

Gujarat University
Bachelor of Computer Applications
Semester III (CBCS)
Syllabus
(Effective from June 2018)



GUJARAT UNIVERSITY

BCA SEMESTER III SYLLABUS

COURSE TITLE	Computer Organization	
COURSE CODE	CC-201	
COURSE CREDIT	3	
Session Per Week	4	
Total Teaching Hours	40 HOURS	
AIM	To study and understand the basic organization of computers and the working of each component.	
LEARNING OUTCOMES	On the completion of the course students will: 1. Understand the working of basic computer components and CPU operation. 2. Data Representation in computers. 3. Understand the concepts related to computer memory.	
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Logic Circuits and Components of Digital Computers Digital Logic Circuit <ul style="list-style-type: none">• Digital Computers• Logic Gates• Boolean Algebra• Combinational Circuits<ul style="list-style-type: none">◦ Half-Adder◦ Full-Adder• Flip-Flops<ul style="list-style-type: none">◦ SR Flip-Flop◦ D Flip-Flop◦ JK Flip-Flop◦ T Flip-Flop	10
	Digital Components <ul style="list-style-type: none">• Integrated Circuits• Decoders<ul style="list-style-type: none">◦ NAND Gate Decoder◦ Encoders• Multiplexers• Registers• Shift Registers• Binary Counters• Memory Unit<ul style="list-style-type: none">◦ Random-Access Memory◦ Read-Only Memory◦ Types of ROMs	2

	Representation of Data and Register Transfer with Microoperations	10
2	<p>Data Representation</p> <ul style="list-style-type: none"> • Data Types <ul style="list-style-type: none"> ◦ Number System ◦ Octal and Hexadecimal Numbers ◦ Decimal Representation ◦ Alphanumeric Representation • Complements <ul style="list-style-type: none"> ◦ $(r-1)$'s Complement ◦ (r)'s Complement • Fixed-Point Representation <ul style="list-style-type: none"> ◦ Integer Representation ◦ Arithmetic Addition ◦ Arithmetic Subtraction ◦ Overflow ◦ Decimal Fixed-Point Representation • Floating-Point Representation • Error Detection Codes 	<p>1</p> <p>2</p>
	Register Transfer and Micro-operations	
	<ul style="list-style-type: none"> • Register Transfer Language • Register Transfer • Bus and Memory Transfers <ul style="list-style-type: none"> ◦ Three-State Bus Buffers ◦ Memory Transfer • Arithmetic Micro-operations <ul style="list-style-type: none"> ◦ Binary Adder ◦ Binary Adder-Subtractor ◦ Binary Incrementer ◦ Arithmetic Circuit • Logic Micro-operations <ul style="list-style-type: none"> ◦ List of Logic Micro-operations ◦ Hardware Implementation • Shift Micro-operations • Arithmetic Logic Shift Unit 	<p>1</p> <p>3</p> <p>3</p>
3	Design and Organization of Basic Computer, CPU	10
	Basic Computer Organization and Design	
	<ul style="list-style-type: none"> • Instruction Codes <ul style="list-style-type: none"> ◦ Stored Program Organization ◦ Indirect Address • Computer Registers <ul style="list-style-type: none"> ◦ Common Bus System • Computer Instructions <ul style="list-style-type: none"> ◦ Instruction Set Completeness • Timing and Control • Instruction Cycle <ul style="list-style-type: none"> ◦ Fetch and Decode ◦ Determine the Type of Instruction ◦ Register-Reference Instructions • Memory-Reference Instructions • Input-Output and Interrupt • Complete Computer Description • Design of Basic Computer • Design of Accumulator Logic 	<p>2</p> <p>2</p>

	Central Processing Unit <ul style="list-style-type: none">• Introduction• General Register Organization• Stack Organization• Instruction Formats• Addressing Modes• Data Transfer and Manipulation• Program Control	3 3
4	Organization of Input-Output and Memory	10
	Input-Output Organization <ul style="list-style-type: none">• Peripheral Devices• Input-Output Interface• Asynchronous Data Transfer<ul style="list-style-type: none">◦ Handshaking• Modes of Transfer• Priority Interrupt• Direct Memory Access	2 3
TEXT BOOK/S:		
Text Book: Computer System Architecture (3rd Edition) By: M. Morris Mano Publisher: Pearson		
REFERENCE BOOKS:		
1. Computer Architecture and Organization (2nd Edition), By: B. Govindraju, Publisher: TMH		
WEB RESOURCES:		
https://www.tutorialspoint.com/computer_logical_organization/index.htm https://en.wikipedia.org/wiki/Computer_architecture http://nptel.ac.in/courses/106103068/# http://www.srmuniv.ac.in/downloads/computer_architecture.pdf https://imlearner.files.wordpress.com/2010/08/computer-system-architecture-3rd-ed-morris-mano-p98.pdf http://www.a-zshiksha.com/forum/viewtopic.php?f=133&t=61511 https://docs.google.com/file/d/0B0DfyDcYZ0AbN2tZEHRCef1a1k&export=download https://robot.bolink.org/ebooks/Computer%20System%20Architecture%203e%20By%20M%20Morris%20Mano.pdf https://books.google.co.in/books/about/Computer_Architecture_and_Organization.html?id=YT74AkSrj4sC http://www.freebookcentre.net/CompuScience/Free-Computer-Architecture-Books-Download.html http://freecomputerbooks.com/compscCategory.html http://www.freetechbooks.com/computer-organization-and-architecture-f56.html		



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	Data Structures
COURSE CODE	CC-202
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

This course introduces students to get the detail knowledge of Basic data structures, representations, building and use of those data structures in different applications in real world.

LEARNING OUTCOMES

Students would be able-

- 1) To understand the concept, role and importance of Data.
- 2) To recognize the use of Data Structure for real applications.
- 3) To identify the key differences between various data structures.
- 4) To comprehend the type of data structure to apply according to the scenery of applications.
- 5) To be aware of the real building of the data structure using various programming languages.
- 6) To implement the various operations of data structures by using algorithms.
- 7) To deal with every tiny elements of the Data Structures.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Introduction to Data Structures, Arrays & Linked List <ul style="list-style-type: none">• Introduction<ul style="list-style-type: none">o Datao Data Types<ul style="list-style-type: none">▪ Abstract Data Types (Primitive)▪ User-Defined Data Types (Non-Primitive)o Data Structures:o Definitiono Classification of Data Structures and details of each classifications	10
	<ul style="list-style-type: none">• Array<ul style="list-style-type: none">o Definitiono Mappingo Sparce Matrix	2

1	<ul style="list-style-type: none"> • Linked list <ul style="list-style-type: none"> ◦ Comparison of Array and Linked List ◦ Types of Linked Lists ◦ Representation of Linked Lists ◦ Operations on Doubly Linked Lists (Algorithm and Explanation) <ul style="list-style-type: none"> ▪ Creation ▪ Traversal ▪ Insertion <ul style="list-style-type: none"> i. At Front ii. In Between (After and Before) iii. At End ▪ Deletion <ul style="list-style-type: none"> i. From Beginning ii. From Between iii. From End 	2
	<ul style="list-style-type: none"> • Searching: <ul style="list-style-type: none"> ◦ Introduction to Searching ◦ Searching Techniques: <ul style="list-style-type: none"> ▪ Sequential Search ▪ Binary Search 	2
	<ul style="list-style-type: none"> • Sorting: <ul style="list-style-type: none"> ◦ Introduction to Sorting ◦ Sorting Techniques: <ul style="list-style-type: none"> ▪ Bubble sort ▪ Selection sort ▪ Insertion sort ▪ Quick sort ▪ Merge sort 	3
2	<p>Stack & Queues</p> <ul style="list-style-type: none"> • Stack: <ul style="list-style-type: none"> ◦ Introduction (Idea of the Stack) ◦ Operations of the Stack (Algorithm and Explanation) ◦ Implementation of the Stack (Using Array and linked list) ◦ Applications of the Stack: <ul style="list-style-type: none"> ▪ Definition: Reverse and Polish ▪ Conversion: Infix to Postfix using manually and stack for parenthesis and Non-parenthesis (with Algorithm) ▪ Recursion(Definition) 	10
	<ul style="list-style-type: none"> • Queue: <ul style="list-style-type: none"> ◦ Introduction (Idea of the Queue) ◦ Types of Queue ◦ Operations of Simple and Circular Queue (Algorithm and Explanation) ◦ Implementation of the Queue (Using Array and Linked list) 	5

	Tree	10
3	<ul style="list-style-type: none"> • Introduction • Terminology • Binary Tree: <ul style="list-style-type: none"> ◦ Definition ◦ Representation of Binary Tree ◦ Operation on Binary Tree <ul style="list-style-type: none"> ▪ Creation ▪ Insertion ▪ Deletion ▪ Traversal (Pre-Order, In-Order and Post- Order) Excluding general binary tree ▪ Conversion from (Pre, In or Post) into Binary Tree 	5
	<ul style="list-style-type: none"> • Types of Binary Tree <ul style="list-style-type: none"> ◦ Full Binary Tree ◦ Complete Binary Tree ◦ Binary Search Tree ◦ Expression Tree ◦ Threaded Binary Tree ◦ Heap Tree ◦ Height Balanced Tree (AVL Tree) ◦ B-Tree 	5
4	Graph	10
	<ul style="list-style-type: none"> • Introduction • Basic Terminology • Representation of Graph <ul style="list-style-type: none"> ◦ Adjacency Matrix (Array) ◦ Adjacency Linked • Traversal of Graph <ul style="list-style-type: none"> ◦ Breadth First Traversal (Algorithm and Tracing) ◦ Depth First Traversal (Algorithm and Tracing) 	6
	<ul style="list-style-type: none"> • Application of Graph <ul style="list-style-type: none"> ◦ Spanning Tree <ul style="list-style-type: none"> ▪ Minimum Spanning Tree (BFS and DFS) ▪ Prim's Algorithm ▪ Kruskal's Algorithm ◦ Shortest Path Algorithm ◦ Dijkstra's Algorithm 	4

TEXT BOOK:

Data and File Structures using C Publisher: Oxford

By Reema Thareja

- Chapter-4 (4.1, 4.2, 4.3) – Introduction to Data Structures
- Chapter-5 (5.1, 5.2, 5.3, 5.6.5, 5.16) – Array and Searching
- Chapter-8 (8.2, 8.7) – Linked List
- Chapter-9 (9.1, 9.3, 9.4, 9.5, 9.7, 9.8, 9.11, 9.12, 9.13, 9.14, 9.16[Only Definition],9.17[Definition and 9.17.1]) – Stack & Queues
- Chapter-10 (10.1, 10.2, 10.4[excluding 10.4.4]) - Tree
- Chapter-11 (11.1, 11.2.2, 11.2.3, 11.3, 11.4 [Definition and 11.4.2], 11.6[Definition and 11.6.2]) - Tree
- Chapter-12 (12.1[Definition and 12.1.1, 12.1.2]) - Tree
- Chapter-13 (13.1, 13.4, 13.5, 13.7[excluding 13.7.5]) - Graph
- Chapter-14 (14.1, 14.2, 14.3, 14.4, 14.5, 14.6) - Sorting

REFERENCE BOOKS:

1. Data Structures and Algorithms in C++ Publisher: Dreamtech

By B. M. Harvani

2. Magnifying Data Structures Publisher: PHI

By: Arpita Gopal

3. Data Structures using C & C ++ Publisher: Wiley-India

By : Rajesh K. Shukla

4. Introduction to Data Structures in C Publisher: Pearson Education

By: Ashok N. Kamthane

5. Data Structures Using C Publisher: Pearson Education By : A. K Sharma

REQUIRED SOFTWARE/S

Turbo c



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	Object Oriented Concepts and Programming	
COURSE CODE	CC-203	
COURSE CREDIT	3	
Session Per Week	4	
Total Teaching Hours	40 HOURS	
AIM		
1.) To get in-depth knowledge of Object Oriented Programming language. 2.) To obtain knowledge of programming for real life applications.		
LEARNING OUTCOMES		
1. Understand the features of C++ supporting object oriented programming 2. Understand the relative merits of C++ as an object oriented programming language 3. Understand how to produce object-oriented software using C++ 4. Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism. 5. Understand advanced features of C++ specifically stream I/O, templates and operator overloading		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	OOPS Introduction * Overview of Object Oriented Programming <ul style="list-style-type: none">o Introduction to Object Oriented Programmingo Procedure Oriented and Object Orientedo Difference Between C and C++o C++ Output/ Inputo Keywords in C++o New style of header file specificationo Comments in C++o Variables in C++o Reference Variables in C++o The bool Data typeo Importance of function prototyping in C++o Function Overloadingo Default Argumentso Inline Functiono Scope Resolution Operator	10
		6

	<p>Classes And Object</p> <ul style="list-style-type: none"> o Structures in C o Structure in C++ o Access Specifier o Classes o Objects in C++ o Characteristics of Access Specifier o Function outside a class o Initialization of variable in C++ o Arrow Operator o ‘this’ pointer 	4
2	<p>More on++Classes and Object, Dynamic Memory Management, Constructor & Destructor</p> <p>* More on Classes and Objects</p> <ul style="list-style-type: none"> o Member Functions and Data Members o Friend Functions o Friend Class o Array of Class Object o Passing Class Objects to Function o Returning Objects from Functions o Nested Classes o Namespaces 	10
	<p>* Dynamic Memory Management</p> <ul style="list-style-type: none"> o Introduction o Dynamic Memory Allocation Using “new” o Dynamic Memory Deallocation 	5
	<p>* Constructor and Destructor</p> <ul style="list-style-type: none"> o Constructor o Characteristics of Constructor o Types of Constructor o Destructor o Characteristics of Destructor 	2
	<p>Inheritance and Polymorphism</p> <p>* Inheritance</p> <ul style="list-style-type: none"> o Introduction o Advantages of Inheritance o ‘Protected’ Access specifier o Inheritance using different access specifier o Initialization of Base class members through derived class object o Different forms of Inheritance o Function Overriding 	3

3	<ul style="list-style-type: none"> * Virtual Functions and Inheritance o Introduction o Pointers to derived class o Rules for virtual function o Internals of Virtual Functions o Pure virtual function o Virtual Base class o Virtual destructor o Abstract class o Limitations of virtual Function o Early binding v /s Late binding 	5
4	<p>Operator Overloading, Working with Files and Templates 10</p> <ul style="list-style-type: none"> * Operator Overloading o Introduction o Operators that can be overloaded o Overloading Unary Operator using member Functions (-,++,--) o Overloading Unary Operator using friend Functions (+,-,++,--) o Overloading Binary Operator using member Functions (+,-,*,/,>,<,==,!<=,>= and <=) o Overloading Binary Operator using friend Functions (+,-,*,&/) o Why to Overload Operators using friend function? o Rules for Operator Overloading o Type Conversions <ul style="list-style-type: none"> * basic type to class type * class type to basic type * class type to another class type o Excluding Assignment operators (=,+=,*=,/=-,=,%=,&=, =,^=), Bit-wise Operator, Dereferencing, New, Delete, Subscript, Function call, Logical and >>=,<<= 	5
	<p>* Working with Input, Output and Files</p> <ul style="list-style-type: none"> o Introduction o Stream Class Model of C++ (istream,ostream,ifstream,ofstream,iostream) o Text Files o Test mode input using ‘extraction’(>>) operator, ‘get()’ function and ‘getline()’ function o Text mode output using ‘insertion’ (<<) operator and ‘put()’ function 	2
	<p>* Templates</p> <ul style="list-style-type: none"> o Introduction o Function Templates o Function Templates with multiple parameters o Overloading Function Template o Class Template o Class Template with multiple parameters o Nested Class Templates o Advantages of using Templates 	3

TEXT BOOK/S:

1. Object Oriented Programming with C++

Publication: Pearson

By Subhash KU

REFERENCE BOOKS:**1. Object-Oriented Programming with C++ (Second Edition)**

Publication: PHI

By Poornachandra Sarang

2. Object Oriented Programming using C++

Publication: Cengage Learning

By Joyce Farrell

3. Object Oriented Programming In C++

Publication: Wiley India Edition

By Rajesh K. Shukla

WEB RESOURCES:**REQUIRED SOFTWARE/S**

Turbo C



GUJARAT UNIVERSITY

BCA SEMESTER III SYLLABUS

COURSE TITLE	Fundamentals of Operating System
COURSE CODE	CC-204
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

To understand the fundamentals of processes, scheduling concepts, memory management, I/O and file systems in a typical operating system.

