



Sarvjanik University

Sarvjanik College of Commerce and Computer Application

Teaching Scheme for B.C.A.

Program Structure			Semester - I						
Sr No.	Course Code	Group	Subjects	Teaching Hrs. per week		University Examination		Internal Marks	Total Marks
				Theory	Practical	Dura	Marks		
1	BSCA21101	Major-1	Structured Programming Methodology	3	1		50	50	100
2	BSCA22102	Major-2	Fundamentals of Database Management System	3	1		50	50	100
3	BSCA32101	Minor-1	Office Tools	3	1		50	50	100
4	BSCA23106	Multidisciplinary	Mathematics	4			50	50	100
5	BSCA24105	AEC	Professional Communication Skill-1	2			25	25	50
6	BSCA25103	SEC	Digital Marketing	2			25	25	50
7	BSCA26107	VAC	Understanding India	2			25	25	50
			Total	22			275	275	550



Sarvjanik University

Sarvjanik College of Commerce and Computer Application

Teaching Scheme for B.C.A.

Program Structure			Semester - II						
Sr No.	Course Code	Group	Subjects	Teaching Hrs. per week		University Examination		Internal Marks	Total Marks
				Theory	Practical	Dura	Marks		
1	BSCA21201	Major-1	Object Oriented Programming Methodology	3	1		50	50	100
2	BSCA22202	Major-2	Computer Organization and Software Development	4			50	50	100
3	BSCA32201	Minor-1	Data Structure and Algorithm	3	1		50	50	100
4	BSCA23206	Multidisciplinary	Personality Development	4			50	50	100
5	BSCA24205	AEC	Professional Communication Skill-2	2			25	25	50
6	BSCA25203	SEC	Web Designing	1	1		25	25	50
7	BSCA26207	VAC	Environmental Studies	2			25	25	50
			Total	22			275	275	550

SARVAJANIK UNIVERSITY						
Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	1		Effective From	June 2023		
Course Code	BSCA21101	Course Name	Structured Programming Methodology			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	3	1	4	50	50	100
Course Objective:						
<ul style="list-style-type: none"> - To Gain knowledge about Programming languages, programming methodology. - To Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc. - To understand how to work with Arrays and Strings. 						
Course Learning Outcomes:						
At the end of the course, student is expected to have understanding about the concepts of Programming languages, programming basics, Functions, Strings and Arrays, etc.						
Units	Content					Weight/ Teaching Hours
1	Introduction to programming <ul style="list-style-type: none"> - What is program? - Levels of programming languages - Programming methodologies – Structured and Object Oriented - Java History - Features of Java 					04
2	Introduction to program design <ul style="list-style-type: none"> - What is a Flowchart? - Flowchart symbols and its usage - What is an Algorithm? - Characteristics of good algorithm 					08
3	Getting started with structured programming <ul style="list-style-type: none"> - Basic structure of program in java - Variables, Datatypes, Keywords, Constants, Comments - Printing output - String literal - Operators <ul style="list-style-type: none"> - Arithmetic Operators - Unary Operators - Relational Operators - Assignment Operators - Conditional Operators - Type casting 					06

4	Control structures <ul style="list-style-type: none"> - Looping statements <ul style="list-style-type: none"> - while Loop - do-while Loop - for Loop - Various forms of if Statement <ul style="list-style-type: none"> - If, else if, nested if - Switch statement - Break and Continue Statements 	10
5	Introducing Functions 10 hr <ul style="list-style-type: none"> - Inbuilt functions - User defined functions - Function declaration, definition and function calling - Passing parameter to functions - Returning values from functions 	10
6	Strings <ul style="list-style-type: none"> - String class - Inbuilt String methods - Operations on String without using inbuilt functions - Concept of Substring 	06
7	Arrays <ul style="list-style-type: none"> - Creating and accessing an array, array literal - Single Dimensional array - Multi-Dimensional array - Operations on Arrays - Passing array to the function 	10
8	Overview of Language Processors and Types of Errors <ul style="list-style-type: none"> - Concepts of Compiler / Interpreter /Assembler/ Symbol table - Java environment JVM, JRE, JIT, J2SE, J2EE, J2ME - Byte code - Steps of java program execution - Types of errors <ul style="list-style-type: none"> - Syntax errors - Semantic errors - Runtime errors 	06

Suggested Reference Books:

1. Java in Nut shell - O'Reilly Publication
2. Java Language Reference - O'Reilly Publication
3. The Complete Reference Java2 Herbert Schildt TMH, New Delhi

