MAHATMA GANDHI UNIVERSITY

SYLLABI FOR COMMON COURSES - UG PROGRAMMES

2017 ADMISSIONS ONWARDS

COURSE 3 - Issues that Matter

Course Code	**EN2CC03**
Title of the course	**Issues that Matter**
Semester in which the course is to be taught	**2**
No. of credits	**4**
No. of contact hours	**90**

AIM OF THE COURSE

To sensitize the learners to contemporary issues of concern.

OBJECTIVES

By the end of the course, the learner should be able to:

1. Identify the major issues of contemporary significance
2. Respond rationally and positively to the issues raised
3. Internalise the values imparted through the selections.

COURSE OUTLINE

Module 1 **(18 hours)**

Luigi Pirandello: War

Judith Wright: The Old Prison

Arundhati Roy: Public Power in the Age of Empire

Module 2 **(18 hours)**

Bertolt Brecht: The Burning of the Books

W. H. Auden: Refugee Blues

Romila Thapar: What Secularism is and Where it Needs to be Headed

Module 3 **(18 hours)**

Zitkala- Sa: A Westward Trip

B.Sc. DEGREE PROGRAMME (UGCBCS 2017)
MATHEMATICS
(COMPLEMENTARY COURSE TO B.Sc COMPUTER SCIENCE/ BCA)
SECOND SEMESTER
DISCRETE MATHEMATICS (II)

4 hrs/week (Total Hrs : 72) **4 credits**

Syllabus

Text Books

1. **Kenneth H Rosen ; Discrete Mathematics And Its Applications ; 6th Edition ; Tata Mc Graw-Hill Publishing Company Limited**
2. **Frank Ayres Jr : Matrices , Schaum's Outline Series , TMH Edition.**

Module I: Graphs **(18 hrs)**

Graphs and Graph Models, Graph Terminology and Special types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths.

Text 1 Chapter 8 (Sections 8.1, 8.2, 8.3, 8.4 and 8.5 only)

Module II: Trees **(17 hrs)**

Introduction to Trees, Application of Trees, Tree Traversal, and Spanning Trees.

Text 1 Chapter 9 (Sections 9.1, 9.2, 9.3 and 9.4 only)

Module III: Boolean Algebra **(17 hrs)**

Boolean Function, Representing Boolean Functions and Logic Gates

Text 1 Chapter 10 (Sections 10.1, 10.2 and 10.3 only)

Module IV: Matrices **(20 hrs)**

Definitions and examples of Symmetric, Skew-symmetric, Conjugate, Hermitian, Skew- hermitian matrices. Rank of Matrix , Determination of rank by Row Canonical form and Normal form , Linear Equations, Solution of non homogenous equations using Augmented matrix and by Cramers Rule , Homogenous Equations, Characteristic Equation, Characteristic roots and Characteristic vectors of matix , Cayley Hamilton theorem and applications.

Text 2. Relevant Sections of Chapters 2, 5 , 10 , 19 and 23 (Proofs of all Theorems in Module IV are Excluded)

References

1. Clifford Stien, Robert L Drysdale, KennethBogart ; Discrete Mathematics for Computer Scientists; Pearson Education; Dorling Kindersley India Pvt. Ltd

2. Kenneth A Ross; Charles R.B. Wright ; Discrete Mathematics; Pearson Education; Dorling Kindersley India Pvt. Ltd

3. Ralph P. Grimaldi, B.V.Ramana; Discrete And Combinatorial Mathematics ; Pearson Education; Dorling Kindersley India Pvt. Ltd

4. Richard Johnsonbaugh; Discrete Mathematics; Pearson Education; Dorling Kindersley India Pvt. Ltd

5. Winfried Karl Grassman, Jean-Paul Tremblay; Logic And Discrete Mathematics A Computer Science Perspective ; Pearson Education; Dorling Kindersley India Pvt. Ltd

QUESTON PAPER PATTERN

Module	Part A 2 Mark	Part B 5 Marks	Part C 15Marks	Total
I	3	3	1	7
II	3	2	1	6
III	3	2	1	6
IV	3	2	1	6
Total No. of Questions	12	9	4	25
No. Questions to be answered	10	6	2	18
Total Marks	20	30	30	80

BCA- SEMESTER II

CA2CRT03- Database Management Systems (Core)

Theory:4 hrs. per week

Credits:3

Unit 1: Introduction (12 hrs.)