LEARNING OUTCOMES

On the completion of the course students will:

1. Know the components of an operating system
2. Understand the basics of process management and memory management.
3. Know the concepts of I/O and file systems
4. Provide information about the functions and roles of each of the components of the operating system.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
	Introduction to Operating System & Processor Management	10
1	<ul style="list-style-type: none">• Introduction to Operating System<ul style="list-style-type: none">o What is Operating System?o Operating system softwareo Types of Operating System• Memory Management: Early System<ul style="list-style-type: none">o Single User Contiguous Schemeo Fixed Partitionso Dynamic Partitionso Allocation and deallocation methodso Relocatable Dynamic Partitions• Memory Management: Virtual Memory<ul style="list-style-type: none">o Paged Memory Allocationo Demand Pagingo Page Replacement Algorithms<ul style="list-style-type: none">▪ First In First Out▪ Least Recently Usedo Segmented Memory allocationo Segmented/Demand Paged Memory allocationo Virtual Memory	2 3 5

	Processor Management <ul style="list-style-type: none"> • Job Scheduler, Process Scheduler, • Job and Process Status • Process Control Block • Process Scheduling Policies • Process Scheduling Algorithms: <ul style="list-style-type: none"> (Examples to be done with or without Arrival time) • First Come First Serve, Shortest Job Next, Priority Scheduling, Shortest Remaining Time, Round Robin 	10		
2	Deadlock and Process Synchronization <ul style="list-style-type: none"> • Deadlock <ul style="list-style-type: none"> ◦ Seven cases for deadlock ◦ Conditions for Deadlock ◦ Strategies for handling Deadlocks ◦ Starvation(Dining Philosophers Problem) • Process Synchronization <ul style="list-style-type: none"> ◦ What is parallel Processing? ◦ Typical Multi processing configurations ◦ Process Synchronization Software-test and set, Wait & Signal ◦ Semaphores ◦ Process Cooperation- Producers and consumers 	10 5 5		
3	Device Management & File Management <ul style="list-style-type: none"> • Device Management <ul style="list-style-type: none"> ◦ Types of System Devices ◦ Communication among devices ◦ Management of I/O requests ◦ Device Handler Seek Strategies <ul style="list-style-type: none"> ▪ FCFS ▪ SSTF ▪ Elevator(Look) • File Management <ul style="list-style-type: none"> ◦ The File Manager ◦ Physicals to rage allocation ◦ Data Compression ◦ Access Control Verification module 	10 6 4		
4	TEXT BOOK/S:			
<p>Text Book: Operating Systems Publication: Cengage learning By Flynn/McHoes,</p>				
REFERENCE BOOKS:				
1. OperatingSystemsConceptsPublication:PearsonHigherEducationBySilberschatz, Galvin&Gagne 2. OperatingSystems:InternalsandDesignPrinciples,5/EPublication:PearsonHigherEducation By William Stallings				
WEB RESOURCES:				
https://www.tutorialspoint.com http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir/ https://users.dimil.uniud.it/~antonio.dangelo/OpSys/materials/Operating_System_Concepts.pdf www.studytonight.com/operating-system/cpu-scheduling https://www.cs.uic.edu/~jbell/CourseNotes/OperatingSystems/5_CPU_Scheduling.html http://www2.latech.edu/~box/os/ch05.pdf				



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	STATISTICAL METHODS	
COURSE CODE	CC-205	
COURSE CREDIT	3	
Session Per Week	4	
Total Teaching Hours	40 HOURS	
AIM		
To develop the skill about the basic statistics. To develop the ability to find approximate solutions and/or answer by choosing correct statistical technique for a given problem.		
LEARNING OUTCOMES		
On the completion of the course students will: 1. Get a working knowledge of statistical methods. 2. Understand the use of statistical methods with computer related computational approach. 3. With statistical techniques so that they are prepared to apply the knowledge in the field of computer science.		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Introduction and Measures of Central Tendency Introduction: <ul style="list-style-type: none">• Meaning of Statistics• Types of Statistical Methods• Scope or Importance of Statistics• Limitations of Statistics	10
	Measures of Central Tendency <ul style="list-style-type: none">o Introduction<ul style="list-style-type: none">• Characteristics of a Good Average.• Different Types of Measures of Central Tendencyo Mean<ul style="list-style-type: none">• Arithmetic Mean• Arithmetic Mean of Grouped Frequency Distribution• Short-cut Method and Step-Deviation Method of• Obtaining Arithmetic Mean (Excluding Mathematical Properties of A.M)• Combined Arithmetic Mean• Cumulative Arithmetic Mean• Advantages, disadvantages and uses of Arithmetic Mean, Geometric Mean, G. M, H.M.• Relation Among A.M., G.M., H.M.• Weighted Arithmetic Mean	1

	<ul style="list-style-type: none"> o Median <ul style="list-style-type: none"> • Individual Frequency Distribution • Ungrouped Frequency Distribution • Grouped Frequency Distribution • Advantages, disadvantages and uses of Median o Mode <ul style="list-style-type: none"> • Individual Frequency Distribution • Ungrouped Frequency Distribution • Grouped Frequency Distribution • Advantages, disadvantages and uses of Mode 	
2	Measures of Dispersion	10
	<ul style="list-style-type: none"> • Quartiles, Deciles and Percentiles • Introduction, Objectives and essentials of a good measure 	1
	o Absolute and Relative Measures of Dispersion	
	o Range	
	o Quartile Deviation	2
	<ul style="list-style-type: none"> • Advantages and disadvantages of Q.D. • Coefficient of Quartile Deviation 	
	<ul style="list-style-type: none"> o Mean Deviation • Coefficient of Mean Deviation • Advantages and disadvantages of M.D. o Standard Deviation • Alternative Method of Standard Deviation • Relationship among Q.D., M.D., S.D. • Advantages and disadvantages of S.D. 	5
3	<ul style="list-style-type: none"> o Variance (Excluding Properties of S.D) • Coefficient of Variation • Direct Method • Step-Derivation Method 	2
	Probability and Probability Distribution	10
	Probability:	
	<ul style="list-style-type: none"> o Introduction o Definitions of Some Important Terms <ul style="list-style-type: none"> • Random Experiment • Trial Event • Favorable Cases • Equally Likely Events • Mutually Exclusive Events • Exhaustive Events • Dependent Events • Independent Events 	2
	<ul style="list-style-type: none"> o Statistical approach to probability o Modern approach to probability o Symbols associated with probability o Algebra of sets o Conditional Probability o Theorems (Laws) of Probability(Without Proof) o Baye's Rule(only for two events) 	6

	<ul style="list-style-type: none"> o Random Variable o Probability Distribution and its types o Binomial Distribution o Characteristics of Binomial Distribution 	2
4	Correlation Analysis And Regression Analysis	10
	<p>Correlation Analysis</p> <ul style="list-style-type: none"> o Introduction o Types of Correlation <ul style="list-style-type: none"> • Positive, Negative and Zero Correlation • Linear and non-linear Correlation • Simple, Multiple and Partial Correlation • Positive, Negative and Zero Correlation • Methods of Measuring Correlation • Karl Pearson's Product Moment Method • Spearman's Rank Method 	6
	<p>Regression Analysis</p> <ul style="list-style-type: none"> o Regression Equation. o Method of Least Squares. o The regression equation of Y on X o The regression equation of X on Y o Regression Coefficient & Its Properties (without proof) o Correlation Versus Regression 	4

TEXT BOOK/S:

Business Statistics (Fourth Edition)

Publication: Vikas Publication House Pvt.Ltd.

By J.K.Sharma

Chapter- 1 (1.4 to 1.7)

Chapter- 3 (3.4 to 3.11)

Chapter- 4 (4.3, 4.4, 4.5.1, 4.5.2, 4.5.3)

Chapter- 6 (6.1 to 6.6)

Chapter- 7 (7.1, 7.2, 7.5.1)

REFERENCE BOOKS:

1. Business Statistics (Third Revised Edition)

Publication: S.Chand

By Padmalochan Hazarika

2. Business Mathematics and Statistics

Publication: Tata McGraw Hill Education Private Limited

By N G Das and J K Das

WEB RESOURCES:

REQUIRED SOFTWARE/S



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	Data Structures Practicals	
COURSE CODE	CC-206	
COURSE CREDIT	3	
Session Per Week	3	
Total Teaching Hours	40 HOURS	
AIM		
Student will be provided with practical knowledge of basic data structures, representation, building and use of various data structures in different applications in real world.		
LEARNING OUTCOMES		
1.) To gain the knowledge of various advanced data structure topics practically. 2.) To develop skills for effective use of the pointers and structures in programming.		
Note		
The students are expected to write program in "C or C++ Programming "languages unit wise as given below. The list in each unit is indicative only and may or may not be asked in the examination . The programs given below are only sample examples for practice in lab.		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Linked List <ul style="list-style-type: none"> 1. Write program to implement following operations using Singly link list <ul style="list-style-type: none"> • Insert at first • Insert at Last • Insert at specified location (Before or After the Node) • Delete from first • Delete from last • Delete any specified node • Traversal • Sorting • Splitting • Merging • Counting Operations(Total no. of nodes, even and odd no. of nodes) 	10
		4

1	<p>2. Write program to implement following operations using Doubly link list</p> <ul style="list-style-type: none"> • Insert at first • Insert at Last • Insert at specified location (Before or After the Node) • Delete from first • Delete from last • Delete any specified node • Traversal • Sorting • Splitting • Merging • Counting Operations(Total no. of nodes, even and odd no. of nodes) 	6
2	Searchin and Sorting	10
	<p>1. Write a program to implement sequential search.</p> <p>2. Write a program to implement binary search.</p>	2
2	<p>3. Write a program to implement bubble sort.</p> <p>4. Write a program to implement selection sort</p> <p>5. Write a program to implement merge sort</p> <p>6. Write a program to implement quick sort</p> <p>7. Write a program to implement insertion sort.</p>	8
3	Stack	10
	<p>• Stack:</p> <p>1. Write a program to implement following operations in stack Using array and Linked List.</p> <ul style="list-style-type: none"> • PUSH • POP • PEEP <p>2. Write a program to implement Evaluation of given postfix expression.</p>	5
3	<p>3. Write a program to implement conversion of infix expression into postfix expression (parentheses and non parentheses).</p> <p>4. Write a program to implement recursion.</p> <p>5. Write a program to reverse the string using the stack.</p>	5
	Queue and Tree	10
4	<p>Queue:</p> <p>1. Write a program to implement Simple Queue operations using Array and Linked List.</p> <ul style="list-style-type: none"> • ENQUEUE • DEQUEUE • Traversal (display) <p>2. Write a program to implement Circular Queue operations Using Array.</p> <ul style="list-style-type: none"> • ENQUEUE • DQUEUE • Traversal (display) 	5

4	3. Write a program to implement following operations on Binary Search Tree using Linked List. • Creation • Insertion • Traversal(In-order, Pre-order, Post-order)	5
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TEXT BOOK:

Data and File Structures using C Publisher: Oxford

By Reema Thareja

REFERENCE BOOKS:

1. Data Structures and Algorithms in C++ Publisher: Dreamtech

By B. M. Harvani

2. Magnifying Data Structures Publisher: PHI

By: Arpita Gopal

3. Data Structures using C & C ++ Publisher: Wiley-India

By : Rajesh K. Shukla

4. Introduction to Data Structures in C Publisher: Pearson Education

By: Ashok N. Kamthane

5. Data Structures Using C Publisher: Pearson Education By : A. K Sharma

REQUIRED SOFTWARE/S

Turbo c



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	C++ Practicals	
COURSE CODE	CC-207	
COURSE CREDIT	3	
Session Per Week	3	
Total Teaching Hours	40 HOURS	
AIM		
1.) To get in-depth practical knowledge of Object Oriented Programming language. 2.) To obtain practical knowledge of programming for real life applications.		
LEARNING OUTCOMES		
1. Understand the features of C++ supporting object oriented programming 2. Understand the relative merits of C++ as an object oriented programming language 3. Understand how to produce object-oriented software using C++ 4. Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism. 5. Understand advanced features of C++ specifically stream I/O, templates and operator overloading		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
	Introduction to OOP, Classes & Objects	10
	1. Write a program to calculate the area of circle, rectangle and square using function overloading. 2. Write a program to demonstrate the use of default arguments in function overloading. 3. Write a program to demonstrate the use of returning a reference variable. 4. Create a class student which stores the detail about roll no, name, marks of 5 subjects, i.e. science, Mathematics, English, C, C++. The class must have the following: <ul style="list-style-type: none">• Get function to accept value of the data members.• Display function to display values of data members.• Total function to add marks of all 5 subjects and Store it in the data members named total.	

