

Detailed Course Scheme
Bachelor of Computer Applications
(BCA)
Semester-I
(2022-25)

DOC202205260004



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 for Odd Semester (July-December) 2022 along with examination pattern is as follows:

Semester -I

S. No.	Course Code	Course Name	L	T	P	Credits
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.	13011100	Software Engineering	3	0	0	3
5.	99002200	Business Communication	3	1	0	4
6.	13004400	Programming with C Lab	0	0	4	2
7.	13002700	Ability & Skill Enhancement - I	2	0	0	2
8.	99003300	Workshops & Seminars/ Human Values & Social Service/NCC/NSS	-	-	-	1
Total			17	4	4	24

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
TOTAL	50	

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
TOTAL	50	

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' Hospital's Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Leibnitz 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: Software Engineering

Course Code: 13011100

Objectives

- To provide the knowledge regarding the software requirement process, designing process, testing and coding process so that students should get to know that how we are developing a complete software.

Course Outline

Unit I: Introduction

Introduction to Software Engineering, importance of Software, The Software Evolution, Software Characteristics, Software Applications, Software Crisis: Problem and Causes .**Software Development Life Cycle:** Waterfall model, Incremental and Evolutionary process models, Personal Software process (PSP) and Team Software process (TSP), Overview of agile process and aspect oriented programming

Unit II: Software Requirement Specification

Problem Analysis, Requirement elicitation and Validation, Requirements modeling: Scenarios, Information and analysis classes, flow and behavioral modeling, documenting Software Requirement Specification (SRS).

System Design: Design Concepts, design models for architecture, component, data and user interfaces; Problem Partitioning, Abstraction, Cohesiveness, Coupling, Top Down and Bottom Up design approaches; Functional Versus Object Oriented Approach, Design Specification, 4GL.

Unit III: Coding

TOP-DOWN and BOTTOM-UP structure programming, Information Hiding, Programming Style, and Internal Documentation, Verification. **Software Testing:** Levels of Testing, Functional Testing, Structural Testing, Test Plan, Test Case Specification, Software Testing Strategies, Verification & Validation, Unit, Integration Testing, Top Down and Bottom Up Integration Testing, Alpha & Beta Testing, White box and black box testing techniques, System Testing and Debugging.

Software Quality Assurance: Software Configuration Management, Overview of Software Quality Control and Quality Assurance, ISO 9000 Certification for Software Industry, SEI Capability Maturity Model (CMM) and Comparison between ISO & SEI CMM.

Unit IV: Technical Metrics for Software

A Framework for Technical Software Metrics, Metrics for the Analysis Model, Metrics for Design Model, Metrics for Source Code, Metrics for Testing, Metrics for Maintenance.

CASE (Computer Aided Software Engineering): CASE and its Scope, CASE support in Software Life Cycle, Documentation Support, Architecture of CASE Environment. Exposure to CASE tools like Rational Software suit, Turbo Analyst, Silk Suite.

Suggested Readings:

1. Roger S. Pressman, Software Engineering, A Practitioner's Approach, McGraw Hill International Edition (2009) 7th edition.
2. Ian Sommerville, Software Engineering, Addison-Wesley Publishing Company, (2006) 8th ed.
3. Watts Humphery, A discipline for Software Engineering, Addison Wesley, Massachusetts (1995).
4. James F. Peter, Software Engineering - An Engineering Approach, John Wiley (2004).
5. Pankaj Jalote, An integrated Approach to Software Engineering, Narosa (2005).

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: 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: 13002700

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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