



**ELIGIBILITY CRITERIA OF COURSE
STUDENT ELIGIBILITY**

RULES OF ORDINANCE NO. 27 OF 2018

Faculty	:	Computer Science & Application
Course	:	Bachelor of Computer Application (B.C.A.)
Subject	:	Computer Application
Ordinance No.	:	82 Page No. 1337
Duration of Course	:	Three-Year Degree Course (Six-Semesters)
Eligibility of Course	:	Passed 10+2 with any Stream at least 45% . No Age limit.
Medium of Course And Examination	:	English / Hindi
Teaching Working Day	:	90 Day Working in Each Paper
Mode of Exam	:	Semester Exam As prescribed by the University from time to time.
Theory & Practical	:	Five Papers in Theory And Two Practical
Internal Evaluation & Assign	:	20% Marks of Internal Evaluation of Each Subject
Minimum Passing Marks	:	Minimum 40% Each Subject
Attendance of Students	:	Attendance at least 75% both Theory and Practical

SHRI KRISHNA UNIVERSITY, CHHATARPUR

SYLLABUS FOR

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

(w.e.f. Year: 2018-19)

SCHEME FOR EXAMINATION

SEMESTER: I											
Sr. No.	Subject Name	Scheme			Theory Marks		Internal Evaluation		Practical Marks		Total Marks
		L	T	P	MM	Min	MM	Min	MM	Min	
1	Programming with C	4	0	2	50	20	20	8	30	12	100
2	Database Management System	4	0	2	50	20	20	8	30	12	100
3	Elementary Mathematics	4	2	0	80	32	20	8	-	-	100
4	Communicative Hindi & English	3	0	0	40	16	10	4	-	-	50
5	Elective: Fundamental of Computer and Information Technology	2	1	0	40	16	10	4	-	-	50
TOTAL											400

(L: Lecture, T: Tutorial, P: Practical)

SHRI KRISHNA UNIVERSITY, CHHATARPUR (M.P.)

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

FIRST SEMESTER

PAPER I: PROGRAMMING WITH C

(MM:100 TH:50 I.E.:20 PR:30)

The Purpose of this course is to-

- Provide the knowledge 'of Programming Language to students.
- Prepare students for professional role of Programmers.
- learn about Programming Methodology, Concepts of C Programming like Control Structures, Functions,
- Learn about Arrays, Structures etc.

UNIT	SYLLABUS
UNIT: I	Program Concept, Characteristics of Programming, Various Stages in Program Development, Algorithms, Flow Charts, Programming Techniques - Top Down, Bottom up, Modular, Structured, Features, Merits, Demerits and Their Comparative Study. Programming Logic - Simple, Branching, Looping,. Recursion, Programming Testing & Debugging
UNIT: II	Introduction to C Language, C Language Standards, Features of C, Structure of C Program, Introduction to C Compilers, Creating, Compiling and Executing C Programs, IDE, Features of Turbo C Compiler. Keywords, Identifiers, Variables, Constants, Scope and Life of Variables, Local and Global Variable, Data Types, Expressions. Operators -Arithmetic, Logical, Relational, Conditional and Bit Wise Operators, Precedence and Associativity of Operators, Type Conversion. Library Functions, Character Input/Output- getch(), getchar(), getche, putchar(). Formatted Input/ Output - printf() and scanf(), Mathematical & Character Functions.
UNIT: III	Control Structures: Declaration Statement, Conditional Statement - if Statement, if else Statement, Nesting of if...- .else Statement, else if Ladder, The P: Operator, switch Statement. Iteration Statements - for Loop, while Loop, do-while Loop. Jump Statements: break, continue, goto, exit(). Arrays - Concept of Single and Multi Dimensional Arrays, Array Declaration and Initialization. Strings : Declaration. Initialization, String Functions
UNIT: IV	The Need of C Functions, User Defined and Library Function, Prototype of Functions, Prototype of main() Function, Calling of Functions, Function Arguments, Argument Passing: Call By Value and Call By Reference, Return Values. Nesting of Function, Recursion, Array as Function Argument, Command Line Arguments, Storage Class Specifier - Auto, Extern, Static, Register.
UNIT: V	Defining Structure, Declaration of Structure Variable, Type def, Accessing Structure: Members, Member Access Operator, Nested Structures, Array of Structure, Structure Assignment, Structure as Function Argument, Function that Return Structure,Union.
	EXPECTED OUTCOMES- At the end of this course- <ol style="list-style-type: none">1. A student will have good hands on C Programming Language.2. A student will be able to take the role of Professional Programmers.3. A student will be able to apply his programming knowledge to develop C Programs on Control Structure, Functions. Etc.4. A student will be able to apply his programming knowledge to develop C Programs on Arrays, Structures, and Union Etc. TEXT & REFERENCE BOOKS:

