VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 701
Paper Title : Advanced Programming Environment – I. (.Net & C#)

[L : 4, P : 0 Hrs]

1 .NET Architecture.

2 Introduction to C#
2.1 The development of C#
2.2 Comparison with C, C++, VB, and Java

3 C# Language
3.1 Data Types
3.2 C# Predefined Types
3.3 Complex Types
3.4 Variables
3.5 Constants
3.6 Operators
3.7 Flow Control
3.8 Program Structure

4 Object Oriented C#
4.1 Method Overloading
4.2 Construction & Disposal
4.3 Operator Overloading
4.4 Indexers
4.5 Interfaces
4.6 Collections

5 Exception & Error Handling

6 Delegates

7 Events

8 C# Preprocessor Directives

9 Assemblies, Threads, and AppDomains

9 C# & Windows Forms

Main Readings :

1. C# and the .NET Platform – Andrew Troelsen – a! Press
2. Professional C# - Wrox

Supplementary Readings :

1. C# The Basics – Vijay Mukhi
2. C# Essentials – Ben Albabari
3. C# The Nuts & Bolts – Akash Sarat & Sonal Mukhi
4. C# Made Simple – BPB Publication

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 702
Paper Title : Advanced Programming Environment – II. (VB.NET & ASP.NET)

1. **VB .NET Programming Basic**
   - 1.1. Working with Data Structures,
   - 1.2. VB.NET Controls, VB.NET Events
   - 1.3. Building Windows Applications
   - 1.4. Sub Procedure, Functions, Arrays, Timers, Files, Printing
   - 1.5. Displaying Dialog Boxes, Multiple forms, Standard Modules, Menus
2. **Advanced Object-Oriented Techniques**
   - 2.1. Classes, Objects, Inheritance, Containment,
   - 2.2. Event Handling, Delegates, Interface.
   - 2.3. Interacting with objects, early – late binding
3. **Debugging and Error Handling.**
4. **Interacting with Input/Output files.**
   - 4.1. Directories, Files, Path
   - 4.2. DirectoryInfo, FileInfo Classes, Streams, etc.
5. **Accessing Databases with SQL Server and ADO.NET**
   - 5.1. ADO.Net Important components, Providers
   - 5.2. Structure & working with DataSet.
   - 5.3. Using DataSet & DataViews.
6. **Building Class Libraries, Your Own Custom Controls & Programming Custom Graphics**
7. **Programming ASP .NET with VB.NET**
   - 7.1. Constants, Variables, Data types, Operators.
   - 7.2. Control Structure & Procedural Programming.
   - 7.3. How dynamic Website Application works
   - 7.4. Processing of ASP.NET Application.
   - 7.5. The Common Language Runtime (CLR).
8. **Event driven Programming and Postback.**
   - 8.1. ASP.NET Events, HTML Events.
   - 8.2. Server Control Events in ASP.NET.
   - 8.3. Event Driven Programming and Postback.
9. **Objects & Components in ASP.NET.**
   - 9.1. Namespace, Page Class
   - 9.2. Request Object, Response Object
   - 9.3. Server Object, Components & Control
   - 9.4. State Handling
     - 9.4.1. Session State, Cookies
   - 9.5. Scripting Object Model

10. Objects & Structured Data

10.1. Collection, types of Collection, Arrays as Collection
10.2. Array list
10.3. Hash table, Sorted List

11. Web Services and ASP.NET

11.1. Web Service Development
11.2. WSDL & SOAP
11.3. Web Services Background

12. Reading & Manipulating with Data Source

12.1. ADO .NET
12.2. ADO .NET Object
12.3. Connection, Command, Data Reader, Data Set, Data Table, Data Row Object.
12.4. Disconnected Data.
12.5. Methods for Updating Data.
12.6. Data Adapter Command.

13. ASP .NET Server Controls

13.1. Rich Object Model.
13.2. Automatic Browser Detection.
13.3. Properties, Events.
13.4. Page Lifecycle

Main Readings:

1. Beginning VB.Net – Wrox.
2. Visual Basic .Net Programming. – Dreamtech. - Peter Aitken's
3. Beginning ASP.NET using VB.NET – Wrox.
4. Visual Basic .NET Object Oriented Programming – Techmedia – New Riders.

Supplementary Reading:

1. Visual Basic .Net Programming Black Book. – Dreamtech.
2. VB.NET Programming Developer's Guide. – Dreamtech.
3. Visual Basic .Net Programming Little Black Book. – Dreamtech. – Steven Holzner
4. Programming VB.NET A guide for Experienced Programmers.– Apress – Cornell and Morrison.
5. Visual Basic .Net Projects. – Dreamtech. – Martin
6. Developing Web Applications with Visual Basic .Net and ASP.Net. – Dreamtech.
7. Starting out with Visual Basic .NET Programming 2nd Edition. – Dreamtech. – Tony Gaddis, Kip Irvine, Bruce Denton.
8. Visual Basic.NET Developer's Headstart. – TMH. – Jeffrey Shapiro
9. Professional VB.NET – Wrox.
10. Visual Basic .NET Unleashed. – Techmedia. – Sams.
11. Visual Basic .BET Progrmmer's Guide: The Base Class Library. – Techmedia – Sams.
12. VB to VB.Net – Techmedia. – Sams.
13. Professional ASP.NET – Wrox.
14. ASP.NET Programmer's Reference – Wrox
15. ADO.NET Programmer's Reference – Wrox.
16. Magic of ASP.NET with C# - Firewall Media – Kumar Sanjeev, Shibi Panikkar
17. Special Edition Using ASP.NET –Pearson Education – Richard Leinecker.
18. ASP.NET A Beginner's guide – TMH – Dave Mercer.
19. ASP.NET Unleashed. – Techmedia – Sams.
20. ASP.NET for Developers – Tecmedia – Amundsen.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 703
Paper Title : Software Engineering.

