SURESH GYAN VIHAR UNIVERSITY, JAIPUR
(CDOE, SGVU)

Program Project Report (PPR)

Bachelor of Computer Application

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Program Project Report

1. Program Mission and Objectives

Suresh Gyan Vihar University, Jaipur, established in 2008, is a leading private University of Rajasthan. SGVU, Jaipur is accredited with Grade A+ by the National Assessment and Accreditation Council (NAAC), and offers courses like Engineering, Management, Hotel Management, Pharmacy, Arts, Humanities, Law, Agriculture, etc. in conventional mode. SGVU is renowned for its innovative academic practices, brilliance in technical education, and consultancy to high-profile industries.

The program's mission is to impart, train, and transform a student completely for high caliber competence through the latest concepts and technology and equip the students as per the demands of the industry.

The program aims to achieve the following objectives

i. To provide an opportunity to get BCA (Bachelor of Computer Application) degree to those who find it difficult or even impossible to pursue regular BCA courses at a university either due to their job commitments or certain other circumstances.

ii. To help the learners, study at their own pace, from their own chosen place.

iii. To provide students with an in-depth understanding of their chosen field of study, including current theories, research methodologies, and significant developments.

iv. To develop students' abilities to critically evaluate existing literature, arguments, and evidence within their field.

v. To encourage the integration of knowledge from various disciplines, promoting a more holistic understanding and innovative approaches to solving complex problems.

vi. To instill a strong sense of ethical responsibility and an understanding of the ethical implications of research and professional practice within their discipline.

2. Relevance of the Program with Suresh Gyan Vihar University, Jaipur Mission and Goals

Suresh Gyan Vihar University (SVGU) was established with a vision to become a university with a commitment to excellence in education, research, and innovation aimed towards human advancement.

The proposed program is highly relevant to the SVGU's mission i.e.

- Facilitate holistic education through knowledge sharing, skilling, research, and development.
- Integrate academic and research work towards the nation's development.

- Mentor students' physical, mental, emotional, secular, and spiritual attributes to become a valued human resource as it aims to provide quality education to those aspiring candidates who are deprived of higher education due to the limited number of intakes in the conventional mode of education in the Universities.

Moreover, to keep the quality intact the curriculum and syllabus have been designed at par with the conventional mode keeping in mind the specific needs and acceptability of the learners' ODL mode and in keeping with the aims and objectives of the University also ensuring the industry and future skills relevance.

Nature of Prospective Target Group of Learners

The curriculum of BCA is designed in such a way that it helps the students to become not only more employable but also encourages them to become entrepreneurs in the field of IT, ITES, etc. Primarily the target group of learners will be:

- Those deprived of admission in the regular mode due to limited intake capacity.
- Those employed in various organizations who desire to pursue higher education as a passion or as a means for movement up the promotional ladder.
- Dropouts primarily due to social, financial and economic compulsions as well as demographic reasons.
- Population of any age and those living in remote areas where higher education institutes are not easily accessible.

3. Appropriateness of program to be conducted in ODL mode to acquire specific skills and competence

The degree would be of most value to students which can support the development of critical thinking, research skills, and subject-specific knowledge. In various fields such as education, business, government sector and public administration, it provides professionals with the opportunity to acquire advanced theoretical knowledge and practical skills that are directly applicable to their work environments.

4. Instructional Design

Curriculum Design

The curriculum is designed by experts in the field of information technology and has taken into account to include relevant topics that are contemporary and create environmental awareness. It is approved by the BoS (Board of Studies), the CIQA (Centre for Internal Quality Assurance), and the AC (Academic Council) of the university.

Program Structure and Credits Mapping: Bachelor of Computer Application

Semester	Course Code	Paper	Credit	Contact Hours	Internal	External	Total
1	DBM-118	Business Communication Skills	05	15	30	70	100
1	DCA-102	Modern Operating Environment & MS Office	05	15	30	70	100
1	DCA-103	Principles of Management	05	15	30	70	100
1	DCA-104	Principles of Programming & Algorithms	05	15	30	70	100
2	DCA-105	Computer Applications in Statistics	05	15	30	70	100
2	DCA-106	C-Programming	05	15	30	70	100
2	DCA-107	E-Commerce Concepts	05	15	30	70	100
2	DCA-108	Introduction to Database Management System	05	15	30	70	100
3	DCA-109	Data Structure Using C	05	15	30	70	100
3	DCA-110	Discrete Mathematics	05	15	30	70	100
3	DCA-111	Introduction to Operating System	05	15	30	70	100
3	DCA-112	Relational DBMS (Oracle)	05	15	30	70	100
4	DCA-113	Database Management System (DBMS)	05	15	30	70	100
4	DCA-114	Object Oriented Concepts & Programming - I (core Java)	05	15	30	70	100
4	DCA-115	Introduction to Computer Network	05	15	30	70	100
4	DCA-116	Big Data Analytics	05	15	30	70	100
5	DCA-117	System Programming and Introduction to Microprocessor	05	15	30	70	100
5	DCA-118	Object Oriented Concepts & Programming-II (Advance Java)	05	15	30	70	100
5	DCA-119	Personality Development	05	15	30	70	100

5	DCA-120	Visual Programming Laboratory	05	15	30	70	100
6	DCA-121	E- Learning	05	15	30	70	100
6	DCA-122	Software Engineering	05	15	30	70	100
6	DCA-123	Programming in Java - Laboratory	05	15	30	70	100
6	DCA-124	Project	08	24	30	70	100
Total Credits			**123**				

*Contact Hours at campus mentioned above are other than the PCP (Personal Contact Program) conducted atcampus.