1. E. BALAGURUSWAMY, "PROGRAMMING IN C ", TMH PUBLICATIONS.
2. YASHWANT KANETKAR , "LET US C", BPB PUBLICATIONS.
3. GOTTFRIED SCHAUMS OUTLINE SERIES, "PROGRAMMING WITH C" TMH PUBLICATIONS.
4. MAHAPATRA, " THINKING IN C", PHI PUBLICATIONS.
5. ANURAG SEETHA; "INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY", RAIN PRASAD & SONS, BHOPAL.
6. S.K. BASANDRA, "COMPUTERS TODAY", GALGOTIA PUBLICATIONS.
7. PETER JULIFF "PROGRAM DESIGN" PHI PUBLICATIONS.

C PROGRAMMING LAB

List of Practical's :

1. WRITE A PROGRAM IN C TO CALCULATE SIMPLE INTEREST WHEN THE VALUES OF PRINCIPAL RATE AND TIME ARE GIVEN.



SHRI KRISHNA UNIVERSITY, CHHATARPUR (M.P.)

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

FIRST SEMESTER

PAPER II: DATABASE MANAGEMENT SYSTEM

(MM:100 TH:50 I.E.:20 PR:30)

The Purpose of this course is to-

- To understand difference between - storing data in FMS and DBMS and advantages of DBMS.
- To understand conceptual and physical design of a database.
- To understand RDBMS and to design Relational database.
- To know basic database backup and recovery.
- To know basics of advances in DBMS.

UNIT	SYLLABUS
UNIT: I	INTRODUCTION TO DATABASE SYSTEM Data - Database Applications - Evolution of DB & DBMS - Need for data Management, Introduction and applications of DBMS, File system versus Database systems, Data Models , DBMS Architecture, Data Independence, Data Modeling using Entity, Relationship Model , Enhanced ER Modeling.
UNIT: II	RELATIONAL DATABASE CONCEPT AND DESIGN – Introduction to relational database, Structure of Relational Database, Relational model terminology domains, Attributes, Tuples, Relations. relational DB schema. Relational algebra: Basic operations selection and projection, Set Theoretic operations Union, Intersection, set difference and division, Join operations: Inner Outer, Left outer, Right outer and full outer join. Relational Database design, Functional Dependency, definition, trivial and nontrivial FD, Normalization 1NF, 2NF, 3NF, Decomposition using FD dependency preservation, BCNF, Multi valued dependency, 4NF, Join dependency and 5NF
UNIT: III	Database storage and querying Basic Concepts Of Indexing and Hashing. Query Processing, Measures Of Query Cost, Query Processing. For Select, Sort Join Operations. Basics of Query Optimization, Transformation of Relational Expression' Estimating., Statistics of Expression, Choice of Evaluation Plan.
UNIT: IV	Concurrency, Recovery and Security -Concurrency Control: Definition of Concurrency, lost update, dirty read and incorrect summary problems due to concurrency. Concurrency Control Techniques, Overview of locking, 2PL, timestamp ordering, Multi versioning, validation Recovery concept, Shadow Paging, Log Based Recovery, Elementary concepts of Database Security : System Failure, Backup and Recovery Techniques authorization and Authentication.
UNIT: V	Introduction to Current Trends – Centralized and Client Server Architectures, Distributed Database Object Oriented Database, Spatial & Temporal Database, Data Mining & Warehousing, Data Visualization, Mobile Database, OODB & XML Database, Multimedia & Web Databases.
	COURSE OUTCOME :- <ul style="list-style-type: none">• Evaluate business information problem and find the requirements of a problem in terms of data.• Understand, appreciate and effectively explain the concepts of database technologies.• Understand the uses the database schema and need for normalization to a given business information problem.• Design a database Using ER modeling and Normalization to a given Business information Problem.

	<ul style="list-style-type: none"> Understand issues and techniques relating to concurrency and recovery in multi-user database environments.
	TEXT & REFERENCE BOOKS: <ol style="list-style-type: none"> 1. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 7th Edition, McGraw Hill. 2. Rajesh Narang "Database management System" PHI. 3. Ramakrishnan and Gherke, "Database Management Systems", TMH. 4. R.Elmarsri and SB Navathe, "Fundamentals of Database Systems", Pearson, 5th Ed. 5. Singh S.K., "Database System Concepts, design and application", Pearson Education 6. Bipin DeSai, "An Introduction to database Systems", Galgotia Publications.
	DBMS Lab :- <ol style="list-style-type: none"> 1. Draw an ER diagram to University Database. 2. Draw an ER diagram to Library management System. 3. Create a Library management Schema/ database and search anomalies in it. 4. Assume a video library maintains a database of movies rented out. Without any normalization, all information is stored in one table as shown below.