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Sarvajanik College of Commerce & Computer Applications						
Faculty	Computer Application			Programme	BCA	
Year	1			Version	2.0	
Semester	1			Effective From	June 2023	
Course Code	BCSA22102	Course Name		Fundamentals of DBMS		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	3	1	4	50	50	100
Course Objective: To introduce the concept of database systems, modelling of data and to make use of SQL base queries to retrieve and store data efficiently						
Course Learning Outcomes: <ul style="list-style-type: none"> - Students will able to differentiate between database approach and conventional file processing system. - Understand database concepts. - Design an entity-relationship model based on user requirements. - Use SQL statements to store, modify and retrieve data from one or more tables. 						
Units	Content					Weight/ Teaching Hours
1	Introduction to DBMS <ul style="list-style-type: none"> - Fundamental concepts - data, information, database, table, row, field - Need of Information - Business, Research, Governance - Requirement of DBMS - Levels of Abstraction in DBMS - Database User and Administrator 					05
2	Database Architecture and Relational Model Design <ul style="list-style-type: none"> - Database Architecture - Centralized database, Client-server, Parallel database, Distributed database - E.F. Codd' rule - Keys - Super key candidate key primary key - Structure of relational database - Basic concept and symbols used in E-R notation - Mapping cardinalities - Types of attributes - Design E-R Diagram. 					08
3	Normalization <ul style="list-style-type: none"> - Functional Dependency - Anomalies of DBMS - Normal Form : 1NF, 2NF, 3NF BCNF - 					08
4	DDL, DML statement and Indexing <ul style="list-style-type: none"> - Schema-based operation : Table Creation, Table structure modification and removal - Data types , Domain and Referential integrity Constraints - Data Manipulation : Retrieving the data using SQL Queries - Operators: IN , BETWEEN, LIKE, Relational, Arithmetic and Logical 					10

5	Advanced SQL Queries <ul style="list-style-type: none"> - Numeric, String and Date function - Aggregate Functions - Sorting and Grouping the data 	06
6	Data from multiple tables <ul style="list-style-type: none"> - Joins: Inner, Outer, Self - Sub-queries with IN, NOT IN, EXIST, NOT EXIST, ANY, ALL 	08

Suggested Reference Books:

1. Silberschatz. Korth , Sudarshan ,Database System Concepts. McGraw-Hill computer science series
2. C J Date, An introduction to Database Systems, Addison-Wesley
3. Nilesh Shah. Database System using Oracle, PHJ.
4. Ramez Elmasri & Shamkant B. Navathe Fundamentals of Database Systems , Addison-Wesley
5. Ivan Bayros , SQL, PL/SQL, BPB Publication
6. Scott Urman Oracle9i PL/SQL programming McGraw-Hill

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Sarvajanik College of Commerce & Computer Applications						
Faculty	Computer Application			Programme	BCA	
Year	1			Version	2.0	
Semester	1			Effective From	June 2023	
Course Code	BSCA24105	Course Name		Professional Communication Skill-1		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	2	-	2	25	25	50
Course Objective: The aim of this course is to equip the student with necessary professional skills for entering the market place.						
Course Learning Outcomes: After completing the course, the student shall be able to: 1. Understand the process of communication. 2. Develop presentation skills that students need to find for jobs as professionals. 3. Demonstrate effective written communication skills. 4. Identify means and opportunities to improve presentation skills						
Units	Content					Weight/ Teaching Hours
1	The process of communication					11
2	Presentation skill – 1					11
3	Presentation skill – 2					11
4	Managing Organizational Structure					12

Suggested Reference Books:

1. English and Soft Skills, by S P Dhanavel, Orient Blackswan
2. Soft Skills by Gajendra Singh Chauhan and Sangeeta Sharma , Wiley
3. Business Communication- Second Edition, by Meenakshi Raman and Prakash Singh, Oxford
4. Interpersonal Skills at work, by John Hayes, Routledge

