DCA

NIELIT – O LEVEL

Internationally & Nationally Recognised Course

10+2 to MCA in just 3 years and 3 steps only...

through

RAJIV SANGAM

NIELIT

AICTE approved & MCIT GOVT. recognised Courses

* Nationally & Internationally recognized courses
* Recognized to get Jobs in Govt., MNCs, Banks etc.
* Recognized to get H1-B Visa

DIPLOMA IN COMPUTER APPLICATIONS

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POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

MCA -18 Months

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Vijay Computer Academy

Since 1990

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About NIELIT
National Institute of Electronics and Information Technology

NIELIT is an autonomous scientific society of the Department of Information Technology, Ministry of Communications & Information Technology, Govt. of India. The Society is registered under the Societies Registration Act, 1860. NIELIT is the only professional examination body in India, which accredits institutes / organizations for conducting particular course, specializing in the nonformal sector of IT education.

The office of the Society is situated at Electronics Niketan, 6, CGO Complex, New Delhi – 110 003 and number of counseling centers are situated in important cities in the country.
NIELIT is envisioned being a premier knowledge institution pursuing human resource development activities in areas of Information Technology, Electronics and Communication Technology (IECT).

NIELIT’s holistic quality policy entails offering its courses through painstakingly screened accredited institutes to ensure seriousness at both the institute and individual level. There are more than 800 centers are in all over India. These Centres provide quality education & training programmes in Information, Electronic Design and related technologies/areas on long term and short term basis.

NIELIT SCHEME

NIELIT is a joint Scheme of the Ministry of Communications & Information Technology, Department of Information Technology (erstwhile Department of Electronics) and All India Council for Technical Education (AICTE), Govt. of India.

Objective of the Scheme
The objective of the Scheme is to generate qualified manpower in the area of Information Technology (IT) at the national level, by utilizing the facilities and infrastructure available with the institutions/organizations in the non-formal sector.

The Society is managed and administered by a Governing Council which consists of eminent academicians and professionals from IT industry. Minister for Communications & Information Technology, Govt. of India, is the Chairman of the Governing Council of the Society. The Executive Director is the Chief Executive Officer of the Society and manages day to day affairs.

About Vijay Computer Academy

- Established since 1990
- Trained 35000+ professionals and candidates uptill now
- Accredited to run NIELIT courses since 1992
- Highly experienced and professional knowledge facilitator
- 100% placement Assistance and Career guidance
DCA - NIELIT ‘O’ LEVEL COURSE

Objective of the ‘O’ Level Course

The objective of the course is to enable a student to acquire the knowledge pertaining to fundamentals of Information Technology (IT Tools and Business Systems, Internet Technology and Web design, Programming and Problem Solving through ‘C’ Language, Application of .NET Technology, Introduction to Multimedia, Introduction to ICT Resources, a Practical and Project Work).

In order to serve the IT industry better, the NIELIT ‘O’ Level course has been designed to develop the basic skills for the above.

The career options available to a NIELIT ‘O’ level qualifiers are:

- Junior Programmer
- EDP Assistant
- Web Designer
- Lab Demonstrator
- SEO Executive
- Technical Executive
- Web Designer

NIELIT ‘O’ Level Course consists of four theory modules (three compulsory modules and one elective module), one Practical and one Project. The structure of the ‘O’ Level syllabus is indicated below:-

**NIELIT ‘O’ LEVEL COURSE STRUCTURE**

The structure of the ‘O’ Level course is:

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1-R4</td>
<td>IT Tools and Business System</td>
</tr>
<tr>
<td>M2-R4</td>
<td>Internet Technology and Web Design</td>
</tr>
<tr>
<td>M3-R4</td>
<td>Programming and Problem Solving Through ‘C’ Language</td>
</tr>
<tr>
<td>M4-R4 Elective:</td>
<td>(One Module out of the following three modules to be chosen)</td>
</tr>
<tr>
<td>M4.1-R4</td>
<td>Application of .NET Technology</td>
</tr>
<tr>
<td>M4.2-R4</td>
<td>Introduction to Multimedia</td>
</tr>
<tr>
<td>M4.3-R4</td>
<td>Introduction to ICT Resources</td>
</tr>
<tr>
<td>PR Practical</td>
<td>(Based on M1, M2, M3, M4 module syllabus)</td>
</tr>
<tr>
<td>PJ</td>
<td>Project</td>
</tr>
</tbody>
</table>
Duration of the Course : 6 months / One Year.