- 1
5. Create a function power() to raise a number m to power n, the function takes a double value for m and int value for n, and returns the result correctly. Use the default value of 2 for n to make the function calculate squares when this argument is omitted. Write a main that gets the values of m and n from the user to test the function.
6. Write a basic program which shows the use of scope resolution operator.
7. Write a C++ program to swap the value of private data members from 2 different classes.
8. Write a program to illustrate the use of this pointer.
9. An election is contested by five candidates. The candidates are numbered 1 to 5 and the voting is done by marking the candidate number on the ballot paper. Write a program to read the ballots and count the votes cast for each candidate using an array variable count. In case a number is read outside the range of 1 to 5, the ballot should be considered as a 'spoilt ballot' and the program should also count the number of spoilt ballots.
10. Write a program to call member functions of class in the main function using pointer to object and pointer to member function.

10

Dynamic Memory Management, Constructor & Destructor, Inheritance

10

1. Using friend function find the maximum number from given two numbers from two different classes. Write all necessary functions and constructors for the program.
2. Using a friend function, find the average of three numbers from three different classes. Write all necessary member functions and constructor for the classes.
3. Define currency class which contains rupees and paisa as data members. Write a friend function named AddCurrency() which adds 2 different Currency objects and returns a Currency object. Write parameterized constructor to initialize the values and use appropriate functions to get the details from the user and display it.
4. Create Calendar class with day, month and year as data members. Include default and parameterized constructors to initialize a Calendar object with a valid date value. Define a function AddDays to add days to the Calendar object. Define a display function to show data in "dd/mm/yyyy" format.
5. Create a class named 'String' with one data member of type char *, which stores a string. Include default, parameterized and copy constructor to initialize the data member. Write a program to test this class.
6. Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a function ComputePay(in hours) to compute the weekly payment of every employee. A male employee is paid on the number of days and hours he works. The female employee gets paid the wages for 40 hours a week, no matter what the actual hours are. Test this program to calculate the pay of employee.

2

- 7.** Create a class called scheme with scheme_id, scheme_name,outgoing_rate, and message_charge. Derive customer classfrom scheme and include cust_id, name and mobile_no data.Define necessary functions to read and display data. Create a menu driven program to read call and message informationfor a customer and display the detail bill.
- 8.** Write a program with use of inheritance: Define a class publisher that stores the name of the title. Derive two classesbook and tape, which inherit publisher. Book class containsmember data called page no and tape class contain time forplaying. Define functions in the appropriate classes to get andprint the details.
- 9.** Create a class account that stores customer name, account no,types of account. From this derive classes cur_acc and sav_acc to include necessary member function to do the following:
- Accepts deposit from customer and update balance
 - Compute and Deposit interest
 - Permit withdrawal and Update balance.
- 10.** Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a functionComputePay (in hours) to compute the weekly payment ofevery employee. A male employee is paid on the number ofdays and hours he works. The female employee gets paid thewages for 40 hours a week, no matter what the actual hoursare. Test this program to calculate the pay of employee

Virtual Functions, Operator Overloading

10

- 1.** Create a class vehicle which stores the vehicleno and chassisno as a member. Define another class for scooter, which inherits the data members of the class vehicle and has a data member for a storing wheels and company.
Define another class for which inherits the data member of the classvehicle and has a data member for storing price and company. Display the data from derived class.
Use virtual function.
- 2.** Create a base class shape. Use this class to store two doubletype values that could be used to compute the area of figures.Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data() to initialize the base class data members and another member function display_area() to compute anddisplay the area of figures. Make display_area() as a virtual function and redefine this function in the derived class to suit their requirements.

- 3** Write a program to demonstrate the use of pure virtual function.
- 4** Create a class time with member data hour and minute. Overload ++ unary operator for class time for increment and -- unary operator for decrement in time object value.
- 5** Create a class string with character array as a data member and write a program to add two strings with use of operator overloading concept.
- 6** Create a class distance which contains feet and inch as a datamember. Overhead = =, <and> operator for the same class. Create necessary functions and constructors too.
- 7** Create a class MATRIX of size mxn. Overload + and – operators for addition and subtraction of the MATRIX.
- 8** Define a class Coord, which has x and y coordinates as itsdata members. Overload ++ and – operators for the Coordclass. Create both its prefix and postfix forms
- 9** Create one class called Rupees, which has one member data tostore amount in rupee and create another class called Paise which has member data to store amount in paise. Write a program to convert one amount to another amount with use of type conversion.
- 10** Create two classes Celsius and Fahrenheit to store temperaturein terms of Celsius and Fahrenheit respectively. Includenecessary functions to read and display the values. Defineconversion mechanism to convert Celsius object to Fahrenheitobject and vice versa. Show both types of conversions in mainfunction.

Templates, Files

10

- 4**
- 1** Write a program to create a function template for finding maximum value contained in an array.
- 2** Write a program to create a class template for the 'Array' class.
- 3** Create a template for the bubble sort function.
- 4** Write a program to create a function template for swapping the two value.
- 5** Write a program to illustrate the use of put(), get() and getline() functions for Text mode Input/Output.
- 6** Write a program to read character, integer and string from keyboard and write it in "data.txt" file and read from file in text mode.
- 7** Write a program to read your name and roll number from keyboard and write it in "mydata.txt " file and read from file in text mode.
- 8** Write a program to read product name and product price from keyboard and write it in "product.txt" file and read from file in text mode.
- 9** Write down a program to create a file temp.txt, write into the specific file than read the same data from the file
- 10** Write a program to create num.txt file which stores number. Find max value from a file nums.txt and print it on standard output device.

TEXT BOOK/S:

1. Object Oriented Programming with C++

Publication: Pearson

By Subhash KU

REFERENCE BOOKS:

1. Object-Oriented Programming with C++ (Second Edition)

Publication: PHI

By Poornachandra Sarang

2. Object Oriented Programming using C++

Publication: Cengage Learning

By Joyce Farrell

3. Object Oriented Programming In C++

Publication: Wiley India Edition

By Rajesh K. Shukla

WEB RESOURCES:

REQUIRED SOFTWARE/S

Turbo C

Elective Course **EC-201(1) Soft Skills Development**

Course Introduction:

In the age of liberalization, privatization and globalization, the need has arisen to inculcate such habits and attitudes which help students to adapt to the occupational set-ups. Such behavioral competencies are known as Soft Skills.

Objectives:

- 1.) To help students do well in academics.
- 2.) To motivate students to personal and professional growth.
- 3.) To provide students with tools for success and character building.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20

UNIT	TOPICS / SUBTOPICS
1	Changing Ourselves to Change the World <ul style="list-style-type: none">• Understanding what are soft skills,• Realizing the need for personality growth and development for a better life and a better world,• Need for Soft Skills in today's world,• Learning to recognize our wants and our choices, Anticipating and understanding changes,• Preparing and dealing with change: Reacting to change in our lives; attitudinal barriers to change
2	Time Management and Stress Management <ul style="list-style-type: none">• Importance of Time Management, How to regulate the way you spend time, Identifying and eliminating time wasters, Strategies for Managing Time,• Understanding stress: Causes of Stress and its consequences, Techniques to manage stress
3	Reading Skills <ul style="list-style-type: none">• Importance of Reading• Pleasure of Reading• Types of Reading• Calculating Reading speed and Accuracy• Techniques to read faster and better• Technique of SQ3R, Practising Comprehension• How to identify the core ideas of reading material
4	Writing and Speaking Skills <ul style="list-style-type: none">• Importance of writing effectively• Methods of writing better• Selecting a topic, Knowing your audience• Writing an outline, Researching, Organizing, Writing and revising drafts,

	<ul style="list-style-type: none"> • Making quick notes • Writing your resume and covering letter
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Text Book:

The ACE of Soft skills
 Publication: Pearson
 By Gopalaswamy Ramesh, Mahadevan Ramesh

Corporate Skills
 Publication: Rupa & Co 2010, New Delhi .
 By Gulati, Sarvesh

Reference Books:

1. Soft Skill for Everyone
 Publication: Cengage
 By Jeff Butterfield
2. Contemporary Business Communication
 By Scott Ober
3. Business Communication Today
 By Bovee, Thill, Schazman
4. Enrich your English
 By CIEFL (Academic Skills book)
5. Contemporary English Grammar
 By Raymond Murphy
6. Essential English Grammar
 By Raymond Murphy
7. English and Soft skills
 Publication: Orient Blackswan
 By S.P.Dhanavel:

**Elective Course
EC-201(2) Carbon Credit**

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20

Syllabus and text book as per B.S.C Syllabus Semester III Elective Course.

Elective Course
EC-201(3) Learning from Great Indian Thinkers

Course Introduction:

This course aims at revisiting the Indian culture with the objective of inspiring students to become better citizens. The course is designed to adopt any pedagogy suited to teach the values, ethics and works of some of the world renowned thinkers who have changed history and brought about a renaissance in the cultural and spiritual heritage of mankind.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
	Extracts from
1	<ul style="list-style-type: none"> ● Ancient India:(Any three) <ul style="list-style-type: none"> ○ The Vedas ○ Stories from the Mahabharata ○ Ramayana and Bhagvad Gita ○ Tales from the Buddha's Life/Jataka ○ Tales from the life of Mahaveer/Jain stories and folklore ○ Upanishadic and Pauranic Stories ○ Extracts from the Sangam Literature, the Milinda Panho, the Arthashastra, and the Charak Samhita ○ Foreign travelers account ○ Life stories of Panini, Gargi, Maitreyi, Aryabhatta ○ Varahmihira ○ Ashtavakra ○ Shankracharya ○ Charvak
2	Extracts from life stories <ul style="list-style-type: none"> ● Modern India(Any three) <ul style="list-style-type: none"> ○ Raja Ram Mohan Roy ○ Iswar Chand Vidyasagar ○ Swami Dayanand, Saraswati ○ Swami Vivekananda ○ Rabindranath Tagore ○ P.C. Ray ○ Swami Sahajanand Saraswati ○ Sarvapalli Radhakrishnan ○ Sri Aurobindo ○ Veer Savarkar

	<ul style="list-style-type: none"> <input type="radio"/> Sardar Patel <input type="radio"/> Bal Gangadhar Tilak <input type="radio"/> Gopal Krishna Gokhale <input type="radio"/> Mohandas Karamchand Gandhi <input type="radio"/> Subhashchandra Bose <input type="radio"/> Jawaharlal Nehru <input type="radio"/> Dr. Baba Saheb Ambedkar <input type="radio"/> Vinoba Bhave <input type="radio"/> Jayprakash Narayan <input type="radio"/> Sarojini Naidu <input type="radio"/> Madam Bhikaji Kama <input type="radio"/> Ram Manohar Lohia <input type="radio"/> FieldMarshall Manekshaw <input type="radio"/> Pandit Madan Mohan Malaviya
3	<p>Extracts from the life stories of</p> <ul style="list-style-type: none"> • Contemporary Indian Leaders: (any three) <ul style="list-style-type: none"> <input type="radio"/> K.R. Narayanmurthi <input type="radio"/> Azim Premji <input type="radio"/> A.P.J. Abdul Kalam <input type="radio"/> Jagdish chandra Bose <input type="radio"/> Ramanujan, Meghnad Saha <input type="radio"/> Vikram Sarabhai <input type="radio"/> Mother Teresa <input type="radio"/> Dhirubhai Ambani <input type="radio"/> J.R.D Tata <input type="radio"/> Ghanshyam Das Birla <input type="radio"/> L. N. Mittal <input type="radio"/> Subhash Chandra <input type="radio"/> Baba Amte, Varghese Kurien <input type="radio"/> Ela Bhatt <input type="radio"/> Medha Patkar <input type="radio"/> Nandan Nilekani, Gita Piramal, C.K. Prahlad <input type="radio"/> Case Study-Setting Goals at State Bank of Vermont
4	<p>Extracts from the life stories of</p> <ul style="list-style-type: none"> • Philosophers(all eras) (any three): <ul style="list-style-type: none"> <input type="radio"/> J. Krishnamurti <input type="radio"/> Rajneesh (Osho) <input type="radio"/> Ram krishna Paramhansa <input type="radio"/> Raman Maharshi <input type="radio"/> Amartya Sen <input type="radio"/> Maharshi Arvind

Elective Course

EC-201(4) Introduction to Indian Constitution

Course Introduction:

To create awareness of Fundamental Law of the land and generate common civic sense.