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Faculty	Computer Application			Programme	BCA	
Year	1			Version	2.0	
Semester	1			Effective From	June 2023	
Course Code	BSCA25103	Course Name		Digital Marketing		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	2	-	2	25	25	50
<p>Course Objective: After learning the course,</p> <ul style="list-style-type: none"> - Get the digital Marketing jobs in IT industry or became a marketing professional. - Your own Business or Company business will get digital platform . - Review and prioritize the strategic options for boosting customer acquisition, conversion, and retention using digital marketing - Design blogs and website with marketing strategies. 						
<p>Course Learning Outcomes: Upon completion of the course, students will possess a comprehensive understanding of digital marketing fundamentals and proficiency in executing impactful email and video marketing campaigns. They will also demonstrate competence in managing YouTube channels and communicating effectively through various digital platforms.</p>						
Units	Content					Weight/ Teaching Hours
1	<p>Digital Marketing Fundamentals</p> <ul style="list-style-type: none"> - Marketing v/s Sales - Inbound v/s Outbound marketing - Content marketing - Strategic flow for marketing activities - Understanding Leads 					04
2	<p>Website Planning and Structure</p> <ul style="list-style-type: none"> - WWW, Domain - Website languages and technology - Strategic design of one page website - SEO overview - Website auditing - Designing Wordpress website 					06
3	<p>Fundamentals of Facebook & Youtube Marketing</p> <ul style="list-style-type: none"> - Profiles and Pages - Business Categories - Getting Assets Ready - Creating Facebook Pages ,Page Info and Settings ,Facebook Page Custom URL, Invite Page - Likes ,Featured Video ,Scheduling Posts ,Facebook Events, Reply and Message, Facebook Insights Reports ,Competitor's Facebook Page, Ban User on Facebook Page - Facebook Ad Campaigns : Setting Up Facebook Ad Account ,Create Ad - Targeting , create Ad - budgeting ,Create Ad - Creative, 					10

	<p>Managing and Editing Ads, Ad Reports and Ad Insights, Billing and Account</p> <ul style="list-style-type: none"> - YouTube Marketing Fundamentals : Video Flow ,Google Pages for YouTube Channel, Verify Channel - Webmaster Tool – Adding Asset ,Associated Website, Linking Custom Channel, URL, Uploading Videos ,Uploading Defaults Creator Library, Paid Youtube Channel, Live Broadcasting 	
4	<p>Email Marketing - Content writing</p> <ul style="list-style-type: none"> - Email Machine – The Strategy ,Email Frequency - Triggers in Email using 4Ps - Sequence of Email Triggers - Email Example – Topic, Intro, Product, Secondary Value, Regret, Offers - Announcements ,Urgency, Cross Sales , Re-Engagement , Buyer vs Consumer - Email Software and Tools ,Importing Email Lists ,Planning Email Campaign - Email Templates and Designs ,Sending HTML Email Campaigns, Campaign Reports and Insights 	10

Suggested Reference Books:

1. Digital Marketing For Dummies., Russ Henneberry and Ryan Deiss
2. Digital Marketing All-In-One Bundle, 2 in 1 Bundle ,Savanna Payne · Wendell Yanick
3. Marketing Analytics: A Practical Guide to Improving Consumer Insights Using Data Techniques by Mike Grigsby.

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Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	1		Effective From	June 2023		
Course Code	BSCA23106	Course Name	Mathematics			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	4	-	4	50	50	100
Course Objective: After completion of this course, students will be able to get well knowledge of the fundamentals level of mathematics and statistics. With this Subject, they will have developed an aptitude for Computer Programming.						
Course Learning Outcomes: After completing the course, the student shall be able to: 1. To expose students to basic Mathematical & statistical concepts. 2. To boost numerical abilities for use of computers application.						
Units	Content					Weight/ Teaching Hours
1	Calculus - Limits, Properties of limits, Limit at a Point, Differentiation - Derivative, Derivative of sum, Differences, Product & Quotients, Chain rule - Simple Application of Differential Calculus					15
2	Integration - The measure of central tendency-mean, median and mode Measures of dispersion (absolute as well as relative) - Mean deviation - Standard deviation - Coefficient of mean deviation and - Coefficient of variation					15
3	Matrices and Determinants - Matrices of Order $m \times n$ - Row and Column Transformation - Addition, Subtraction, Multiplication of Matrices - Computation of Inverse - Cramer's Rule - Business Applications of Matrices.					15

Suggested Reference Books:

- (1) Linear Algebra by Sushoma Verma
- (2) Advanced Mathematics- B.S. Shah & Co.
- (3) Gupta S.C. & Kapoor V.K.: Fundamentals of Mathematical Statistics; Sultan Chand & Sons
- (4) Data K.P.: Matrix & Linear Algebra; Prentice Hall, India.
- (5) Pavate D.C. Bhagwat: The Element Calculus : Popular Prakshan, Bombay

