Shri Rawatpura Sarkar University, Raipur

Examination Scheme & Syllabus

For

Bachelor of Computer Application

Semester-I

(Effective from the session: 2022-23)

Department of Computer Science & Engineering

SHRI RAWATPURA SARKAR UNIVERSITY, RAIPUR, CHHATTISGARH
FACULTY OF SCIENCE

B.C.A. First Semester

Semester-I
Teaching & Examination Scheme
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2022-2023)

S.No.	Course Code	Course Title	Hours / Week			Credits	Maximum Marks			Sem End Exam Duration (Hrs)
			L	T	P		Continuous Evaluation	Sem End Exam	Total	
1	SCA04101	Language & Communication Skills	3	1	-	4	30	70	100	3 Hrs
2	SCA04102	Mathematical Foundation	3	1	-	4	30	70	100	3 Hrs
3	SCA04103	Fundamental of Computer & information Technology	3	1	-	4	30	70	100	3 Hrs
4	SCA04104	PC Software	3	1	-	4	30	70	100	3 Hrs
5	SCA04105	Problem Solving Through C	3	1	-	4	30	70	100	3 Hrs
6	SCA04191	Language & Communication Skills Lab	-	-	4	2	15	35	50	3 Hrs
7	SCA04192	PC Software Lab	-	-	4	2	15	35	50	3 Hrs
8	SCA04193	Problem Solving Through C Lab	-	-	4	2	15	35	50	3 Hrs
Total Contact Hrs per week: 32			**Total Credit:26**				**Total Marks: 650**			

Course Title	Language & Communication Skills				
Course Code	SCA04101				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	3	**1**	**-**	**4**	
Prerequisites	Basic knowledge about English.				
Course Objectives	● Understand the role of communication in personal & professional success. ● Develop awareness of appropriate communication strategies. ● Prepare and present messages with a specific intent. ● Analyze a variety of communication acts.				
Course Contents	**UNIT – I: Vocabulary** Vocabulary, knowledge of at least one thousand words with their spelling, Meanings and usage. Phrases. **UNIT – II : Structure of sentences** Structure of sentences: Simple, Complex and Compound. Clauses and Subordinate clauses. **UNIT – III : Tenses** The tenses and aspects. The modal, The gerund, The participle, The infinitive. **UNIT – IV : Transformation of sentences** Transformation of sentences: 1. Interchange of Active and Passive Voice. 2. Interchange of Affirmative and Negative Sentences. 3. Interchange of Explanative and Assertive Sentences. 4. Interchange of interrogative and Assertive Sentences. 5. Direct and Indirect Speech. **UNIT – V : Application of Grammar** Practical application of grammar. Practice in talks, Conversation and writing. Report writing. Writing of applications, Letter writings, Description of events.				
Course Outcomes	The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.				

SHRI RAWATPURA SARKAR UNIVERSITY, RAIPUR, CHHATTISGARH
FACULTY OF SCIENCE

Text Books	1. Living English Structure, W.S. Allen. 2. A Practical English Grammar, Thomson and Martinet.
Reference Books	1. Practical English Usage. Michael Swan. OUP. 1995. 2. Remedial English Grammar. F.T. Wood. Macmillan.2007 3. On Writing Well. William Zinsser. Harper Resource Book. 2001 4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006. 5. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011.

B.C.A. First Semester

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2022-2023)

Course Title	Mathematical Foundation				
Course Code	**SCA04102**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	3	**1**	**-**	**4**	
Prerequisites	Basic knowledge about Maths.				
Course Objectives	● Use of Matrices as a tool of Linear Algebra. ● Use and importance of trigonometry. ● Apply the knowledge of consistency/inconsistency of a linear system. ● Get the concept of solving vector equations. ● Understand the statistics.				