Semester 1
Modern Operating Environment and MS Office

Learning Objective

- The students will be able to understand the basic concepts of computer and related peripherals.
- Develop the proficiency in routine use of a computer and all the related components of the same in terms of computer language, programming, etc.
- The objective of this Course is also making the student understand the functioning of operating systems and network related components.
-

The course aims to train them in communicating efficiently in the workplace and professional contexts.

Unit 1

Introduction, what is a computer? History of Computers, Characteristics of Computers, Concepts of Hardware and Software, Types of Software, Evolution and Generation of Computers, Types of Computers, Limitations of Computers, Application Areas of Computers, Block Diagram of a Computer, CPU (Central Processing Unit, Bus Structure, input / Output Devices, Input Devices, Output Devices

Unit 2

Computer Memory, Primary (Semiconductor) Memory, Secondary Memory and Storage Devices, Computer Language and Software

Unit 3

Algorithm, Flowchart, Types of Programming Lan, Compilers and Interpreters, Characteristics of a Good Programming Language, Software,

Unit 4

Operating system, Functions of Operating System, Types of Operating Systems, Windows Operating System, Components of the Windows O.S., Running Windows Applications, Switching between Applications, Windows Accessories.

Unit 5

Networking, Introduction, Computer Network, Communication Modes, Data Transmission, Direction of Transmission, Data Transmission Media, Network Structure, Network Topologies, Internet, MS-Office, Modern Operating.

References

- How to solve it by Computer – R. G. Dromy
- Fundamentals of Data Structures – Horowitz and Sahani
- Introduction to algorithms – Cormen, Leiserson, Rivest, Stein

Semester 1
Principles of Programming & Algorithms

Learning Objectives

- Elucidate the basic architecture and functionalities of a computer
- Apply programming constructs of C language to solve the real-world problems
- Explore user-defined data structures like arrays, structures and pointers in implementing solutions to problems
- Design and Develop Solutions to problems using structured programming constructs such as functions and procedures

UNIT-I

Introduction to „C‟ Language History, Structures of _Programming, Function as building blocks. Language Fundamentals Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments.

UNIT-II

Operators Types of operators, Precedence and Associativity, Expression, Statement and types of statements Build in Operators and function Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files, Preprocessor directives: #include, #define. Control structures Decision making structures.

UNIT-III Introduction to problem solving Concept: problem solving, Problem solving techniques (Trail & Error, Brain Stroming, Divide & Conquer) Steps in problem solving (Define Problem, Analyze Problem, Explore Solution) Algorithms and Flowcharts (Definitions, Symbols), Characteristics of an algorithm Conditionals in pseudo-code, Loops in pseudo code Time complexity: Big-Oh notation, efficiency Simple Examples: Algorithms and flowcharts (Real Life Examples)

UNIT-IV

Simple Arithmetic Problems Addition / Multiplication of integers, Determining if a number is +ve / -ve / even / odd, Maximum of 2 numbers, 3 numbers, Sum of first n numbers, given n numbers, Integer division, Digit reversing, Table generation for n, a n C b , Factorial, sine series, cosine series, r , Pascal Triangle, Prime number, Factors of a number, Other problems such as Perfect

number, GCD numbers etc (Write algorithms and draw flowchart), Swapping

UNIT-V

Functions Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variable, Storage classes, Recursion.

References

- Computer fundamentals and programming in c, "Reema Thareja", Oxford University, Second edition, 2017.
- E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill.
- Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India.
- elearning.vtu.ac.in/econtent/courses/video/BS/15PCD23.html
- https://nptel.ac.in/courses/106/105/106105171/ MOOC courses can be adopted for more clarity in understanding the topics and verities of problem solving methods.

Semester 1
PRINCIPLES OF MANAGEMENT

Learning Objectives

- To have brief about the concept of Management and its application and related components.
- Students will learn about features, levels and process of management.
- Develop the linkages with various approaches towards management.
- Will become verse with the significance of various components of management like planning, organizing, etc.
- Student will be able to participate actively in the management decision making process.

UNIT - I

Nature of Management, Definition, Management as Science, Management as an Art, Management as both Science and Art, Features of management, Process of management, Levels of management, Management Thought, Early Management Thought, The Classical Approach, Modern Management Approaches, The Quantitative Approach of Management Thought, Systems Approach of Management Thought, Modern approaches to management, Other Responsibility of Management.

UNIT - II

Nature and Objectives, Significance Process of Planning, Types of Plans, steps in Planning Process, Merits and Demerits of Planning, Management by Objective, Decision Making & Its Techniques, Concept of Decision Making, Objectives, Importance of Decision Making, Process of Decision Making, Techniques of Decision Making, Types of Managerial Decisions, Essentials of Sound Decision Making.

UNIT – III

Concept Of Organization, Nature and Characteristics of Organization, Organization Structure, Formal Organization, Informal Organization, Concept of Line & Staff, Conflict between Line &

Staff Managers, Concepts of Departmentation, Bases of Departmentation, Concept of Matrix Organization, Advantages & Disadvantages of Matrix Organization Structure, Concept of Span Of Control, Factors Affecting Span Of Control, Graicunas Theory of Span Of Control, Concept of Centralization & Decentralization, Advantages & Disadvantages of Centralization & Decentralization, Concept of Delegation of Authority, Principles of Effective Delegation, Authority & Responsibility Relationship.