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Faculty	Computer Application			Programme	BCA	
Year	1			Version	2.0	
Semester	1			Effective From	June 2023	
Course Code	BSCA26107	Course Name		Understanding India		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	2	-	2	25	25	50
Course Objective: This course is designed familiarize students with the Indian constitution and its emergence as one of the largest democratic states in the world. It also aims to aware the students to social, economic and cultural heritage as well as discoveries of India.						
Course Learning Outcomes: On successful completion of this course, the student will be able to have a knowledge regarding 1. Constitutional obligations: fundamental rights and duties. 2. Unknown hidden discoveries of India. 3. Cultural development of India and the making of unity in diversity. 4. Deeper understanding of various historical periods, events and civilization by studying monuments and historical sites						
Units	Content					Weight/ Teaching Hours
1	Indian Constitution: - Salient features, - Fundamental rights and duties					12
2	Indian Discoveries: - India's contribution to the world, - Medical Science: Charaka, Sushruta. - Mathematics and Astronomy					11
3	Cultural Diversity - Origin and growth of major religious streams: Vedic, Jainism, Buddhism, - Bhakti and Sufism, - Brahmo Samaj, Arya Samaj, - Religious philosophy of Sri Aurobindo					11
4	Monuments and Historical sites - Introduction to monuments and historical sites, - Indus Valley Civilization, - Hindu Temple, - Buddhist monuments, - ancient monuments					11

Suggested Reference Books:

1. A. L. Basham, A Cultural History of India, Oxford University Press, 1997
2. A. L. Basham, A Wonder that was India, Rupa, New Delhi, 1994
3. N. R. Ray, An Approach to Indian Art, Publication Bureau, Chandigarh, 1974
4. NayanjotLahiri, Marshaling the Past: Ancient India and its Modern Histories, Permanent Black, 2012
5. R.C. Majumdar (ed.), History and Culture of Indian People (Relevant Volumes and Chapters), Bhartiya Vidya Bhawan, Bombay.
6. S. C. Ghosh, History of Education in Modern India, 1758-1986, Orient Longman, Hyderabad, 1995

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Faculty	Computer Application			Programme	BCA	
Year	1			Version	3.0	
Semester	1			Effective From	June 2024	
Course Code	BSCA32101	Course Name		Office Tools		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	3	1	4	50	50	100
<p>Course Objective</p> <p>The course is designed to equip a person to use computers for professional as well as day to day use. It provides theoretical background as well as in depth knowledge of Software/ packages. After completing the course, the incumbent will be digitally literate and will be able to:</p> <ul style="list-style-type: none"> • Create documents using word processor, spreadsheet & presentation software • Acquire confidence in using computers in Office and General Life 						
<p>Course Learning Outcomes</p> <p>At the end of this course, students will be able to:</p> <ul style="list-style-type: none"> • Students will demonstrate the ability to create, edit, format, and manage documents using Microsoft Word. • Students will be able to design visually appealing presentations using Microsoft PowerPoint. • Students will gain proficiency in data entry, organization, and analysis using Microsoft Excel. • They will learn to create and format spreadsheets, enter data accurately, and perform basic calculations and functions. • By the end of the course, students will be able to integrate their skills in Word, PowerPoint, and Excel to produce comprehensive documents, reports, and presentations. 						
Units	Content					Weight/ Teaching Hours
1	<p>Introduction to Computer</p> <ul style="list-style-type: none"> - Introduction, Objectives - What is Computer? - Components of Computer System - Concept of Hardware and Software - Representation of Data/Information - Concept of Data processing - Applications of IECT 					4
2	<p>Introduction to GUI based Operating System</p> <ul style="list-style-type: none"> - Introduction - Objectives - Basics of Operating System - Operating system - Basics of popular operating system (LINUX, WINDOWS) The User Interface - Task Bar - Icons - Start Menu - Running an application 					8

	<ul style="list-style-type: none"> - Operating System Simple Setting - Changing System Date And Time - Changing Display Properties - To Add Or Remove A Windows Component - Changing Mouse Properties - Adding and removing Printers - File and Directory Management - Types of files 	
3	<p>Elements of Word Processing</p> <ul style="list-style-type: none"> - Introduction - Objectives - Word Processing Basics - Opening and closing Documents - Text Creation and manipulation - Formatting the Text - Table Manipulation 	6
4	<p>Spread Sheet</p> <ul style="list-style-type: none"> - Introduction - Objectives • Elements of Spread Sheet - Creating of Spread Sheet - Concept of Cell Address [Row and Column] and selecting a Cell - Entering Data [text, number, date] in Cells - Page Setup - Printing of Sheet - Saving Spreadsheet - Opening and Closing • Manipulation of Cells & Sheet - Modifying / Editing Cell Content - Formatting Cell (Font, Alignment, Style) - Cut, Copy, Paste & Paste Special - Changing Cell Height and Width - Inserting and Deleting Rows, Column - AutoFill - Sorting & Filtering - Freezing panes • Formulas, Functions and Charts - Using Formulas for Numbers (Addition, Subtraction, Multiplication & Division) - AutoSum - Functions (Sum, Count, MAX, MIN, AVERAGE) - Charts (Bar, Pie, Line) 	10
5	<p>Computer Communication and Internet</p> <ul style="list-style-type: none"> - Introduction - Objectives 	

