Detailed Program Scheme

Bachelor of Computer Applications
(BCA)

Semester-III

(2016-2019)

DOC201717040007

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 for (July-Dec.) Semester, 2017 along with examination pattern is as follows:

Semester –III

S. No	Course Code	Course Name	Credits
1.	13008100	Mathematics-III	4
2.	13008200	Database Management System	3
3.	13008300	Database Management System Lab	1
4.	13008400	Computer Architecture	4
5.	13008500	Object Oriented Programming with C/C++	4
6.	13008600	Object Oriented Programming with C/C++ Lab	2
7.	11014900	Principle of Accounting	3
8.	13002900	Ability & Skill Enhancement Module - III	3
9.	99002000	NCC/NSS/Similar activities	-
10.	99002100	Club Activity	-
Total Credits			**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

Area of Assessment	Marking	Maximum Marks
Sessional-I	As per marks obtained	10
Sessional-II	As per marks obtained	10
Assignment + Presentation	15	15
Overall Conduct and Discipline	To be decided by concerned Faculty Member	5
Attendance	Student with 80% attendance will get 5 marks and 0.25 marks for every 1% attendance above 80 %	10
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	35
Discipline	To be decided by concerned faculty	5
Attendance	80% - 5 marks and 0.25 percent for every one percent above 80	10

	%	
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

CURRICULUM

Course Name: Mathematics-III

Course Code: 13008100

Course Outline

Unit I Measures of Central Tendency & Dispersion -Definition, Importance & Limitation. Collection of data and formation of frequency distribution. Graphic presentation of frequency distribution – graphics, Bars, Histogram, Diagrammatic. Measures of central tendency – mean, median and mode, partition values –quartiles, deciles and percentiles. Measures of variation – range, IQR, quartile, deciles and percentiles.

Unit II :Correlation/Regression- Correlation Coefficient; Assumptions of correlation analysis; coefficients of determination and correlation; measurement of correlation- Karl Person's Methods; Spearman's rank correlation; concurrent deviation the correlation coefficient; Pitfalls and limitations associated with regression and correlation analysis; real world application using IT tools.

Unit III: Linear Programming:, Concept a assumptions usage in business decision making linear programming problem: formulation, methods of solving: graphical and simplex, problems with mixed constraints: duality; concept, significance, usage & application in business decision making. Queuing Models: Basic structure of queuing models, Birth-Death queuing models and its steady state solution,

Unit IV : Transportation & Assignment Problem- General structure of transportation problem, solution procedure for transportation problem ,methods for finding initial solution, test for optimality. Maximization of transportation problem, transportation problem.

Assignment problem approach of the assignment model, solution methods of assignment problem, maximization in an assignment, unbalanced assignment problem, restriction on assignment.

Suggested Readings:

1. Sharma, J.K.; Operations Research: problems & solutions; Macmillan India
2. Gupta, S.P. and Gupta, P.K.; Quantitative Techniques and Operations Research,
3. Sultan Chand & Sons
4. Vohra, N.D.; Quantitative Techniques in Management 2003.
5. Gupta, S.P. Statistical Methods, Sultan Chand &Sons.2004
6. M. Natarajan, P Balasubramani A. Tamilarasi, Operations Research, Pearson 2005

Course Name: Database Management System

Course Code: 13008200

Course Outline

Unit-I : Introduction: An overview of database management system, database system Vs file system, Characteristics of database approach, DBMS architecture , data models, schema and instances, data independence. **Data Modeling using Entity Relationship Model:** Entity, Entity types, entity set, notation for ER diagram, attributes and keys, Concepts of composite, derived and multi valued attributes, Super Key, candidate key, primary key, relationships, relation types, weak entities, enhanced E-R and object modelling, Sub Classes:, Super classes, inheritance, specialization and generalization.

Unit–II: Introduction to SQL: Overview , Characteristics of SQL. Advantage of SQL, SQL data types and literals. Types of SQL commands: DDL, DML, DCL. Basic SQL Queries. Logical operators :BETWEEN, IN, AND, OR and NOT Null Values: Disallowing Null Values, Comparisons Using Null Values Integrity constraints: Primary Key, Not NULL, Unique, Check, Referential key Introduction to Nested Queries, Correlated Nested Queries, Set-Comparison Operators, Aggregate Operators: The GROUP BY and HAVING Clauses, Joins: Inner joins, Outer Joins, Left outer, Right outer, full outer joins. Overview of views and indexes.