PRACTICAL

The students have to devote half of the total time allotted to each module of the course for the practical session. Practical assignments have been worked out for each theory module. The Practical examination will be based on the syllabi M1-R4, M2-R4, M3-R4 and M4-R4 modules of ‘O’ Level course.

PROJECT

NIELIT curriculum has a project as an important component of ‘O’ Level course. The Project is carried out by the student under guidance and support of faculty and management of the respective Institute / Organization. It is felt that such a project provides an opportunity to the student to apply his / her knowledge and skills to real life problems (including oral and written communication skills), and as such the project should be given utmost importance and priority both by the students as well as institution faculty / management in respect of its identification, planning and implementation.

Objective of the Project

The aim of the project is to give the students an additional hand-on experience in solving a real life problem by applying knowledge and skills gained on completion of theory papers in a course at a given Level. It provides an occasion for students to develop written and communication skills, Project also helps the students to realize the importance of resource and time management, ownership of task towards deliverables, innovation and efficiency in task management apart from presentation skills. It also provides a good opportunity for students to build, enhance and sustain high levels of professional conduct and performance and evolves a problem solver frame of mind in the students. It is also felt that taking up the project by a student prepares him for a job in industry and elsewhere.

O Level project submission

The Project should be original, of real life value and not copies from existing material from any other source and a certificate to this effect duly countersigned by the Supervisor will be submitted to the NIELIT Society.

At O Level, no marks are assigned to the Project. However, the candidates are expected to carry out a project successfully and submit certificate in the prescribed format from the head of the institute running the accredited course or the organization of which the candidate is an employee.
CREDIT SCHEME FOR NIELIT ‘O’ LEVEL COURSE (As per requirement of National and International standard)

Introduction

A credit system based on the AICTE norms has been introduced for indicating the efforts required to pass a specific level of course under the NIELIT Scheme. Award of credit to a student will facilitate measurement/comparison of study hours including Theory Lectures, Tutorials and Practical Assignments put in a given module/paper/subject under the Scheme with similar course in IT in India and abroad. This will also facilitate other Universities / Apex Accrediting bodies to consider academic and professional equivalence of NIELIT courses. This will also help students/organizations to transfer credits from NIELIT to other academic bodies and vice-versa for ensuring continuing education. Following table gives the no. of hours of Lectures/Tutorials and Practicals per week to be attended and the credits earned by the Student:-

Calculation of Credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>L*</th>
<th>T/P**</th>
<th>No. of Credits+</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1-R4</td>
<td>IT Tools and Business System</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M2-R4</td>
<td>Internet Technology and Web Design</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M3-R4</td>
<td>Programming and Problem Solving Through ‘C’ Language</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M4.1-R4</td>
<td>Application of .NET Technology (Elective)</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M4.2-R4</td>
<td>Introduction to Multimedia (Elective)</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M4.3-R4</td>
<td>Introduction to ICR Resources (Elective)</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total Credit</td>
<td></td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Notes

1. One credit is defined as one hour of lecture of 2 hrs. of tutorials/practicals every week for one semester consisting of 20 weeks.

2. Total No. of credits earned in a module is calculated using AICTE FORMULA (as applicable to Under Graduate Courses in IT namely C=L + (T+P)/2 where L, T and P indicate no. of hours per week for Lectures, Tutorials and Practicals.

3. The credit scheme was implemented from July, 2003 examinations.

4. Fractions in Credits have been rounded to nearest integer.
EXAMINATION PATTERN

Theory Exam : 100 Marks
   (40 Marks objectives + 60 subjective)
Practical Exam : 100 Marks
   ( 80 Marks Practical + 20 Viva)

Pass Percentage

To qualify for a pass in a module, a candidate must have obtained at least 50% in each theory and practical examination.

