TCP Session Hijacking, Sequence Guessing, Network Scanning: ICMP, TCP sweeps, Basic Port Scans; Denial of Service Attacks: SYN Flood, Teardrop attacks, land, Smurf Attacks. Virtual Private Network Technology: Tunneling, IPSEC: Traffic Protocols: Authentication Headers, ESP Internet Key Exchange (IKE), Security Association PPTP, L2TP.		
Unit-4	Identification & Authentication	09	14
	Definitions, Types of authentication, Password Authentication, Password Vulnerabilities & Attacks: Brute Force & Dictionary Attacks. Password Policy & Discipline, Single Signon - Kerberos, Alternate Approaches: Biometrics: Types of Biometric Techniques: False Rejection, False Acceptance, Cross Over Error Rates..		
Unit-5	Internet Security	09	14
	. Proxy Servers, Firewalls, , Smurf Attacks on ISP : How Virus works on Internet, How Cookies, Passports and Web Tracking Work, , Privacy and Digital Certificates, Parental Controls on the Internet		

Reference Books
1. William Stallings, "Network Security Essentials"
2. Behrouz A Forouzan " Data Communication And Networking"
3. Professional Reference, "Internet Security"
4. Gollmann, Dieter, "Computer Security"



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY
NAAC Accreditation Grade "B"
(With effect from Academic Year: 2016-17)

B.Sc.(IT)	Course: Practical (Based on B.Sc.(IT)-CC-202)	Course No: B.Sc.(IT)-CC-205
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 06	Practical Sessions per Week: 06	Teaching Hours: 90 Hours

Unit	Detailed Syllabus	Marks/Weight
Unit-1	Practical Problem from B.Sc.(IT)-CC-202	50
Unit-2	Practical Problem from B.Sc.(IT)-CC-202	30
Unit-3	Journal <ul style="list-style-type: none">➤ Students have to prepare a hand written journal describing his /her Practical work throughout the Semester.➤ The journal must be certified by concern faculty and Principal of the College.➤ The journal will be evaluated by examiners appointed by the university.	20

B.Sc.(IT)	Course: Practical (Based on B.Sc.(IT)-CC-203)	Course No: B.Sc.(IT)-CC-206
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 06	Practical Sessions per Week: 06	Teaching Hours: 90 Hours

Unit	Detailed Syllabus	Marks/Weight
Unit-1	Practical Problem from B.Sc.(IT)-CC-203	50
Unit-2	Practical Problem from B.Sc.(IT)-CC-203	30
Unit-3	Journal <ul style="list-style-type: none">➤ Students have to prepare a hand written journal describing his /her Practical work throughout the Semester.➤ The journal must be certified by concern faculty and Principal of the College.➤ The journal will be evaluated by examiners appointed by the university.	20