UNIT – IV

Importance of Directing as Managerial function, Supervisor and Role of Supervisor, Functions of Supervisors, Leadership and its Characteristics, Importance of Leadership. Roles performed by the Leader, Leadership & Management, Leadership Styles. Trait theory of Leadership, Behavioral Theories. Role theory. Managerial grid, Staffing Nature, Importance of Staffing, Elements of Staffing, Factors Influencing the Staffing Patterns.

UNIT – V

Concept of Co-ordination, Importance of Co-ordination, Concept & Nature of Controlling, Process of Controlling, Controlling Techniques, Modern Management Practices Objectives, managing diversity, Japanese Management Practices, Unique Features of Japanese Management, Comparison of Japanese and American Management Concept of Green Management, Features of Green Management, Corporate Social Responsibility, Features, Significance, Arguments against Corporate Social Responsibility.

References

1. Koontz, H., and Weihrich, H., Essentials of Management: An International, Innovation and Leadership Perspective, 10th ed., McGraw Hill, 2015.
2. Robbins, SP, Bergman, R, Stagg, I, and Coulter, M, Management 7, Prentice Hall, 7th edition, 2015.
3. Richard I Levin, David S Rubin, Statistical management, 7th Edition, Prentice Hall India, 2011.
4. Kotler, P., Keller, Kevin Lane Keller et al. Marketing Management, 3rd Edition, 2016.
5. Eugene F. Brigham and Michael C. Ehrhardt, Financial Mangement: Theory and Practice, SouthWestern College Pub; 15th Edition, 2016.

Semester 1
BUSINESS COMMUNICATION SYLLABUS

Learning Objective

- The objective of this Course is to understand the communication concepts and to develop the students' competence in communication at an advanced level.
- Develop the proficiency in the basic communication skills of listening, speaking, reading and writing in English.
- The course aims to train them in communicating efficiently in the workplace and professional contexts.

Unit 1

Concept of Communication – Significance, Scope – Communication Process – Essentials of good communication – Channels of Communication – Formal, Informal Communication – Upward, Downward, Horizontal Communication.

Unit 2

Types of communication: Verbal – Oral Communication: Advantages and Limitations of Oral Communication, Written Communication – Characteristics, Advantages & Limitations Nonverbal Communication: Sign language – Body language – Kinesics – Proxemics – Time language and Hepatics: Touch language.

Unit 3

Interpersonal Communication: Communication Styles, Managing Motivation to Influence Interpersonal Communication – Role of emotion in Inter personal Communication.

Unit 4

Barriers of Communication: Types of barriers – Technological – Socio-Psychological Text Books: barriers – Overcoming barriers, Types of listening.

Unit 5

Report writing – Formal reports – Writing effective letters – Different types of business letters - Interview techniques – Communication etiquettes

References

- Business Communication, C.S.Rayudu, HPH.
- Business Communication, Meenakshi Raman, Oxford University Press.
- Business communication, Shalini Varma, Vikas.
- Business Communication, Raymond V.Lesikar, Neeraja Pandit et al.,TMH
- English for Business Communication, Dr.T.M Farhatulla, Prism books Pvt. Ltd.
- Business Communications, Hudson, Jaico Publications
- Business communication for managers, Penrose, Raspbery, Myers, Cengage

Semester 2
C Programming

Learning Objectives

1. Write algorithms, flowcharts and programs.
2. Implement different programming constructs and decomposition of problems into functions.
3. Use and implement data structures like arrays and structures to obtain solutions.
4. Define and use of pointers with simple applications.

Unit 1

Introduction to Computing: Introduction, Art of Programming through Algorithms and Flowcharts. Overview of C: History and importance of C, Basic structure of C program, executing a C program. Constants, Variable and Data Types: Introduction, Character Set, C Tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Assigning Values to Variables, Defining Symbolic Constants. Managing Input and Output Operations: Reading a Character, Writing a Character, Formatted Input, Formatted Output. Operators and Expressions: Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operator, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions, Operator Precedence and Associativity.

Unit 2

Decision Making and Branching: Introduction, Decision Making with IF Statement, Simple IF Statement, the IF-ELSE Statement, Nesting of IF-ELSE Statements, The ELSE IF Ladder, The Switch statement, The?: Operator, The goto statement. Decision Making and Looping: Introduction, The while Statement, The do statement, The for statement, Jumps in LOOPS.

Unit 3

Arrays: One-dimensional Arrays, Declaration of One-dimensional Arrays, Initialization of One-dimensional Arrays, Example programs- Bubble sort, Selection sort, Linear search, Binary search, Two-dimensional Arrays, Declaration of Two-dimensional Arrays, Initialization of Two-dimensional Arrays, Example programs-Matrix Multiplication, Transpose of a matrix. Character Arrays and Strings: Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, String-handling Functions, Example Programs (with and without using built-in string functions)

Unit 4

User-defined Functions: Need for functions, Elements of User-defined Functions, Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return values, Arguments with Return Values, No Arguments but Returns a Value, Passing Arrays to Functions, Recursion, The Scope, Visibility and Lifetime of variables. Pointers: Introduction, Declaring Pointer Variables, Initialization of Pointer variables, accessing a Variable through its Pointer, Pointer Expressions, Pointer Increments and Scale Factor.

Unit 5

Structures: Introduction, defining a structure, declaring structure variables, accessing structure members, structure initialization, array of structures. File Management in C: Introduction, Defining and opening a file, closing a file, Input/output and Error Handling on Files.

