6.1   .NET   PROGRAMMING

L   T   P
Periods/ Week   4   -   4

RATIONALE

VB .NET is the visual programming technique based on Object Oriented Concepts. This subject will give the students an in-depth understanding the features of VB .NET. The practical exercise of VB.NET during the course of study will reinforce the understanding of the subject.

DETAILED CONTENTS

1.   Introduction to Microsoft. Net Framework   (08 Periods)

Introduction to .NET framework, Feature, Architecture and component of .Net, Common Language Runtime (CLR), Common Type System (CTS), Common Language Specifications (CLS), Microsoft Intermediate Language (MSIL), Just In Time Compiler, Common IDE for all languages, Creating Applications, Building Projects Using simple components, Running VB .NET applications.

2.   Concepts Oops Using of C#   (10 Periods)

Overview of C#, Data Type: Primitive and Reference, Type Conversion, Type Conversion Function, Boxing Un-boxing, Controlling the flow in C#, Class & Object, Function, Function Call and Arguments, Inheritance, Function Overloading, Overriding, Static Members, Final Members, Exception handling, Garbage Collection: Finalize and Dispose, Multithreading: Thread States, Lifecycle of a Thread, Abstract Class, Interface, Data structures: Array, String, String Buffer, Arraylist, Hashtable.

3.   Server Programming Concepts   (10 Periods)

Introduction to client server architecture, Introduction ASP .Net, Design ASPX Pages, Web forms, Web Controls: Properties and Layout, Event Handling, Designing CSS, Using CSS in Web Page, Designing Custom & User Control, View State, Control State, Session State, Application State, ASP.Net Validators, Get and Set Properties.

4.   Database Programming   (10 Periods)

Database Programming with ADO.Net, Object Linking and Embedding, Database Connections, Data access techniques, ADO.NET Objects, Development of 3 Tier Architecture Web Application, LINQ to SQL & ADO.NET, Write XML Schema, XML Attributes, Creating & Accessing XML Files, LINQ Queries, LINQ and the Standard Query Operators, Programming with LINQ, Programming with LINQ to XML, LINQ to SQL Queries, LINQ over Datasets, Interoperating with ADO.NET.

5.   Client-side Scripting: (Using Java Script)   (08 Periods)

Introduction to JQuery, Creating User Interface, JSON Syntax, JSON Encoding/Decoding, Server-Side JSON Tools, JSON verses XML, Getting Data from the Server, Defining HTTP Handlers and Module.

6.   Web services, WCF   (10 Periods)

Development & consuming web services, WCF Services, Fundamentals WCF Concepts, Creating a New Service, Generating a Service and Client Proxy, Hosting a service in IIS, Messaging protocol, WCF Contracts and Serialization, Service Contracts, Approaches to Serialization, Web Service Bindings, Object Oriented Bindings, One way and Duplex Communication, Large Message Transfers, Hosting Features, Hosting in IIS, WCF Exception Handling.

7.   Reporting Services   (08 Periods)

Understanding SSRS, Configure Report Server, Using Report Wizard, Building a Matrix Report, Client and Server Side Reports, Parameterize Reports, Using Bars, Charts and Maps in Report, Deploying and Administering SSRS, Data Bars and Indicators, Using Report Builder.

LIST OF PRACTICALS

1.   Exercise on OOPS Using C#.

2.   Exercise on Design and Development of Web Pages using ASP.NET.

3.   Development & Integration of Web Applications Development using ASP.NET

4.   Exercise on ADO.NET and LINQ.

5.   Exercise on Design and Development of Reports using ASP.NET

6.   Exercise on Web Page Development using Ajax.

7.   Exercise on Web Services and Windows Communication Foundation.

8.   Exercise on Testing and Debugging Web Application.

9.   Exercise on Reporting Services.

10.   Perform Testing on Web Application.

INSTRUCTIONAL STRATEGY

.NET being a new technology subject, the teacher should lay considerable emphasis on providing various examples while imparting instructions to the students. Practice exercises will reinforce understanding of various features of this language and will develop requisite abilities to develop programs.