Unit-III: Relational Data Model: Relational model terminology domains, Attributes, Tuples, Relations ,characteristics of relations, relational constraints domain constraints, key constraints and constraints on null, relational DB schema. Codd's Rules 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.ER to relational Mapping: Data base design using ER to relational language. Data

Normalization: Functional dependencies, Armstong's inference rule, Normal form up to3rd normal form.

Unit–IV: Transaction processing and Concurrency Control: Definition of Transaction, Desirable ACID properties, overview of serializability, serializable and non-serializable transactions Concurrency Control: Definition of concurrency, lost update, dirty read and incorrect summary problems due to Concurrency Control Techniques: Overview of Locking,2PL,Timstamp ordering, multi versioning, validation Elementary concepts of Database security: system failure, Backup and Recovery Techniques, authorization and authentication.

Suggested Readings:

1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Pearson,5th Ed.
2. Singh S.K., "Database System Concepts, design and application", Pearson Education
3. Ramakrishnan and Gherke, "Database Management Systems", TMH.
4. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4thEdition, McGraw Hill, 1997.
5. Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", MorganKaufmann Publishers, 1993.
6. K. Majumdar, P. Battacharya, "Data Base Management Systems', TMH, 1996.
7. Bipin Desai, "An Introduction to database Systems", Galgotia Publications, 1991.

Course Name: Database Management System Lab

Course Code: 13008300

List of the Programs not limiting to:

1. **Creating Database**

   a. Creating a Database

   b. Creating a Table

   c. Specifying Relational Data Types

   d. Specifying Constraints

   e. Creating Indexes

2. **Table and Record Handling**

   a. INSERT statement

   b. Using SELECT and INSERT together

   c. DELETE, UPDATE, TRUNCATE statements

     d. DROP, ALTER statements

3. **Retrieving Data from a Database**

     a. The SELECT statement

     b. Using the WHERE clause

     c. Using Logical Operators in the WHERE clause

     d. Using IN, BETWEEN, LIKE , ORDER BY, GROUP BY and HAVING

4. **Clause**

     a. Using Aggregate Functions

     b. Combining Tables Using JOINS

     c. sub- queries

5. **Database Management**

     a. Creating Views

     b. Creating Column Aliases

     c. Creating Database Users

     d. Using GRANT and REVOKE

Course Name: Computer Architecture

Course Code: 13008400

Course Outline:

Unit I: Basics of Digital Electronics: Codes, Logic gates, Flip flops, Registers, Counters, Multiplexer, Demultiplexer, Decoder, Encoder. **Register Transfer and Micro operations:** Register transfer Language, Register transfer, Bus & memory transfer, Logic micro operations, Shift micro operation. **Basic Computer Organization:** Instruction codes, Computer instructions, Timing & control, Instruction Cycles, Memory reference instruction, Input/Output & Interrupts, Complete computer description & design of basic computer.

Unit-II Control Unit: Hardwired vs. Micro programmed control unit. **Central Processing** General register organization, Stack organization, Instruction format, Data transfer & manipulation, Program control, RISC, CISC.

Computer Arithmetic: Addition & subtraction, Multiplication Algorithms, Division algorithms.

Unit-III Input-Output Organization: Peripheral devices, I/O interface, Data transfer schemes, Program control, Interrupt, DMA transfer, I/O processor.

Memory Unit: Memory hierarchy, Processor vs. memory speed, High-speed memories, Cache memory, Associative memory, Interleave, Virtual memory, Memory management.

Unit IV Introduction To Parallel Processing: Pipelining, Characteristics of multiprocessors, Interconnection structures, Inter processor arbitration, Inter processor communication & synchronization.

Suggested Readings

1. Mano, Morris M., Computer System Architecture, Prentice Hall (1992) 3rd ed.
2. Hayes, J.P., Computer Architecture and Organization, McGraw Hill (1998) 3rd ed.
3. Hennessy, J.L., Patterson, D.A, and Goldberg, D., Computer Architecture A Quantitative Approach, Pearson Education Asia (2006) 4th ed.
4. Leigh, W.E. and Ali, D.L., System Architecture: software and hardware concepts, South Wester Publishing Co. (2000).

Course Name: Object Oriented Programming in C/C++

Course Code: 13008500

Course Outline

Unit I Programming Concepts: Algorithm and its characteristics, pseudo code / flow chart, program, identifiers, variables, constants, primitive data types, expressions, structured data types, arrays, compilers and interpreters.

