

Detailed Syllabus
(With effect from Academic Year 2017-2018)

Maharaja Krishnakumarsinhji Bhavnagar University

BACHELOR OF SCIENCE IN IT (B.Sc IT)

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

Semester-III (SY)

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

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BACHELOR OF SCIENCE IN IT (B.Sc IT)

B.Sc IT	Course: Data And File Structure Using C	Course No: B.Sc IT-CC-301	
Semester: 03	Type of Course : Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 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	9	14
	<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 		
Unit-2	Stack and Queue	9	14
	<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	Sorting and searching Techniques	9	14
	<ul style="list-style-type: none"> • Bubble sort, Selection sort • Quick Sort, Merge Sort • Insertion Sort, Shell Sort • Linear Search, Binary Search 		
Unit-4	Linked List	9	14
	<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-5	Tree and Graph	9	14
	<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 definations 		
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 & Sorenson 3. Expert in Data Structure with C: R. B. Patel (Second or above editions) 			

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BACHELOR OF SCIENCE IN IT (B.Sc IT)

B.Sc IT		Course: Programming in C++	Course No: B.Sc IT-CC-302
Semester: 03		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 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	9	14
	<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 		
Unit-2	OOP Concept	9	14
	<ul style="list-style-type: none"> • Function – Member function, Inline function, Friend function • Constructor – Types of constructor, characteristics of constructor, constructor overloading. • Destructor • Input/output statements • Declaration & Creation of Class and Object 		
Unit-3	Operator overloading and Type conversion	9	14
	<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-4	Inheritance & Polymorphism	9	14
	<ul style="list-style-type: none"> • Inheritance • Types of inheritance • *this pointer • Polymorphism (Compile time and Run time polymorphism) • Pure virtual function 		
Unit-5	File Handling and exception handling	9	14
	<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-Hill 2. Robert Lafore: Object Oriented Programming with C++ Galgotia Publications. 3. Rajaraman: Object Oriented Programming with C++ New age International 			

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BACHELOR OF SCIENCE IN IT (B.Sc IT)

B.Sc IT		Course: System Analysis And Design	Course No: B.Sc IT-CC-303
Semester: 03		Type of Course : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03		Theory Sessions per Week: 03	Teaching Hours: 45 Hours
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	System Concepts	9	14
	<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. 		
Unit-2	System Development Life Cycle (SDLC)	9	14
	<ul style="list-style-type: none"> • Requirement analysis and Determination. • System Design Technique. • System Development. • System Testing. • System Implementation and Evaluation. 		
Unit-3	Structured System Analysis and Design Method	9	14
	<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-4	Input / Output Design, Fact Gathering Techniques and implementation	9	14
	<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-5	Analysis and Design Tools	9	14
	<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. Edn 2. 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 			

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BACHELOR OF SCIENCE IN IT (B.Sc IT)

B.Sc. IT Semester: 03	Course: Operating System - I Type of Course : Core Course	Course No: B.Sc IT-CC-304	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours	
Unit	Detailed Syllabus	Teaching Hours	Marks/Weight
Unit-1	Basic of Operating System.	9	14
	<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 		
Unit-2	Operating System Types & Structure.	9	14
	<ul style="list-style-type: none"> • 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-3	Process Scheduling	9	14
	<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-4	Threads & Deadlocks	9	14
	<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-5	Memory Management	9	14
	<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, 2001 3. Stallng W, “Operating Systems”, 6th edition, Prentice Hall India. 			

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BACHELOR OF SCIENCE IN IT (B.Sc IT)

B.Sc IT				Course: Practical		Course No: B.Sc IT-CC-305	
Semester: 03				Type of Course: Core Course			
Marking Scheme: External Examination: 100 + Internal Examination: 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 301			90	50		
Unit-2	Practical Based on 302			90	50		