	<ul style="list-style-type: none"> - Basics of Computer Networks - Local Area Network (LAN) - Wide Area Network (WAN) - Internet - Concept of Internet - Basics of Internet Architecture - Services on Internet - World Wide Web and Websites - Communication on Internet - Internet Services - Preparing Computer for Internet Access - ISPs and examples (Broadband/Dialup/WiFi) - Internet Access Techniques 	6
6	<p>Making Small Presentation</p> <ul style="list-style-type: none"> - Introduction - Objectives • Creation of Presentation - Creating a Presentation Using a Template - Creating a Blank Presentation - Inserting & Editing Text on Slides - Inserting and Deleting Slides in a Presentation - Saving a Presentation • Manipulating Slides - Inserting Table - Adding ClipArt Pictures - Inserting Other Objects - Resizing and Scaling an Object - Creating & using Master Slide • Presentation of Slides - Choosing a Set Up for Presentation - Running a Slide Show - Transition and Slide Timings - Automating a Slide Show • Providing Aesthetics to Slides & Printing - Enhancing Text Presentation - Working with Color and Line Style - Adding Movie and Sound - Adding Headers, Footers and Notes - Printing Slides and Handouts 	8

Suggested Reference Books:

1. C.S. French "Data Processing and Information Technology", BPB Publications 1998
2. P.K Sinha `Computer Fundamentals`, BPB Publications, 1992
3. Guy Hart-Davis "The ABCs of Microsoft Office 97 Professional edition", BPB Publications, 1998
4. Karl Schwartz, "Microsoft Windows 98 Training Guide", 1998

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Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	2		Effective From	June 2023		
Course Code	BSCA21201	Course Name	Object Oriented Programming Methodology			
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	3	1	4	50	50	100
Course Objective:						
<ul style="list-style-type: none"> - To learn inheritance, package and interfaces. - Identify exception handling methods. - Develop multithreading, object-oriented programs. - To learn Collection Framework - To Understand how to work with Strings and operations in Java 						
Course Learning Outcomes:						
At the end of the course, student is expected to have clear concepts about the OOP concepts, Inheritance, Interfaces, Packages and Multithreading in Java.						
Units	Content					Weight/ Teaching Hours
1	Introduction to Object oriented programming in java <ul style="list-style-type: none"> - Object oriented programming - Structured vs object-oriented programming - Object oriented programming languages - Overview of object-oriented programming features – data hiding, abstraction, encapsulation, inheritance, polymorphism - Classes and objects - Class attributes/variables - Class methods - Calling class methods <ul style="list-style-type: none"> • Calling user defined class methods without parameters • Calling user defined class methods with primitive datatype parameters • Calling user defined class methods with object as parameters - Access modifiers and its usage for data hiding 					10
2	Object - construction, accessibility and clean-up <ul style="list-style-type: none"> - Constructor and its types - Default constructor - Parameterized constructor - Copy constructor - Garbage collection in java - new() and finalize() methods - static keyword – static variables and methods - this keyword 					08

	- Array of objects	
3	Exception handling in java <ul style="list-style-type: none"> - Need of exception handling - Types of exceptions - Try... catch block - Finally clause - Throw clause - Throws clause 	06
4	Inheritance <ul style="list-style-type: none"> - Importance of inheritance in object-oriented programming - Types of inheritance 1. Single 2. Multilevel 3. Hierarchical 4. Multiple (using interface) 5. Hybrid - Use of super keyword - Order of calling constructors 	14
5	Polymorphism <ul style="list-style-type: none"> - Method overloading - Method overriding and dynamic binding - Using Final keyword to prevent overring and inheritance 	06
6	Abstraction <ul style="list-style-type: none"> - Need of abstraction - Abstract class - Abstract class vs interface 	04
7	Encapsulation and packages in java <ul style="list-style-type: none"> - Significance of Encapsulation - What is a package? - Importance of package - Creating and accessing package in java - Adding classes to package - Inbuilt packages – Java.util, Java.lang, Java.io 	06
8	Inner class in java <ul style="list-style-type: none"> - Inner classes – need and advantages - Accessing members of outer class within inner class - Difference between nested class and inner class - Types of nested classes 	06

Suggested Reference Books:

1. The Complete Reference Java2 Herbert Schildt TMH, New Delhi
2. Mastering JAVA2 John Zukowski BPB
3. Teach Yourself Java2 platform in 21 days Lamey & Cadenhead Teach Media
- 4 Java in Nut shell - O'Relly Publication
- 5 Java Language Reference - O'Relly Publication