Course Contents	**UNIT– I** **Algebra:-**Polynomials, quadratic polynomials, general quadratic equations, solutions of quadratic equations, roots of quadratic equations, nature of roots, relations between roots and coefficients. Partial fraction, proper fraction, improper fraction, partial fraction type I, II, III, IV. **UNIT – II** **Metrics: -**Determinants, properties of determinants, definitions of Matrices type of matrices; algebra of matrices adjoins of metrics, inverse of metrics. **UNIT – III** **Trigonometry: -**Trigonometrically ratios of multiple angles and submultiples angles, important results of trigonometrically ratios, Trigonometrically equations. **UNIT – IV** **Differential Calculus:-**Function, type of functions ,limits, continuity, definitions of derivatives ,differential coefficients of some functions, differential of some of two functions, differential of products of two functions, differential of division of two functions. **UNIT – V** **Statistics:-** Frequency, Frequency distributions, calculations of arithmetic average or mean, median and mode, calculation of standard deviation
Course Outcomes	On the successful completion of this course students will be able to apply mathematics for understanding the problems scientifically and computationally
Text Books	1. Mathematics Volume I By R.D. Sharma (Dhanpat Rai Publication) 2. Mathematics Volume II By R.D. Sharma (Dhanpat Rai Publication) 3. Engineering Mathematics Volume I By S.S. sastry (Prentice-Hall of India) 4. Discrete mathematics Schaum's Series By Seymour LipSchutz, Marc Lipson (Tata McGraw Hill)
Reference Books	1. Discrete mathematics By Vinay Kumar (BPB) 2. Discrete mathematical Structure By Dr. K.C. Jain, Dr. M.L. Rawat. 3. NCERT Mathematics Textbook for class XI and XII

Course Title	Fundamental of Computer & information Technology				
Course Code	SCA04103				
Semester	BCA				
Course Credits	**L**	**T**	**P**	**TC**	
	3	**1**	**-**	**4**	
Prerequisites	Basic knowledge about Computer.				
Course Objectives	1. To learn the Computer Fundamental concepts 2. To aware students about Software and Hardware 3. To make them to use basic components of MS Office 4. To give the foundations for different Applications of Google.				

Course Contents	**UNIT – I : Basics of Computer** **Basics of Computer :-** What is Computer?, Introduction to Computing, History of Computers, Application and Issues of Computer, Components of Computer: Input Devices, Output Devices, System Unit, Storage Devices, Communication Devices; Computer Building Blocks: CPU, Hardware Devices: External Connectivity, Video Port, USB Port, all other Ports. **UNIT – II : Processing Unit** **Processing Unit :-** Processor Building Blocks: Control Unit, Arithmetic Logic Unit, Register Unit, Comparison of Personal Computer Processors, Processor for Mini, Mainframe, Large and Super Computers, Examples of Various Processor and their families, Category of Processor on basis of Word length, Working of Processor and Execution Process, Machine Cycle, System Clock. **UNIT – III : Memory and I/O Devices** **Memory and I/O Devices :-** Types of Memory: RAM, Cache, ROM, Flash Memory, CMOS, Cloud Storage, Optical Discs: CDs, DVDs. Memory Hierarchy, Input Devices: Keyboard, Mouse, Trackball, Touchpad, Pointing Stick, and others; Output Devices: LCD Plasma Monitors, other Monitors, Printers: Nonimpact, Ink-Jet, Photo, Laser Printers, Plotters, Speakers, Headphones, and Ear-buds, Data Projectors, Interactive Whiteboards. **UNIT – IV : Category of Software with example and brief features** **Category of Software with example and brief features:-** Introduction to Software (s/w), Types of s/w: Application Software System Software, Various Application Software s/w and their examples, System Programming and System Programs, Needs of System Software, BIOS, POST sequence, Concept introduction to various system s/w such as: Assemblers, Loaders, linkers, macro processors, Macros, Compilers, Interpreters, Operating system and formula system, Translators and its types, Editor, Simulator, Emulator, Debugger, Device Drivers, Firmware etc. Assemblers: Structure of assembler, Overview of the assembly process, Basic function, Machine dependent and machine independent features of assembler, Types of assemblers – single pass, multi-pass, cross assembler, Macros processors. **UNIT – V : Loaders and Compilers** **Loaders and Compilers :-** Basic Loader Functions, Linking and Concept of Static Dynamic Relocation, Various loader schemes with their advantages and disadvantages, Compilers, Phases of a Compiler, Comparison of Compilers Interpreters, Machine dependent Machine Independent Compiler Features, Aspects of Compilation, Lexical Analysis, Syntax Analysis, Memory Allocation, Compilation of Expressions; Code optimization – local and global optimization.