RECOMMENDED BOOKS

1. Beginning ASP.NET 4: in C# by Imar Spaanjaars Wrox Professional, Wiley Dreamtech India (P) ltd New Delhi.
2. Beginning Microsoft Visual C# 2008 by Karli Watson, Christian Nagel, Jacob Vibe Hammer, Jon D. Reid, Morgan Skinner, Eric White Wrox, Wiley Dreamtech India (P) ltd New Delhi.
3. Beginning C# 3.0: An Introduction to Object Oriented Programming by Jack Purdum, Wrox, Wiley Dreamtech India (P) ltd New Delhi.
4. Beginning JavaScript for Web Developers, 3rd Edition Nicholas C. Zakas Wrox, Wiley Dreamtech India (P) ltd New Delhi.
5. Beginning Ajax with ASP.NET By Wallace B. McClure, Scott Cate, Paul Glavich, Craig Shoemaker Wiley Dreamtech India (P) ltd New Delhi.
6. Beginning LINQ by Scott Klein Wrox, Wiley Dreamtech India (P) ltd New Delhi.
7. Beginning Microsoft SQL Server 2008 Reporting Services by Paul Turley, Thiago Silva, Brian M. Smith, Ken Withee Wrox, Wiley Dreamtech India (P) ltd New Delhi.
8. Beginning WCF Programming: .NET Development with the Windows Communication Foundation by Scott Klein Wrox Professional, Wiley Dreamtech India (P) ltd New Delhi.
9. Professional Microsoft SQL Server 2008 Reporting Services by Paul Turley, Thiago Silva, Brian M. Smith, Ken Withee Wrox, Wiley Dreamtech India (P) ltd New Delhi.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	08	15
2	10	25
3	10	10
4	10	20
5	08	10
6	10	10
7	08	10
Total	**64**	**100**

6.2   MULTIMEDIA APPLICATIONS

L T P
Periods/Week 4 - 3

RATIONALE

Multimedia is a new concept emerged in the recent times. Now this technology is being widely used in web pages, motion pictures and interactive presentations, animation etc. Multimedia has made a significant impact in training/education, business presentations, public information access etc. This course intends to introduce and expose multimedia technology and various factors and features of authoring software. It will also help in making the internet application richer in content and presentation.

DETAILED CONTENTS

1.   Introduction   (10 Periods)

Introduction to multimedia, hypertext, hyper graphics, animation, application in Education training, science and technology, business and games

2.   Multimedia Hardware   (10 Periods)

Multimedia PC configuration, features and specifications of sound and video Interfaces, OCR, touch-screen, scanners, digital cameras, speakers, printers, Plotters, optical disks and drives as CDROM and DVD. Multimedia Networks

3.   Data Compression   (14 Periods)

Huffman Coding, Shannon Fano Algorithm, Huffman Algorithms, Adaptive Coding, Dictionary based, Compression, Sliding Window Compression, LZW compression, Compression, Compression ratio loss less & lossy compression,

4.   Images   (10 Periods)

Multiple monitors, bitmaps, Vector drawing, lossy graphic compression, image file formats, animations Images standards, JPEG Compression, Zig Zag Coding, Multimedia Database, Content based retrieval for text and images.

5.   Audio & Video   (12 Periods)

Digital Audio concepts, Sampling Variables, Loss less compression of sound, loss, compression & silence compression, Video representation, Colors, Video, Compression, MPEG standards, MPEG Standard Video Streaming on net, Video Conferencing, Multimedia Broadcast Services, Indexing and retrieval of Video Database, recent development in Multimedia.

6.   Flash   (08 Periods)

Exploring interface, using selection and pen tools, working with drawing and painting tools, applying color, viewing and manipulating time line, time line/stage relationship, animating (frame-by-frame, twining), guiding layers, importing and editing sound and video clips in flash, importing and exporting flash files in other applications

LIST OF PRACTICALS

1.   Configuring multimedia devices to PC (Personal computer)
2.   Installing and use of various multimedia devices
3.   Scanner
4.   Digital camera, web camera
5.   Mike and speakers
6.   Touch screen
7.   Plotter and printers
8.   DVD, Audio CD and Video CD
9.   Reading and writing of different format on a frame CD
10.   Transporting audio and video files
11.   Using various features of Flash
12.   Using various features of Photo-shop/GIMP
13.   Making multimedia presentations combining Flash and Photo-shop such as
14.   Department profile, lesson presentation, games and project presentations
15.   Some working in Director and 3D Max/Blender

INSTRUCTIONAL STRATEGY

As the subject is practice oriented, more stress should be given to students to do the work practically. The features of software packages Photo-shop and Flash are to be demonstrated in class using LCD projector.