Reference

- E. Balaguruswamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
- Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.
- Kernighan B.W and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.
- Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978-938728-449-4.
- Jacqueline A Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9.
- Dr. Guruprasad Nagraj, "C Programming for Problem Solving", Himalaya Publishing House. ISBN-978-93-5299-361-1. Weblinks and Video Lectures (e-Resources):
- http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html
- https://nptel.ac.in/courses/106/105/106105171/

Semester 2

Computer Application in Statistics

Learning Objectives

- The students will learn the basic components of statistics and use of computer in the same.
- Develop the base acumen for using computer in real world statistical problems. \
- The students will develop the calculation skills with a base acumen of using computer application for the same.
- Will be able to resolve the statistical problem in the field of management, IT and ITES.

Unit 1

Statistical Population, Census, Sampling, Advantages of Sampling, Classification, Objectives of Classification, Basis of Classification, Types of Classification, Spreadsheet, Preparation of Frequency Distribution, Bar Chart, Pie Charl, Frequency Curves and Ogive Curves, Methods of Counting, Counting Techniques, Fundamental Principle of Counting, Multiplication Principle, Addition Principle.

Unit 2

Factorial Notation. Permutations, Combinations, Some Standard Results, Solved Examples.

Unit 3

Elements of Probability Theory, Sample Space and Events, Discrete Sample Space, Events, Occurrence of an event, Algebra of Events, Complementary Event, Union and intersection of Two Events, Union of Three Events, intersection of Three Events, De Morgan's Laws. Classical Approach of Probability, Probability of an Event: Equally likely Outcomes, Limitations of the Classical Definition, Axiomatic Approach, Probability of an Event: Properties, Independence of Standard Discrete Distributions.

Unit 4

Concept of a Random Variable, Discrete Random Variable, Probability Mass Function (PMF), Cumulative Distribution Function (CDF), Mathematical Expectation, Properties of Expectation, Variance, Standard Probability Distributions, Discrete Uniform Distribution, Cumulative Distribution Function (CDF), Bernoulli Distribution, Binomial Distribution.

Unit 5

Simulation Techniques, Random Number Generator, Monte Carlo Simulation, Model Sampling, from Discrete Distributions, Computer Aided Simulation, Merits and Demerits of Simulation.

References

1. R. A. Becker, J. M. Chambers, and A. R. Wilks. The New S Language. Chapman & Hall, Boca Raton, FL, 1988.
2. W. John Braun and Duncan J. Murdoch. A First Course in Statistical Programming with R. Cambridge University Press, Cambridge, 2007.
3. Cynthia A. Brewer. Designing Better Maps: A Guide for GIS Users. ESRI Press, Redlands, CA, 2005.
4. John M. Chambers. Data Management in S. Technical report, AT&T Bell Laboratories Statistics Research Report No. 99, 1991.
5. John M. Chambers. Programming with Data: A Guide to the S Language. Springer, New York, 1998.

Semester 2
Data Base Management System

Learning Objective

- Students will be able to learn how to manage the data while using an IT enabled framework.
- Will be able to develop acumen about the system of data base i.e. what are the peripherals, how they work and even coordination.
- Will learn about a number of ERP systems that will enable them to manage the related components in real world.
- Student will be able to develop skills to manager data and use the same with utmost efficiency.

Unit 1

What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management.

Unit 2

The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction.

Unit 3

Database design and ER Model:overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML Relational database model: Logical view of data, keys, integrity rules. Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).

Unit 4

Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple

relational calculus, Domain relational Calculus, calculus vs algebra, computational capabilities.

Unit 5

What is constraints, types of constrains, Integrity constraints, Views: Introduction to views, data independence, security, updates on views, comparison between tables and views SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers. Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks),Time stamping methods, optimistic methods, database recovery management.

References

- A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", fifth Edition McGraw-Hill
- An introduction to Database System – Bipin Desai, Galgotia Publications
- Database System: concept, Design & Application by S.K.Singh (Pearson Education)
- Database management system by leon &leon (Vikas publishing House).
- Database Modeling and Design: Logical Design by Toby J. Teorey, Sam S. Lightstone, and Tom Nadeau, "", 4th Edition, 2005, Elsevier India Publications, New Delhi
- Fundamentals of Database Management System – Gillenson, Wiley India
- Rob, Coronel, "Database Systems", Seventh Edition, Cengage Learning.

Semester 2
e-Commerce Concepts

Learning Objectives

- Students will learn the basic aspects of information technology and occurrence of E-commerce.
- Will be able to understand the functioning of market in online mode, related threats, advantages, etc.
- Will be able to understand the difference in conventional marketing and E-Marketing.
- Will be able to learn about the ethics in the field of E-commerce.

Unit 1

Overview of developments in Information Technology and Defining E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, Produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.

Unit 2

Traditional retailing and e retailing, Benefits of e retailing, Key success factors, Models of e retailing, Features of e retailing. E services: Categories of e-services, Web-enabled services, matchmaking services, Information-selling on the web, e entertainment, Auctions and other specialized services. Business to Business Electronic Commerce.

Unit 3

Benefits of EDI, EDI technology, EDI standards, EDI communications, EDI Implementation, EDI Agreements, EDI Security. Electronic Payment Systems, Need of Electronic Payment System: Study and examine the use of Electronic Payment system and the protocols used, Study Electronic Fund Transfer and secure electronic transaction protocol for credit card payment. Digital economy: Identify the methods of payments on the net – Electronic Cash, cheques and credit cards on the Internet.

