# National Vocational Certificate Level 2 in Information Technology (Web Designing and Development)

**CBT Curriculum**

NAVTTC

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# Contents

# Curriculum specification for Web Design and Development

## 1. Introduction

### The structure of this course

This curriculum comprises 9 modules. The recommended delivery time is 780 hours. Delivery of the course can therefore be full time, 5 days a week, for 6 months. Training providers are at liberty to develop other models of delivery, including part-time and evening delivery. The full structure of the course is as follow:

| Module | Theory[1] Days/hours | Workplace[2] Days/hours | Total hours |
|---|---|---|---|
| Module 1: Explain Internet Working | 16 | 9 | 25 |
| Module 2: Elaborate World Wide Web | 26 | 39 | 65 |
| Module 3: Design a Website | 40 | 95 | 135 |
| Module 4: Plan Website and Explain Software Development Life Cycle for Web Applications | 20 | 30 | 50 |
| Module 5: Use Databases in Web Development | 16 | 59 | 75 |
| Module 6: Develop Website using Client Side Scripting Languages | 20 | 80 | 100 |
| Module 7: Develop Website using Server Side Scripting Languages | 50 | 150 | 200 |
| Module 8: Design and Present  Final Project | 20 | 80 | 100 |
| Module 9: Perform Duties and Exhibit rights at the workplace | 30 | 0 | 30 |

This is a curriculum of website designing and development programme which has been developed for implementation throughout Pakistan. This curriculum for web design and development provides stakeholders with guidance on how to design and develop dynamic websites.

**Main objective of this course**

The overall objective of this programme is to produce employable web designers and web developers who can provide website designs and development services in nearly any industry or organization, which involves web applications in its operations. The graduates of this programme will also be able to be entrepreneurs. However, this will require providing additional input on entrepreneurship development for the one who is willing to start his/her own business. (Not included in the curriculum).

**Central aim of the training provider, trainer or teacher**

The aim of the instructor for this curriculum is to develop work related skills through practical oriented work. Practical orientation can be understood as the willingness and ability of a student to act in different situations in a socially responsible manner.

Teaching staff will support student in developing his/her willingness and ability, through their technical knowledge and abilities, to solve tasks and problems that are goal-oriented. They will need to use student-centred, practical oriented methods. They will also need to develop a programme of practical assessment that reflects the learning outcomes stated in the curriculum.

Student will also develop ability as an individual to clarify issues, think through and to assess development opportunities. He/she will learn to consider requirements and constraints in day to day routine life and to develop his/her own projects / products.

Teaching staff will also support student in developing characteristics such as communication skills, client dealing, self-reliance, reliability, responsibility, and a sense of duty and negotiation tactics.

This curriculum can serve as a quality improvement initiative geared to helping institution build its capacity to produce resources for Designing a Website and development. By leveraging the guided discussions, activities, resources, and other materials in these trainings, participant will build his/her knowledge, skills, and abilities related to:

  • Knowledge about internet
  • Differentiate different types of websites

- Explanation of problem solving techniques
- Practical experience of designing software
- Understanding of the web hosting and domain registration process
- Ability to deal with clients
- Information about major websites threats and their security measures
- Practical experience of HTML / JavaScript / CSS
- Sound knowledge about Database Management Systems
- Adequate presentation skills

**Entry level for trainees**

Intermediate degree with basic computer and internet knowledge and completion of appropriate admission assessment.

**Minimum teaching qualification**

Teaching staff should have at least three years experience in the field of Web Design and Development and a Bachelors degree in Computer Science, Software Engineering or Information Technology. They should also hold or be working towards a formal teaching qualification.

Other formal qualifications in the Web Design and Development industry will be useful in addition to the above. Trainers must be competent at Level 3 in English and numeracy.

**Medium of instruction**

Instruction will be in Urdu and English. For employment in the Middle East, some Arabic expressions will be helpful.