RECOMMENDED BOOKS

1.   Mark Nelson "Data Compression Book" BPB.
2.   Multimedia An Introduction by Villam Casanova and Molina; Prentice Hall of India
3.   Tay Vaughan "Multimedia, Making IT Work" Osborne McGraw Hill.
4.   Director and Lingo Bible by John and Nyquist and Rober Martin, IDG Books India Pvt. Ltd.,
5.   Mastering Macro Media Director 5 by Feudnon; BPB Publication, New Delhi
6.   Photo-shop for Windows Bible by Deke Maclelland IDG Books India Pvt. Ltd., New Delhi
7.   Multimedia Technology and Application by Hillman, Galgotia Publications, NewDelhi
8.   Flash 5 Bible by Rein Hardit, IDG Books India Pvt. Ltd.
9.   Flash 5 in easy steps by Vandome IDG Books India Pvt. Ltd.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	10	15
2	10	15
3	14	25
4	10	10
5	12	20
6	08	15
Total	**64**	**100**

6.3 DATA WAREHOUSE AND MINING

L T P
Periods/ Week 4 - -

RATIONALE

Data Mining and Warehousing enables middle and top managers to analyze data and explore relationships among the data items which helps them to take right decisions in right time. After going through this course, students can understand the concepts, functions and various techniques of data mining and warehousing and appreciate them through various case studies.

DETAILED CONTENTS

1.   Introduction to Data Mining   (8 Periods)

- What is data mining? Data mining background
- Inductive learning, statistics, machine learning
- Difference between data mining and machine learning, data mining models,
  verification model, discovery model
- Data mining problems/issues

2.   Introduction to Data Warehousing   (15 Periods)

- Concept and benefits of data warehousing, type of data, characteristics of a
  data warehouse, processes in data warehousing
- Data warehousing and OLTP systems
- The data warehouse architecture, problems with data warehousing, criteria
  for a data warehouse
- Data marks

3.   Data Mining Functions   (15 Periods)
- Classification
- Associations
- Sequential/temporal patterns
- Clustering/segmentation

4.   Data Mining Techniques   (20 Periods)
- Cluster analysis
- Induction, decision trees, rule induction
- Neural networks
- On-line analytical processing, OLAP (Online Analytical Processing) examples
- Comparison of OLAP and OLTP (Online Transaction Processing)
- Data visualization

5.   Case Studies on Data Mining Applications and recent trends in data mining
                                                                        (6 Periods)

INSTRUCTIONAL STRATEGY

As the subject is theoretical one, the concepts of data warehousing and data mining and their applications must be introduced to students with appropriate case studies and examples

RECOMMENDED BOOKS

1. Data Mining Concepts and Techniques by J. Han, M Kamber, Morgan Kaufmann, 2001, ISBN 1-55860-489-8

2. Introduction to Data Mining by Hand, Mannila, and Smyth, MIT Press, Cambrdge, MA, 2000

3. OLAP Solutions : Building Multidimensional Information Systems by Erik Thomsen, John Wiley & Sons, Inc., 1997 (ISBN 0471014931-4)

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	08	15
2	15	20
3	15	20
4	20	35
5	06	10
Total	**64**	**100**

6.4   ADVANCE WEB PROGRAMMING

L T P
Periods/Week 5 - 6

RATIONALE

This course develops competency amongst the students to design professional web sites and know how to implement different security and session management in the web site using server and client side programming using advanced java jsp and servelets. With the help of this course the student also know how to configure web server. This course is very useful in industries to develop different application.

DETAILED CONTENTS

UNIT-I: (4 Periods)

Java Beans: Introduction to Java Beans, Advantages of Java Beans

UNIT-II: (6 Periods)

Introduction to web server: Tomcat and its configuration for running Jsp and Servlet applications,difference between Web Server and Application Server

UNIT-III: (20 Periods)

Servelets: Introduction to Servelets: Lifecycle of a Serverlet,Servelet architecture,Generic Servelet and HTTP Servelet, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking.

UNIT –IV: (10 Periods)

Introduction to JSP: The Problem with Servelet,How Jsp works , Jsp syntax,Jsp development model,Expressions,directives,Scriplets and declaration,Implicit objects of Jsp,Jsp standard actions.

UNIT V: (12 Periods)

Request dispatching in Jsp: Anatomy of request processing ,Include directive and include action,passing parameter to included Jsp,Forwarding requests,Request dispatcher object.