The marks will be translated into grades, while communicating results to the candidates. The gradation structure is as below:-

Pass percentage Grade
- Failed (<50) F
- 50%-54% D
- 55%-64% C
- 65%-74% B
- 75%-84% A
- 85% and over S

Award of Certificates

The students would be eligible for the award of ‘O’ Level Certificate on successfully qualifying the Theory Examinations of all modules, Practical Examination and the Project. The ‘O’ Level Certificate is recognized as equivalent to Foundation Level Course by the Government of India for the purpose of employment vide Notification No. 43 & 49 dated 1st March, 1995 and 10th April, 1996 respectively issued by the Ministry of HRD, Government of India.

PRACTICAL EXAMINATION SCHEME

No of Practical Examination : One
Duration of Practical Examination : Three hour duration including viva-voce
Max. Marks : 100 = 80(Practical) + 20(Viva Voce)
Grading : Marks obtained by the students will be translated into the Grades as per the structure given above.

The Practical Examination will be conducted by the Society in reputed Institutions for all candidates. The institutes are obliged to facilitate the conduct of Practical Examinations and arrange infrastructure, support of its faculty and staff for the conduct of Practical Examination at their Centre.
M1-R4: IT TOOLS AND BUSINESS SYSTEM

Objective of the Course

The goal of this course is to present overview of IT tools used in day to day use of computers and data base operations. The Course has been designed to provide knowledge on various hardware and software components of computer, operating system, various packages used for different applications, data base concepts & operations and various issues related to IT and application of IT.

At the end of the course the students will be able to:-

- Acquire the foundation level knowledge required to understand computer and its operations.
- Understand the hardware and software components of the computer.
- Understand the basic concept of operating system and get knowledge about various different operating systems.
- Understand to use the packages of word processing, spreadsheet and presentation in detail.
- Understand various data base concepts and operations.
- Understand the issues related to IT and IT applications.

Outline of Course

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Topic</th>
<th>Minimum number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Computer Appreciation</td>
<td>04</td>
</tr>
<tr>
<td>2.</td>
<td>Computer Organization</td>
<td>06</td>
</tr>
<tr>
<td>3.</td>
<td>Operating System</td>
<td>13</td>
</tr>
<tr>
<td>4.</td>
<td>Word Processing</td>
<td>06</td>
</tr>
<tr>
<td>5.</td>
<td>Spreadsheet Package</td>
<td>09</td>
</tr>
<tr>
<td>6.</td>
<td>Presentation Package</td>
<td>05</td>
</tr>
<tr>
<td>7.</td>
<td>Data Base Operations</td>
<td>13</td>
</tr>
<tr>
<td>8.</td>
<td>Information Technology and Society</td>
<td>04</td>
</tr>
</tbody>
</table>

Lectures = 60  
Practical/Tutorials = 60  
Total = 120

Detailed Syllabus

1. **Computer Appreciation**  
   Characteristics of Computers, Input, Output, Storage units, CPU, Computer System, Binary number system, Binary to Decimal Conversion, Decimal to Binary Conversion, ASCII Code, Unicode.

2. **Computer Organization**  

3. Operating System 13 Hrs.

Application Management: Installing, uninstalling, Running applications.

Linux- An overview of Linux, Basic Linux elements: System Features, Software Features, File Structure, File handling in Linux: H/W, S/W requirements, Preliminary steps before installation, specifics on Hard drive repartitioning and booting a Linux system.

4. Word Processing 06 Hrs.


5. Spreadsheet Package 09 Hrs.
Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, entering data in a cell / formula Copying and Moving from selected cells, handling operators in Formulae, Functions: Mathematical, Logical, statistical, text, financial, Date and Time functions, Using Function Wizard.

Formatting a Worksheet: Formatting Cells – changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors, Printing worksheets, Charts and Graphs – Creating, Previewing, Modifying Charts. Integrating word processor, spreadsheets, web pages.