**Terminology**

This curriculum is for a Web Design and Development. Some organisations may use alternative terms to describe this job role, for example Web Designer, Web Programmer or Web Developer. Training providers should examine the overview of the curriculum to determine whether this curriculum meets the needs of potential students.

**Laws and regulations**

Training providers must ensure they keep up to date with laws, standards and regulations – at both national and regional levels – relating to Web Design and Development, Copyright, Cyber Crime, and other relevant issues. These currently include:

- The Information Technology University of the Punjab Act 2012
- Payment System Electronic Funds Transfer Act 2007
- The Research and Development Fund Rules 2006
- The Pakistan Telecommunication Authority (Functions and Powers) Regulations, 2004
- The Freedom of Information Ordinance 2002 (XCVI of 2002)
- Electronic Transaction Ordinance 2002
- The Pakistan Electronic Media Regulatory Authority Ordinance 2002 (XIII of 2002)
- The Pakistan Telecommunication Rules 2000
- The Punjab Information Technology Board Ordinance 1999
- The Pakistan Telecommunication Corporation Act, 1991 (XVIII of 1991)

The team of staff responsible for delivery of the Web Design and Development curriculum must familiarise itself with laws and regulations that relate to the area of teaching and ensure that learner knows and understands how to comply with and meet his/her responsibilities. Learning units will refer to the above list where appropriate.

**Suggested distribution of modules**

This qualification is made up of 9 modules. A suggested distribution of these modules is presented overleaf. This is not prescriptive and training providers may modify this if they wish.

Seven modules are interdependent: Module 1: Explain Internet Working, Module 2: Elaborate World Wide Web, Module 3: Design a

Website, Module 5: Use Databases in Web Development, Module 6: Develop Website using Client Side Scripting Languages, Module 7: Develop Website using Server Side Scripting Languages, and Module 8: Design and Present Design and Present Final Project. These modules need to be delivered in parallel. This is illustrated in the distribution table.

Module 4: Plan Website and Explain Software Development Life Cycle for Web Applications and Module 9: Perform Duties and Exhibit Rights at the workplace – can be delivered at any stage. The distribution table suggests that these should be delivered at any stage after the Module 2.

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardised approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught.

The distribution table is shown below:

| | |
|---|---|
| Module 1: Explain Internet Working<br>25 hours | Module 3: Design a Website 135<br>hours |
| Module 2: Elaborate World Wide Web<br>65 hours | |
| | Module 4 Plan Website and Explain Software Development Life Cycle for Web Applications<br>50 hours |
| Module 5: Use Databases in Web Development<br>75 hours | |
| Module 6: Develop Website using Client Side Scripting Languages<br>100 hours | Module 7: Develop Website using Server Side Scripting Languages<br>200 hours |
| Module 8: Design and Present Final Project<br>100 hours | Module 9: Perform Duties and Exhibit Rights at the workplace<br>30 hours |

**Definition of Web Designer and Web Developer**

Web designer designs the Graphical User Interface (GUI) of a website and a Web developer does the coding / programming of a static or dynamic website in client and server side scripting languages.

**Overall objectives of this course**

- To lead and supervise software development teams and ensure organizational service standards are upheld
- Equip with resources to enhance skills for Designing a Website
- Provide skilled resource for web development
- Work closely with other team members to ensure excellent service is provided to all clients
- Support and take direction from Project Manager
- Ensure the team is working as per project requirement

**Competencies gained after completion of the course:**

At the end of the course, the student must have attained the following competencies:

- Design and develop a static website
- Design and develop a dynamic website
- Prepare the project documentation
- Manage a web project
- Database designing of a project
- Dealing with clients
- Web development in ASP.Net
- Web development in PHP
- Installation of Design and Development Software on a computer

- Installation of Database Management System (DBMS) on a computer
- Lead a software development team
- Supervise the delivery of effective software service solution to clients
- Support the professional development of the software service team

**Personal requirements**

Trainee needs the following characteristics:

- A genuine interest in web and software industry
- An out-going personality
- Good health and stamina – ability to work for a longer period of time in tough environment
- Ability to lead and work as a member of a team
- Willingness to maintain the high standard of coding necessary in any project / product
- Organizational skills
- Flexibility
- Teamwork and leadership
- Desire to learn
- Creativity and Imagination
- Innovation
- Aesthetic Sense
- Risk Taking

**Opportunities for employment and advancement**

Trainee is employed in government / semi-government / private organizations as well as in private software houses. Experienced resources may advance through promotions with the same employer or by moving to more advanced positions with other employers. They can become:

- Web Engineer

- Senior Web Engineer

- Technical Team Lead

- Project Manager

- Project Architect

An experienced trainee achieves a highly respected level of salary. There are good prospects for travel both within Pakistan and abroad. The employment outlook in this occupation will be influenced by a wide variety of factors including:

- Trends and events affecting overall employment

- Location in Pakistan

- Employment turnover (work opportunities generated by people leaving existing positions)

- Occupational growth (work opportunities resulting from the creation of new positions that never existed before)

- Size of the industry

- Flexibility of the applicant (concerning location and schedule of work)

## 2. Overview of the curriculum for Web Design and Development

| Module Title and Aim | Learning Units | |
|---|---|---|
| **Module 1:** Explain Internet Working<br>**Aim:** The aim of this module is that the learner will be able to explain the internet and computer networks. | LU1: Discuss the history evolution of internet<br>LU2: Define and differentiate software and hardware<br>LU3: Elaborate the working of different Computer Networks<br>LU4: Differentiate different types of networks | **Timeframe of modules** |
| | | 25 hours |
| | | **Theory Days/hours** |
| | | 16 hours |
| | | **Workplace Days/hours** |
| | | 9 hours |
| **Module 2:** Elaborate World Wide Web<br>**Aim:** The aim of this module is that the learner will be able to explain the world wide web with its historical prospective. It will also enable the learner to differentiate types of websites and web threats and their security measures. | LU1 : Discuss different Eras of Web<br>LU2 : Compare Static Websites with Dynamic Websites<br>LU3 : Elaborate and differentiate different web browsers<br>LU4: Compare different types of websites<br>LU5: Identify different Web Threats and explain their security measures<br>LU6: Highlight the process of Domain Registration and Web Hosting<br>LU7: Discuss shopping carts and E-commerce | **Timeframe of modules** |
| | | 65 hours |
| | | **Theory Days/hours** |
| | | 26 hours |
| | | **Workplace Days/hours** |
| | | 39 hours |
| **Module 3:** Design a Website<br>**Aim:** The aim of this module is to develop the skills, knowledge and understanding to design a website. | LU1: Explain the basics of web designing<br>LU2: Analyze different software to design website<br>LU3: Apply appropriate Website Templates in your Website | **Timeframe of modules** |
| | | 135 hours |
| | | **Theory Days/hours** |
| | | 40 hours |
| | | **Workplace Days/hours** |
| | | 95 hours |

| Module Title and Aim | Learning Units | |
|---|---|---|
| **Module 4:** Plan Website and Explain Software Development Life Cycle for Web Applications<br>**Aim:** The aim of this module is to develop the skills, knowledge and understanding required for planning a website design and implementing the software development lifecycle for any web project. | LU1: Devise Website Project Plan<br>LU2: Utilize the Software Development Life Cycle in a web project | **Timeframe of modules** |
| | | 50 hours |
| | | **Theory Days/hours** |
| | | 20 hours |
| | | **Workplace Days/hours** |
| | | 30 hours |
| **Module 5:** Use Databases in Web Development<br>**Aim:** The aim of this module is that the learner will be able to create database of a website in any Database Management System. | LU1: Discuss the basic and historical perspectives of databases<br>LU2: Differentiate different Database Management Systems (DBMS)<br>LU3: Create database of a website in a Database Management System | **Timeframe of modules** |
| | | 75 hours |
| | | **Theory Days/hours** |
| | | 16 hours |
| | | **Workplace Days/hours** |
| | | 59 hours |
| **Module 6:** Develop Website using Client Side Scripting Languages<br>**Aim:** The aim of this module is that the learner will be able to use JavaScript, html and cascading style sheets in a website. | LU1 : Write HTML code for a Website<br>LU2 : Use JavaScript in a website<br>LU3 : Implement Cascading Style Sheets (CSS) in a website | **Timeframe of modules** |
| | | 100 hours |
| | | **Theory Days/hours** |
| | | 20 hours |
| | | **Workplace Days/hours** |
| | | 80 hours |