Objectives:

The Student will be able to:

- 1.) Understand the basic features of the Constitution of India, as set out in the Preamble.
- 2.) Identify your fundamental rights and learn how they can be enforced.
- 3.) See how the Directive Principles of State Policy influence the law makers of the country.
- 4.) Get an understanding of your fundamental duties.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20

UNIT	TOPICS / SUBTOPICS
1	Introduction to Constitution of India <ul style="list-style-type: none">• The Background• Making of the Constitution• Basic Principles• The Philosophy of the Constitution
2	More on Constitution of India <ul style="list-style-type: none">• Salient Features of the Constitution• Special Features of the Constitution• The Preamble• The Union and Its Territory• Citizenship
3	Fundamental Rights & Duties <ul style="list-style-type: none">• Introduction of Fundamental Rights• Right to Equality• The Right to Freedom• The Right against Exploitation• The Right to Freedom of Religion• Cultural and Educational Rights• A Right to Constitutional Remedies• An Assessment• The Directive Principles of State Policy• Fundamental Duties
4	Members In Parliament, Judiciary and Federalism <ul style="list-style-type: none">• The Union Executive• The Vice President and the Attorney-General• The Union Legislature – The Parliament of India• Legislative Procedure• The Union Judiciary – the Supreme Court• The Machinery of Government in the States

- | | |
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| | <ul style="list-style-type: none">• Judiciary in the States• The Federal System• Administrative Relations between the Union and the States• Financial Relations between the Union and the States• Inter-State Trade and Commerce |
|--|--|

Textbook:

An Introduction to the Constitution of India

Publication: Vikas Publications

By Dr. M V Pylee

Reference Book:

1. Introduction to the Constitution of India

Publication: PHI Publications

By Brij Kishore Sharma

2. Introduction to the Constitution of India

Publication: LexisNexis Publications

By Durga Das Basu



GUJARAT UNIVERSITY

BCA III SYLLABUS

COURSE TITLE	Digital Marketing
COURSE CODE	EC-201
COURSE CREDIT	2
Session Per Week	2
Total Teaching Hours	20 HOURS

AIM

- * To Provides comprehensive coverage of the developments and use of Internet as a marketing planning tool
- * To Presents the ability of the digital world to increase efficiency in established marketing functions
- * To Provides insights on how organizations can leverage the benefits of social media
- * To Discusses cutting-edge business strategies such as differentiation, and cost leadership that generate revenue while delivering customer value
- * To Includes both Indian as well as global case studies of companies such as Vodafone, Ford, Aviva India, Bacardi, Amazon

LEARNING OUTCOMES

On the completion of the course students will:

- 1.Understand the marketing in the digital era.
2. Understand the business drivers in the virtual world; such as social media, online branding, traffic building on web-site, e-commerce.
- 3.Understand the online tools for marketing.
- 4.To understand the contemporary digital revolution

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Marketing in the Digital Era * E-marketing * The Online Marketing Mix * The Online Consumer * Customer Relationship Management in a Web 2.0 World	5
2	Business Drivers in the Virtual World * Social Media * Online Branding * Traffic Building * Web Business Models * E-commerce	5
	Online Tools for Marketing	5

3	<ul style="list-style-type: none"> * Engagement Marketing through Content Management * Online Campaign Management * Consumer Segmentation, Targeting, and Positioning using Online Tools * Market Influence Analytics in a Digital Ecosystem 	
4	<p>The Contemporary Digital Revolution</p> <ul style="list-style-type: none"> * Online Communities and Co-creation * The World of Facebook * The Future of Marketing Gamification and Apps 	5

TEXT BOOK/S:

1. Digital Marketing

Publisher: Oxford University Press

Author: Vandana Ahuja

REFERENCE BOOKS:

WEB RESOURCES:

REQUIRED SOFTWARE/S

Foundation Course **FC-201(1) Principles of Management**

Course Introduction:

The field of management has undergone a sea change and has today assumed a form of a profession with a well-defined body of knowledge. This knowledge is continuously evolving and new issues and findings are constantly emerging. This field is attracting many people who want to undergo a formal training in this area.

Objectives:

The student would be able

- 1.) To get a basic understanding with reference to working of business organizations through the process of management.
- 2.) To understand the managerial functions of planning and organizing.
- 3.) To discuss on the managerial functions of staffing, directing and controlling.

No. of Credits: 2

Theory Sessions per week: 3

Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Introduction to Management, Planning and Organizing <ul style="list-style-type: none">• Management<ul style="list-style-type: none">○ Meaning and process of management	10 hours
	<ul style="list-style-type: none">• Planning<ul style="list-style-type: none">○ Meaning○ Planning process○ Planning premises○ Types of plans – based on breadth and use.	
	<ul style="list-style-type: none">• Organizing<ul style="list-style-type: none">○ Introduction○ Meaning of organizing○ Principles of organizing.	
2.	More on Organizing and Staffing <ul style="list-style-type: none">• Departmentation<ul style="list-style-type: none">○ Meaning	10 hours
	<ul style="list-style-type: none">• Bases of departmentation<ul style="list-style-type: none">○ Function wise○ Product wise○ Territory wise○ Process wise○ Customer wise.	

	<ul style="list-style-type: none"> • Delegation <ul style="list-style-type: none"> ○ Meaning ○ Elements of delegation ○ Principles of effective delegation. • Centralization and decentralization <ul style="list-style-type: none"> ○ Meaning ○ Factors affecting degree of centralization and decentralization. • Staffing <ul style="list-style-type: none"> ○ Meaning ○ Human Resource Planning <ul style="list-style-type: none"> ▪ Meaning ▪ Importance ○ Job Analysis <ul style="list-style-type: none"> ▪ Meaning ▪ Importance ○ Recruitment <ul style="list-style-type: none"> ▪ Meaning ▪ Only sources of recruitment ○ Selection <ul style="list-style-type: none"> ▪ Meaning ▪ Only the selection process ○ Training <ul style="list-style-type: none"> ▪ Meaning ▪ Methods of training-job rotation ○ Lectures/conference vestibule(a short note on these) 	
3	<p>Directing</p> <ul style="list-style-type: none"> • Meaning of directing • Principles of directing • Motivation <ul style="list-style-type: none"> ○ Meaning ○ Theories of motivation <ul style="list-style-type: none"> ▪ Herzberg's Two-Factor theory ▪ McGregor's Theory X and Theory Y , Theory Z • Leadership <ul style="list-style-type: none"> ○ Meaning of leadership ○ Types of leadership <ul style="list-style-type: none"> ▪ Autocratic ▪ Democratic ▪ Theories of leadership-Blake and Mouton's ▪ Managerial grid ▪ Leadership continuum ○ Communication <ul style="list-style-type: none"> ▪ Meaning and Importance 	10 hours

4	Control <ul style="list-style-type: none"> • Meaning and Nature of control • Importance of control • Control process • Essentials/principles of effective control system • Techniques of control-Break-Even Analysis 	10 hours
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Textbook:

Principles of Management (Fifth Edition)

Publication: Tata McGraw Hill

By P C Tripathi, PN Reddy,

Reference Book:

1. Fundamental of Management, Concept, application, skill development
Publication: Cengage Learning
By Robert N. Lussier
2. Entrepreneurship and Management
Publication: Pearson
By: S. Nagendra, VS Manjunath
3. Management-Concept, Practice and Cases
Publication: Tata McGraw Hill(first Edition-2010)
By: Karminder Ghuman and K. Aswathapa

Foundation Course **FC-201(2) Mass Communication**

Course Introduction:

With the advances in ICT, the new methods of mass communication have been developed. More and more, radio, TV channels as well as news papers are been made available to the society. Since, the student having good knowledge of ICT will have openings in mass media field. It is essential that the student should know different aspects of mass media and communication. This subject makes an attempt to expose the students to the role of electronic and print media, in corporate as well as societal communication.

Objectives:

- 1.) To gain understanding of mass communication and its processes.
- 2.) To become aware of the effects of mass media upon society.
- 3.) To understand the theoretical underpinnings and ethical standards within mass media fields.
- 4.) To enhance media literacy.
- 5.) To learn about the norms and practices within mass media fields.

No. of Credits: 2

Theory Sessions per week: 3

Teaching Hours: 40

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Mass Communication: An Overview <ul style="list-style-type: none">• Mass Communication & Society• Uses & Effects• Content of Media• Impact o f Mass Media on children, women & others• Target Audience & Objectives• Cultural Context & Psychology• Technology in Communication• Various Media• Convergence & New Media: E-Commerce, E-learning• Effective Presentation Skills	10 hours
2	Print Media & Corporate Communication <ul style="list-style-type: none">• Newspapers• Magazines• What is news?• News Values, Types & Sources• Role of Editors & Reporters• Technology used in print media• Content analysis of newspaper• What is Corporate Communication?• In-house Communication• Corporate Identity: Definition & Types	10 hours

3	Radio	10 hours
	<ul style="list-style-type: none"> • Importance of Spoken words • Strength & Weaknesses of Radio as a Medium • Functioning of Radio Stations • Public & Private Radio Stations • Different Production Formats & Genres • Technology in Radio • Ethics in Broadcasting 	
4	Television	10 hours
	<ul style="list-style-type: none"> • Basics of Photography • Early Experiments of Television (SITE, KCP, Jhabua project,etc) • Developing Ideas & Script Writing • TV Production Formats • Planning & Budgeting • Camera Compositions, Framing, Movements • Editing • Television Crew & Functioning of Studio • E-Content 	

Reference Book:

1. Mass Communication in India
Publication: JAICO Publications
By Keval J. Kumar

Cyber Law

About the course: Development of Cyber law is a recent phenomenon. It is still in a nascent stage and continuously evolving every passing day. Even the most learned legal luminaries find it difficult to solve the legal problems posed by technology. India has emerged as a hub of the IT industry due to the phenomenal growth of the IT sector. However, this huge growth rate has brought with it the inevitable legal complications due to a switch over from paper-based commercial transactions to e-commerce and e-transactions.

The purpose and object of the course:

To introduce the cyber world and cyber law in general

To explain about the various facets of cyber crimes

To enhance the understanding of problems arising out of online transactions and provoke them to find solutions

To clarify the Intellectual Property issues in the cyber space and the growth and development of the law in this regard

To educate about the regulation of cyber space at national and international level

Syllabus:

The syllabus is divided in four units:

Unit 1: Internet, E-Commerce and E-Governance with Reference to Free Market Economy

- Modern Era: The scene and problems
- Need for Cyber Laws
- What is E-commerce? Various Modes of E-commerce
- Illustrative cases about cyberspace jurisdiction
- Basic laws of Digital and Electronic Signature in India

Unit II: Law Relating to Electronic Records and Intellectual Property Rights in India

- Legal aspects of electronic records/ digital signatures
- The roles and regulations of certifying authorities in India
- Protection of intellectual property rights in cyberspace in India

Unit III: International efforts relating to cyberspace laws and cyber crimes

- International efforts related to cyberspace laws
- Council of Europe convention on cyber crimes

Unit IV: Penalties, compensation and offences under the cyberspace and Internet in India

- Penalties, compensation and adjudication of violations of provisions of IT Act and judicial review
- Some important offences under the cyberspace law and the internet in India

- Miscellaneous provisions of IT act and conclusions

Textbook:

Cyber Laws and IT Protection by Harish Chander

Publication: PHI Learning PVT LTD

Reference Books:

1) Textbook on Cyber Law by Pavan Duggal

Publication: Universal Law Publishing

2) Cyber Law: Law of Information Technology and Internet by Anirudh Rastogi

Publication: LexisNexis

Gujarat University
Bachelor of Computer Applications
Semester IV (CBCS)
Syllabus
(Effective from June 2018)



GUJARAT UNIVERSITY

BCA SEMESTER IV SYLLABUS

COURSE TITLE	Database Management System - II			
COURSE CODE	CC-208			
COURSE CREDIT	3			
Session Per Week	4			
Total Teaching Hours	40 HOURS			
AIM				
The aim of the course is to make student how to use these concepts in database applications.				
LEARNING OUTCOMES				
Students would be able to:				
1) Decide where and how to store and retrieve the information effectively using advanced concept of database				
2) Recognize the elements of Database for real life applications.				
3) Familiar with the advanced database concepts such as distributed database, business intelligence and data warehouse etc.				
DETAIL SYLLABUS				
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS		
1	<p>Introduction to SQL</p> <ul style="list-style-type: none">● Introduction to SQL● Data Definition Commands<ul style="list-style-type: none">○ Data Types○ Creating Table Structures○ SQL Constraints● Data Manipulation Commands<ul style="list-style-type: none">○ Adding Table Rows○ Saving Table Changes○ Listing Table Rows○ Updating Table Rows○ Restoring Table Contents○ Deleting Table Row● Select Query<ul style="list-style-type: none">○ With Conditional Restrictions○ Arithmetic Operators○ Logical Operators○ Special Operators● Advanced Data Definition Commands<ul style="list-style-type: none">○ Changing a Column's Data Type○ Changing a Column's Data Characteristic○ Adding a column○ Dropping a column○ Advanced Data Update○ Copying Parts of Table○ Adding Primary and Foreign Key Designations○ Deleting Table From The Database	<p>10</p> <p>5</p> <p>5</p>		

	Transaction Management and Concurrency Control	10
2	<ul style="list-style-type: none"> ● What is a Transaction? ● Concurrency Control ● Concurrency Control with Locking Methods ● Concurrency Control with Stamping Methods ● Concurrency Control with Optimistic Methods ● Database Recovery Management 	
3	Distributed Database Management System <ul style="list-style-type: none"> ○ Evolution of DDBMS ○ Distributed Processing and Distributed Database ● Levels of Data and Process Distribution <ul style="list-style-type: none"> ○ Single-Site Processing, Single-Site Data(SPSD) ○ Multiple-Site Processing, Single-Site Data(MPSD) ○ Multiple-Site Processing, Multiple-Site Data(MPSD) ● Distributed Database Transparency Features ● Distributed Transparency ● Transaction Transparency <ul style="list-style-type: none"> ○ Distributed Requests and Distributed Transactions ○ Distributed Concurrency Control ○ Two-Phase Commit Protocol ● Performance Transparency and Query Optimization 	10 2 3 5
4	Advanced SQL <ul style="list-style-type: none"> ● Set Operators <ul style="list-style-type: none"> ○ Union ○ Union All ○ Intersect ○ Minus ● SQL Join <ul style="list-style-type: none"> ○ Cross Join ○ Natural Join ○ Join Using Clause ○ Join On Clause ○ Outer Join ● SQL Functions <ul style="list-style-type: none"> ○ Date and Time ○ Numeric ○ String ○ Conversion ● Sub Queries <ul style="list-style-type: none"> ○ Where Sub Queries ○ In Sub Queries ○ Multirow Sub Query Operators: Any and All ○ From Sub queries ○ Attribute list Sub queries ○ Correlated Sub queries ● Sequence 	10 2 5 3

TEXT BOOK/S:

Database System Concepts (First Edition: 2008)

Publisher: Cengage Learning

By Peter Rob and Carlos Coronel

Chapter-10 (10.1, 10.2, 10.3, 10.4, 10.5, 10.6)

Chapter-12 (12.1, 12.3, 12.6, 12.7, 12.8, 12.9, and 12.10)

Chapter-7 (7.1, 7.2 (7.2.4, 7.2.5, 7.2.6, 7.2.7) 7.3, 7.4, 7.5, 7.6.3) Excluding (7.1.1, 7.1.2, 7.2.3)

Chapter-8 (8.1, 8.2, 8.3, 8.4, 8.5)

REFERENCE BOOKS:

1. Introduction to Database Management Systems (First Edition 2006)

Publisher: Tata McGraw-Hill

By ISRD Group

2. An Introduction to Database Systems (Eighth Edition 2006)

Publisher : Pearson

By C. J. Date, A. Kannan & S. Swamynathan

3. An Introduction to Database Systems

Publisher: Pearson

By ITL Education Solutions Limited

WEB RESOURCES:

<https://www.techonthenet.com/oracle/>

http://www.way2tutorial.com/sql/oracle_sql_introduction_type_of_sql_statement.php

https://docs.oracle.com/cd/B19306_01/server.102/b14200/



GUJARAT UNIVERSITY

BCA SEM-IV SYLLABUS

COURSE TITLE	System Analysis, QA and Testing	
COURSE CODE	CC-209	
COURSE CREDIT	3	
Session Per Week	3	
Total Teaching Hours	40 HOURS	
AIM		
To develop the skill about System Analysis, Quality Assurance and types of Testing Methods To make the students able to design CD, DFD, UML Diagrams and test the existing systems.		
LEARNING OUTCOMES		
On the completion of the course students will: 1.Understand different models and draw data flow diagrams 3.Understand the basic android terminology and technology 4.Learn how to draw uml diagrams 5.To understand the basic terminologies and types of testing		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	SYSTEM ANALYSIS AND DESIGN	10
	Software Development Models <ul style="list-style-type: none">o Waterfall Modelo The Incremental Modelo The Spiral Model	4
1	Requirement Modeling / Fact-finding techniques <ul style="list-style-type: none">InterviewDocument reviewObservationQuestionnaires and surveysOverview Feasibility StudyOperational , Technical , Economic , Schedule FeasibilityData Flow Diagram: Concepts, Symbols, Rules, Construction of CD and DFD	6

	Object Oriented Analysis	10
2	<p>The Constituents of OOAD:</p> <ul style="list-style-type: none"> o Objects and Classes o Links and Association o Generalization and Specialization o Aggregation and Composition o Coupling and Cohesion o Components o Interfaces 	4
	<p>UML DIAGRAMS</p> <p>Use-Case Diagram:</p> <p>Benefits of Use-Case Diagram</p> <ul style="list-style-type: none"> o Actors, Use-Cases , Relationship between Actor and Use Case <p>Sequence Diagram:</p> <p>Elements of Sequence Diagram:</p> <p>Life Lines, Messages, Activation, Guards, Combined Fragments, Objects</p>	6
3	<p>UML DIAGRAMS</p> <p>Activity Diagram:</p> <p>Elements of Activity Diagram:</p> <p>Initial State, Final State</p> <p>Action / Activity</p> <p>Transitions , Decision</p> <p>Synchronization, Fork and Join</p> <p>Swim lanes, Object and Object Flow</p> <p>Class Diagram:</p> <ul style="list-style-type: none"> o Elements of Class Diagram: 	6
	<p>User Interfaces and Layouts</p> <ul style="list-style-type: none"> o Viewgroups o Built-in Layout classes o FrameLayout, LinearLayout, RelativeLayout,TableLayout, GridLayout o Multiple Layouts on a screen 	4
4	<p>QA and TESTING</p> <p>Quality, Quality Assurance and Quality Control</p> <p>White Box Testing</p> <p>Black Box Testing</p> <p>Integration Testing</p>	6
	<p>QA and TESTING</p> <p>System and Acceptance Testing</p> <p>Performance Testing</p> <p>Regression Testing</p> <p>Test Metrics and Measurements</p>	4

TEXT BOOK/S:

UNIT 1 :

System Analysis and Design Methods

Publisher: Cengage Learling

By: Gary B. Shelly, Thomas J. Cashman, Harry J. Rosenblatt

UNIT 2, 3

Magnifying Object-Oriented Analysis and Design

Publisher: PHI

Author: Arpita Gopal and Netra Patil

UNIT 3, 4

Software Testing: Principles and Practices

Pearson Education

Srinivasan Desikan Gopalaswamy Ramesh

REFERENCE BOOKS:

WEB RESOURCES:

REQUIRED SOFTWARE/S



GUJARAT UNIVERSITY

BCA IV SYLLABUS

COURSE TITLE	CORE JAVA					
COURSE CODE	CC-210					
COURSE CREDIT	3					
Session Per Week	4					
Total Teaching Hours	40 HOURS					
AIM						
To develop the skill about the basic knowledge of java programming language with oop concepts and provide knowledge about platform independent concept.						
To provide knowledge of interface exception handling,threading, package and applet details through java.						
LEARNING OUTCOMES						
On the completion of the course students will:						
1.Understand the java programming and oop concepts.						
2.Understand the concepts of Inteface, exception handling, threading, and package.						
3.Understand the basic concepts of applet.						
DETAIL SYLLABUS						
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS				
1	Java Introduction <ul style="list-style-type: none"> • Principles of Object oriented language • Java Essentials • Java Virtual Machine • Java Features • Program Structure • Java Improvements • Difference between Java and C++ • Installation of JDK 1.7 • Integrated Development Ebvironment 	10				
	<ul style="list-style-type: none"> • Java Programming constructs <ul style="list-style-type: none"> o Variables o Primitive Data Types o Identifier o Literals o Operators o Expressions o Precedence Rules and Associativity o Primitive type conversion and casting o Flow of Control 	4				

	<ul style="list-style-type: none"> • Classes and Objects <ul style="list-style-type: none"> ◦ Class, Objects, Class declaration in java, Creating Objects ◦ Methods, Constructors, Cleaning Up Unused Objects 	3
2	Array, Inheritance and Interface <ul style="list-style-type: none"> ◦ Class Variable and Methods - Static Keyword ◦ this keyword • Arrays ◦ One dimensional, Two dimensional ◦ Using For..each with array ◦ Passing arrays to methods and returning arrays from method • command line arguments 	4
	<ul style="list-style-type: none"> • Inheritance <ul style="list-style-type: none"> ◦ Deriving classes using extends keyword ◦ Overriding Method ◦ super keyword, final keyword ◦ Abstract class • Interface <ul style="list-style-type: none"> ◦ Variables in Interface ◦ Extending Interfaces ◦ Interface vs Abstract class 	4
3	Package, String and Exception Handling <ul style="list-style-type: none"> • Packages <ul style="list-style-type: none"> ◦ Creating Packages ◦ Using Packages ◦ Access Protection • java .lang Package • java.lang.Objects class • java.wrapper classses • String class • String Buffer Class 	5
	<ul style="list-style-type: none"> • Exception <ul style="list-style-type: none"> ◦ Introduction ◦ Exception Handling Techniques ◦ User Defined Exception 	5
	Multithreading and Applet <ul style="list-style-type: none"> • Introduction • Multithreading in java • java.lang.Thread • Main Thread • Creation of new Threads • Thread State in java • Thread Priority • Multithreading using isAlive() and join() 	10

4

- Applet
- Introduction
- Applet class
- Applet Structure
- Example Applet Program
- Applet Life Cycle
- Common methods used in displaying the output
- paint(), update() and repaint() methods
- More about applet tag
- Methods of Graphics class
 - o drawLine(), drawArc(), fillArc(), drawOval(), fillOval(), drawPolygon(), fillPolygon(), drawRect(), fillRect(), drawRoundRect(), fillRoundRect()

5

TEXT BOOK/S:

Programming in Java
Oxford Publication
By Sachin Malhotra and Saurabh Choudhary

REFERENCE BOOKS:

1. Programming in Java 2
 Jaico publishing house
 By Dr. K. Somasundaram
2. The Complete Reference Java2
 TMH Publication
 By Herbert Schildt

WEB RESOURCES:

1. docs.oracle.com/javaee/6/tutorial/doc/girgm.html
2. docs.oracle.com/javaee/6/tutorial/doc/bnagi.htm
3. www.javatpoint.com
4. www.tutorialspoint.com

REQUIRED SOFTWARE/S

1. Any editor of Windows or Linux/UNIX.
2. JVM version 1.8



GUJARAT UNIVERSITY

BCA IV SYLLABUS

COURSE TITLE	E-COMMERCE
COURSE CODE	CC-211
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

To develop the skill about the basic and important terminology of Internet.
To make the students able for web site design fundamentals using HTML scripting.

LEARNING OUTCOMES

On the completion of the course students will:

- 1.Understand the meaning and syntax of different tags of HTML5
- 2.Learn the basic differences between HTML and HTML5
- 3.Understand the basic internet terminology and technology
- 4.To design web pages using simple and advanced tags of HTML5.
- 5.To understand the fundamental concept of Google AdSense and Analytics.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Introduction to E-Commerce <ul style="list-style-type: none">• E-Commerce: The revolution is just beginningo What is E-Commerce?o The difference between E- Commerce and E-Businesso Eight Unique Features of E-Commerce Technologyo Introduction to Web 2.0o Types of E-Commerce	10 3
	The Internet and World Wide Web : E-Commerce Infrastructure	

	<ul style="list-style-type: none"> • The Internet: Technology Background <ul style="list-style-type: none"> o The Evolution of the Internet 1961 – the Present o The Internet : Key Technology Concepts o Other Internet Protocols and Utility Programs • The Internet Today <ul style="list-style-type: none"> o The Internet Backbone o Internet Exchange Points o Campus Area Networks (CANs) o Internet Service Providers o Internets and Extranets • Introduction to Internet 2 • The Internet and the Web: Features <ul style="list-style-type: none"> o E-mail o Instant Messaging o Search Engines o Intelligent Agents (Bots) o Online Forums and Chat o Streaming Media o Cookies 	7
2	<p>Online Security and Payment System</p> <ul style="list-style-type: none"> • The E-Commerce Security Environment <ul style="list-style-type: none"> o Scope of the problem o What is good E-commerce security? o Dimensions of E-commerce security o The tensions between security and other values • Security Threats in the E-Commerce Environment <ul style="list-style-type: none"> o Malicious code o Unwanted programs o Phishing and Identity theft o Hacking and Cyber vandalism o Credit Card Fraud/Theft o Spoofing and Spam Web Sites o Sniffing o Insider attacks o Poorly designed server and client software • Technology solution <ul style="list-style-type: none"> o Protecting Internet communications o Encryption (excluding: limitation of encryption solutions) 	10

3	<p>Payment Systems, Social Networks and Online Auctions</p> <ul style="list-style-type: none"> • Types of Payment systems o Cash o Checking transfer o Credit card o Accumulating balance • E-Commerce payment systems o Online credit card transaction o Digital wallets o Digital cash o Online stored value systems o Digital accumulating balance payment systems o Digital checking payment systems o Wireless payment systems <p>Social Networks, Auctions and Portals</p> <ul style="list-style-type: none"> • Social Networks and Online Communities o What is online social network? o Difference between Social networks and Portals o Social network features and technologies o The future of social networks • Online Auctions o Defining and measuring the growth of auctions and dynamic pricing o Why are Auctions so popular? Benefits and costs of o Auctions(excluding: market-maker benefit) o Types and examples of Auctions 	10 5
4	<p>Ethical, Social and Political issues in E-commerce</p> <ul style="list-style-type: none"> • Understanding Ethical, Social and Political Issues in ECommerce o A model for organizing the issues o Basic ethical concepts: responsibility, accountability and liability o Analyzing ethical dilemmas o Candidate ethical principles • Intellectual property rights o Types of Intellectual property protections o Copyrights: the problem of perfect copies and encryption o Patents: business methods and processes o Trademark: online infringement and dilution • Governance o Public government and law o Introduction to Taxation 	10

TEXT BOOK/S:

E-Commerce – Business, Technologies, Society (2008), 4th Edition

Publication: Pearson

Kenneth C. Laudon, Carol Guercio Traver

REFERENCE BOOKS:

1. E-Commerce Strategy, Technology and Implementation

Publication: Cengage Learning

By Gary P. Schneider

2. Electronic commerce

Publication: TATA Mc Graw Hill

By Bharat Bhasker

3. Electronic Commerce A Managers' Guide

Publication: Pearson

By Ravi Kalakota, Andrew B. Whinston

4. Electronic Commerce A simplified Approach

Publication: JAICO

By Munesh Chandra Trivedi

5. e-Business 2.0

Publication: Pearson

By Ravi Kalakota, Marcia Robinson

WEB RESOURCES:

REQUIRED SOFTWARE/S



GUJARAT UNIVERSITY
BCA IV SYLLABUS

COURSE TITLE	DATABASE MANAGEMENT SYSTEM-II PRACTICAL
COURSE CODE	CC-212
COURSE CREDIT	3
SESSIONS PER WEEK	3
TOTAL TEACHING HOURS	40 HOURS

AIM

To develop the skill about the basic knowledge of SQL.

LEARNING OUTCOMES

On the completion of the course students will:

- 1.Understand the SQL concepts.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	SQL Create table structures. o With Different data types of SQL o with use of necessary constraints _ Primary Key _ Foreign Key _ Not Null _ Unique _ Default _ Check	10
	Perform following data manipulation commands on table For Example: o Adding Table Rows o Saving Table Changes o Listing Table Rows o Updating Table Rows o Restoring Table Contents o Deleting Table Row	5 hours
2	SQL Perform select queries on different tables. with arithmetic operators o with conditional restrictions o with logical operators o with special operators	10
	Apply advanced data definition commands on table For Example: o Changing a Column's Data Type o Changing a Column's Data Characteristic o Adding a column o Dropping a column o Advanced Data Update o Copying Parts of Table o Adding Primary and Foreign Key Designations o Deleting Table From The Database	8 hours

	Advanced SQL	10 hours
3	Perform select query with aggregate functions o Min o Max o Count o Sum o Avg	2 hours
	Apply set operators on any given two tables. o Union o Union All o Intersect o minus	2 hours
	Perform join on given two or more than two tables. o Cross Join o Natural Join o Join Using Clause o Join On Clause o Outer Join	6 hours
4	Advanced SQL	10 hours
	Demonstrate the use of SQL functions using SQL query on different tables. o Date and Time o Numeric o String o Conversion	3 hours
	Demonstrate the use of sub queries on different tables. o Where o In o Having o Multi rows (Any/ All) o From sub query o Attribute list o correlated	6 hours
	Create sequences and demonstrate the use of sequence.(Create, Use and Delete)	1 hours

Following type of sample questions can be asked in the final examination

1. CUST(CID,CNAME,CCITY,DOB)
PROD(PID,PNAME,PCOST,PPROFIT)
SALE_DETAIL(CID,PID,SALE,SALE_DATE)
1) Write a query that display purchase detail of all customers based on sale date.
2) Display the Name of customers who are born in 1985.
3) Display the name of product starts with "s".
4) Display details of product having maximum sales.

2. BRANCH_MASTER(B_NO,B_NAME,LOCATION)
CUSTOMER_MASTER(C_NO,C_NAME,GENDER,DOB,CITY,CONTACT_NO)
ACCOUNT_MASTER(ACC_NO,ACC_TYPE,B_NO,C_NO,OPEN_DATE,CURR_BALANCE)
1) Display details of male customers only.
2) Display the details of account opened in 1999.
3) List all records where current balance not less than 4000.
4) List all branch names where branch number is 1 or 3.