Unit 4

Virus, Cyber Crime Network Security: Encryption, Protecting Web server with a Firewall, Firewall and the Security Policy, Network Firewalls and Application Firewalls, Proxy Server.

Unit 5

Understanding Ethical, Social and Political issues in E-Commerce: A model for Organizing the issues, Basic Ethical Concepts, Analyzing Ethical Dilemmas, Candidate Ethical principles Privacy and Information Rights: Information collected at E-Commerce Websites, The Concept of Privacy, Legal protections Intellectual Property Rights: Types of Intellectual Property protection, Governance.

References

- Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd.
- RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley.
- Efraim Turban, Jae Lee, David King, H.Michael Chung, “Electronic Commerce–A ManagerialPerspective", Addison-Wesley.
- Elias M Award, “Electronic Commerce from Vision to Fulfilment”, 3rd Edition, PHI.

- Judy Strauss, Adel El-Ansary, Raymond Frost, "E-Marketing", 3RDEdition, Pearson Education.

Semester 3
Discrete Mathematics

Learning Objectives

- The primary objective of the course is that students should learn a particular set of mathematical facts and how to apply them.
- In particular it teaches students how to think logically and mathematically through five important themes: mathematical reasoning, combinatorial analysis, discrete structures, algorithmic thinking, and applications and modeling.
- A successful discrete mathematics course should carefully blend and balance all five themes.

Unit I

Logic: Propositional equivalence, predicates and quantifiers, Methods of proofs, proof strategy, sequences and summation, mathematical induction, recursive definitions and structural induction, program correctness. Counting: The basics of counting, the pigeonhole principle, permutations and combinations, recurrence relations, solving recurrence relations, generating functions, inclusion-exclusion principle, application of inclusion-exclusion.

Unit II

Relations: Relations and their properties, n-array relations and their applications, representing relations, closure of relations, equivalence of relations, partial orderings. Graph theory: Introduction to graphs, graph terminology, representing graphs and graph isomorphism, connectivity, Euler and Hamilton paths, planar graphs, graph coloring, introduction to trees, application of trees.

Unit III

Group theory: Groups, subgroups, generators and evaluation of powers, cosets and Lagrange's theorem, permutation groups and Burnside's theorem, isomorphism, automorphisms, homomorphism and normal subgroups, rings, integral domains and fields.

Unit IV

Lattice theory: Lattices and algebras systems, principles of duality, basic properties of algebraic systems defined by lattices, distributive and complimented lattices, Boolean lattices and Boolean algebras, uniqueness of finite Boolean expressions, prepositional calculus. Coding theory: Coding of binary information and error detection, decoding and error correction.

References

- K.H. Rosen: Discrete Mathematics and its application, 5th edition, Tata McGraw Hill.Chapter
- C. L. Liu: Elements of Discrete Mathematics, 2nd edition, TMH 2000.
- B.Kalman: Discrete Mathematical Structure, 3rd edition,
- "Discrete Mathematical Structures": Tremblay and Manohar, Tata McGraw Hill
- "Discrete Mathematics": 1 st edition by Maggard Thomson
- "Discrete M a t h e m atic s ": Semyour Lipschutz, Varsha Patil IInd Edition Schaum's Series, TMH

- "Discrete M a t h e m a t i c a l Structures": Kolman, Busb y a nd Ross, Prentice Hall India, Edition 3

Semester 3
Introduction to Operating System

Learning Objective

- To explain main components of OS and their working
- To familiarize the operations performed by OS as a resource Manager
- To impart various scheduling policies of OS To teach the different memory management techniques.

UNIT I

OPERATING SYSTEMS OVERVIEW: Introduction, operating system operations, process management, memory management, storage management, protection and security, distributed systems. OPERATING SYSTEMS STRUCTURES: Operating system services and systems calls, system programs, operating system structure, operating systems generations.

UNIT II

PROCESS MANAGEMENT: Process concepts, process state, process control block, scheduling queues, process scheduling, multithreaded programming, threads in UNIX, comparison of UNIX and windows. CONCURRENCY AND SYNCHRONIZATION: Process synchronization, critical section problem, Peterson's solution, synchronization hardware, semaphores, classic problems of synchronization, readers and writers problem, dining philosophers problem, monitors, synchronization examples (Solaris), atomic transactions. Comparison of UNIX and windows.

UNIT - III

DEADLOCKS: System model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock banker's algorithm. MEMORY MANAGEMENT: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page-replacement algorithms, allocation of frames, thrashing, case study - UNIX.

UNIT IV

FILE SYSTEM: Concept of a file, access methods, directory structure, file system mounting, file sharing, protection. File system implementation: file system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance, comparison of UNIX and windows.

UNIT - V

I/O SYSTEM: Mass storage structure - overview of mass storage structure, disk structure, disk attachment, disk scheduling algorithms, swap space management, stable storage implementation, tertiary storage structure. I/O: Hardware, application I/O interface, kernel I/O subsystem, transforming I/O requests to hardware operations, streams, performance.

References

- Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2006), Operating System Principles, 7th edition, Wiley India Private Limited, New Delhi.
- Stallings (2006), Operating Systems, Internals and Design Principles, 5th edition, Pearson Education, India.

- Andrew S. Tanenbaum (2007), Modern Operating Systems, 2nd edition, Prentice Hall of India, India.
- Deitel & Deitel (2008), Operating systems, 3rd edition, Pearson Education, India.