| Module Title and Aim | Learning Units | |
|---|---|---|
| **Module 7:** Develop Website using Server Side Scripting Languages **Aim:** The aim of this module is to develop the skills, knowledge and understanding required to develop a website in PHP and ASP.Net. | LU1: Develop a website using PHP<br>LU2: Develop a website using ASP.Net | **Timeframe of modules** |
| | | 200 hours |
| | | **Theory Days/hours** |
| | | 50 hours |
| | | **Workplace Days/hours** |
| | | 150 hours |
| **Module 8:** Design and Present Final Project **Aim:** The aim of this module is that the learner will be able to develop a dynamic web application in any of the taught web development technologies. | LU1: Develop a dynamic website in ASP.Net / PHP<br>LU2: Prepare a project document | **Timeframe of modules** |
| | | 100 hours |
| | | **Theory Days/hours** |
| | | 20 hours |
| | | **Workplace Days/hours** |
| | | 80 hours |
| **Module 9:** Perform Duties and Exhibit Rights at the workplace **Aim:** The aim of this module is to develop code of ethics and professional conduct, improve planning capabilities, and awareness to provision of employment rights. | LU1: Demonstrate Ethics and Professional Conduct<br>LU2: Plan Business-Process Activities<br>LU3: Develop awareness of rights | **Timeframe of modules** |
| | | 30 hours |
| | | **Theory Days/hours** |
| | | 30 hours |
| | | **Workplace Days/hours** |
| | | 0 hours |

## 3. Teaching and Learning Guide for Web Design and Development

The aim of the training is to student to be able to act independently and responsibly in his/her field of study, by following an educational programme where this is part of the overall methodological concept.

Different methodologies can therefore contribute to achieve this objective. Theory methodologies should be supported by appropriate resources, as indicated in the 'Materials required' column of the Learning Unit specifications. Teachers should also illustrate theory sessions with examples of how the learning can be applied in the workplace. Practical methodologies should be set in an appropriate environment and supported by appropriate resources, also indicated in the 'Materials required' column of the Learning Unit specifications. Methods that directly promote capacity-building for the student are particularly suitable, for example practical work, mock up, role play, emergency and contingency situational training, case study, situational problem solving, body language, positive impression, dignity in labor, and therefore should be included appropriately in the teaching approach.

### 3.1. Module 1: Explain Internet Working

**Objective of the module:** The aim of this module is that the learner will be able to explain the internet and computer networks.

**Duration**     25 hours     **Theory:**     16 hours     **Practical:**     9  hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Discuss the history and evolution of internet | **The student will be able to:** Define internet Explain the working of internet Explain the history and evolution of internet | Learn definition of internet Comprehend working of internet Read about history and evolution of internet | **Total:** 3 hours **Theory : 3** hours **Practical:** 0 Hours | Books, Handouts, e-books, and Class notes. | **For theoretical learning:** Class room with multimedia aid and audio facility |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU2:** Define and differentiate software and hardware | **The student will be able to:** Define software Give detail of the working of software Explain different types of software Elaborate the role of software in a computer system | Learn definition of software Learn history of software Identify types of software Practise installation of a software Experience working of software Study role of software in a computer system Learn definition of hardware Learn history of hardware Identify types of hardware Study role of hardware in a computer system | **Total:** 6 hours **Theory** **:** 3 hours **Practical:** 3 hours | Books, Handouts, e-books, Class notes, User manuals, and Installation guides. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | Install a software on a computer Define hardware Elaborate different types of hardware Illustrate working of different hardware components in a computer Identify different hardware in a computer Recount the importance of hardware in a computer system Elucidate the hardware of a network | Identify different hardware components in a computer Examine hardware of a network Compare software and hardware | | | |