SHRI KRISHNA UNIVERSITY, CHHATARPUR (M.P.)

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

FIRST SEMESTER

PAPER III: ELEMENTARY MATHEMATICS

(MM:100 TH:80 I.E.:20)

Course Objectives-

- To enable professional undergraduate students to understand some fundamental mathematical concepts and terminology.
- To develop some Mathematical Maturity, that enhances their ability to understand and create mathematical Arguments.
- The course includes topics with importance of mathematics in Computer Science such as discrete mathematics, database theory analysis of algorithm.
- It Includes fundamentals of Reasoning Theory.
- It also includes basics of Statistics which enriches students understanding for data analysis.

UNIT	SYLLABUS
UNIT: I	Sets and Elements, Power Set, Universal Set. Union and Intersection of Sets. Difference of Sets. Complement of a Set. Ordered Pairs, Cartesian Product of Sets. Number of Elements in the Cartesian Product of two Finite Sets. Equality of Sets, Transitivity of Set Inclusion, Universal Set, Complement of a Set, Subsets Proper and Improper Subsets, Union of Sets, Properties of Union. Operation, Intersection of Sets, Disjoint Sets, Properties of Intersection Operation, Relative Complement of a Set, De-Morgan's Laws, Distributive Laws of Union and Intersection. Definition of Relation, Pictorial Diagrams, Domain. Co-domain and Range of a Relation.
UNIT: II	Function as a special kind of relation from one set to another. Pictorial representation of a function, domain, co-domain & range of a function. Real valued function of the real variable, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integer functions with their graphs. Sum, difference, product and quotients of functions. Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function. Binary operations.
UNIT: III	Determinant: Determinant of 3rd order, Cramer's rule, Consistency of equations Matrices: Types of matrices, Algebra of matrices, Linear homogeneous equations, Linear non-homogeneous equations
UNIT: IV	Mathematical reasoning: Mathematically acceptable statements. Connecting words/ Phrases consolidating the understanding of "if and only if (necessary and sufficient) "condition", "implies", "and/or", "implied by", "and", "or", "there exists" and their use variety of examples related to real life and Mathematics. Definition of Statistics, Raw data, Classification of data, Average, Scatter, range, -ship between Mean, Median, Mode, Dispersion, Mean Deviation, Standard Variance.
UNIT: V	Meaning of Probability, Random Experiment an outcome, Sample Space, Sample Point, Types of Sample Space, Types of Events, and Probability of an Event, Total and Conditional Probability, Probability distribution of a random Variable, Repeated independent (Bernoulli) trials and Binomial distribution.
	Expected Outcomes:- After Completion of the course student must be able to <ul style="list-style-type: none">• Understand and Practice Set theory basics and operations.• Understand and Practice Relations and Functions.• Understand and Practice Determinant and matrices.• Understand and Practice Logic.

	<ul style="list-style-type: none"> Understand and practice foundation of Statistics and Probability theory
	TEXT & REFERENCE BOOKS: <ol style="list-style-type: none"> www.e-booksdirectory.com/mathematics www.origoeducation.com/go-maths Basics of Mathematics By R. D Sharma. Statistics and Solution By V. K. Kapoor



SHRI KRISHNA UNIVERSITY, CHHATARPUR (M.P.)

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

FIRST SEMESTER

PAPER IV: COMMUNICATIVE HINDI & ENGLISH

(MM:50 TH:40 I.E.:10)