Characteristics of the Database Approach – Database users :DBA , Database Designers ,End users – Advantages of using the DBMS Approach – Data models, Schemas , and Instances – ThreeSchema Architecture and Data Independence.

DBMS Languages: DDL, DML – The Database System Environment: DBMS Component Modules.

Unit 2: Relational Model (16 hrs.)

Entity Relationship Modeling: Introduction –Entity Types , Entity Sets , Attributes and Keys – Relationship Types ,Relationship Sets, Roles , and Structural Constraints – Weak Entity Types – Notation for ER diagrams – Sample ER diagrams.

Relational Model concepts: Domains ,Attributes , Tuples , and Relations – Characteristics of Relations – Relational Model Constraints and Relational Database Schemas : Domain Constraints, Key Constraints , Relational Database Schemas , Entity Integrity , Referential Integrity, and Foreign Keys .

Unit 3: SQL(14 hrs.)

Data Types – Data Definition commands : CREATE , ALTER ,DROP - Adding constraints in SQL –

Basic SQL Queries : INSERT ,SELECT ,DELETE ,UPDATE - Substring comparison using LIKE operator ,BETWEEN operator – Ordering of rows – SQL set operations UNION , EXCEPT , INTERSECT – Complex Queries : Comparison involving NULL and Three-valued logic ,Nested queries , EXISTS and UNIQUE functions, Renaming of attributes and Joining of tables, Aggregate functions ,Grouping – Managing Views.

Unit 4: Normalization and Indexing Structures for Files(15 hrs.)

Normalization: Informal Design Guidelines for Relational Schemas –Functional Dependencies – Normal forms : First Normal Form , Second Normal Form , Third Normal Form – General Definitions of Second and Third Normal Forms –BCNF.

Indexing Structures for files: -Types of Single-Level Ordered Indexes: Primary Indexes, Clustering Indexes, and Secondary Indexes.

Unit 5: Transaction Processing and Database Security (15 hrs.)
Transaction Processing: Introduction to Transaction Processing - Transaction and System Concepts – Desirable properties of Transactions.

Database Security and Authorization: Types of Security – Control measures – Database Security and DBA – Access Control , User Accounts, and Database Audits –Access Control based on Granting and Revoking Privileges.

***Books of study*:**

1.Ramez Elmasri and Shamkant B.Bavathe - DATABASE SYSTEMS , Sixth Edition, Pearson Education.

***References**:*

1. C.J Date- An Introduction to Database Systems, Eighth edition, Pearson Education,2003

2. Reghu Ramakrishnan and Johannes Gehrke- Database Management Systems , Third edition, Mc Graw Hill International Edition.

3. Dipin Desai , An Introduction to Database Systems , First Edition, Galgoria Publications .

CA2CRT04 : Computer Organization and Architecture (Core)

Theory:4 hrs. per week

Credits:3

Unit 1: (12 hrs.)

Basic computer organization and design

Operational concepts, Instruction codes, Computer Registers, Computer Instructions, Memory locations and addresses, Instruction cycle, Timing and control, Bus organization.

Unit 2: (15 hrs.)

Central Processing Unit:

General Register Organization, Stack Organization, Addressing modes, Instruction Classification, Program control.

Unit 3: (16 hrs.)

Memory Organization

Memory Hierarchy, Main Memory, Organization of RAM, SRAM, DRAM, Read Only MemoryROM-PROM,EROM,EEPROM, Auxiliary memory, Cache memory, Virtual Memory, Memory mapping Techniques.

Unit 4: (15 hrs.)

Parallel Computer Structures:

Introduction to parallel processing, Pipeline computers, Multi processing systems, Architectural classification scheme-SISD, SIMD, MISD, MIMD.

Unit 5: (14 hrs.)

Pipelining and Vector processing: Introduction to pipelining, Instruction and Arithmetic pipelines (design) Vector processing, Array Processors.