Course Outcomes	The student will learn ● To familiar with Computer Fundamental ● To know about MS Office. ● To use different text, spreadsheet and presentation skills. ● To apply different applications online. ● To know about Google Products.
Text Books	1. Computer Basics by IGNOU. 2. Suresh K Basendrea: Computers Today 3. Pradeep K. Sinha, Priti Sinha, "Computer Fundamentals". BPB Publications. 4. Rajaraman, V., "Fundamental of Computers". Prentice Hall India, New Delhi 5. Sanders Donald H Computers Today
Reference Books	1. Peter Norton, "Introduction to Computers",4th Edition, TMH Ltd, New Delhi, 2017. 2. R.G. Dromey,"How to solve it by Computers", Pearson Publishers, New Delhi, 2007. 3. Dorothy House, "Microsoft Word, Excel, and PowerPoint: Just for Beginners, 2015

Course Title	PC Software				
Course Code	**SCA04104**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	3	**1**	**-**	**4**	
Prerequisites	Basic knowledge about Computer.				
Course Objectives	1. To learn the concepts of MS-Word 2. To aware students about MS-Excel 3. To make them use basic components of MS-PowerPoint. 4. To learn about the animations and graphics.				

Course Contents	**UNIT – I** **Office Packages:** Office activates and their software requirements, Word-processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MS-Office, Lotus-Office, Star-Office, Open-Office etc.MS Word Basics: Introduction to MS Office, Introduction to MS Word, Features area of use. Working with MS Word, Menus Commands, Toolbars Buttons, Shortcut Menus, Wizards Templates, Creating a New Document,DifferentPageViewsandlayouts,ApplyingvariousTextEnhancements,Workingwith-Styles,Text Attributes, Paragraph and Page Formatting, Text Editing using various features; Bullets, Numbering, Auto formatting, Printing various print options. **UNIT – II** Advanced Features of MS-Word: Spell Check, Thesaurus, Find Replace; Headers Footers, Inserting - Page Numbers, Pictures, Files, Auto texts, Symbols etc., Working with Columns, Tabs Indents, Creation Working with Tables including conversion to and from text, Margins Space management in Document, Adding References and Graphics, Mail Merge, Envelops Mailing Labels. Importing and exporting to and from various formats. **UNIT – III** MS Excel: Introduction and area of use, Working with MS Excel, Toolbars, Menus and Keyboard Shortcuts, concepts of Workbook Worksheets, Using Wizards, Various Data Types, Using different features with Data, Cell and Texts, Inserting, Removing Resizing of Columns Rows, Working with Data Ranges, Different Views of Worksheets, Column Freezing, Labels, Hiding, Splitting etc., Using different features with Data and Text, Cell Formatting including Borders Shading, **UNIT – IV** Advanced Features of MS Excel: Multiple Worksheets: Concept, Creating and Using Multiple Worksheets; Use of Formulas, Calculations Functions, Various types of Functions, Cell Referencing, Absolute and Relative Addressing, Working with Different Chart Types, Chart Wizard, Printing of Workbook Worksheets with various options, Database: Creation, Sorting, Query and Filtering a Database; Creating and Using Macros. **UNIT – V** MS PowerPoint: Introduction area of use, Working with MS PowerPoint, Creating a New Presentation, Working with Presentation, Using Wizards; Slides its different views, Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns Lists, Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects, Designing Presentation of a Slide Show, Printing Presentations, Notes, Handouts with print options.
Course Outcomes	The student will learn ● To familiar with Computer Fundamental ● To know about MS Office. ● To use different text, spreadsheet and presentation skills. ● To know about Animations and graphics.