UNIT VI: (14 Periods)

Session and thread management, Session tracking, The session API: Creating sessions ,Joining a session, Storing and Retrieving Objects from Session, Destroying Session. Threading concepts, creating threads, Default threading model, single Threaded model, multithreaded model .

UNIT VII: (6 Periods)

Introduction to Jsp custom Tags, handling Jsp Errors.

UNIT VIII: (8 Periods)

Database Access : Database Programming using JDBC, Studying Javax.sql.* package,Accessing a Database from a JSP Page

INSTRUCTIONAL STRATEGY

Advanced java is a technology which is widely used due to their excellent fecture , the teacher should give programming example of each topic so that student can easily understand the purpose of the topic . Practice exercises will reinforce understanding of various features of this language and will develop requisite abilities to develop programs, websits and applications   .

LIST OF PRACTICALS

1.   Exercise on implementing java beans .
2.   Installation and Configuration of tomcat for web development.
3.   Exercises on sending and reading parameter using servlets
4.   Exercises on handling http request and response.
5.   Exercises on cookies using servlets
6.   Exercises on session tracking using servlets
7.   Exercises on Expressions,directives,Scriplets of jsp
8.   Exercises on request dispatching in jsp
9.   Exercises on jsp session tracking
10.   Exercises on custom tag
11.   Exercises on jsp error handling
12.   Exercises on database access with the help of jsp and servlets
13.   Develop application (project) using jsp or servlet

RECOMMENDED BOOKS

1.   Beginning JSP 2.0 , Ben Galbraith, Peter Den Haan, Lance Lavandowska, sathya
        narayana. A Press (shroff publishers and distributors pvt ltd)
2.   Complete Reference JSP, Jim Keogh , Tata Mc Graw- Hill edition
3.   Pure Java Server Pages , James GoodWill, Tech Media
4.   Inside Servlets Dustine R. Callway
5.   Developing Java Servlets James Goodwill

6. Web programming building internet applications, Chris Bates 2nd edition, WILEY Dreamtech
7. Professional JSP Wrox press
8. Complete reference JSP , Tata Mc Graw- Hill edition
9. Java Server Pages –Hans Bergsten, SPD O'Reilly
10. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	04	05
2	06	10
3	20	25
4	10	15
5	12	15
6	14	10
7	06	10
8	08	10
Total	**80**	**100**

6.5   MOBILE COMPUTING

L T P
Periods/Week 4 - -

RATIONALE

The concept of wireless communication technologies and the proliferation of portable computing devices have made possible a mobile computing era in which users, on the move, can seamlessly access network services and resources, from anywhere and at anytime. This course provides an introduction to the fundamentals of mobile computing. A background in computer networks and wireless communication is required.

DETAILED CONTENTS

1.   Introduction   (08 Periods)

Evolution of wireless networks, wireline and wireless data networks, advantages of mobile computing, networks, middleware and gateways, application, services and security   , Evolution of mobile communication system, paging system

2.   Mobile Computing Architecture   (10 Periods)

3-tier architecture, design considerations for mobile computing, mobile computing through internet, FDMA, TDMA, CDMA, SDMA

3.   Cellular Networks   (10 Periods)

GSM principles and architecture, GPRS architecture, EDGE,2G cellular network,2.5 G wireless network, HSCSD,UMTS, 3G, CDMA Technologies

4.   System design fundamentals   (10 Periods)
Frequency reuse ,channel alignment strategies ,handoff strategies ,interference and system capacity, improving converge and capacity in cellular system ,parameters for mobile multipath channel, small scale fading

5.   Wireless System and Standards   (15 Periods)

Difference between wireless and wired telephone network, ISDN, development of wireless network, Bluetooth, RFID, IEEE 802.11.a/b/g/n, Mobile IP, IPV6, JAVA Card, Features of WIMAX,CDMA digital cellular standard

6.   Wireless Application Protocol (WAP)   (06 Periods)
WAP, MMS, GPRS Applications

7.   Operating Systems for Mobile Devices   (05 Periods)

Design constraints in applications for handheld devices, palm and symbian OS features and architecture, introduction to J2ME technology

INSTRUCTIONAL STRATEGIES

Since the subject is comparatively new and the students are required some background of other subjects like computer networks and wireless communication. So while explaining of concepts, real-time examples and case studies may be used. In addition, institute may arrange visits to places

RECOMMENDED BOOKS

1. Mobile Computing by Hansman; Wiley India Publications

2. Mobile Computing : Technology, Applications and Service Creation by Asoke K. Talukdar and Roopa R. Yavagal, Tata McGraw Hill Education Pvt Ltd , New Delhi

3. Handbook of Wireless Networks and Mobile Computing by Stojmenovic, Wiley India Pvt Ltd. Daryaganj, New Delhi

4. Wireless Communication: Principles and Practice by Theodok S. Rappaport, Pearson Education Asia, 2nd Edition.

5. Principles of Mobile Computing by Owe Hansman, Lothar Merk, Martin S Nicklous and Thomas Stober, Springel-Verlag, 2nd Edition, 2003, New Delhi.