3. EMP(EMP_NO,EMP_NAME,DESIGNATION,MGR_NO,HIREDATE,SALARY,
COMMISSION,DEPT_NO)
DEPT(DEPT_NO,DEPT_NAME,LOCATION)
1) List DEPTNO as DEPARTMENT NUMBER, Count of Employees as "Number of Employees"
FROM Employee table.
2) List all employees who earn more than the average salary of their departments.
3) List DEPTNO, sum of salary department wise of employees who earn more than 2000.
4) Create a view on all the employee details of deptno=10.

4. PERSON (P_ID, LASTNAME, FIRSTNAME, ADDRESS, CITY)
ORDER (O_ID, ORDERNO, P_ID, ORDER_PRICE)
1) List all persons in Norway and USA:
2) Select only the records with NULL values in the "Address" column
3) List firstname,lastname with an Order month "November".
4) Count the no of persons having average order price=20;

5. PROGRAMMER(NAME,DOB,DOJ,PROF1,PROF2,SALARY)
SOFTWARE(NAME,TITLE,DEV_IN,SCOST,DCOST,SOLD)
STUDIES (NAME,SPLACE,COURSE,CCOST)
1) How many programmers have done the PGDCA course.
2) Display the institute names from the Studies table without Duplicates.
3) Display details of software having maximum scost.
4) Display the names of the programmers whose names contain 2 Occurrences of the letter
'A':

TEXTBOOKS:

Database System Concepts (First Edition: 2008)
Publisher: Cengage Learning
By Peter Rob and Carlos Coronel

REFERENCE BOOKS

1. SQL, PL/SQL: The Programming Language Of Oracle (4th Revised Edition) by Ivan Bayross
Publisher: BPB Publications
2. An Introduction to Database Systems (Eighth Edition 2006)
Publisher : Pearson
By C. J. Date, A. Kannan & S. Swamynathan

REQUIRED SOFTWARE:



GUJARAT UNIVERSITY SYLLABUS

LEARNING OUTCOMES		
On the completion of the course students will: 1.Understand the language Visual Basic .NET 2.Learn the basic Visual and Windows Components / Controls. 3.Understand Object Oriented Programming with VB.NET. 4.Connectivity with Database. 5.Generating Reports with crystal reports.		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1		10
	1 Design interface and implement functionalities for Arithmetic calculator with power, square, log, factorial, square root and clear functionalities.	
	2 Design interface and implement functionalities for Loan calculator. Take Amount, No of installments and Rate of interest from the user. Also user can choose Early Pay option through a checkbox. Calculate installment amount using pmt() function. Do proper validation for inputs taken by the user.	
	3 Design an application which will have 2 radio buttons. One will convert the Celsius to Fahrenheit and another will convert Fahrenheit to Celsius. Show the appropriate output depends on the user's selection. (Use radio button to take user choice and use textbox to enter value).	
	4 Design a form having two text boxes, combo box and a label. Make the validation so that user can enter only numbers in both texboxes, if user has entered both numerical values then make the combo box visible. The combo box has options like 'ADD', 'SUB', 'MUL' and 'DIV'. According to user's choice from from combo, result will display in label.	
	5 Create an application with a textbox in which user can enter a sentence then displays 1) Number of vowels 2) Number of spaces 3) Number of digits 4) Number of special symbols When user press "analysis" button.	
	6 Design and implement a Tic Tack Toe game (Two Player).	
	7 Write a program to transfer an item from First Listbox to Second Listbox and from Second Listbox to First.	
	8 Print multiplication table into Listbox. For multiplication take value using Numeric up down.	
	9 Take 3 Radio buttons showing the name of 3 Countries. Load the image of the Flag of the country selected by the user from the given Radio buttons in the Picture box.	

	10	Take a Timer control which will delay to load MainForm by 10 seconds. Show the progress bar in the wait time. Also use Time control to scroll a label having text "Gujarat University", also take two more labels to show date and time on the tick event of the timer.	
2	1	Take 3 Scrollbars indicating values of Red, Green and Blue colors from 0 to 255. Take 3 labels to show the values of the scroll bars. Depending upon values selected by the user with the help of scrollbars make a color and shows it in the picture box. Place a button having text 'Apply Color', and on the click event of the button apply that color to the form.	10
	2	Implement Textpad application using Rich textbox. Make menus like File (New, Open Save, SaveAs and Exit), Edit (Cut, Copy, Paste, Undo, Redo), Format (Bold, Italic, Underline, Font, Color) etc. Use all common dialog controls and implement functionalities.	
	3	Take a Rich Textbox and implement Find, FindNext, Replace and ReplaceAll functionalities.	
	4	Write a program to Read and Write Text file.	
	5	Write a program to Read and Write Binary file.	
	6	Accept no from user and perform following operations using user defined sub routines or functions: 1) Factorial of number 2) Odd/even	
	7	Create MDI form. It must have File menu with option open, Close and Exit. It should also have window menu to arrange the child forms like Tile Horizontal, Tile Vertical, Cascade and Arrange Icons.	
	8	Create MDI form. It must have File menu with option Open, Close and Exit and one picture box. Allow users to open any picture using open dialog box, that picture should be displayed in the picture box.	
	9	Write function or subroutine to Find maximize, minimize value from an array and also to sort an array.	
3			10
	1	Create shape class as abstract class having area as must override function. Derive rectangle, triangle, square class based from this class.	
	2	Write a program to create class Person. Make at least three properties and one method "show detail" of this class. Now inherit class Student and Faculty from class Person and override method "show detail". Create objects of Student and Faculty class and call show detail function for both objects to show details in appropriate text boxes.	
	3	Write a program to implement the class Employee. Show Constructor Overloading.	
	4	Write a program to implement the class Book. Show Method Overloading.	
	5	Create an Invoice application in which user enters the customer name, description, unit price and quantity for the item ordered, then clicks the add item button. The application calculates the order total by multiplying the unit price by the quantity. And calculates a discount based on the order total. The user can then add another item to the order by using all information.	
	6	Create a user control called myTextBox, having all the properties of the TextBox. Add Four Properties to it called EnterClr as Color, LeaveClr as Color and MandatoryClr as Color and Mandatory as boolean. Use this control on Windows Application. Object of this control will show EnterClr when it is being focused. On Leave if Mandatory property is TRUE and Textbox is Empty then MandatoryClr has to be applied otherwise LeaveClr is applied to the Textbox.	
	7	Write an application, which works like a window's explorer, using combo box and list box. 1. The combo box should display the list of drives. 2. The list box should display the list of files and directories.	
	1	Write a Program to develop a Database Application with ADO.NET with Record Navigation and Add, Delete, Save and Update Facility for Books table (BookID, BookName, Qty, UnitPrice, TotalPrice).	10
	2	Create a login form which will validate user name and password from the database. On validation show MDI form. Show appropriate message if user name and password is incorrect.	

	3 Create two tables State(StateCode, StateName) and City(CityCode, CityName, StateCode). Design a form which will list all the state in the ComboBox. After selection of the StateName, another ComboBox should display all the Cities which belong to the state selected by the user in the first ComboBox.													
4	<p>4 Write a program to create a table Emp with the following fields:</p> <table> <thead> <tr> <th>Field Name</th> <th>Datatype</th> </tr> </thead> <tbody> <tr> <td>Eno</td> <td>Integer</td> </tr> <tr> <td>Ename</td> <td>Varchar(20)</td> </tr> <tr> <td>Salary</td> <td>Single</td> </tr> <tr> <td>Birthdate</td> <td>Date</td> </tr> <tr> <td>Designation</td> <td>Varchar(20)</td> </tr> </tbody> </table> <p>Design a form which perform Select, Insert, Update and Delete operations on the table Emp. On Insert Eno has been generated automatically.</p>	Field Name	Datatype	Eno	Integer	Ename	Varchar(20)	Salary	Single	Birthdate	Date	Designation	Varchar(20)	
Field Name	Datatype													
Eno	Integer													
Ename	Varchar(20)													
Salary	Single													
Birthdate	Date													
Designation	Varchar(20)													
	5 Create below mentioned Crystal Reports for the above application. <ul style="list-style-type: none"> • List all the Employees having salary more than 25000 • List all the Employees who are above the age 35. • List all the Employees designation wise. 													
	6 Design a following table in Access. Table name = Book (Bookcode, Booktype, Bookpublisher, Bookauthor, Bookpage, Bprice). Design Form that Display Above detail. Provide Add, Update, Delete, Next, first, last, previous functionalities. Create Crystal Report for above application.													
	7 Design a crystal report for the table given in the Q:6. Report should be Author wise and summarize it with Book count and Total of the price (Author wise).													

TEXT BOOK/S:

REFERENCE BOOKS:

WEB RESOURCES:

REQUIRED SOFTWARE/S

1. Visual Studio 2008



GUJARAT UNIVERSITY

BCA IV SYLLABUS

COURSE TITLE		CORE JAVA PRACTICAL
COURSE CODE		CC-214
COURSE CREDIT		3
Session Per Week		3
Total Teaching Hours		40 HOURS
AIM		
To develop practical skill about the basic java programming language with OOP concepts. To provide development skill of interface, exception handling, threading and applet.		
LEARNING OUTCOMES		
On the completion of the course practically students will: 1. Understand the java programming and Object Oriented Programming concepts. 2. Understand the concepts of Interface, Exception handling, Threading, and Package. 3. Understand the basic concepts of Applet.		
DETAIL SYLLABUS		
UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	Java Introduction	10
1	Write a program to evaluate simple interest of a given principle, rate and time.	
2	A motor cycle dealer sells two-wheelers to his customer on loan, which is to be repaid in 5 years. The dealer charges simple interest for the whole term on the day of giving the loan itself. The total amount is then divided by 60(months) and is collected as equated monthly instalment (EMI). Write a program to calculate the EMI for a loan of Rs. X, where X is given from command line argument. Print the EMI value in rupees.	

	A car accessories shop assigns code 1 to seat covers, 2 to steering wheel covers , 3 to car lighting and 4 for air purifiers. All other items have code 5 or more. While selling the goods, a sales tax of 2% to seat covers ,3% to steering wheel covers, 4% to car lighting, 2.5% to air purifiers and 1.2% for all other items is charged. A list containing the product code and price is given for making a bill. Write a java program using switch statements to prepare a bill.	
3	Write a java program to scan 3 integer values from the command line argument and display the maximum number using conditional operator.	
5	Write a program to calculate the hypotenuse of right angled triangle when other sides of the triangle are given. (Hypotenuse = square root (x*x + Y *Y))	
6	Write a program to calculate the area of square and rectangle by overloading the area method.	
7	Create a complex number class. The class should have a constructor and methods to add, subtract and multiply two complex numbers and to return the real and imaginary parts.	
8	A shop during festival season offers a discount 10% for purchase made up to Rs.1,000, 12% for purchase value of Rs.1,000 or more up to Rs 1,500 and 15% for purchase value of Rs.1,500 or more. Write a program to implement the above scheme for a given sales and print out the sales and print out the sales value, discount and net amount payable by a customer. Create necessary methods and constructors.	
9	A bank gives 6.5% per annum interest on deposits made in that bank. Write a program to calculate the total amount that a person will receive after the end of 5 years for a deposit of Rs.5000 for compound interest. Create necessary methods and constructors too.	
10	Write a java program to display powers of 2 i.e. 2,4,8,16 etc up to 1024 using bitwise operators.	
2	Array, Inheritance and Interface	10
1	Write a program to sort the elements of one dimensional array. Read value of array elements through command line argument.	
2	Write a program to create an array to store 5 integer values. Also initialize the array with 5 numbers and display the array Elements in reverse order.	
3	Write a program to find sum of two matrices of 3 x3.	
4	Write program to create an array of company name and another array of price quoted by the company. Fetch the company name who has quoted the lowest amount.	
5	Write an interface called numbers, with a method in Process(int x, int y). Write a class called Sum, in which the method Process finds the sum of two numbers and returns an int value. Write another class called Average, in which the Process method finds the average of the two numbers and returns an int.	

6	<p>Create a class called NumberData that accept any array of the five numbers. Create a sub class called Numplay which provides methods for followings: 1. Display numbers entered. 2. Sum of the number. 3. Average of the numbers. 4. Maximum of the numbers. 5. Minimum of the numbers. Create a class that provides menu for above methods. Give choice from the command-line argument.</p>	
7	<p>Declare an abstract class Vehicle with an abstract method named numWheels().provide subclasses Car and Truck that each implements this method. Create instance of these subclasses and demonstrate the use of this method</p>	
8	<p>Write an interface called Exam with a method Pass(int mark) that returns a Boolean. Write another interface called Classify with a method Division(int average) which returns a string. Write a class called Result which implements both Exam and Classify. The pass method should return true if the marks is greater than or equal to 35 else false. The division method must return "First" when the parameter average is 60 or more, "second" when average is 50 or more but below 60, "no division" when average is less than 50.</p>	
9	<p>Create class calculation with an abstract method area(). Create Rectangle and Triangle subclasses of calculation and find area of rectangle and triangle.</p>	
10	<p>The abstract Vegetable class has four subclasses named cabbage, carrot and potato. Write an application that demonstrates how to establish this class hierarchy. Declare one instance variable of type string that indicates the color of a vegetable. Create and display instances of these object. Override the toString() method of object to return a string with the name of the vegetable and its color.</p>	
3	Package, String and Exception Handling	10
1	<p>Create a package P and within that package create class PackClass which have method called findmax() which find maximum value from three numbers. Now import the package within another class DemoClass and now display the maximum number.</p>	
2	<p>Write a program that creates three different classes in three different packages and access them from default package. All the three packages should be at the same level.</p>	
3	<p>Create package pack1 within this package create class A which contains one instance variable and one instance method. Create another package pack2 within this package create class B. where class B is calling the method and variable of class A</p>	
4	<p>Write a program that accepts a string from command line and perform following operations:</p> <ol style="list-style-type: none"> 1. Display each character on separate line in reverse order. 2. Count total number of characters and display each character's position too. 3. Identify that whether the string is palindrom or not. 4. Count total number of uppercase and lowercase characters in it. 	

