VEER NARMAD SOUTH GUJARAT UNIVERSITY

Syllabus for S.Y. Bsc. (Semester-3)

COMPUTER SCIENCE

Paper : ___III____ : Object Oriented Programming :C++

With Effect From June - 2012.

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1. Introduction
    - 1.1 Introduction to Object Oriented Programming.
    - 1.2 C++ fundamentals.

2. Classes and Objects
    - 2.1 Classes
    - 2.2 Constructors and destructors
    - 2.3 Inline functions
        - 2.3.1 Defining inline functions within a class.
    - 2.4 Friend functions and classes.
    - 2.5 Static class members.
        - 2.5.1 Static data members and member functions.
    - 2.6 Local and nested classes.
    - 2.7 Passing objects to functions and returning objects from function.
    - 2.8 Object assignment.

3. Arrays, Pointers, References and the Dynamic Allocaton Operators.
    - 3.1 Array of objects
    - 3.2 References
    - 3.3 Dynamic allocation operators.
    - 3.4 Pointers to objects
    - 3.5 this pointer

4. Function overloading, copy constructors and Default arguments.
    - 4.1 Function overloading.
    - 4.2 Overloading constructor functions
    - 4.3 Copy constructors
    - 4.4 Default function arguments
5. Opertor overloading
    - 5.1 Creating a member Operator Function

5.2 Operator overloading using friend functions
5.3 Overloading new and delete
5.4 Overloading some special operators.

6. Inheritance
   6.1 Base class Access control
   6.2 Inheritance and protected members
   6.3 Inheriting multiple base classes.
   6.4 Constructor destructors and inheritance
   6.5 Virtual base class
7. Virtual functions and polymorphism
8. Templates
   8.1 Generic functions
   8.2 Applying generic functions
   8.3 Generic classes.
9. Exception handling
   9.1 Exception handling Fundamentals.
   9.2 Handling derived class exceptions.

10. I/O system
    10.1 Streams and stream classes.
    10.2 formatted I/O
    10.3 File I/O
        10.3.1 Opening and closing files.
        10.3.2 Reading and writing text files.
        10.3.3 Unformatted and binary I/O.

Recommended Reference Books :-

1. The complete reference C++ : Herbert Schildt, TMH.
2. Object Oriented Programming in C++ : Robert Lafore - Galgotia Publication.
3. C++ : Effective Object Oriented Software Construction - Kayshav Dattari.
4. Object Oriented Programming using C++ - Addition Wesley.
5. Object Oriented Programming in C++ - Balaguruswamy.

NOTE : Practical shall be based on the above syllabus.

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Syllabus for S.Y. Bsc. (Semester-3)

COMPUTER SCIENCE

Paper _IV_____ : Visual Basic.NET

With Effect From June - 2012.

SUBJECT: Visual Basic .Net

1. **OVERVIEW OF MICROSOFT .NET FRAMEWORK**
   - 1.1. What is .net framework & its benefits
   - 1.2. The Common Language Runtime(CLR), Purpose of CLR
   - 1.3. Managed/Unmanaged code, Compilation & Exception
   - 1.4. Memory Management, Garbage Collection
   - 1.5. The .Net Framework Class Library.
   - 1.6. .NET Web Services
   - 1.7. Introduction to Ms Visual Studio .NET

2. **VB.NET PROGRAMMING LANGUAGE**
   - 2.1. Data Types, Types Conversion Functions, Operator & Exceptions
   - 2.2. Variable Declaration : Level, Lifetime, Scope & Accessibility
   - 2.3. Array : Single, Multidimensional, Jagged Array
   - 2.4. Collections, User-Defined Data types
   - 2.5. Decisions Structures
   - 2.6. Loop Statements: While, Do…. Loop, For…Next, For….Each…Next, With..End With
   - 2.7. Nested Control Statements, Exit & End Statements
   - 2.8. Procedures

3. **DESIGNING USING INTERFACE**
   - 3.1. Working with Forms
   - 3.2. Basic Windows Controls
   - 3.3. Menus, Timer, Common dialog control, Rich Textbox
   - 3.4. Treeview & Listview controls, Toolbar, Statusbar
   - 3.5. SDI & MDI Application

4. **OBJECT ORIENTED PROGRAMMING**
   - 4.1. Classes : Methods, Properties, Fields, Events
   - 4.2. Overloading
   - 4.3. Constructor & Destructor
   - 4.4. Creating & Using Objects, Managing Groups of Objects
   - 4.5. Abstraction, Encapsulation & Polymorphism

5. **DATA ACCESS**
   - 5.1. History of Microsoft Data Access Technologies
   - 5.2. Overview of ADO.NET
   - 5.3. The Server Explorer & Query Builder
   - 5.4. ADO.NET Object Model

5.5. Programming ADO.NET-provider, Adapter, Reader, command objects

6. EXCEPTION HANDLING

6.1. Error in Programming
6.2. Exception Handling Overview
6.3. Structures Exception Handling
6.4. Programmer – Defined Exception Class
6.5. On Error statement
6.6. Debugging