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Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	2		Effective From	June 2023		
Course Code	BSCA22202	Course Name	Computer Organization and Software Development			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	4	-	4	50	50	100
Course Objective: To provide fundamental knowledge of computer organization, operating system and its processes, networking ,internet and software development process.						
Course Learning Outcomes: After completion of this course, the student will get knowledge of computer internal structure, memories, various operating systems and basic idea for software development process.						
Units	Content					Weight/ Teaching Hours
1	Computer Organization <ul style="list-style-type: none"> - Personal Computer, Workstation, Server, Mainframe, Super Computer, Embedded System - Basic building blocks – CPU, interconnection Bus, Input-Output - Internal architecture of processor – Register, ALU, Control Unit, Program Counter, Stack Pointer - Inter connection Bus structure – Data Bus, Address Bus, Control Bus - Processor Operations – Instruction cycle, Instruction fetch, Instruction decode, instruction execute, Program flow control, Processor clock, Machine cycle and T state, interrupts and interrupt service routine 					6
2	Basics of Operating System <ul style="list-style-type: none"> - Basic concept of Operating System - Purpose of Operating System - Types of Operating System 					6
3	Fundamentals of Memory Management & Processing System <ul style="list-style-type: none"> - Types of Memory : Primary memory, secondary memory, - Virtual Memory - Processor - Memory interaction, I/O Device controllers, I/O Processors - Overview of Memory management – addressing, allocation, garbage collection, free memory list, paging, segmentation - Parallel Processing with Uniprocessor ,Pipeline computers, Array computers, Multiprocessor system - Overview of SIMD & MIMD - Boolean algebra, Number System - Conversion of Numbers, Binary addition & subtraction, ASCII and ANSI character code 					10

4	Fundamentals of Computer Networking <ul style="list-style-type: none"> - Need for Computer Networking - Types of Networks – LAN, MAN, WAN, Internet, Intranet - Applications of Network 	3
5	Fundamentals of Internet <ul style="list-style-type: none"> - Overview of Internet, Intranet and types - World Wide Web (WWW), - Website Basics – Web Pages (Static and Dynamic); Hyper Text, Web browser, Web Servers; Web Hosting, Web Portal, Domain name server, - Overview of Client & Server Side Scripting, Applications of Internet 	8
6	Basic of software & Software engineering <ul style="list-style-type: none"> - Types of Software - Software development life cycle - Software engineering practice – communication, planning, modelling, constructions, deployment - Software application architectures – Desktop applications, client-server/Web application, cloud application - Software Quality attributes= FURPS - Various programming methodologies – Structured, object oriented, event driven, pair programming, extreme programming 	10

Suggested Reference Books:

1. Computer Architecture: K M Hebbar
2. Computer System Architecture: M. Morris Mano
3. Introduction to computers: 4th Edition – Peter Norton
4. Fundamentals of Computers: V. Rajaraman
5. Computer Architecture and Organization- A Journey Through Evolution: P. Chakraborty
6. Computer Architecture and Organization: Subrata Ghosal

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Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application			Programme	BCA	
Year	1			Version	3.0	
Semester	2			Effective From	June 2024	
Course Code		Course Name		Data Structure and Algorithm		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	3	1	4	50	50	100
Course Objective To learn the basic types of Data Structures, their implementation, and their applications. To understand the importance of using suitable data structures for efficient programming. To develop the skill to identify appropriate data structures in problem-solving.						
Course Learning Outcomes At the end of this course, students will be able to: <ul style="list-style-type: none"> • understand the importance of data structure for efficient programming. • analyze the linear data structures and their applications. • implement the non-linear data structures and perform different operations on them. • describe the hashing functions and file structures. • differentiate the working of searching and sorting techniques. 						
Units	Content					Weight/ Teaching Hours
1	Introduction to Data Structures: <ul style="list-style-type: none"> - Algorithms and Flowcharts, Basics Analysis on Algorithm, Complexity of Algorithm - Introduction and Definition of Data Structure, Classification of Data, Arrays, Various types of Data Structure, Static and Dynamic Memory Allocation, Function, Recursion. 					4
2	Stacks and Queue : <ul style="list-style-type: none"> - Introduction to Stack, Definition, Stack Implementation, Operations of Stack, - Applications of Stack and Multiple Stacks. - Introduction to Queue, Definition, Queue Implementation, Operations of Queue, - Circular Queue, Operations of Circular Queue, Difference Queue and Circular Queue 					8
3	Linked Lists <ul style="list-style-type: none"> - Introduction, Representation and Operations of Linked Lists, - Singly Linked List, Doubly Linked List, - Circular Linked List, Application of Linked List 					10
4	Searching and Sorting: <ul style="list-style-type: none"> - Sorting Methods : a. Bubble Sort, b. Selection Sort, c. Quick Sort, d. Insertion Sort, e. Merge Sort, f. Radix Sort - Searching an element into an array – i. Linear Search ii. Binary Search 					8