Semester 3
Relational Database Management System

Learning Objectives

- Understand the basic concepts and the applications of database systems.
- Master the basics of SQL and construct queries using SQL.
- Understand the relational database design principles.
- Familiar with the basic issues of transaction processing and concurrency control.
- Familiar with database storage structures and access techniques.

Unit I

Database System Architecture – Data Abstraction, Data Independence, Data Definitions and Data Manipulation Languages. Data models – Entity Relationship (ER), Mapping ER Model to Relational Mode, Network. Relational and Object Oriented Data Models, Integrity Constraints and Data Manipulation Operations.

Unit II

Relation Query Languages, Relational Algebra, Tuple and Domain Relational Calculus, SQL and QBE. Relational Database Design: Domain and Data dependency, Armstrong's Axioms, Normal Forms, Dependency Preservation, Lossless design, Comparison of Oracle & DB2.

Unit III

Query Processing and Optimization: Evaluation of Relational Algebra Expressions, Query Equivalence, Join strategies, Query Optimization Algorithms.

Unit IV

Storage Strategies: Indices, B-Trees, Hashing, Transaction processing: Recovery and Concurrency Control, Locking and Timestamp based Schedulers, Mult version and Optimistic Concurrency Control Schemes. Advanced Topics: Object-Oriented and Object Relational databases. Logical Databases, Web Databases, Distributed Databases, Data Warehouse and Data Mining.

References

- Database System Concepts by Sudarshan, Korth (McGraw-Hill Education)
- Fundamentals of Database System By Elmasari &Navathe- Pearson Education
- An introduction to Database System – Bipin Desai, Galgotia Publications
- Database System: concept, Design & Application by S.K.Singh (Pearson Education)
- Database management system by leon &leon (Vikas publishing House).
- Database Modeling and Design: Logical Design by Toby J. Teorey, Sam S. Lightstone, and Tom Nadeau, "", 4thEdition, 2005, Elsevier India Publications, New Delhi
- Fundamentals of Database Management System – Gillenson, Wiley India

Semester 3
Data Structure Using C

Learning Objective

- To teach efficient storage mechanisms of data for an easy access.
- To design and implementation of various basic and advanced data structures.
- To introduce various techniques for representation of the data in the real world.
- To develop application using data structures.
- To improve the logical ability

Unit 1

Introduction to data structures: storage structure for arrays, sparse matrices, Stacks and Queues: representation and application. Linked lists: Single linked lists, linked list representation of stacks and Queues. Operations on polynomials, Double linked list, circular list.

Unit 2

Dynamic storage management-garbage collection and compaction, infix to post fix conversion, postfix expression evaluation. Trees: Tree terminology, Binary tree, Binary search tree, General tree, B+ tree, AVL Tree, Complete Binary Tree representation, Tree traversals, operation on Binary tree-expression Manipulation.

Unit 3

Graphs: Graph terminology, Representation of graphs, path matrix, BFS (breadth first search), DFS (depth first search), topological sorting, Warshall's algorithm (shortest path algorithm.) Sorting and Searching techniques

Unit 4

Bubble sort, selection sort, Insertion sort, Quick sort, merge sort, Heap sort, Radix sort. Linear and binary search methods, Hashing techniques and hash functions.

References

- Gilberg and Forouzan: "Data Structure- A Pseudo code approach with C" by Thomson publication
- "Data structure in C" by Tanenbaum, PHI publication / Pearson publication.
- Pai: "Data Structures & Algorithms; Concepts, Techniques & Algorithms "Tata McGraw Hill.

Reference Books:

- "Fundamentals of data structure in C" Horowitz, Sahani & Freed, Computer Science Press.
- "Fundamental of Data Structure" (Schaums Series) Tata-McGraw-Hill.

Semester4
Computer Networking

Learning Objectives

- The course introduces main concepts of networking; application areas; classification; reference models; transmission environment; technologies; routing algorithms; IP, UDP and TCP protocols; reliable data transferring methods; application protocols; network security; management systems; perspectives of communication networks.
- Students will be able to gain knowledge about the above given components and application of the same in real work situations.

UNIT I

INTRODUCTION: Network applications, network hardware, network software, reference models: OSI, TCP/IP, Internet, Connection oriented network - X.25, frame relay. THE PHYSICAL LAYER: Theoretical basis for communication, guided transmission media, wireless transmission, the public switched telephone networks, mobile telephone system.

UNIT - II

THE DATA LINK LAYER: Design issues, error detection and correction, elementary data link protocols, sliding window protocols, example data link protocols - HDLC, the data link layer in the internet. THE MEDIUM ACCESS SUBLAYER: Channel allocations problem, multiple access protocols, Ethernet, Data Link Layer switching, Wireless LAN, Broadband Wireless, Bluetooth

UNIT - III

THE NETWORK LAYER: Network layer design issues, routing algorithms, Congestion control algorithms, Internetworking, the network layer in the internet (IPv4 and IPv6), Quality of Service.

UNIT – IV

THE TRANSPORT LAYER: Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP.

UNIT - V

THE APPLICATION LAYER: Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. APPLICATION LAYER PROTOCOLS: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.

References

- A. S. Tanenbaum (2003), Computer Networks, 4th edition, Pearson Education/ PHI, New Delhi, India.
- Behrouz A. Forouzan (2006), Data communication and Networking, 4th Edition, Mc Graw-Hill, India.
- Kurose, Ross (2010), Computer Networking: A top-down approach, Pearson Education, India.