Unit II Statements: Assignment statement, if then else statements, switch statement, looping statements- while, do while, for, break, continue, input/output statements, functions/ procedures.

Unit III Object Oriented Concepts: Abstraction, encapsulation, objects, classes, methods, constructors, inheritance, polymorphism, static and dynamic binding, overloading. Program Development: Object oriented analysis, design, unit testing & debugging, system testing & integration, maintenance.

Unit IV Introduction to structured programming: data types- simple data types, floating data types, character data types, string data types, arithmetic operators and operator precedence, variables and constant declarations, expressions, input using the extraction operator >> and cin, output using the insertion operator << and cout, preprocessor directives, increment (++) and decrement operations (--), creating a C++ program,

input/output, relational operators, logical operators and logical expressions, if and if … else statement, switch and break statements.

Unit V "for", "while" and "do – while" loops, break and continue statement, nested control statement, value returning functions, void functions, value versus reference Parameters, local and global variables, static and automatic variables, enumeration type, one dimensional array, two dimensional array, character array, pointer data and pointer variables.

Suggested Readings:

1. Lippman, S.B. and Lajoie, J., C++Primer, Pearson Education (2005) 4th ed..
2. Stroustrup, Bjarne, The C++ Programming Language, Pearson Education (2000)3rd ed.
3. Eills, Margaret A. and Stroustrup , Bjarne, The Annonated C++ Reference Manual, Pearson Education (2002).
4. Rumbaugh, J.R., Premerlani, W. and Blaha, M., Object Oriented Modeling and Design with UML, Pearson Education (2005) 2nd ed.
5. Kanetkar, Yashvant, Let us C++, Jones and Bartlett Publications (2008) 8th ed

Course Name: Object Oriented Programming in C/C++ Lab

Course Code: 13008600

List of Programs

1. WAP to print the sum and product of digits of an integer.
2. WAP to reverse a number.
3. WAP to compute the sum of the first n terms of the following series S = 1+1/2+1/3+1/4
4. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
5. WAP to compute the factors of a given number.
6. Write a program that swaps two numbers.
7. WAP to print a triangle of stars as follows (take number of lines from user):

```
    *

   ***

  *****

 *******

********
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8. WAP to perform following actions on an array entered by the user: i) Print the even-valued elements ii) Print the odd-valued elements
9. Calculate and print the sum and average of the elements of array
10. Print the maximum and minimum element of array
11. Write a program that swaps two numbers using pointers.
12. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
13. WAP to display Fibonacci series using recursion.
14. WAP to display Fibonacci series using iteration.
15. WAP to calculate Factorial of a number using iteration
16. WAP to calculate Factorial of a number using recursion
17. Create Matrix class using templates. Write a menu-driven program to perform following Matrix operations (2-D array implementation): a) Sum b) Difference
18. Create a class Box containing length, breath and height. Include following methods in it:

 a) Calculate surface Area

 b) Calculate Volume

19. Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator.

20. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Mark. Create 10 students and store them in a file.

Course Name: Principles of Accounting

Course Code: 11014900

Course Outline

Unit-I : Meaning and nature of accounting, Scope of financial accounting, Interrelationship of Accounting with other disciplines, Branches of Accounting, Accounting concepts and convention, Accounting standards in India.

Unit–II : Journal, Rules of Debit and Credit, Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Ledger, Trial Balance

Unit-III Preparation of Final Accounts, Profit & Loss Account, Balance Sheet-Without adjustments and with adjustments.

Unit–IV Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories-FIFO, LIFO and Weighted Average Method, Concept of Deprecation, Causes of Depreciation, Meaning of Depreciation Accounting, Method of Recording Depreciation, Methods of Providing Depreciation.

Suggested Readings:

1. Maheshwari, S.N. and Maheshwari, S. K., (2009) An Introduction to Accountancy, Eighth Edition, Vikas Publishing House.
2. Tulsian, P.C., (2009) Financial Accountancy, 2nd edition, Pearson Education.
3. Gupta R. L., & Gupta V.K., "Principles & Practice of Accounting", Sultan Chand &Sons, 1999.
4. Monga J R, "Introduction to Financial Accounting", Mayur Paperbacks, 2010.
5. Raja Sekaran/Lalitha, "Financial Accounting", Pearsons .

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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