

**Detailed Course Scheme**  
**Bachelor of Computer Applications**  
**(BCA)**

**Semester-I**  
**(2020-21)**

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**RNB GLOBAL UNIVERSITY**

RNB Global City, Ganganagar Road,  
Bikaner, Rajasthan 334601

## **OVERVIEW**

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June)**. Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for BCA Program along with examination pattern is as follows:

### **Course Scheme**

#### **Semester -I**

<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1.	13004200	Mathematics- I	3	1	0	4
2.	13004100	Introduction to Computers and IT	3	1	0	4
3.	13004300	Fundamentals of Programming with C	3	1	0	4
4.	13004500	System Analysis and Design	3	0	0	3
5.	99002200	Business Communication	3	1	0	4
6.	13004600	Lab for Office Automation and PC hardware	0	0	4	2
7.	13004400	Programming with C Lab	0	0	4	2
8.	13002700	Ability & Skill Enhancement - I	2	0	0	2
9.	99002800	Workshops & Seminars	-	-	-	1
10.	99002700	Human Values & Social Service/NCC/NSS	-	-	-	1
<b>Total</b>			<b>17</b>	<b>4</b>	<b>8</b>	<b>27</b>

### **EVALUATION SCHEME- THEORY**

The evaluation of the theory paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

### **Internal Assessment**

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20
Attendance	75% + : 5 marks	5
<b>TOTAL</b>	<b>50</b>	

### **External Assessment**

Type	Marks
Theory	50

### **EVALUATION SCHEME -PRACTICAL**

The evaluation of the practical paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

### **Internal Assessment**

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
<b>TOTAL</b>	<b>50</b>	

## External Assessment

Type	Marks
Practical	50

## EVALUATION SCHEME- WORKSHOPS & SEMINARS AND HUMAN VALUES & SOCIAL SERVICE/NCC/NSS

1. The evaluation of Workshops & Seminar and Human Values & Social Service/NCC/NSS will be completed from Semester I – Semester VI. It will be evaluated internally by the various Forums & Schools Concerned. The credit for this will be given at the end of each Semester.
2. The students have to join club/clubs/Forums with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester.

## CURRICULUM

**Course Name: Mathematics-I**

**Course Code: 13004200**

### Objectives

- To get the knowledge about the matrices, determinants and limits.- IP
- To study the basics of differential and integral calculus- IP

### Course Outline

#### **Unit I: Determinants**

Definition, Minors, Cofactors, Properties of Determinants MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

## **Unit II: Limits & Continuity**

Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities.

## **Unit III: Differentiation**

Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Liebnitz Theorem.

## **Unit IV: Integration**

Integral as Limit of Sum, Fundamental Theorem of Calculus( without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).

## **Unit V: Vector Algebra**

Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and physical interpretation of area and volume.

### **Suggested Readings:**

1. B.S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
2. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition, 2001.

## **Course Name: Introduction to Computers and IT**

### **Course Code:13004100**

### **Objectives**

This is an elementary course in computers and information technology. Upon completion of this course the student should be able to:

- Discuss the evolution of computers in different generations.
- Classify computers in different categories based on their capabilities.
- Describe the major components of computers and information technology applications:
- Hardware, software, data, processes, computer networks and people.
- Demonstrate an understanding of the importance of algorithms in the development of IT applications.- IP

## **Course Outline**

### **Unit I: Introduction to Computers**

The evolution of computers: Computer Generation from First Generation to Fifth Generation. Classifications of Computers: Micro, Mini, Mainframe and super computers,

Distributed Computer System, Parallel Computers. Computer Hardware: Major Components of a digital computer, Block Diagram of computer Input-output devices, Description of Computer Input Units, Output Units. CPU Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access, Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk, Drives, Compact Disk Read Only Memory, Magnetic Tape Drives.