UNIT	SYLLABUS
UNIT: I	<u>Language Skill and Presentation.</u> 1. Speaking Skills and Presentation: Presentation Design and Delivery. 2. Monologue Dialogue, Group Discussion. 3. Effective Communication/ Mis-Communication. 4. Interview, Public Speech. 5. Effective Writing, Report Writing, Resume, Circular, Notice and letter Writing.
UNIT: II	<u>Reading and Understanding.</u> 1. Importance of English as a vehicle of Spoken and written Communication. 2. Close Reading Comprehension Summary Paraphrasing Analysis and Interpretation. 3. Translation (from Indian language to English and vice-versa). 4. Introduction to Articles of eminent Indian authors. 5. Short Stories of eminent Indian authors.
UNIT: III	<u>İG=nh Htt6tt wt ilöjp; =</u> 1. Hkkekk dh fodİ ;k=kA 2. fgUnh Hkkekk dh İo/kkfud fLFkfr : lel; , vj lek/kkuA 3. Hkkekk : fofHkUu clkfy; k o LoviA 4. Hkkekk ifjokj vj Hkkjrh; Hkkekk ,A 5. oreku İnhk esa fgUnh dh mİn; rA
UNIT: IV	<u>Htt6tt=</u> 1. kēnk dh laLdfr , o mudk bfrgkA Hkkekk , o laLdfrA Hkkekk , o leİ 2. fgnh esa 'kēn lajpuk , o mİd İ; kxk dh fo 'kek r k , A 3. laf/k] leİ mİlx] iR; ; i; k; okp] fo ykekFkh] vudkFkd] legkFkd 'kēn ¼O; kogkfjd] 0; kdj .k doy ijp; kRedA 4. okD;] jpuk , o idjA 5. okD; jpuk d dkjd] okD; jpuk dh lkek; fof/k; kA
UNIT: V	<u>Translation/vu,otn</u> vuokn dk vFk vj ifjHkkekkA vuokn d idjA vuokn d midj.k , o leL;kA Hkko rFkk iHkko d vk/kkj ij vuokn , o y/kA vuokn— Hindi to English and English to Hindi.
	<u>TEXT & REFERENCE BOOKS:</u> 1. Pathway to Greatness - APJ Abdul kalam 2. Wise and Otherwise - Sudha Murthy 3. The Serpents Revenue - Sudha Murthy 4. World Myths and Legends - Anita Nair 5. The Mother I Never Knew - Sudha Murthy 6. The Jungle Book - R Kipling 7. Malgudi Days - R K Narayana 8. Collected Stories - The Adventure of Rusty Ruskin Bond 9. vuokn fodİ , o laİek.k – MkW- gfjekgu

	10. <i>vuokn dyk fl)kr vkj i;</i> <i>kkx – MkW- dyk HkkfV;k</i>
	11. <i>l;logifjd fgnh – MkW- ekfkUn: ikBd</i>
	12. <i>lfjedr fganh l;kdj.k – cnjhukFk</i>
	13. <i>vPNh fgUnh – jkepUn: oekl</i>
	14. <i>i:epUn: ,o t; 'dj ilkn dh dgkfu;k</i>



SHRI KRISHNA UNIVERSITY, CHHATARPUR (M.P.)

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

FIRST SEMESTER

PAPER V: FUNDAMENTAL OF COMPUTER & INFORMATION TECHNOLOGY

(MM:50 TH:40 I.E.:10)

Course Objectives:

The objective of this course is to-

- Making the students understand and learn the basics of computer how to operate it.
- To make familiar with the part and function of computer, its types, how to use.
- To know the place of computer in our day to day life, its characteristics, its usage, Limitations and benefits etc.
- To Know about software, its type and its uses
- To understand the use of communication and IT
- Provide an orientation about the increasing role of management information system in managerial decision making with the help of computers and how information is processed, stored and utilized.

UNIT	SYLLABUS
UNIT: I	Brief history of development of computers, Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) - evolution of PCs, configurations of PCs- Pentium and Newer, PCs specifications and main characteristics. Basic components of a computer system - Control unit, ALU, Input/ Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.
UNIT: II	Input/ Output & Storage Units:-Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard -VGA, SVGA, XGA etc, Printers& types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Direct and Index Sequential, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape. Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/ MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW.
UNIT: III	Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux. Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet. Presentation Graphics, Data Base Management Software, characteristics, Uses and examples and area of applications of each of them, Virus working principles, Types of viruses, virus detection and prevention.
UNIT: IV	Use of communication and IT , Communication Process, Communication types, Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem -Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of

	LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet-Evolution, World Wide Web Internet Services, Convergence of technologies.
UNIT: V	Management information system - Introduction, Characteristics, Needs, Different views of MIS, Designing, Placement of MIS, Pitfalls in Designing an MIS, Computer based MIS - Advantages & Disadvantages. Computer Applications in Business-Need and Scope, Computer Applications in Project Management, Computer in Personnel Administration, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing. Use of computers in common public services and e-governance.
	<u>Expected Outcomes:-</u> At the end of this course student is able to <ul style="list-style-type: none"> • Identify all the parts and main function of computer. • Acquaint the students with the application of computers in understanding latest trends in information technology. • Knowledge about software, its type and its uses