| LU3:
Elaborate the working of different Computer Networks | **The student will be able to:**
Define a network
Narrate the history of networks
Give detail of network topologies
Define the basic components of a computer network
Illustrate the working of a computer network | Learn definition of network
Learn history of networks
Read about Network topologies such as Bus topology, Ring topology, Star topology, Mesh topology
Basic components of a computer network
Experience working of a computer network | **Total:**
6 hours
**Theory: 3 hours**
**Practical:**
3 hours | Books,
Handouts,
e-books,
Class notes,
Sample network,
diagrams, and
Hardware of a computer network. | **For theoretical learning:**
Class room with multimedia aid and audio facility

**For practical learning:**
Computer Lab |
|---|---|---|---|---|---|
| LU4:Differentiate different types of networks | **The student will be able to:**
List down the different network types in order of scale | Personal Area Network
Read in detail about the following:
• Local Area Network
• Campus Area Network
• Metropolitan Area Network | **Total:**
10 hours
**Theory:**
7 hours
**Practical:** | Books
Handouts,
e-books,
Class notes,
Sample network | **For theoretical learning:**
Class room with multimedia aid and audio facility |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | Recount the following:
• Personal Area Network
• Local Area Network
• Campus Area Network
• Metropolitan area network
• Wide Area Network
• Virtual Private Network
Differentiate different types of networks | • Wide Area Network
• Virtual Private Network
• Difference among network types | 3 hours | and diagrams of all network types. | **For practical learning:**
Computer Lab |

**3.2.  Module 2:** Elaborate World Wide Web

**Objective of the module:** The aim of this module is that the learner will be able to explain the World Wide Web with its history and architecture. It will also enable the learner to differentiate web protocols, types of websites and web threats.

**Duration**  65 hours  **Theory:**  26 hours  **Practical:**  39 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Discuss different Eras of web | **The student will be able to:** Define the world wide web Define a website Define a webpage Narrate history of web Exemplify Web 1.0 (Read Web), Web 2.0 (Social Web), and Web 3.0 (Semantic Web) Differentiate Web 1.0, Web 2.0 and Web 3.0 Give examples of Web 1.0, Web 2.0 and Web 3.0 | Define world wide web Define website and webpage Narrate history of web Read about Web 1.0 (Read Web), Web 2.0 (Social Web), and Web 3.0 (Semantic Web) Compare Web 1.0, Web 2.0 and Web 3.0 Study examples of Web 1.0, Web 2.0 and Web 3.0 | **Total:** 11 hours **Theory:** 5 hours **Practical:** 6 Hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| LU2:<br>Compare Static websites with Dynamic websites | **The student will be able to:**<br>Define a static website<br>Define a dynamic website<br>Elucidate the workflow of a static website<br>Elucidate the workflow of a dynamic website<br>Illustrate the architectures of static and dynamic websites<br>Differentiate static and dynamic websites | Learn to define static website<br>Learn to define dynamic website<br>Examine workflow of a static website<br>Examine workflow of a dynamic website<br>Differentiation between static and dynamic websites<br>Study examples of static and dynamic websites<br>Study and design architecture of a static website<br>Study and design architecture of a dynamic website | **Total:**<br>10 hours<br>**Theory:**<br>6 hours<br>**Practical:**<br>4 Hours | Books,<br>Handouts,<br>e-books,<br>Class notes, and Internet facility. | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |
|---|---|---|---|---|---|