6. Presentation Package 05 Hrs.
Creating, Opening and Saving Presentations, Creating the Look of Your Presentation, Working in Different Views, Working with Slides, Adding and Formatting Text, Formatting Paragraphs, Checking Spelling and Correcting Typing Mistakes, Making Notes Pages and Handouts, Drawing and Working with Objects, Adding Clip Art and other pictures, Designing Slide Shows, Running and Controlling a Slide Show, Printing Presentations.

7. Data Base Operations 13 Hrs.
Data Manipulation-Concept: Database, Relational Database, Integrity.
Operations: Creating, dropping, manipulating table structure.
Manipulation of Data: Query, Data Entry Form, Reports.

**8. Information Technology and Society**


**04 Hrs.**
Objective of the Course

The aim of this course is to provide you the conceptual and technological developments in the field of Internet and web designing with the emphasis on comprehensive knowledge of Internet, its applications and the TCP/IP protocols widely deployed to provide Internet connective worldwide. The World Wide Web with its widespread usefulness has become an integral part of the Internet. Therefore, this course also puts emphasis on basic concepts of web design.

At the end of the course, the students will be able to:

- Review the current topics in Web & Internet technologies.
- Describe the basic concepts for network implementation.
- Learn the basic working scheme of the Internet and World Wide Web.
- Understand fundamental tools and technologies for web design.
- Comprehend the technologies for Hypertext Mark-up Language (HTML).
- Specify design rules in constructing web pages and sites.
- Effectively deal with programming issues relating to VB Script, JavaScript, Java, ASP, Front Page and Flash.
- Figure out the various security hazards on the Internet and need of security measures.

Outline of Course

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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction to Internet</td>
<td>02</td>
</tr>
<tr>
<td>2.</td>
<td>TCP/IP – Internet Technology and Protocol</td>
<td>03</td>
</tr>
<tr>
<td>3.</td>
<td>Internet Connectivity</td>
<td>03</td>
</tr>
<tr>
<td>4.</td>
<td>Internet Network</td>
<td>04</td>
</tr>
<tr>
<td>5.</td>
<td>Services on Internet (Definition and Functions)</td>
<td>04</td>
</tr>
<tr>
<td>6.</td>
<td>Electronic Mail</td>
<td>07</td>
</tr>
<tr>
<td>7.</td>
<td>Current Trends on Internet</td>
<td>03</td>
</tr>
<tr>
<td>8.</td>
<td>Web Publishing and Browsing</td>
<td>10</td>
</tr>
<tr>
<td>9.</td>
<td>HTML Programming Basics</td>
<td>12</td>
</tr>
<tr>
<td>10.</td>
<td>Interactivity Tools</td>
<td>08</td>
</tr>
<tr>
<td>11.</td>
<td>Internet Security Management Concepts, Information Privacy</td>
<td>04</td>
</tr>
<tr>
<td></td>
<td>and Copyright Issues</td>
<td></td>
</tr>
</tbody>
</table>

Lectures = 60
Practical/tutorials = 60
Total = 120
Detailed Syllabus

1. Introduction to Internet 02 Hrs.

Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANE and Internet history of the World Wide Web, basic Internet Terminology, Net etiquette. Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

2. TCP/IP – Internet Technology and Protocol 03 Hrs.
Packet switching technology, Internet Protocols: TCP/IP, Router, Internet Addressing Scheme: Machine Addressing (IP address), E-mail Addresses, Resources Addresses

3. Internet Connectivity 03 Hrs.
Connectivity types: level one, level two and level three connectivity, Setting up a connection: hardware requirement, selection of a modem, software requirement, modem configuration, Internet accounts by ISP: Telephone line options, Protocol options, Service options, Telephone line options – Dialup connections through the telephone system, dedicated connections through the telephone system, ISDN, Protocol options – Shell, SLIP, PPP, Service options – E-mail, WWW, News Firewall etc.