Text Books	1. Microsoft Office 2007 fundamentals, L Story, D Walls. 2. MS Office, S. S. Shrivastava, Firewall Media. 3. Office 2000 made easy, Alan Neibauer, Tata McGraw Hill. 4. FLASHMX Bible, Robert Reinhart.
Reference Books	1.Sams Teach Yourself Macromedia Flash 8 in 24 Hours, Phillip Kerman. 2.How to do everything with Macromedia, Bonnie Blake, DougSahlin. 3.Multimedia Making it works, Tay Vaughan, Tata Mcgraw Hills

Course Title	Problem Solving Through C				
Course Code	**SCA04105**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	3	**1**	**-**	**4**	
Prerequisites	Basic knowledge about computers				
Course Objectives	● To learn the Computer Fundamental concepts ● To aware students about Problem Solving approach ● To make them to use basic components of Programming				

Course Contents	**Unit I: Introduction** Introduction to Programming, Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.), Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart, Pseudo code and Source code with examples. **Unit II: Programming Concepts** Variables, data types, memory locations, Syntax and Logical Errors in compilation, object and executable code, Arithmetic expressions and precedence, Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching, Iteration and loops. **Unit III: Arrays** Introduction to Arrays (1-D, 2-D), Character arrays and Strings, Basic Algorithms: Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required). **Unit IV: Function** Definition, prototyping, built in libraries, Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference, Recursion: Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort. **Unit V: Structure** Defining structures and Array of Structures, Pointers: Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation), bit-fields. File handling: concept of a file, text files and binary files, Formatted I/O, file I/O operations, example programs.
Course Outcomes	The student will learn- ● To formulate simple algorithms for arithmetic and logical problems. ● To decompose a problem into functions and synthesize a complete program using divide and conquer approach. ● To use arrays, pointers and structures to formulate algorithms and programs. ● To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.
Text Books	1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill. 2. E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill
Reference Books	1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

Course Title	Language & Communication Skills Lab				
Course Code	**SCA04-191**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	-	**-**	**4**	**2**	
Prerequisites	Basic knowledge about English Language.				
Course Objectives	● To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning ● To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm ● To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking ● To improve the fluency of students in spoken English and neutralize their mother tongue influence ● To train students to use language appropriately for public speaking, group discussions and interviews				

Course Contents	**English Language Communication Skills Lab (ELCS) shall have two parts:** • **Computer Assisted Language Learning (CALL) Lab** • **Interactive Communication Skills (ICS) Lab** **Exercise – I** **CALL Lab:** *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers- Effective Listening. *Practice***:** Introduction to Phonetics – Speech Sounds – Vowels and Consonants – Minimal Pairs- Consonant Clusters- Past Tense Marker and Plural Marker. *Testing Exercises* **ICS Lab:** *Understand:* Spoken vs. Written language- Formal and Informal English. *Practice:* Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others. **Exercise – II** **CALL Lab:** *Understand:* Structure of Syllables – Word Stress– Weak Forms and Strong Forms – Sentence Stress – Intonation. *Practice:* Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms- Sentence Stress – Intonation. *Testing Exercises* ICS Lab: *Understand:* Features of Good Conversation – Strategies for Effective Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette. **Exercise – III** **CALL Lab:** *Understand:* Errors in Pronunciation-the Influence of Mother Tongue (MTI). *Practice:* Common Indian Variants in Pronunciation – Differences between British and American Pronunciation.

Course Outcomes	Students will be able to attain: ● Better understanding of nuances of English language through audio-visual experience and group activities ● Neutralization of accent for intelligibility ● Speaking skills with clarity and confidence which in turn enhances their employability skills.
Suggested Software	1. Cambridge Advanced Learners' English Dictionary with CD. 2. Grammar Made Easy by Darling Kindersley. 3. Punctuation Made Easy by Darling Kindersley. 4. Oxford Advanced Learner's Compass, 8th Edition.
Reference Books	1. Jayashree Mohanraj. *Let Us Hear Them Speak*. New Delhi: Sage Texts. 2015. Print. Hancock, M. *English Pronunciation in Use. Intermediate Cambridge*: Cambridge University Press. 2009. Print.

Course Title	PC Software Lab				
Course Code	**SCA04192**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	-	**-**	**4**	**2**	
Prerequisites	Basic knowledge about Operating System.				
Course Objectives	1. To learn the concepts of MS-Word 2. To aware students about MS-Excel 3. To make them to use basic components of MS-PowerPoint.				

List of Practical

MS-Word:-

Week1-Task1: Creation of a document, saving a document in desire location by using SAVE AS option, editing the document, usage of SAVE option, Usage of functions like Cut, Copy, Paste.