Semester4
Enterprise Resource Planning

Learning Objective

- Demonstrate a good understanding of the basic issues in ERP systems
- Analyze the strategic options for ERP identification and adoption
- Design the ERP implementation strategies
- Understand the need of Business Systems and Processes through strategic analysis of ERP systems

Unit 1

Process view of organization Make to stock and Make to order cycles ERP Introduction: Origin, Evolution and Structure and Benefits: o Conceptual Model of ERP, Scenario and Justification of ERP in India, Various Modules of ERP, Advantage of ERP.

Unit 2

Advancement of IT and Impact on organizations data management: Data ware Housing, Data Mining, Online Analytic Processing (OLAP), Product Life Cycle Management (PLM).

Unit 3

ERP Marketplace and Marketplace Dynamics: Market Overview, Marketplace Dynamics, and The changing ERP Market. ERP- Functional Modules: Introduction, Functional Modules of ERP Software Integration of ERP, Supply chain and Customer Relationship Applications.

Unit 4

ERP Implementation: Business Process mapping and re-engineering, ERP Implementation Life Cycle Role of Consultants, Vendors and Employees. Critical Success Factors: Guiding Selection and Evaluation of ERP, Strategies and CSF for Successful ERP Implementation, Causes of ERP Failure.

Unit 5

Practical Module: ERP & E-Commerce, Future Directives- in ERP, Integrating ERP into organizational culture. Using an open source ERP toolfor orienting students to ERP.

References

- Manufacturing Resource Planning (MRP II) with Introduction to ERP; SCM; an CRM by Khalid Sheikh, Publisher: McGraw-Hill
- The Impact of Enterprise Systems on Corporate Performance: A study of ERP, SCM, and CRM System Implementations [An article from: Journal of Operations Management] by K.B. Hendricks; V.R. Singhal; and J.K. Stratman, Publisher: Elsevier
- ERP and Supply Chain Management by Christian N. Madu, Publisher: CHI
- Implementing SAP ERP Sales & Distribution by Glynn C. Williams, Publisher McGraw-Hill

Semester 4

Object Oriented Programming

Learning Objective

- Provide flexible and powerful abstraction
- Allow programmers to think in terms of the structure of the problem rather than in terms of the structure of the computer.
- Decompose the problem into a set of objects
- Objects interact with each other to solve the problem
- create new type of objects to model elements from the problem space

Unit 1

Introduction to object oriented programming, user defined types, structures, unions, polymorphism, encapsulation. Getting started with C++ syntax, data-type, variables, strings, functions, default values in functions, recursion, namespaces, operators, flow control, arrays and pointers.

Unit II

Abstraction mechanism: Classes, private, public, constructors, destructors, member data, member functions, inline function, friend functions, static members, and references. Inheritance: Class hierarchy, derived classes, single inheritance, multiple, multilevel, hybrid inheritance, role of virtual base class, constructor and destructor execution, base initialization using derived class constructors.

Unit III

Polymorphism: Binding, Static binding, Dynamic binding, Static polymorphism: Function Overloading, Ambiguity in function overloading, Dynamic polymorphism: Base class pointer, object slicing, late binding, method overriding with virtual functions, pure virtual functions, abstract classes. Operator Overloading: This pointer, applications of this pointer, Operator function, member and non member operator function, operator overloading, I/O operators. Exception handling: Try, throw, and catch, exceptions and derived classes, function exception declaration, unexpected exceptions, exception when handling exceptions, resource capture and release.

Unit IV

Dynamic memory management, new and delete operators, object copying, copy constructor, assignment operator, virtual destructor. Template: template classes, template functions. Standard Template Library: Fundamental idea about string, iterators, hashes, iostreams and other types. Namespaces: user defined namespaces, namespaces provided by library. Object Oriented Design, design and programming, role of classes.

References

- Object Oriented Programming with C++ by E. Balagurusamy, McGraw-Hill Education (India)
- ANSI and Turbo C++ by Ashoke N. Kamthane, Pearson Education Reference Books: 1. Big C++ - Wiley India
- C++: The Complete Reference- Schildt, McGraw-Hill Education (India)
- C++ and Object Oriented Programming – Jana, PHI Learning.
- Object Oriented Programming with C++ - Rajiv Sahay, Oxford
- Mastering C++ - Venugopal, McGraw-Hill Education (India)

Syllabus
Programming in Visual Basic

Learning Objectives

- learn features of Visual Basic and concept of programming.
- Get familiar with VB Interfaces, viz. Menus, Toolbar, Toolbox, different VB windows
- Work with VB controls to place them to VB forms and make executable files.
- Learn to get concept of algorithm and flowchart and write simple programs by using different types of control and loop statements

UNIT-I

Introduction to Visual Basic, Integrated development environment features – Forums – Controls – Events – Methods – Properties - Uses of Property Window – Code Window (Code Behind File) – Variable declaration.

UNIT-II

Scope of Variables – Constant – Array – Loops in Visual Basic: For … Next, While, Do…While - Select statements: if…end if - if…else if…end if - Select…Case End Case –

UNIT-III

Standard Controls: Form - Text Box – Command Button – Label Box – Check Box – Frame Control – Combo Box – List Box – Radio Button - Image Control - Picture Box – Timer.

UNIT-IV

File System – Drive, DirList, File List Box – Introduction to Built-in-Active X control tool bar – Tree view – Menu Editor – Command dialog control – Rich Text Box.