4. Internet Network 04 Hrs.

5. Services on Internet (Definition and Functions) 04 Hrs.
E-mail, WWW, Telnet, FTP, IRC and Search Engine

6. Electronic Mail 07 Hrs.
Email Networks and Servers, Email protocols –SMTP, POP3, IMAP4, MIME6, Structure of an Email – Email Address, Email Header, Body and Attachments, Email Clients: Netscape mail Clients, Outlook Express, Web based E-mail. Email encryption- Address Book, Signature File.

7. Current Trends on Internet 03 Hrs.
Languages, Internet Phone, Internet Video, collaborative computing, e-commerce.

8. Web Publishing and Browsing 10 Hrs.

9. HTML Programming Basics 12 Hrs.
HTML page structure, HTML Text, HTML links, HTML document tables, HTML Frames, HTML Images, multimedia
10. Interactivity Tools
ASP, VB Script, JAVA Script, JAVA and Front Page, Flash

11. Internet Security Management Concepts, Information Privacy and Copyright Issues
M3-R4: PROGRAMMING AND PROBLEM SOLVING THROUGH ‘C’ LANGUAGE

Objective of the Course
The objectives of this course are to make the student understand programming language, programming, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the real life problem and write a program in ‘C’ language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e. developing proper algorithms.

After completion of the course the student will be able to
- Develop efficient algorithms for solving a problem.
- Use the various constructs of a programming language viz. conditional, iteration and recursion.
- Implement the algorithms in “C” language.
- Use simple data structures like arrays, stacks and linked list in solving problems.
- Handling File in “C”.

Outline of Course

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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction to Programming</td>
<td>04</td>
</tr>
<tr>
<td>2.</td>
<td>Algorithms for Problem Solving</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>Introduction to ‘C’ Language</td>
<td>04</td>
</tr>
<tr>
<td>4.</td>
<td>Conditional Statements and Loops</td>
<td>07</td>
</tr>
<tr>
<td>5.</td>
<td>Arrays</td>
<td>06</td>
</tr>
<tr>
<td>6.</td>
<td>Functions</td>
<td>06</td>
</tr>
<tr>
<td>7.</td>
<td>Storage Classes</td>
<td>03</td>
</tr>
<tr>
<td>8.</td>
<td>Structures and Unions</td>
<td>06</td>
</tr>
<tr>
<td>9.</td>
<td>Pointers</td>
<td>06</td>
</tr>
<tr>
<td>10.</td>
<td>Self Referential Structures and Linked Lists</td>
<td>04</td>
</tr>
<tr>
<td>11.</td>
<td>File Processing</td>
<td>04</td>
</tr>
</tbody>
</table>

Lectures = 60  
Practical/tutorials = 60  
Total = 120

Detailed Syllabus

1. Introduction to Programming 04 Hrs.
The Basic Model of Computation, Algorithms, Flow-charts, Programming Languages, Compilation, Linking and Loading, Testing and Debugging, Documentation

2. Algorithms for Problem Solving 10 Hrs.
Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest Common Division) of two numbers, Test whether a number is prime, Organize numbers in ascending order, Find square root of a number, factorial computation, Fibonacci sequence, Evaluate ‘sin x’ as sum of a series, Reverse order of elements of an array, Find largest number in an array, Print elements of upper triangular matrix, multiplication of two matrices, Evaluate a Polynomial
3. Introduction to ‘C’ Language
Character set, Variables and Identifiers, Built-in Data Types, Variable Definition, Arithmetic operators and Expressions, Constants and Literals, Simple assignment statement, Basic input/output statement, Simple ‘C’ programs.

4. Conditional Statements and Loops
Decision making within a program, Conditions, Relational Operators, Logical Connectives, if statement, if-else statement, Loops: while loop, do while, for loop, Nested loops, Infinite loops, Switch statement, structured Programming.