5	Trees <ul style="list-style-type: none"> - Binary trees : Complete Binary Tree, Basic Terms: level number, degree, in-degree and out-degree, leaf node, similar binary trees, copies of binary trees, directed edge, path, depth, General Tree, Conversion of General Tree to Binary Tree, Forest. - Binary Search Tree : Insertion of a node in binary tree, Deletion of a node in binary tree, Searching a node in binary tree - Tree Traversal : Inorder, Preorder, Postorder 	8
6	Hashing <ul style="list-style-type: none"> - Hashing Concepts - Hash functions : Division Method, Middle Square Method, Folding Method, - Collision in Hashing - Collision resolution techniques: Linear Probing 	4

Suggested Reference Books:

- 1 . Data Structures, Chitra, A Rajan, P T Tata McGraw Hill, New delhi, 2009
- 2 . Classic Data Structures, Samanta, D. PHI Learning, New Delhi
- 3 . Data and File Structures using C, Thareja, Reema Oxford University Press New Delhi 2011
- 4 . Data Structures using C, ISRD Group McGraw Hill, New Delhi, 2013

SARVAJANIK UNIVERSITY						
Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	2		Effective From	June 2023		
Course Code	BSCA23206	Course Name	Personality Development			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
4	4	-	4	50	50	100
Course Objective: The course intends to develop latent abilities and talents of students. The course also aims to bring about personality development along with different dimensions like attitude, self-esteem and employability.						
Course Learning Outcomes: After completing the course, the student shall be able to: 1. Understand and develop accurate sense of self. 2. Groom their overall personality. 3. Think critically & to stand confidently in society. 4. Demonstrate knowledge of personal belief.						
Units	Content					Weight/ Teaching Hours
1	Introduction to Personality Development - The concept of personality - Dimensions of personality - Theories of Freud & - Erickson-Significance of personality development. - The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles -Factors responsible for success – - What is failure - Causes of failure. - SWOT analysis.					11
2	Attitude - Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude -Advantages - Negative attitude- Disadvantages - Ways to develop positive attitude - Differences between personalities having positive and negative attitude.					11
3	Motivation & Self-esteem - Concept of motivation - Significance - Internal and external motives - Importance of self- motivation- Factors leading to dc-motivation - Term self-esteem - Symptoms - Advantages - Dos and Don'ts to develop positive self-esteem - Low self-esteem - Symptoms					12

	<ul style="list-style-type: none"> - Personality having low self-esteem -Positive and negative self-esteem. Interpersonal Relationships - Defining the difference between aggressive, submissive and assertive behavior's - Lateral thinking. 	
4	Other Aspects of Personality Development <ul style="list-style-type: none"> - Body language - Problem-solving - Conflict and Stress Management - Decision-making skills - Leadership and qualities of a successful leader - Character building -Team-work - Time management - Work ethics - Good manners and etiquette. 	11

Suggested Reference Books:

1. Andrews, Sudhir. How to Succeed at Interviews. 21st (rep.) New Delhi.Tata McGraw-Hill 1988.
2. Heller, Robert. Effective leadership. Essential Manager series. Dk Publishing, 2002
3. Hindle, Tim. Reducing Stress. Essential Manager series. Dk Publishing, 2003
4. Lucas, Stephen. Art of Public Speaking. New Delhi. Tata - Mc-Graw Hill. 2001
5. Mile, D.J Power of positive thinking. Delhi. Rohan Book Company, (2004).

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Sarvajanik College of Commerce & Computer Applications						
Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	2		Effective From	June 2023		
Course Code	BSCA24205	Course Name	Professional Communication Skill-2			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	2	-	2	25	25	50
Course Objective: The courses are designed to equip the student with necessary professional skills for entering the market place.						
Course Learning Outcomes: After completing the course, the student shall be able to: 1. help student in building and improving their skills in preparing job applications 2. Equip with necessary skill of group discussion. 3. Develop interpersonal skills so as to be successful at their workplace. 4. Understand workplace ethics						
Units	Content					Weight/ Teaching Hours
1	Job applications and interview					11
2	Group Discussion					11
3	Developing Interpersonal Skills for a successful life at the workplace.					11
4	Work ethics and social media Etiquette					12

Suggested Reference Books:

1. English and Soft Skills, by S P Dhanavel, Orient Blackswan
2. Soft Skills by Gajendra Singh Chauhan and Sangeeta Sharma , Wiley
3. Business Communication- Second Edition, by Meenakshi Raman and Prakash Singh, Oxford
4. Interpersonal Skills at work, by John Hayes, Routledge

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Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application			Programme	BCA	
Year	1			Version	2.0	
Semester	2			Effective From	June 2023	
Course Code	BSCA25203	Course Name		Web Designing		
Teaching Scheme				Examination Scheme		
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	1	1	2	25	25	50
Course Objective: To provide fundamental knowledge of Web page design with HTML5, CSS and JavaScript.						
Course Learning Outcomes: After completion of this subject, student will be able to <ul style="list-style-type: none"> - The student will be capable of designing effective and interactive web pages using HTML5, CSS and JavaScript. - Design various web application 						
Units	Content					Weight/Teaching Hours
1	Web designing Fundamentals <ul style="list-style-type: none"> - Overview of Client & Server architecture - Website Basics - WebPages(static and dynamic) - Web browser, Web Servers; Web Hosting, Web Portal, Domain name server 					5
2	Basic Web page designing with HTML 5 <ul style="list-style-type: none"> - HTML Structure - Basic HTML Tags – Formatting, Table, Headings - Other Tags – Ordered Lists, Unordered Lists, Links - Tables and Frame, Form Tags - HTML 5- standard and custom attributes, events - Web Form 2.0, Web storage, Web SQL - SVG, Canvas, Embedding and Playing Audio & Video 					10
3	Cascade Style Sheets <ul style="list-style-type: none"> - Introduction to CSS and Its types - Common Tasks with CSS-styling fonts, margins, links With Background related tags, Border related tags, Font related tags, Margin related tags, Text related tags, Page related tags, List related tags, Colour tag, Layer tag, Size and location related properties, - Assigning classes 					7

4	<p>JavaScript</p> <ul style="list-style-type: none"> - Structure of JavaScript - Data Types and Variables in JavaScript - Operators : Arithmetic Operator, Assignment Operator, Comparison Operator, Logical Operator, Conditional Operator in JavaScript - Control Structure : If...Else, While, Do...While, For and Functions in JavaScript - Handling events in JavaScript-Windows event, Event object 	
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Suggested Reference Books:

1. HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and JQuery, Dreamtech Press
2. WEB TECHNOLOGIES: HTML, JAVASCRIPT, PHP, JAVA, JSP, ASP.NET, XML AND AJAX, BLACK BOOK: HTML, Javascript, PHP, Java, Jsp, XML and Ajax, Black Book, Dreamtech Press
3. HTML5 and CSS3 made Simple, Ivan Byross, BPB
4. Pro HTML5 and CSS3 Design Patterns, Dionysios Synodinos, Michael Bowers and Victor Sumner, Pearson
5. HTML5 In easy steps, Mike McGrath, McGrawHill
6. Programming in HTML5 with JavaScript and CSS3 Training Guide, Johnson G, PHI

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Sarvajanic College of Commerce & Computer Applications						
Faculty	Computer Application		Programme	BCA		
Year	1		Version	2.0		
Semester	2		Effective From	June 2023		
Course Code	BSCA26207	Course Name	Environmental Studies			
Teaching Scheme			Examination Scheme			
Credits	Lecture	Practical	Total	CCE	SEE	Total
2	2	-	2	25	25	50
Course Objective: To get an understanding of the scope and importance of environmental studies, eco system, bio diversity and various environment related social issues.						
Course Learning Outcomes: After completing the course, the student shall be able to: 1. Students shall get a basic understanding about the importance of environmental studies. 2. Students will get a detailed understanding about the ecosystem. 3. The study will update the students about bio diversity and various environment related social issues. 4. Students will be developing understanding about sustainable development and thereby to conserve natural resources.						
Units	Content					Weight/ Teaching Hours
1	The multidisciplinary nature of environmental studies - Definition, - scope and importance, Need for public awareness					12
2	Ecosystem - Concept - Structure and function of ecosystem - Producers, consumer and decomposers - Energy flow in the ecosystem - Food chain, food webs and ecological pyramids					12
3	Biodiversity and its conservation - Concept - Importance - Loss biodiversity					11
4	Social issues and the environment - From unsustainable to sustainable development - Water conservation, rain water harvesting - Environmental ethics; issues and possible solutions Environment protection act					11

Suggested Reference Books:

1. "Ecology and Environment" by P.D. Sharma and Pankaj Sharma
2. "Environmental Studies: From Crisis to Cure" by R.Rajagopalan
3. "Environmental Studies: Multiple Choice Questions" by Erach Bharucha