	Write a Java program to input n integer numbers and display lowest and second lowest number. Also handle the different exceptions possible to be thrown during execution.	
5	Write a program that takes a string from the user and validate it. The string should be at least 5 characters and should contain at least one digit. Display an appropriate valid message.	
6	Write an application that accepts marks of three different subject from user. Marks should be between 0 to 100, if marks of any of the subject is not belong to this range, generate custom exception out of RangeException. If marks of each subjects are greater than or equal to 40 then display message "PASS" along with percentage, otherwise display message "FAIL". Also write exception handling code to catch all the possible runtime exceptions likely to be generated in the program.	
7	Write a program which takes the age of 5 persons from command line and find the average age of all persons. The program should handle exception if the argument is not correctly formatted and custom exception if the age is not between 1 to 100.	
8	Write an application that converts between meters and feet. Its first command-line argument is a number and second command line argument is either "centimeter" or "meter". If the argument equals "centimeter" displays a string reporting the equivalent number of meters. If this argument equals "meters", display a string reporting the equivalent number of centimeter. If unit is not given properly then generate custom exception Unitformatexception. If first argument is not proper format then generate numberformatexception. Generate other exception as per requirements. (1 meter=100 centimeter)	
9	Write a program that accepts 5 even numbers from command line , if any of the numbers is odd then throw custom exception OddException and count such invalid numbers.	
10	Multithreading and Applet	10
1	Write an application that starts two thread. First thread displays even numbers in the range specified from the command line and second thread displays odd numbers in the same range. Each thread waits for 300 milliseconds before displaying the next numbers. The application waits for both the thread to finish and then displays the message "Both threads completed".	
2	Write a program that create and starts five threads. Each thread is instantiated from the same class. It executes a loop with ten iterations. Each iteration displays the character 'x' and sleep for 500 milliseconds. The application waits for all threads to complete and then display a message 'hello'.	
3	Write a java program to create 2 threads each thread calculates the sum and average of 1 to 10 and 11 to 20 respectively. After all thread finish, main thread should print message " Task Completed". Write this program with use of runnable interface.	
4	Create two thread. One thread print 'fybca' 4 times and another thread print 'sybca' 6 times. Set priority for both thread and when thread finished print 'tybca' from main.	

5	Create an applet which draws a line, rectangle and filled circle in applet display area.
6	Write applets to draw the following shapes. a. cone b. cylinder c. cube
7	Write an applet that take 2 numbers as parameter and display their average and sum.
8	Write a Java applet that draws a circle centred in the centre of the applet. The radius of the circle should be passed as a parameter.
9	Write an applet that draw a circle divided in 6 equal parts.
10	Write an applet that draw a rectangle divided in 5 equal parts.

TEXT BOOK/S:

Programming in Java

Oxford Publication

By Sachin Malhotra and Saurabh Choudhary

REFERENCE BOOKS:

1. Programming in Java 2
Jaico publishing house
By Dr. K. Somasundaram
- 2.The Complete Reference Java2
TMH Publication
By Herbert Schildt

WEB RESOURCES:

1. docs.oracle.com/javaee/6/tutorial/doc/girgm.html
2. docs.oracle.com/javaee/6/tutorial/doc/bnagi.htm
3. www.javatpoint.com
4. www.tutorialspoint.com

REQUIRED SOFTWARE/S

1. Any editor of Windows or Linux/UNIX.
2. JVM version 1.8

Foundation Course

FC – 202(1) Scientific Computing

Course Introduction:

The course introduces the Computer Science student to the numerical methods necessary for scientific computing such as Error, propagation, solutions of Non linear and Transcendental Equations, interpolation and Curve Fitting.

Objectives:

- 1.) To understand the concepts, techniques & applications of scientific computing.
- 2.) To develop the skills of solving real life problems by using computer programming.
- 3.) To make students to understand the art of applying Mathematical techniques to solve some real life problems.
- 4.) To gain knowledge of scientific computing.

No. of Credits: 2

Theory Sessions per week: 3

Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Errors in Computation <ul style="list-style-type: none"> • Introduction • Significant Digits and Floating-Point Representation • Floating point Arithmetic <ul style="list-style-type: none"> ◦ Addition Operation ◦ Subtraction Operation ◦ Multiplication Operation ◦ Division Operation 	10 hours
	<ul style="list-style-type: none"> • Errors in Computation • Absolute and Relative Errors • Calculation of Absolute and Relative Errors • Error Propagation 	5 hrs
	Practical Demo should be given for Floating point Arithmetic and Error in C/C++	
2	Numerical Methods for Nonlinear and Transcendental Equations <ul style="list-style-type: none"> • Introduction • Graphical Method • Tabulation Method 	10 hours
	<ul style="list-style-type: none"> • Iteration Methods <ul style="list-style-type: none"> ◦ Bisection Method ◦ False Position Method ◦ Newton–Raphson Method 	2 hrs
	Numerical Integration <ul style="list-style-type: none"> • Introduction • General Quadrature Formula (GQF) • Trapezoidal Rule • Simpson's 1/3 rule 	4 hrs

	Practical Demo should be given for Iteration Method in C/C++	
3	Interpolation	10 hours
	<ul style="list-style-type: none"> • Introduction • Lagrange Interpolation Method • Methods Based on Finite Differences • Forward Differences and the Forward Difference Table • Newton's Forward Interpolation Formula 	5 hrs
4	<ul style="list-style-type: none"> • Backward Differences and the Backward Difference Table • Newton's Backward Interpolation Formula • Divided Differences and the Divided Difference Table for Unequally Spaced Points • Newton's Divided Difference Interpolation Formula 	5 hrs
	Practical Demo should be given for Interpolation Method in C/C++	
Curve Fitting	10 hours	
	<ul style="list-style-type: none"> • Introduction • Straight Line Fit Using the LSF Method • Reverse Straight Line Fit • Polynomial Fit by the LSF Method • Power Function Fit Using the LSF Method 	5 hrs
	<ul style="list-style-type: none"> • Exponential Function Fit by the LSF Method • Error Estimation in LSF Method • Weighted Least Square Approximation • Straight Line Fit Using the WLSF Method 	5 hrs
	Polynomial Curve Fit Using the WLSF Method	
Practical Demo should be given for different Methods of Curve Fitting in C/C++		

Note: - C/C++ Programs and Algorithms should not be asked in theory examination.

Textbook:

Numerical Analysis with Algorithms and Computer Programs in C++

Publication : PHI Learning Private Limited

By Ajay Wadhwa

Chapter-1, 2, 4, 8

Reference Book:

1. Computer Oriented Numerical Methods

Publication: Khanna Book Publishing Co. Ltd.

By R.S.Salaria

2. Numerical Methods for Scientists and Engineers (Third Edition)

Publication: PHI Learning Private Limited

By K. Sankara Rao

Foundation Course

FC-202(2) eGovernance

Course Introduction:

Students will be provided with basic awareness of ‘what’, ‘why’ and ‘how’ of e-governance as well as impact of e-government on different stake holders. E-government implementation requires multi-disciplinary approach. Discussion of Case Studies of successful e-governance projects in developing countries will increase understanding of the technical, public administration, economic, managerial perspective of e-government to the students.

Objectives:

Students would be able to

- 1.) Comprehend the Need and Scope of E-governance.
- 2.) Understand how projects affecting mass and different stakeholders are planned and implemented.

No. of Credits: 2

Theory Sessions per week: 3

Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Introduction	10 hours
	<ul style="list-style-type: none"> • E-Government: Definition and Scope <ul style="list-style-type: none"> ○ Nature of Clients Served and the Service Delivery Process ○ E-Government: Different Stages of Evolution ○ E-Government verses E-Governance. 	3 hrs
	<ul style="list-style-type: none"> • E-Government in the Context of Developing Countries <ul style="list-style-type: none"> ○ Nature of Applications for Different Types of Clients ○ Challenges in Design and Implementation ○ Investments in E-Government ○ Reasons for Implementing E-Government ○ E-Government Readiness of Countries ○ Status of E-Government in India ○ Key Challenges in Further Development of E-Government 	5 hrs
2	<ul style="list-style-type: none"> • Making E-Government Work for Rural Citizens <ul style="list-style-type: none"> ○ How can ICT Use and E-Government Help the Poor ○ Challenges in Building Pro-poor E-Government 	2 hrs
	Benefits and Impact of e-Governance	10 hours
2	<ul style="list-style-type: none"> • Potential Benefits of E-Government for Key Stakeholders <ul style="list-style-type: none"> ○ Benefits for Citizens : Results from an Impact Assessment Study ○ Benefits for Businesses: Results from an Impact Assessment Study 	5 hrs

	<ul style="list-style-type: none"> ○ Benefits for Agencies Implementing E-Government Applications ● Impact of E-Government on Transparency and Corruption <ul style="list-style-type: none"> ○ Results from a Study of Impact on Corruption ○ Improvement in Transparency through E-Government ○ Dealing with Corruption through E-Government 	
	E-Governance Projects and its Success <ul style="list-style-type: none"> ● Guidelines for Implementing Projects Successfully <ul style="list-style-type: none"> ○ Life Cycle of an E-Government Project ○ Conceptualizing Project Definition and Scope: Starting Small ○ Process RE-engineering ○ Designing a Citizen-centric Service Delivery mechanism ○ Communicating with Users ○ Seeking Partnerships: Avoiding Reinvention of the wheels ○ Phasing Implementation ○ Capacity to manage change ○ Strong Internal leadership and Project Management ○ Risk Factors in Implementing E-Government Projects 	5 hrs
3	E-Governance Projects and its Success <ul style="list-style-type: none"> ● Guidelines for Implementing Projects Successfully <ul style="list-style-type: none"> ○ Life Cycle of an E-Government Project ○ Conceptualizing Project Definition and Scope: Starting Small ○ Process RE-engineering ○ Designing a Citizen-centric Service Delivery mechanism ○ Communicating with Users ○ Seeking Partnerships: Avoiding Reinvention of the wheels ○ Phasing Implementation ○ Capacity to manage change ○ Strong Internal leadership and Project Management ○ Risk Factors in Implementing E-Government Projects 	10 hours
4	Case Studies and the road ahead <ul style="list-style-type: none"> ● Government of Citizen (G2C) Applications <ul style="list-style-type: none"> ○ Online Delivery of Municipal Services: Ahmedabad Municipal Corporation, Vijaywada, Kalyan-Dombiwali ● Government to Business (G2B) Applications <ul style="list-style-type: none"> ○ Online Tax Filing Systems in Different Countries ○ Computerization of Interstate Border Check posts in Gujarat ● Government to Government (G2G) Applications <ul style="list-style-type: none"> ○ Computerization of the Treasuries in Karnataka (Khajane) ● E-Government : The Way Ahead 	10 hours
		8 hrs
		2 hrs

Textbook:

Unlocking E-Government Potential: Concepts, Cases and Practical Insights
 Publication: Sage Publications
 by Subhash Bhatnagar

Reference Books:

1. E-Governance Today
 Publication: ICFAI University Press
 by Sowmyanarayan Sadagopan
2. Government Online: Opportunities and Challenges
 Publication: Tata McGraw Hill
 by M P Gupta, Prabhat Kumar, Jaijit Bhattacharya

Foundation Course **FC-202(3) Interpersonal Skills**

Course Introduction:

A study related with the interpersonal skill and behavior patterns. The topics include interpersonal communication to problem solving and management with good leadership skills.

Objectives:

The student would be able to:

- 1.) Manage their interpersonal skills and conflicts in an efficient way.
- 2.) Understand leadership skills and maintain team building.
- 3.) Practice time management and solve problem related with it.
- 4.) Solve problems of any issue by resolving conflicts and negotiating.
- 5.) Structure their ethical decision making.
- 6.) Appreciate and respect the culture difference and manage cross cultural differences.

No. of Credits: 2

Theory Sessions per week: 3

Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Skill: An Introduction <ul style="list-style-type: none">• Interpersonal skills and effective management behavior<ul style="list-style-type: none">○ Behavior○ Motivation○ Skill and the need for skills training	10 hours
	<ul style="list-style-type: none">• Self Management<ul style="list-style-type: none">○ Clarifying Values○ Setting Goals and Planning○ Group Exercise-The Alligator Rives	4 hrs
	<ul style="list-style-type: none">• Applying Emotional Intelligence<ul style="list-style-type: none">○ Group Exercise-Head versus Heart	3 hrs
2	Problem Solving <ul style="list-style-type: none">• Ethical Decision Making<ul style="list-style-type: none">○ Group Exercise-Mini Cases○ Group Exercise-Anticipating Ethical Conflict• Creative Problem Solving• Resolving Conflict• Negotiating<ul style="list-style-type: none">○ Group Exercise-The used car Negotiations	10 hours
	<ul style="list-style-type: none">• Ethical Decision Making<ul style="list-style-type: none">○ Group Exercise-Mini Cases○ Group Exercise-Anticipating Ethical Conflict	3 hrs
	<ul style="list-style-type: none">• Creative Problem Solving	2 hrs
	<ul style="list-style-type: none">• Resolving Conflict	2 hrs
	<ul style="list-style-type: none">• Negotiating<ul style="list-style-type: none">○ Group Exercise-The used car Negotiations	3 hrs

	Leadership and Team Building	10 hours
3	• Leadership Qualities and Team Building	3 hrs
	• Team Building	3 hrs
	• Team Motivation	
	○ Goal Setting	4 hrs
	○ Case Study-Setting Goals at State Bank of Vermont	
	Communication of Management	10 hours
4	• Time Management	3 hrs
	• Stress Management	2 hrs
	• Communicating across cultures	
	○ Group Exercise-What just happened?	3 hrs
	• Cross Cultural Etiquette	2 hrs

Textbook:

Training in Interpersonal Skill

Publication: PHI

By Stephen P. Robbins and Phillip L. Hunsaker

Elective Course
EC-202(1) History of Gandhian Movement

Course Introduction:

Mahatma Gandhi is the father of the modern India. According to him Truth is God and God is Truth. His life was an experiment with truth and he had strong faith in peace, truth and non-violence. Basic education was his brainchild and its principles were based on his philosophy of life. The course focuses on Gandhiji's childhood, youth and the movement started by him at South Africa and India.