5. Arrays
One dimensional arrays: Array manipulation; Searching, Insertion, Deletion of an element from an array; Finding the largest/smallest element in an array; Two dimensional arrays, Addition/Multiplication of two matrices, Transpose of a square matrix; Null terminated strings as array of characters, Standard library string functions

6. Functions
Top-down approach of problem solving, Modular programming and functions, Standard Library of C functions, Prototype of a function: Formal parameter list, Return Type, Function call, Block structure, Passing arguments to a Function: call by reference, call by value, Recursive Functions, arrays as function arguments.

7. Storage Classes
Scope and extent, Storage Classes in a single source file: auto, extern and static, register, Storage Classes in a multiple source files: extern and static

8. Structures and Unions
Structure variables, initialization, structure assignment, nested structure, structures and functions, structures and arrays: arrays of structures, structures containing arrays, unions

9. Pointers
Address operators, pointer type declaration, pointer assignment, pointer initialization, pointer arithmetic, functions and pointers, Arrays and Pointers, pointer arrays, pointers and structures, dynamic memory allocation.

10. Self Referential Structures and Linked Lists
Creation of a singly connected linked list, Traversing a linked list, Insertion into a linked list, Deletion from a linked list

11. File Processing
Concept of Files, File opening in various modes and closing of a file, Reading from a file, Writing onto a file.
M4.1-R4: APPLICATION OF .NET TECHNOLOGY

Objective of the Course

The objective of the course is to introduce .NET technology which provides multi language environment to develop windows based software development. The focus is on

- .NET Framework
- Programming Language C#
- Visual Basic
- ASP.NET (for web application)

Outline of Course

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Topic</th>
<th>Minimum number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The .NET framework</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>C# Basics</td>
<td>11</td>
</tr>
<tr>
<td>3.</td>
<td>C# Using Libraries</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Advanced Features Using C#</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>ASP.NET 2.0</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>Introduction to Programming with Visual Basic.NET</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>File and Database Applications</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>Advanced Programming Constructs</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>.NET Architecture and Advanced Tools</td>
<td>5</td>
</tr>
</tbody>
</table>

Detailed Syllabus

1. The .NET framework 03 Hrs.

2. C# Basics 11 Hrs.
   Introduction, Data Types, Identifiers, variables & constants, C# statements, Object Oriented Concept, Object and Classes, Arrays and Strings, System Collections, Delegates and Events, Indexes Attributes, versioning.

3. C# Using Libraries 07 Hrs.
   Namespace-System, Input Output, Multi-Threading, Networking and Sockets, Data Handling, Windows Forms, C# in Web application, Error Handling.

4. Advanced Features Using C# 07 Hrs.
Web Services, Windows services, messaging, Reflection, COM and C#, localization. Distributed Application in C#, XML and C#, Unsafe Mode, Graphical Device Interface with C#, Case Study (Messenger Application).

5. ASP.NET 2.0 07 Hrs.
Features of ASP.NET 2.0, Stages in Web Forms Processing, Introduction to Server Controls, HTML Controls, Validation Controls, User control, Data Binding Controls, Configuration, Personalization, Session State, ADO.NET VB.NET programming language

6. Introduction to Programming with Visual Basic.NET 07 Hrs.
Basic Concepts and a Simple Application
Using Variables, Constants, Functions
Processing Decisions
Looping Structures and Lists

7. File and Database Applications 08 Hrs.
File Access, Dialog Boxes, Error Handling, Menus
Connecting to Databases

8. Advanced Programming Constructs 05 Hrs.
Sub Procedures, Function Procedures, Modules
Arrays, Structures, Collections

9. .NET Architecture and Advanced Tools 05 Hrs.
Object-oriented Programming
Creating Distributed Web Applications
XML and ADO.NET
Graphics, Printing, Reporting
Objective of the Course

This course aims to introduce the fundamental elements of multimedia. It will provide an understanding of the fundamental elements in multimedia. The emphasis will be on learning the representations, perceptions and applications of multimedia. Software skills and hands on work on digital media will also be emphasized. On completion of the subject, the students will understand the technologies behind multimedia applications and master the skills for developing multimedia projects. After successfully completing the module student should be able to:

- Summarize the key concepts in current multimedia technology.
- Create quality multimedia software titles.