UNIT-V

Introduction to Database – MS Access – Data Grid (Accessing Data Base data) – Open data base connectivity – Introduction to Dot Net: IDE – Execution Procedures – CLR – CTS. Text and

Reference

- Mastering Visual Basic 6 – BPB Publications, New Delhi.
- Mohammed Azam, Programming with Visual basic 6.0 – Vikas Publishing House.
- Test Your Vb.Net Skills: Language Elements Part 1 Paperback – 1 Dec 2000 by Yashavant P. Kanetkar (Author), Asang Dani, BPB Publications, New Delhi.

5. Procedure for Admission, Curriculum Transaction and Evaluation

The proposed program in ODL mode will be conducted by CDOE-SGVU with the support of various departments of the University. Eligibility criteria, course structure, detailed curriculum, duration of program and evaluation criteria shall be approved by Board of Studies and Academic Council, SGVU, Jaipur which are based on UGC guidelines for the program which comes under the purview of ODL and mode for award of Degree.

Details of Procedure for admission in which eligibility criteria for admission and fee structure of the course, Curriculum includes Program delivery, norms for delivery of courses in ODL mode, use

of IT services to academic support services, course design academic calendar and Evaluation which includes Distribution of Marks in Continuous internal assessments, Minimum Passing criteria and system of Grading formats are given in detail as under.

Procedure for Admission

Students who will seek admission in Bachelor of Computer Application program are required to apply through the website of university www.sgvu.edu.in or visit the campus directly.

Minimum Eligibility Criteria for Admission

The minimum eligibility criteria for admission in ODL, Bachelor of Computer Application program is 12th grade pass (With Mathematics) from any Recognized education Board.

Program Fee and Financial Assistance Policy

Program fees for students for proposed Bachelor of Computer Application in various streams offered by CDOE-SGVU, Jaipur is Rs. 20,000 is the tuition fees and 3000 is examination fees for one year the total course fees will be Rs. 69,000/-.

Curriculum Transactions

Program Delivery

The curriculum will be delivered through the Self Learning Materials (SLMs) supported by various learning resources including audio-video aids.

Academic Calendar

Sr no	Name of the Activity	Tentative months schedule(specify months) during Year			
		From (Month)	To (Month)	From (Month)	To (Month)
1	Admission	Jul	Sep	Jan	Feb
2	Assignment Submission (if any)	Oct	Nov	April	May
3	Evaluation of Assignment	Nov	Dec	May	June
4	Examination	Dec	Jan	June	Jul
5	Declaration of Result	Feb	Mar	Aug	Sep
6	Re–registration	Jan	Feb	Jul	Sep

7	Distribution of SLM	Jul	Sep	Jan	Feb
8	Contact Program (Counselling, Practical's, etc.)	Nov	Dec	May	June

Evaluation

The evaluation shall include two types of assessments-

1. Continuous Assessment in the form of assignments (30% Weightage)
2. End Semester Examination, which will be held at the SGVU campus (70% Weightage).

Minimum Passing percentage

The students are considered as passed in a course if they score 36% marks in the Continuous Evaluation (Internal Assessment) and end-semester Examinations (External Assessment).

Marks and Grades

Grades & Grade Points

a. At the end of the Semester / Year every student is assigned a 'Letter Grade' based on his/her performance over the semester in all courses for which he/she had registered.

b. The letter grade and grade point indicate the results of quantitative and qualitative assessment of the student's performance in a course.

c. There are seven letter grades: **A+, A, B+, B, C+, C, D, E (E1 for internal back and E2 for external back), F** that have grade points with values distributed on a 10-point scale.

6. Requirement of the Laboratory Support and Library Resources

Library Resources

CDOE-SGVU has excellent library with all the books required for the course learning and reference books for the course of Bachelor of Computer Application. Adequate online learning links and e-learning materials will also be provided to students which will be support students in their learning cycle.

7. Cost Estimate of the Program and the Provisions

The Estimate of Cost & Budget could be as follows (all figures on Annual basis):

1. Salaries: Rs. 10,00,000/- (Approx)
2. Travel: Rs. 30,000/- (Approx)
3. Seminars: Rs. 40,000/- (Approx)
4. SLM Preparation, Printing, Distribution: Rs. 3,00,000/- (Approx)
5. Library: 1,25,000/- (Approx)
6. Courier/Transportation: Rs. 50,000/- (Approx)
7. Infrastructure: Rs. 1,50,000/- (Approx)

8. Quality assurance mechanism and expected Program Outcomes

The quality of the program depends on the course curriculum and syllabus which meets the requirement of the industry and creates the skillful learning in the students. The ultimate aim of Bachelor of Business Administration program in ODL Mode is to enhance skills of the learners as job aspirants, IT Professionals, entrepreneurs and seeing them excel in their profession and meeting global standards too by upgrading their career opportunities.

The CDOE, SGVU, Jaipur has constituted Centre for Internal Quality Assurance (CIQA). The CIQA will do periodic assessment of the ODL learning course material and audio video tutorials and will assure that the quality of learning is maintained and time to time changes are made as per the requirement of the course. The CIQA will also access the quality of assignments, quizzes and end term assessment time to time and required changes will be assured by them to maintain the quality of the learning program. CIQA will assure that the learning is made a truly global experience for the learner along with inculcation of required skills in the learner as expected program outcome with CDOE, SGVU, Jaipur.

The university will work continuously for the betterment of processes, assessments, teaching methodology, e-learning material improvisation as per four quadrant approach and implementation of the same as per New Education Policy. The University is committed to deliver the best education in all the learning modes with adherence to NEP, UGC and other regulatory guidelines in truly Global sense. To monitor quality of Student Support Services provided to the learners.