| LU3:<br>Elaborate and differentiate different web browsers | **The student will be able to:**<br>Define a web browser<br>Explain the working of a web browser<br>Install and use the internet explorer<br>Install and use Mozilla Firefox<br>Install and use Google Chrome<br>Install and use Safari<br>Give in detail the features/options of different web browsers<br>Compare the features of different web browsers<br>Explain the meaning of cross browser compatibility of websites | Learn definition of a web browser<br>Read about working of a web browser<br>Install and use Internet Explorer<br>Install and use Mozilla Firefox<br>Install and use Google Chrome<br>Install and use Safari<br>Study features/options of different web browsers<br>Compare different web browsers<br>Study cross browser compatibility of websites | **Total:**<br>10 hours<br>**Theory:**<br>4 hours<br>**Practical:**<br>6 hours | Books,<br>Handouts,<br>e-books,<br>Class notes,<br>Internet facility,<br>Software of different web browsers like: internet explorer, Mozilla Firefox, Google Chrome, Safari etc.<br>Installation procedures of different web browsers. | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |
|---|---|---|---|---|---|

| LU4<br>Compare different types of websites | **The student will be able to:**<br>Define and explain the working of different types of websites such as:<br>• Personal websites<br>• Information websites<br>• Social Networking websites<br>• Web Portals<br>• Webmail<br>• Wiki sites<br>• Search engine | Learn Definition and read in detail about different types of websites such as personal websites, information websites, web portals, webmail, social networking websites, blogs, forums, wiki websites, search engine websites, community websites, News websites etc.<br>Study examples of different types of websites | **Total:**<br>10 hours<br>**Theory:**<br>4 hours<br>**Practical:**<br>6 hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |
|---|---|---|---|---|---|
| | websites<br>• Communit y websites<br>• Blogs<br>• Forums<br>• News websites Exemplify types of websites | | | | |

| LU5:<br>Identify different Web Threats and explain their security measures | The student will be able to:<br>Give detail about different web threats such as<br><ul><li>Viruses</li><li>Computer Worms</li><li>Trojans</li><li>Malware</li><li>SQL Injection</li><li>Cross-site Scripting (XSS)</li><li>Email Spam</li><li>Phishing</li><li>Denial-of-service attack (DoS attack)</li></ul>Classify the security measures for different web threats<br>Install antivirus software and use it | Study in detail different web threats such as Viruses, Computer Worms, Trojans, Malware, SQL Injection, Cross-site Scripting (XSS), Email Spam, Phishing, Denial-of-service attack (DoS Attack) etc.<br>Read in detail about security measures for different web threats<br>Install an antivirus software<br>Use antivirus to scan a computer for viruses and removal of viruses. | **Total:**<br>10 hours<br>**Theory:**<br>4 hours<br>**Practical:**<br>6 hours | Books, Handouts, e-books, Class notes, Internet facility, and Antivirus Software. | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |

| | | | | | |
|---|---|---|---|---|---|
| **LU6:** Highlight the process of domain registration and Web Hosting | **The student will be able to:** Search internet service providers (ISPs) Recount the web hosting process Illustrate the domain registration process Select one of the ISP for website Get the web hosting package from the ISP Get the domain registration package from the ISP Upload the website to the web server / web space provided by the ISP Test the uploaded website on a web browser | Search internet service providers (ISPs) Learn about web hosting process Learn about domain registration process Make selection of any ISP for the website Observe getting the web hosting package from the ISP Observe getting domain registration package from the ISP Experience uploading a website to the web server / web space provided by the ISP Practice testing the uploaded website on a web browser | **Total:** 10 hours **Theory:** 4 hours **Practical:** 8 hours | Books, Handouts, e-books, Class notes, Internet facility, and List of internet service providers. (ISPs) | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |
| **LU7:** Discuss shopping carts andecommerce | **The student will be able to:** Define and Elaborate E-commerce Communicate in detail about some common business applications of E- commerce | Learn definition and explanation of E-commerce Become familiar with some common business applications of E-commerce | **Total:** 4 hours **Theory:** 3 hours **Practical:** 1 hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical** |