Outline of Course

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Topic</th>
<th>Minimum number of hours</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction to Multimedia</td>
<td>08</td>
</tr>
<tr>
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<td>Video and Animation</td>
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<td>6.</td>
<td>Multimedia Authoring</td>
<td>12</td>
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</tbody>
</table>

Lectures = 60
Practical/tutorials = 60
Total = 120

Detailed Syllabus

1. Introduction to Multimedia 08Hrs.
What is multimedia, Components of multimedia, Web and Internet multimedia applications, Transition from conventional media to digital media.

2. Computer Fonts and Hypertext 10 Hrs.
Usage of text in Multimedia, Families and faces of fonts, outline fonts, bitmap fonts International character sets and hypertext, Digital fonts techniques.

3. Audio fundamentals and representations 10 Hrs.
Digitization of sound, frequency and bandwidth, decibel system, data rate, audio file format, Sound synthesis, MIDI, wavetable, Compression and transmission of audio on Internet, Adding sound to your multimedia project, Audio software and hardware.

4. Image fundamentals and representations 10 Hrs.
Colour Science , Colour, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression and File Formats :GIF, JPEG, JPEG 2000, PNG, TIFF, EXIF, PS, PDF, Basic
Image Processing [ Can Use Photoshop ], Use of image editing software, White balance correction, Dynamic range correction, Gamma correction, Photo Retouching.

5. Video and Animation 10 Hrs.

6. Multimedia Authoring 12 Hrs.
Multimedia Authoring Basics, Some Authoring Tools, Macromedia Director & Flash.
M4.3-R4: INTRODUCTION TO ICT RESOURCES

Objective of the Course

This course has been designed to provide an introduction to Computer Hardware and Networking troubleshooting & maintenance. The student will be able to troubleshoot problems of PC and replace the defected parts of the computer. Students will understand the basic networking concepts and they will be able to establish and manage small networks.

At the end of the course students will be able to:

- Assemble and disassemble a PC
- Effectively use miscellaneous utilities such as: Compression, CD writing, Antivirus etc.
- Establish and configure a small LAN
- Perform simple network administration operation

Outline of Course

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Topic</th>
<th>Minimum number of hours</th>
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<tbody>
<tr>
<td>1.</td>
<td>PC Assembly and Operation</td>
<td>15</td>
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<tr>
<td>2.</td>
<td>Miscellaneous Utilities</td>
<td>15</td>
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<tr>
<td>3.</td>
<td>Networking Concepts</td>
<td>15</td>
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<tr>
<td>4.</td>
<td>Network Administration</td>
<td>15</td>
</tr>
</tbody>
</table>

Lectures = 60  
Practical/Tutorials = 60  
Total = 120

Detailed Syllabus

1. **PC Assembly and Operation**  
   Assembly and Disassembly of PC and its various Parts, Startup Process (Booting), BIOS Setup, CMOS Setup and meaning of its various setting, Installation of Windows XP operating System, Installation of Other Software Packages such as Ms Office etc. Operation of Printer, Installation of printer driver, Backup and Restore Operations Troubleshooting PC Problems  

2. **Utilities**  
   Compression Utilities: WinZip, PKZIP, Concept of compression, Defragmenting Hard, disk using defrag, Scan Disk for checking disk space, lost files and recovery, Formatting Hard disk, Floppy Disk, Setting System Date and Time, Antivirus Package CD Writing Sofware – Nero etc.

3. **Networking Concepts**  
   What is Networking, Local Area Networking (LANs), Metropolitan Area Network (MAN), Wide Area Network (WAN), Networking Topologies, Transmission media & method of communication, Cabling: straight through and cross over, Study of components like switches, bridges, routers, Wifi router etc., communication Protocols, TCP/IP, IP addressing, MAC address, Subnetting
4. Network Administration  
15 Hrs.
Installing and configuring the network using Windows NT based System, Administration of Windows NT based network, Creation of user and groups, File Sharing, Printer Sharing