7. MULTITHREADING

7.1. Introduction to Thread
7.2. Life Cycle of a Thread
7.3. Creating Multithreading application
7.4. Thread Priorities & thread Scheduling
7.5. Thread Synchronization

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Reference Books :-

1. Mastering Visual Basic.NET
By Evangelos Petroutsos - BPB
2. Professional VB.NET 2003, 2004 Edition
By Bill Evjen, Billy Hollis, Rockford Lhotka et al. - Wrox, Wiley dreamtech
3. Visual Basic.NET Programming Bible
By Bill Evjen, Jason Beres et al.-Wlley dreamtech
4. Visual Basic.NET How to program, second Edition
By H. M. Deitel, P.J. Deitel, T. R. Nieto-Person Education(Low Price Edition)
5. Database Access with Visual Basic.NET, Third Edition.
By Jeffrey P. Mc Manus, Jackie Goldstein - Person Education (Low Price Edition)

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Syllabus For S.Y. Bsc. COMPUTER SCIENCE

Paper V : Relational Database Management System -I

With Effect From July - 2012.

1. Introduction to DBMS

- 1.1 What is database?
- 1.2 Requirement of database system.
- 1.3 Data models and data independence
- 1.4 DDL, DML
- 1.5 Database Manager, Database Administrator.

2. Entity Relationship Models

- 2.1 Entities and Entity sets
- 2.2 Relationship and relationship sets
- 2.3 Mapping constrains
- 2.4 Primary keys
- 2.5 Entity Relationship diagram and reducing it to tables.
- 2.6 Generation and Specialization.
- 2.7 Aggregation

3. Relational Model

- 3.1 Structure of relational database.
- 3.2 Relation algebra.

4. Introduction to other models

- 4.1 Network Model
- 4.2 Hierarchical Model

5. Relational Database Design

- 5.1 Functional Dependencies
- 5.2 Referential Intergrity
- 5.3 Need for Normalization
- 5.4 Normal forms
- 5.5 Data Dictionary
- 5.6 Tables, Table spaces & Data files, Views.

6. SQL Queries:

- 6.1 Overview of SQL
- 6.2 Various types of data, conventions and terminology
- 6.3 Retrival of information from tables. :

  Making a query, SELECT command, column recordering, Use of relational operators, use of Boolean operators, operations like IN, BETWEEN, LIKE,

NULL, NOT etc., Aggregate functions, COUNT, GROUP By clause, HAVING clause.

6.4 Formatting Query output :

String and expressions, Ordering output by fields, multiple columns, Aggregate Group, Column number, ORDER BY, with NULL.

6.5 Querying multiple tables :

Joining tables through Referential Intergrity, Equijoins and other kinds of joins, joins of more than two tables, Joining a table to itself.

6.6 Subqueries :

DISTINCT with subqueries, Predicates with subqueries, Aggregate Functions in subqueries, Correlated subqueries, Correlating tables to itself, Correlated subqueries in HAVING, Correlated subqueries and joins EXISTS operator, using EXISTS with Correlated subqueries, combining EXISTS and joins, special operator ANY or SOME, ALL, UNION classes.

6.7 Entering Deleting and Changing Field Values :

DML Update command, UPDATE with multiple columns, UPDATing to NULL values, INSERT command, using subqueries with UPDATE commands.

6.8 CREAT TABLE Command :

Indexing, Altering a table, Dropping a table, Constraining a Table, Declaring Constraints, PRIMARY KEY constraint, Foreign and Parent keys, Multicolumn Foreign keys, FOREIGN KEY constraint, Foreign key restrictions.

6.9 CREAT VIEW Command :

Updating views, Group views and Joins, Views and subqueries, Changing values through views, Grant command, using ALL and PUBLIC arguments, GRANT OPTION.

Recommended Reference Books :

1. Henry Kroth & Silbershats, Database System Concept.
2. C.J. Date, Introduction to Database Design, Addition Wesley, Nasora.
3. Martin Gruber, Understanding SQL, BPB Pub., New Delhi.
4. Ivan Baross, SQL, PL/SQL The Programming Language of ORACLE, BPB Pub., New Delhi.
5. James Martin, Computer Database Organization, PHI, New Delhi.
6. J Ullman, Principles of Database Systems, Galgotia Pub., New Delhi.
7. ORACLE Manuals.
8. SQL Manuals
9. George Koch and Kevin Loney<ORACLE 8 The Complete Reference, ORACLE Press, TMH, Delhi.
10. Oracle PL/SQL programming - Oracle press - Tata Megrawhill.
11. Microsoft Sql server - pretince hall of India.

Teaching Scheme for 3rd Semester B Sc (Computer Science)

Paper No and title	Teaching Schedule Theory Hrs	Practical Hrs
III : Object Oriented Programming C++	2	2
IV : VB .NET	2	2
V : Relational Database Management System -1	2	2