### **Unit II: Interaction with Computers**

Computer Software: System software, assemblers, compilers, interpreters, linkers Elementary Operating System concepts, different types of operating systems, Application Software: Introduction to MS Office (MS-Word, MS Powerpoint, MS-Excel) Computer Programming and Languages: Algorithms, flow chart, decision tables, pseudo code, Low level languages and introduction to high level languages.

### **Unit III: Computer Number System**

Decimal, Binary, Octal, Hexa-decimal. **Conversion:** Decimal to all other number systems, Binary to octal and hexa decimal, Addition of binary numbers, Binary subtraction, Use of complements to represent negative numbers, Conversion of a binary fraction to a decimal fraction and decimal to binary fraction, Binary Coded Decimal(BCD), ASE II Codes, EBCDIC codes, Gray codes, Unicodes.

### **Unit IV: Computer Network & Internet**

Basic elements of a communication system, Data transmission modes, Data Transmission speed, Data transmission media, Digital and Analog Transmission, Network topologies, Network Types (LAN, WAN and MAN), Client and Servers , Intranet, Extranet. **Internet:** Terminologies related to Internet: Protocol, Domain name, IP address, URL, World Wide Web. Overview of various services on Internet: E-mail, FTP, Telnet, Chat , Instant Messaging.

### **Suggested Readings:**

1. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 1992.
2. Anita Goel "Computer Fundamentals", Pearson.
3. B.Ram Computer fundamentals Architecture and Organization, New Age Intl.
4. Alex Leon & Mathews Leon, "Introduction to Computers", Vikas Publishing .
5. Norton Peter, "Introduction to computers", 4th Ed., TMH, 2001.
6. Vikas Gupta, "Comdex Computer Kit", Wiley Dreamtech, Delhi, 2004.

## **Course Name: Fundamentals of Programming with C**

### **Course Code: 13004300**

#### **Objectives**

- To be able to build own logic for a given problem and finally develop one's own programs.
- To understand the syntax and the semantics of C programming language. - IP

#### **Course Outline**

##### **Unit I**

C basics, C character set, Identifiers and keywords, Data types, constants, variables and arrays, declarations, expressions statements, symbolic constants, compound statements, arithmetic, operators, unary operators, relational and logical operators, assignment operators, conditional, operators, bit operators .C constructs: If statement, if....else statement, if.....else if....else statement, while statement, do....while statement, for statement, switch statement, nested control statement, break operator, continue operator, comma operator, go to statement.

##### **Unit II**

C Functions: Functions: declaration, definition & scope, recursion, call by value, call by reference. Storage Classes: automatic, external (global), static & registers.

##### **Unit III**

Arrays: Arrays, pointers, array & pointer relationship, pointer arithmetic, dynamic memory allocation, pointer to arrays, array of pointers, pointers to functions, array of pointers to functions, Pre-processor directives: #include, #define, macro's with arguments, the operators #and ##, conditional compilations.

##### **Unit IV**

Structures: Structures, unions, passing structure to functions, bit fields, file handling [text(ASEII), binary]

##### **Unit V**

String manipulation functions and other standard library functions from stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h.Usage of command line arguments.

#### **Suggested Readings:**

1. Ashok N. Kamthane, "Computer Basics and C Programming", Pearson Education.

2. E. Bala Guruswamy, "Programming in ANSI C", 2008.
3. V Rajaraman, "Computer Basics and C Programming", PHI.
4. Herbert Schildt, "C The Complete Reference" Fourth Edition, 2000.
5. Yashwant Kanetkar, "Let us C" eighth edition, 2002.
6. Kernighan and d. Ritchie, "The ANSI C Programming Language", 2000.
7. Stephenn Prata, "C Primer Plus" Fourth Edition, 2001.
8. Schaum's Outline Series, "Programming with C", 2nd Edition, 1996.