1. Write steps for creating a document and save that document in D drive?

2. Edit the existing document and save the changes?

3. Write steps for copying the text and pasting it on next page?

4. Write steps for cutting the unwanted text?

Week 2-Task 2: - Highlighting the text, changing the color of text. Changing text attributes applying different types of bullets and numberings to text.

1. Write steps for highlighting the text?

2. Write steps for making text Bold, Underline and Italic?

3. Write steps for applying different types of numbering?

4. Write steps for applying different customized Bullets and use any picture as a bullet?

Week3-Task3: - Creating tables, altering the table by adding additional rows and columns. Deleting a particular row or column, splitting the cells and merging the cells. Applying different types of table auto formats to tables.

1. Write steps for creating a table with 10 rows and 7 columns?

2. Write steps for aligning the text in the centre of the cell and apply the different?

3. Write steps for adding one row below 5th row and add one column in between 5th and 6th column?

4. Write steps for merging the 6 columns of a last row and split the 2nd column in to 2 sub columns?

5. Write steps for applying Table Auto format to the above table?

Week4-Task4: - Mail Merge, Inserting page numbers. Adding Header and Footer to each page in a document. Using Spell check function to check the spellings of text. Finding the synonyms of a particular word & Print the

Course Outcomes	The student will learn ● To familiar with Computer Fundamental ● To know about MS Office. ● To use different text, spreadsheet and presentation skill. ● To know about Animations and graphics.
Suggested Software	1. Microsoft Office.
Reference Books	1.Sams Teach Yourself Macromedia Flash 8 in 24 Hours, Phillip Kerman. 2.How to do everything with Macromedia, Bonnie Blake, DougSahlin. 3.Multimedia Making it works, Tay Vaughan, Tata Mcgraw Hills

Course Title	Problem Solving Through C Lab				
Course Code	**SCA04193**				
Semester	**BCA**				
Course Credits	**L**	**T**	**P**	**TC**	
	-	**-**	**4**	**2**	
Prerequisites	Basic knowledge about C Language				
Course Objectives	● To learn the Computer Fundamental concepts ● To aware students about Problem Solving approach ● To make them to use basic components of Programming				

Course Contents	**List of Practical's (Perform any 10 Practicals)** 2. Write a C program to display "This is my first C Program". 3. Write a C program to perform addition, subtraction, division and multiplication of two numbers. 4. Write a program to calculate simple and compound interest. 5. Write a program to input the name, marks of 5 subjects of a student and display the name of the student, the total marks scored, percentage scored and the class of result. 6. Write a Program to Check Whether a Number is Prime or not. 7. Write a program to find the largest and smallest among three entered numbers and also display whether the identified largest/smallest number is even or odd. 8. Write a program to find the factorial of a number. 9. Write a program to check if the number is Armstrong or not. (Hint: A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself). 10. Write a program to check whether a number is positive, negative or zero using a switch case. 11. Write a program to check whether a number is Palindrome or not. 12. Write a program to generate Fibonacci series. 13. Write programs to display each of the following patterns.

```
 i)                    (ii)                   (iii)
 * * * *                1                      1
 * * *                  2 2                    1 2
 * *                    3 3 3                  1 2 3
 *                       4 4 4                 1 2 3 4
 *                  4                          1 2 3 4 5
                     5  5  5
                  5 5
```

	14. Write a Program to Search an element in array. 15. Write a program to generate Fibonacci series using recursive function. 16. Write a program to swap two integers using call by value and call by reference methods of passing arguments to a function. 17. Write a C program to find maximum and minimum between two numbers using functions. 18. Write a program to swap value of two variables using pointer.
BCA 1ˢᵗ Semester	19. Write a program to add two distances in feet and inches using structure 20. Write a program to read and print an Employee's Details using

Course Outcomes	After completing this lab course you will be able to: 1. Understand the logic for a given problem. 2. Recognize and understand the syntax and construction of C programming code. 3. Understand using header files. 4. Learn the methods of iteration or looping and branching. 5. Make use of different data-structures like arrays, pointers, structures and files.
Suggested Software	1. Turbo C 2. Dev C++ 3. Visual Studio C++
Reference Books	1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India