Objectives:

The Students would be able to:

- 1.) To know the principles followed by Gandhiji.
- 2.) To understand how he involved in Satyagraha movement.
- 3.) To also know how he dealt with injustice done by the British Government before Independence.
- 4.) To understand the life and works of Gandhiji.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20

UNIT	TOPICS / SUBTOPICS
1	Gandhiji's Childhood and Youth <ul style="list-style-type: none">• Birth and parentage• At school• Marriage• Stealing and Atonement• Glimpses of religion• In England as student• In India as Barrister
2	Gandhiji in South Africa <ul style="list-style-type: none">• Arrival in South Africa• Getting acquainted with the Indian Problem• Civil rights movement in South Africa• 'Indian Opinion'• The Phoenix settlement• The Zulu 'Rebellion'• Domestic Satyagraha• The advent of Satyagraha• Tolstoy Farm

	Gandhiji in India
3	<ul style="list-style-type: none"> • Founding of the Ashram • Champaran and Kheda Satyagraha • Non- Cooperation Movement • Salt Satyagraha (Salt March) • World War II and Quit India Movement • The Rowlatt Act • ‘Navajivan’ and ‘Young India’ • The Birth of Khadi
	World Leaders Inspired by Gandhiji
4	<ul style="list-style-type: none"> • Nelson Mandela : The South African leader • Martin Luther King Jr • Aung San Suu Kyi: The Burmese leader • Barack Obama

Textbook:

Gandhi the Man

Publication: Jaico

By Eknath Easwaran

Reference Book :

1. Gandhi and the Mass Movements

Publication: Atlantic Publishers

By S.R.Bakshi

2. Gandhian Non-Violence And India's Freedom Struggle

Publication: Mahesh Jain

By Asha Rani

3. Gandhiji's Autobiography

Publication: Navjivan Publishing House

4. Gandhi and South Africa

Publication: Navjivan Publishing House

ELECTIVE COURSE

EC-202(2) Introduction to Science and Technology

Course Introduction

This course offers an introduction of Science and Technology to students from non-science background. The course will deliver positive and informed values and attitudes towards themselves, others and science and technology.

Objectives

The student would be able:

- 1.) To develop their knowledge and understanding of the role of science in creating/ changing: the environment, information & communication, life-styles products and services, agriculture, health and nutrition.
- 2.) To understand the impact of technologies people select and use; how these technologies affect other people, the environment and the future
- 3.) To introduce students to the some aspects of science of the future times and how it will affect human kind.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
1	Introduction to Science and technology and its role <ul style="list-style-type: none">• Introduction to Science<ul style="list-style-type: none">○ History of science○ Major Historical Scientific and technological achievements in India• Role of science and technology in today's world<ul style="list-style-type: none">○ Science and technology and the developing countries○ Science Policy in India○ Role of science in India○ Societal aspects of science and technology in India• Emergence of modern Science in India<ul style="list-style-type: none">○ Science & technology in the 20th century○ Science and technology infrastructure in India Today○ Overview of India's achievements in Science & tech. sphere○ Variety of Science Communication Media
2	Nuclear Technology & Material Technology <ul style="list-style-type: none">• Nuclear Technology<ul style="list-style-type: none">○ Nuclear Energy<ul style="list-style-type: none">▪ Introduction and Scientific basis of nuclear energy

	<ul style="list-style-type: none"> ○ Advantages and Disadvantages of nuclear Fission Energy ○ Reactor Safety systems ○ Radioisotopes & its applications ○ Medical Diagnosis using nuclear medicine ○ Radiotherapy ○ Radiation and Environment ○ Radiation damage and its study ○ Research and development in nuclear technology in India
	<ul style="list-style-type: none"> ● Material Technology <ul style="list-style-type: none"> ○ Nanoscience and nanotechnologies <ul style="list-style-type: none"> ■ Basics of Nanoscience ■ Introduction to Nanomaterials ○ Applications of Nanotechnology ○ Cryogenics ○ Laser and Photonics <ul style="list-style-type: none"> ■ Photonics and its applications ■ Lasers and its applications
3	<p>Space Technology & Earth Sciences in India</p> <ul style="list-style-type: none"> ● Space Technology <ul style="list-style-type: none"> ○ Launch Vehicle Technology ○ Propulsion method for launch vehicles ○ Satellites and their orbits(GTO orbits) ○ Global Positioning System ○ Scientific Experiments on the space station ○ Remote Sensing ○ Some Important Indian satellites ○ Brief about PSLV & GSLV ● Earth Sciences in India <ul style="list-style-type: none"> ○ Introduction to earth science ● Meteorological science <ul style="list-style-type: none"> ○ Meterology ○ Weather Prediction ○ Weather Modification and cloud seeding
4	<p>Defence and Biotechnology</p> <ul style="list-style-type: none"> ● The effects of weapons of Mass destruction ● Nuclear Weapons ● Effects of Nuclear weapons ● Biological and toxin weapons ● Missile Technologies ● Defence in India <ul style="list-style-type: none"> ○ Defence Research and development organization ○ BRAHMOS cruise missiles ○ Stealth technology and aircraft

- | | |
|--|---|
| | <ul style="list-style-type: none"> • Biotechnology <ul style="list-style-type: none"> ○ What is Biotechnology? ○ Important techniques used in Biotechnology ○ Nanobiotechnology ○ Cloning ○ Bioinformatics technology ○ Major Application Areas of Biotechnology |
|--|---|

Text Book:

Science and technology

Publisher: Tata McGraw Hill

Author: Ashok Kumar Singh

Chapters 1 to 13, 26 to 30 and 33 to 39 (to be covered)

Reference Books:

1. CONCEPTS OF NUCLEAR PHYSICS

Publisher: Tata McGraw Hill

By Bernard Cohen

2. The Good Earth: Introduction to Earth Science

Publisher: Tata McGraw Hill

By David McConnell, David Steer,
Katharine Owens, Catherine Knight

3. Understanding Space: An Introduction to Astronautics + Website

Publisher: Tata Mc Graw Hill

By Jerry Sellers, William Astore,
Robert Giffen, Wiley Larson

Elective Course **EC-202(3) Introduction to Humanities**

Course Introduction:

This elective course in humanities aims at introducing to the subject of social science, with special emphasis on the issues pertaining to evolution of human society, emergence and various aspects of society in modern India. It also covers issues pertaining to social, political and administrative systems existing in India. The course is framed to familiarize students with the developments in economics, arts and aesthetics and the present day challenges experienced by India and the World societies.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
	Human Society And Its Evolution
1	<ul style="list-style-type: none">• World Perspective<ul style="list-style-type: none">○ Introduction: Meaning of Society, relevance of human beings in relation to the study of social sciences, Evolution in tools/technology in various ages(Stone Age, Bronze Age and Iron Age), Rise of religions of the world.○ Role of nature and its adaptation by human beings through different ages, Evolution of human beings as thinking individuals, Evolution of Knowledge(magical form, Scietific and Religious form), Geographical discoveries and Colonisation.○ Emergence of the modern world: Fuedalism, Capitalism, Humanism, Secularism.○ Post Renaissance influences-on literature, Architecture,Art, Philosophy and Science.○ Industrial Revolution and its influence on the society• Indian Perspective<ul style="list-style-type: none">○ Pre-colonial economy: characteristics pertaining to agriculture, trade and handicrafts industry.○ Evolution of colonial rule and its impact on India (Drain theory, De-industrialization), impact on the indian agrararian economy.○ Important movements in the Indian History before and after Gandhian Era, Economic developments in the pre and post independence period.○ Concepts of secularism, nationalism, internationalism, communalism, regionalism.○ Major Challenges: Education, Upholding Democracy, Bueracracy etc.

	Social, Political And Administrative Systems
2	<ul style="list-style-type: none"> ● Social Structure <ul style="list-style-type: none"> ○ Meaning of social structure; concept of ROLE and STATUS, Components of Social structure- Social stratification and Division of labour. ○ Social Institutions: Family, Marriage. ○ Economic Institutions: Types of economic systems(Hunting and gathering, pastoral and horticultural economy, agrarian economy and industrial economy. Political systems and types of authority which impact the social structure. ○ Religion: Positive and Negative aspects of Religion on society. ○ Marginalized groups in a society: meaning, Types: orphaned, delinquent, destitute children, Disabled, Women in distress, Commercial sex workers, Scheduled castes, Scheduled tribes, OBCs, Denotified tribes, Minorities. Social Changes and the factors causing them(Biological, geographical, technological,socio-cultural) ● Political systems: (with reference to India) <ul style="list-style-type: none"> ○ History, composition and basic features of the Indian Constitution. ○ Democracy: meaning, state institutions and the democratic process, role of non-state institutions/groups in the democratic process. ● Administrative Systems <ul style="list-style-type: none"> ○ Administrative Structure: Role of The Chief Executives at Union level, state level and district level. ○ Composition of line agencies: departments, public corporations and public enterprises, boards and commissions ○ Composition of staff agencies: General agencies, technical agencies and auxilliary agencies. ○ Important Administrative Processes: Planning, Decision-making, Communication, Control and co-ordination. ○ Governance issues and strategies: Characteristics, functions and difference between state and Government. ○ Governance: its concept, significance and characteristics, relevance of good governance.
3	Economic Development, Development of Arts and Aesthetics <ul style="list-style-type: none"> ● Indian Economy <ul style="list-style-type: none"> ○ Features, Development and Growth strategies through planning in the post independence period. Performance of the Indian Economy post 1990(economic reforms era) yanmurthi ● Arts and Aesthetics: (with reference to India) <ul style="list-style-type: none"> ○ Literature: Introduction to Poetry, fiction, drama, novels, short stories.

	<ul style="list-style-type: none"> ○ Fine Arts: Introduction to Paintings(pre and post medieval ages, modern era) ○ Dance: History and Types of Indian Classical Dances ○ Music: History and Types of Indian Music and major indiginous musical instruments. ○ Theatre and Indian Cinema: Forms of Theatre in Modern Era, Cinema in modern era and Its impact on the society.
4	<p>Contemporary Concerns and Challanges: (with reference to India for sub points</p> <ul style="list-style-type: none"> ● Human Security <ul style="list-style-type: none"> ○ Valuing human beings as assets/resources, concept of human rights, concept of human security including health, food ● Educaton and Awareness <ul style="list-style-type: none"> ○ Aims and importance of education, challenges to education in the modern era. ● Informaiton and Communication Technology <ul style="list-style-type: none"> ○ Role of ICT, Socio- economic implications of ICT ● Peace and. Conflict <ul style="list-style-type: none"> ○ Challenges to World Peace, Role, functioning and obstacles to Efforts of the UNITED NATION, SAARC,EU,APEF. ● Globilisation <ul style="list-style-type: none"> ○ Pros and cons. ● Environment <ul style="list-style-type: none"> ○ Environmental initiatives in India and challenges.

Elective Course **EC-202(4) Disaster Management**

Course Introduction:

This course aims to provide an insight into immensely significant area of common welfare. The course will enable a student to understand the major types of natural and man-made disasters and also methods of mitigating their ill-effects on the human race. The course also covers a few modern disasters which are hitherto not experienced by humankind across the globe.

Course Objective:

The student would be able

- 1) To understand the concept of managing the Disasters when it occurs.
- 2) To apply their technical knowledge to manage the Disasters.
- 3) To identify the key points and area where and how to use the Information Technology to manage the damage in disasters.
- 4) To get detailed knowledge of various Government agencies and NGOs dealing for disaster management.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
	Introduction to Disasters / Hazards
1	<ul style="list-style-type: none">• Definition of disaster:• General Effects of disasters• Causal Factors• Disasters and development (cause and effect)• Meaning of Disaster Management• Types of Disaster/Hazards:<ul style="list-style-type: none">• Natural• Anthropogenic• Sociological• Technological• Transport• Climate change• Social and Psychological dimensions of disasters• Coping with stress, anxiety and fears• Technology and disaster management• Latest Technological equipment• Disaster Response:<ul style="list-style-type: none">• Reasons for concern• Objectives• Study of responses in Kutch Earth-quake, 2001

	Disaster Management <ul style="list-style-type: none"> • Definition • Need • Obstacles • Disaster Relief and Factors • International approach to integrated disaster risk management • Risk Mitigation Strategies • Participatory assessment of disaster risk • Disaster Reduction • Communicable diseases occurring after natural disasters • Their prevention • Mass casualty management • Technology and disaster management and latest technological equipment to combat disasters
2	Relief, Rehabilitation, Recovery and Role of NGO and Government <ul style="list-style-type: none"> • Relief • Rehabilitation • Displacement and Development • Priorities and opportunities in Rehabilitation and reconstruction • Relevance of Mitigation and its techniques • Mitigation measures • People's Participation • Disaster Recovery <ul style="list-style-type: none"> ◦ Business continuity planning • Role of NGO in Managing disasters • India's natural disaster's proneness: <ul style="list-style-type: none"> ◦ Management of disasters in India ◦ Institutional and policy framework ◦ Government Policies for Disaster Planning
3	Use of IT in Disaster Management, Applications and Future of Disaster Management <ul style="list-style-type: none"> • Use of IT in Disaster Management: <ul style="list-style-type: none"> ◦ Computer Attack ◦ Other latest technological Equipments: <ul style="list-style-type: none"> ▪ TSUNAMI WARNING SYSTEM ▪ CENS (Community Emergency Notification System) ▪ CREST (Consolidated Reporting of Earthquakes and Tsunamis) ▪ CUBE (Caltech USGS Broadcast of Earthquakes) ▪ DART (Deep Ocean Assessment and Reporting of Tsunamis) ▪ EAS (Emergency Alert System) ▪ EMWIN (Emergency Managers Weather information Network) ▪ GPS (Global Positioning System)

	<ul style="list-style-type: none"> ▪ ITIC (International Tsunami Information Center) ▪ NOAA (National Oceanic and Atmospheric Administration) ▪ NWS (National Weather Service) ▪ PTWS (Pacific Tsunami Warning Center) ▪ RACE (Rapid Alert Cascadia Earthquake) ▪ REDI (Rapid Earthquake Data Integration) ▪ SAWS (Simultaneous Announcement Wireless System) ▪ THRUST (Tsunami hazard Reduction Using System Tech.) ▪ WC/ATWC (West Coast/Alaska Tsunami Warning Center) <ul style="list-style-type: none"> ▪ Audio Evacuation System ○ Laser Scanning ○ Remote Sensing-GIS Integration ○ Atmospheric Water Generator ○ The AIRCRAFT GATEWAY PROCESSOR (AGP) ○ Mobile Electronic Warfare Platform • Applications in Disaster Management: <ul style="list-style-type: none"> ○ Bio-terrorism <ul style="list-style-type: none"> ▪ Framing the Problem ▪ Threat assessment ○ Statistical Seismology and its application
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Textbook: Disaster Management

Publisher: Himalaya Publishing House

By M. Saravana Kumar

Reference Books:

1. Introduction to Disaster Management

Publisher: Macmillan

By Satish Modh

2. The Disaster Recovery Handbook

Publisher: PHI

By Michael Wallace and Lawrence Webber

3. Citizen's Guide to Disaster Management

Publisher: Macmillan

By Satish Modh

Elective Course
EC-202(5) History of Gujarat and its Culture

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

Syllabus and text book as per B.B.A Syllabus Semester III Elective Course.