Book of study :

1. M.Morris Mano-Computer Systems Architecture, Third Edition, Pearson Education
2. Kai Hwang and F A Briggs-Computer Architecture and parallel processing, McGraw Hills,1990

Reference

1. Carl Hamacher -Computer Organization, Fifth Edition, Tata McGraw Hill.
2. John P Hayes -Computer Architecture & Organization–Mc Graw Hill
3. William Stallings-Computer Organization and Architecture , Seventh Edition, Pearson Education

CA2CRT05- Object Oriented Programming using C++ (Core)

Theory:3 hrs. per week Credits:4

Unit 1: (10 hrs.) **Principles of Object Oriented Programming, Beginning with C++**

Procedure Oriented Programming-Object Oriented Programming-Basic concepts of object-oriented programming- Benefits of OOP- Applications of OOP-A simple C++program-Structure of C++ program-C++ data types- Symbolic constants- Reference by variables-Operators in C++- Operator precedenceControl structures- Function in C++ - The main function, Function prototyping- Call by reference- Return by reference- Inline function- Default arguments- Function overloading.

Unit 2: (10 hrs.)

Classes and Objects : Specifying a class- Defining member functions- Nesting of member functions - Private member functions - Arrays within a class - Memory allocation for objects-Static data members Static member functions -Arrays of objects - objects as function arguments -Friendly functions-Returning Objects.

Unit 3: (12 hrs.)

Constructers and Destructors, Overloading

Constructors- Default constructor-Parameterized constructor-Copy constructor- Multiple constructors-Constructors with default arguments- Dynamic constructor-Destructors- Operator overloading- Unary and Binary operator overloading- Overloading using friends- Rules for overloading- Type conversion.

Unit 4: (10 hrs.)

Inheritance: Inheritance - Defining derived classes-Visibility modes-Single, Multilevel, Multiple, Hierarchical and Hybrid inheritance- Virtual base classes- Abstract classes- Constructors in derived classes- Nesting of classes.

Unit 5: (12 hrs.)

Pointers, Virtual Functions and Polymorphism, Working with Files : Pointers- Pointers to objects-this pointer-Pointers to derived classes- Virtual functions- Pure virtual functions- File Stream classes, Opening and closing a file- File opening modes- File pointers and their manipulations- Sequential input and output operations.

Book of Study:

1. E. Balagurusamy - Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill , 2011. ***Reference****:*

1. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India
2. Robert Lafore, Object Oriented Programming in Turbo C++, First Edition, Galgotia Publications.
3. D Ravichandran, Programming with C++, Second edition, Tata McGraw- Hill.

CA2CRP02-Software Lab II (Core)

Software Lab: 5 hrs. per week

Credits:2

SQL Commands (2 hrs. per week)

1. Data definition commands - CREATE, ALTER, DROP, Adding Constraints Primary key, foreign key, unique key, check, not null.

2. Basic SQL queries INSERT, SELECT, DELETE, UPDATE, Using multiple tables, ordering of rows using ORDER BY option, Set operations using UNION, EXCEPT, INTERSECT, Substring Comparison using LIKE operator, BETWEEN operator.

3. Complex Queries Nested Queries, EXISTS and UNIQUE/DISTINCT functions, NULL values, Renaming of attributes and Joining of tables, Aggregate functions and grouping.

4. Managing views, Simple stored procedures.

5. Data Control commands - Access Control and Privilege commands.

II. Object Oriented Programming using C++ (3 hrs. per week)

1. Programs based on default arguments, function overloading.
2. Programs based on array of objects, friend functions, passing objects as arguments to function.
3. Programs based on operator overloading (binary, unary) using member functions and friend functions.
4. Programs based on constructors, different types of constructors.
5. Programs based on inheritance, different types of inheritance.

Scheme of Evaluation for software lab II external is as follows:

(There will be two questions; the first from DBMS and second from C++)

Division of Marks (Practical - 3 hours External)

First program - questions from DBMS **- 25 marks**

1. Logic – 10 marks
2. Successful compilation – 8 marks
3. Result – 7 marks

Second program – questions from Object Oriented Programming using C++ **- 35 marks**

1. Logic – 20 marks
2. Successful compilation –10 marks
3. Result – 5 marks

Viva Voce **- 10 marks**

Lab Record **- 10 marks**

(DBMS -Minimum of 10 Programs

C++ -Minimum: of 15 Programs)

Total Marks **- 80 marks**