6. J. Schiller, Mobile Communications, Addison Wesley.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Periods)	Marks Allotted (%)
1	08	10
2	10	15
3	10	20
4	10	15
5	15	20
6	06	10
7	05	10
Total	**64**	**100**

6.6   EMPLOYABLE SKILLS

L T P
Periods per week   -   -   4

RATIONALE

Diploma holders are required to not only possess subject related knowledge but also soft skills to get good jobs and to rise steadily at their workplace. This subject is included to develop employability skills amongst the students

DETAILED CONTENTS

1.   Industrial Scenario Engineering Education and expectations of competences from an engineer by employer   (04 period)

2.   Personality types, characteristic and features for a successful engineer

(04 period)

3.   Professional Engineer desirable values and ethics and their development. Relation between engineering profession, society and environment   (04 period)

4.   Managing project   (16 period)

- Leadership
- Motivation
- Time management
- Resource management
- Computer Software
- Interpersonal relationship
- Engineer economics and fundamentals

5.   Effective Communication   (08 period)

- Listening
- Speaking
- Writing
- Presentation Technique/Seminar
- Group discussion

6.   Preparing for Employment   (08 period)

- Searching for job/job hunting
- Resume Writing
- Interview technique in personal interview telephonic interview, panel interview, group interview, video conference

7.   Managing Self   (06 period)

- Managers body, mind, emotion and spirit
- Stress Management
- Conflict resolution

8.   Continuing professional development   (04 period)

- Organising learning and knowledge
- Use of computer for organising knowledge resource

9.   Creativity, Innovation and Intellectual property right   (06 period)

- Concept and need in present time for an engineer

10.   Basic rules, laws and norms to be adhered by engineers during their working   (04 period)

6.7   MAJOR PROJECT WORK

L   T   P
Periods/Week -   -   6

RATIONALE

Major Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The students should identify themselves or accept the given project assignment at least two to three months in advance. The project work identified in collaboration with industry should be preferred. Each teacher is expected to guide the project work of 5–6 students.

The project assignments may consist of:

- Repair, maintenance and installation of computer systems, peripherals and softwares

- Programming customer based applications/Inventory control

- Dynamic website using ASP, JSP and PHP

- Database applications

- Establishment and repairing of LAN in lab.

- Software development module for administration and banking payroll system

- Troubleshooting of computer systems, peripherals and devices

- Application development using sewelet, session tracking online module

- Projects related to Multimedia

- Projects related to Computer Graphics

- Web Hosting

- Configuration of Network Operating System(Windows, Linux)

- Configuration of servers (Proxy, DNS etc)

A suggestive criteria for assessing student performance by the external (personnel from industry) and internal (teacher) examiner is given in table below:

Sr. No.	Performance criteria	Max.** marks	Rating Scale				
			Exce-llent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10	10	8	6	4	2
2.	Planning and execution of considerations	10	10	8	6	4	2
3.	Quality of performance	20	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20	20	16	12	8	4
5.	Sense of responsibility	10	10	8	6	4	2
6.	Self expression/ communication skills	5	5	4	3	2	1
7.	Interpersonal skills/human relations	5	5	4	3	2	1
8.	Report writing skills	10	10	8	6	4	2
9.	Viva voce	10	10	8	6	4	2
	Total marks	**100**	**100**	**80**	**60**	**40**	**20**

The overall grading of the practical training shall be made as per following table

	Range of maximum marks	Overall grade
i)	More than 80	Excellent
ii)	79 <> 65	Very good
iii)	64 <> 50	Good
iv)	49 <> 40	Fair
v)	Less than 40	Poor

In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance of undergoing 8 -10 weeks of project oriented professional training in the same industry and re-evaluated before being disqualified and declared "not eligible to receive diploma ". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

Important Notes

1. **This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.**

2. **The criteria for evaluation of the students have been worked out for 100 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.**