1. **Software Matrix & Project Planning**
   - 1.1. Software Measurements.
   - 1.2. Metrics for Software Quality.
   - 1.3. Project Planning Objectives.
   - 1.4. Software Scope, Resources.
   - 1.5. Decomposition Techniques.
   - 1.6. Empirical Estimation Model.
   - 1.7. Make-Buy Decision.

2. **Risk Management**
   - 2.1. Software Risk & Risk Identification
   - 2.2. Risk Identification, Projection, Migration, Monitoring, Management.

3. **Project Scheduling & Tracking**
   - 3.1. Relationship between People & Effort.
   - 3.2. Defining a Task set for the Software Project.
   - 3.3. Selecting & Refining Software Engineering Tasks.
   - 3.4. Scheduling.

4. **Software Quality Assurance**
   - 4.1. Software Quality & Assurance.
   - 4.2. Software Review.
   - 4.3. Formal Technical Review.
   - 4.4. Software Quality Metrics.
   - 4.5. Formal Approaches to SQA.
   - 4.6. Software Reliability.
   - 4.7. ISO 9000 Quality Standards
     - 4.7.1. ISO Approach to Quality Assurance systems
     - 4.7.2. The ISO 9001 Standards.

5. **Object Oriented Concepts & Principles**
   - 5.1. Object Oriented Paradigm & Concepts
   - 5.2. Identifying the elements of an Object Model
   - 5.3. Management of Object Oriented Software Projects

6. **Object Oriented Analysis & Design**
   - 6.1. Domain Analysis
   - 6.2. Generic Components of the OO Analysis & OOA Process.
   - 6.3. Object Relationship Model, Object Behavior Model.
   - 6.4. Generic Components of the OO Design & System Design Process.
   - 6.5. Object Design Process & Design Pattern.

Main Readings :

1. Software Engineering A practitioner's approach - Roger S Pressman - McGraw Hill
2. Object Oriented Modeling Design – James Rumbaugh, Michael Blaha – PHI
3. An Integrated Approach to Software Engineering - Pankaj Jalote - Narosa Pub.

Supplementary Readings :

1. Software Engineering Concepts - Fairley R E - Mc-Graw Hill
2. Software Engineering - Lewis T G - Mc-Graw Hill
3. Fundamentals of Software Engineering – Carlo Ghezzi
4. IEEE standard for software user documentation, std 1063-1987
5. Software Engineering- A programming approach, D. Bell, I. Morrey, PHI

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 704
Paper Title : Operation Research.

1. Linear Programming
- 1.1 Formulation of L.P.P.
- 1.2 Solution Methods
  - 1.2.1 Graphical Method
  - 1.2.2 Simplex Method
  - 1.2.3 Two Phase Method
  - 1.2.4 Big-M Method

2. Special cases of L.P.P.
- 2.1 Transportation Problem
- 2.2 Assignment Problem

3. Job Sequencing
- 3.1 Processing n jobs through 2 machines
- 3.2 Processing n jobs through 3 machines
- 3.3 Processing 2 jobs through m machines
- 3.4 Processing n jobs through m machines

4. Inventory Problem
- 4.1 Introduction to Inventory
- 4.2 Deterministic Inventory models
- 4.3 Dynamic Inventory models

5. Network Analysis
- 5.1 PERT
- 5.2 CPM

Main Readings :

1. Hiller F.S. & Liberman G.J. - Introduction to Operations Research, 2nd Edn. - Holand Day Inc. London, 1974
2. Tara H.A. - Operation Research, 3rd Edn. - McMillan Publishing Company, 1982

Supplementary Readings :

1. Beightler C.S. & Phillips D.T. - Foundation of Optimization - Prentice Hall, 1979
2. McMillan claude Jr. - Mathematical Programming, 2nd Edn. - Wiley Series, 1979
3. Gillett B.G. - Introduction to Operation Research - A Computer oriented Algorithmic approach - McGrow Hill Book Comp., 1976
4. N.S. Kambo - Mathematical Programming Techniques. - East-West Press, New Delhi, 1991

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 705
Paper Title : Seminars.

[P : 2 Hrs]

Students will be required to prepare and present Seminars.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper No : 706
Paper Title : Project.

[P : 12 Hrs]

Project will be required to undertake project work.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
M.Sc. (Information Technology)
Semester - VII

Paper Sr. No.	Paper Title	Teaching Schedule (Hours/Week) Lect	Prac	University Exam Theory / Practical Duration | Hrs.	Marks	Internal Exam Theory / Practical Duration | Hrs.	Marks	Total Theory / Practical
701	APE – I	4	-	3	70	2	30	100
702	APE – II	4	-	3	70	2	30	100
703	Software Engineering	4	-	3	70	2	30	100
704	Operation Research	4	-	3	70	2	30	100
705	Seminars	-	2	-	35	-	15	50
706	Project	-	12	-	140	-	60	200
Total			30		455		195	650

APE – Advanced Programming Environment