## **Course Name: System Analysis and Design**

### **Course Code: 13004500**

#### **Objectives**

- To provide an understanding and application of system analysis and design processes centered on the systems development life cycle.
- To extend the core topics include project management and cost-benefit analysis; information systems planning and project identification and selection.
- To emphasizes interpersonal skill development with clients, users, team members, and others associated with development, operation, and maintenance of systems.
- To learn the Information system components, Types on information systems, System development life cycles, the systems analyst.
- To make a study of Systems planning, Object oriented analysis and design.- JECRC

#### **Course Outline**

##### **Unit I**

System Concepts: Definition, characteristics, elements & types of system. System development life cycle: Recognition of need: Feasibility study, system analysis-introduction, information collection, interviews, questionnaires, observation, record searching and document analysis

##### **Unit II**

Analysis tools, data flow diagram, data dictionary, decision tree, structured English and decision table. System Design: The process and stages of systems design, input/output and file design.

##### **Unit III**

System Implementation: System implementation, system testing: Blackbox, White Box, Alpha, Beta Testing, Unit Testing and System Testing, implementation process and implementation methods: Parallel Run, Phased Adoption;



#### **Unit IV**

System maintenance: Corrective maintenance, Adaptive maintenance and Perfective maintenance.

#### **Suggested Readings:**

1. Awad Elias N., System analysis and design (Galgotia).
2. Sen James A., Analysis and design of information system (Tata McGraw).
3. Burd, Stephen. D System architecture (PHI).
4. Shelly Garry, B Rosan Belt System analysis and Design-9<sup>th</sup>(Tata McGraw).

### **Course Name: Business Communication**

### **Course Code: 99002200**

#### **Objectives:**

- To equip students of the BCA course effectively to acquire skills in reading, writing, comprehension and communication, as also to use electronic media for business communication.
- To provide an overview of the various business communication skills and groom students professionally.

#### **Course Outline**

##### **Unit I: Nature of Communication**

Process of Communication, Types of Communication (Verbal & Non-Verbal), Importance of Communication, Different forms of Communication Barriers to Communication Causes, Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers.

##### **Unit II: Business Correspondence**

Letter Writing, presentation, Inviting quotations, Sending quotations, Placing orders, Inviting tenders, Sales letters, claim & adjustment letters and social correspondence, Memorandum, Inter -office Memo, Notices, Agenda, Minutes, Job application letter, preparing the Resume.

##### **Unit III: Report Writing**

Business reports, Types, Characteristics, Importance, Elements of structure, Process of writing, Order of writing, the final draft, check lists for reports.

#### **Unit IV: Vocabulary**

Words often confused Words often misspelt, common errors in English.

**Unit V Oral Presentation:** Importance, Characteristics, Presentation Plan, Power point presentation, Visual aids.

#### **Suggested Readings:**

1. Bovee, and Thill, Business Communication Today, Pearson Education.
2. Lesikar, R.V. & Flatley, M.E. Kathryn Rentz; Business Communication Making. Connections in Digital World, 11th ed., McGraw Hill Education.
3. Shirley Taylor, Communication for Business, Pearson Education.
4. Locker and Kaczmarek, Business Communication: Building Critical Skills, TMH.

### **Course Name: Lab for Office Automation and PC hardware**

**Course Code: 13004600**

#### **Objectives:**

##### **MS-WORD**

The purpose of this course is to teach students to identify word processing terminology and concepts, Create technical documents, Animation and Design document, format and edit documents, use simple tools and utilities, Mail merge concepts and Mathematical expressions.

##### **MS-EXCEL**

This course will teach you the skills you'll need to successfully use Excel. This course will start with basic skills, and then move forward to more advanced features and techniques-  
**Christ University**

#### **Course Outline**

##### **PART-1**

##### **MS WORD**

- a. Adding text, editing text, finding and replacing text, formatting text, character/line/paragraph spacing, working with styles and text indentation.
- b. Saving document with and without password.
- c. Working with page layout, page setup i.e. setting margins, changing page size, changing page orientation and applying page background.
- d. Printing a document.
- e. Inserting page numbers, headers and footers, footnote, endnote, date and time, pictures, objects, shapes etc.

- f. Creating bulleted and numbered lists.
- g. Working with tables, paragraphs and columns.
- h. Reviewing (track changes, adding comments etc.) and proof reading a document i.e. spell check, grammar etc.
- i. Creating and working with table of content.
- j. Mail merge.

### **MS EXCEL**

- a. Entering data, formatting data i.e. applying borders, various formats (currency formats, number formats etc.), fonts etc.
- b. Creating custom lists, using auto fill, find and replace and editing text (cut, copy, paste and paste special).
- c. Working with formulae and functions.
- d. Applying conditional formatting to data.
- e. Sorting and filtering data (auto and advanced filter).
- f. Performing Subtotals.
- g. What-if-analysis using goal seek, scenarios and solver.
- h. Pivot tables and data tables (one and two table input)
- i. Working with charts (2D and 3D).
- j. Adding comments, applying password protection to the workbook.
- k. Working with page layout and printing options.

### **MS POWERPOINT**

- a) Creating and formatting slides in a presentation.
  - b) Create a master slide with a logo, footer, and font.
  - c) Add notes to each slide.
  - d) Insert a graphic or picture.
  - e) Implement a background.
  - f) Place a text box in the title slide with your name.
  - g) Insert transitions for each slide.
  - h) Applying various effects (custom animation and transitional effects) in a presentation.
  - i) Adjust text alignment in the title slide so it is centered.
- Printing the slides of a presentation

### **PART-2:**

#### **PC Hardware**

1. Identification of the peripherals of a computer.
2. To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions.
3. Installation of MS windows and LINUX on a PC.
4. Exposure to Basic commands and system administration in Linux including: Basic Linux commands in bash, Create hard and symbolic links.

## **Course Name: Programming with C Lab**

**Course Code: 13004400**

### **Objectives**

- To learn problem solving through procedural language programming technique and
- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.- **Christ university**

### **Course Outline**

#### **List if Experiments (Not limiting to)**

1. Write a program sum of two numbers
2. Write a program to check either the number is even or odd
3. Write a program calculate simple interest.
4. Write a program to calculate the marks of four subject and percentage.
5. Write a program to check either the year is leap year or not.
6. Write a program to find out the grade using if/else if statement.
7. Write a program to find out the greater number between two number.
8. WAP to read base and height of a triangle, calculate the area using formula :
  - i.  $\text{Area} = 1/2 * \text{base} * \text{height}$
9. WAP to read marks obtained and maximum marks of a student and calculate its percentage and display it.
10. Write a program to print even number up to n.
11. Write a program to print odd number up to n.
12. Write a program to print table.

## **Course Name: Ability & Skill Enhancement I**

**Course Code: 11003500**

### **Objectives**

- To sensitize students to the nuances of the four basic communication skills – Listening, Speaking, Reading and Writing.
- To enable students to convert the conceptual understanding of communication into everyday practice. Besides making English Learning an interesting activity, the curriculum aims to develop and enhance creativity of the students.

**Course Outline - Final Assessment – Written Paper**

**Unit I: Ice Breaking Session & Recap of Language Skills**

Ice Breaking Session, Phrase, Clause, Sentence, Word Classes (Parts of Speech).

**Unit II: Recap of Language Skills**

Tenses (Present, Past Future), Modals, Articles (a, an, the).

**Unit III: Reading Skills & Fluency Building**

Reading Process, Importance & Types of Reading, Techniques of Reading, and Strategies to Improve Reading Abilities, Comprehension, Reading Aloud, Reading News.

**Unit IV: Writing Skills**

Generating ideas/gathering data, organizing ideas, Note taking, Outlining, drafting, Editing, and Proof Reading, Story Writing (through pictures/videos), Dialogue Writing, Email Writing.

**Unit V: Listening & Speaking Skills**

Types and Essentials of good listening, Listening Process, Barriers to Listening and Strategies to improve Listening, Listening to Inspirational Movies/Clips, Listening News Techniques of Effective Speaking, Introducing Oneself and others, Extempore, Situational Conversations (Practicing Short Dialogues).

**Note:** The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

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