**3.3. Module 3**: Design a Website

**Objective of the module:** The aim of this module is to develop the skills, knowledge and understanding to design a website in any software

**Duration**    135 hours    **Theory:**    40 hours    **Practical:**    95 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Explain the basics Website designing | **The student will be able to:** Define website designing Recount the history of website designing Differentiate b different types of design Classify the basic elements of design Recognize different Web Design standards and principles Differentiate between web design and web development Differentiate between web design and graphics designing Communicate importance of design in a website | Define website designing Learn history of website designing Identify types of Design Identify basic elements of design Read in detail about Web Design Standards and Principles Difference between web design and web development Locate difference between web design and graphics designing Exhibit understanding of the importance of design in a website | **Total:** 15 hours **Theory:** 10 hours **Practical:** 5 hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |
| **LU2:** Analyze different software to design a website | **The student will be able to:** List down different software to design a website Elaborate the features and options of different designing software Install different design software to a computer Design website using | Make a list of different design software Features and options of different designing software Experience installation of different software to design a Website. Practise design in designing software like Adobe Photoshop, Macromedia Dreamweaver, Microsoft FrontPage, Microsoft Publisher, Adobe Flash etc. | **Total:** 100 hours **Theory:** 25 hours **Practical:** 75 hours | Books, Handouts, e-books, Class notes, Internet facility, Licensed versions of software to design a website like Adobe Photoshop, Macromedia, | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | different software such as: Adobe Photoshop, Macromedia, Dreamweaver, Microsoft FrontPage, Microsoft Publisher, and Adobe Flash. | | | Dreamweaver, Microsoft, FrontPage, Microsoft Publisher, and Adobe Flash. | |
| **LU3:** Apply appropriate website Templates in your website | **The student will be able to:** Communicate what is a website template Search free and paid website templates form internet Download website templates to a computer Test website templates using any web browser Edit different website templates in any web editor | Explanation of a website template Manage to searching free and paid website templates on internet Downloading website templates to a computer Learn how to test website templates using any web browser Execute editing of different website templates in any web editor such as Macromedia Dreamweaver | **Total:** 20 hours **Theory:** 5 hours **Practical:** 15 hours | Books, Handouts, e-books, Class notes, Internet facility, and Licensed versions of any software, to design a website, like Macromedia Dreamweaver. | **For theoretical learning:** Class room with multimedia aid & audio facility **For practical learning:** Computer Lab |

**3.4. Module 4:** Plan Website and Explain Software Development Life Cycle for Web Applications

**Objective of the module:** The aim of this module is to develop the skills, knowledge and understanding required for planning a website design and implementing the software development lifecycle for any web project.

**Duration**    50 hours    **Theory:**    20  hours    **Practical:**    30  hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Devise Website Project Plan | **The student will be able to:** Arrange and manage project meetings Gather the project requirements Perform storyboarding Develop timelines Evaluate finances (budgeting and costing) Differentiate between functional requirements and non-functional requirements Exhibit the significance of client management | Build understanding about how to arrange and manage project meetings Gather and implement the project requirements Learn to execute storyboarding Learn to develop timelines Carry out financial evaluation (budgeting and costing) Recognize and share differences between functional requirements and non-functional requirements Recount the significance of client management | **Total:** 25 hours **Theory:** 10 hours **Practical:** 15 Hours | Books, Handouts, e-books, Class notes, Internet facility, and Microsoft Office. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |
| **LU2:** Utilize the software development life cycle in a web project | **The student will be able to:** Elaborate the software development life cycle Carry out the project analysis phase Execute the design phase Implement / code the project Test the project Deploy the project on a web server Execute the maintenance & support phase | Recount software development life cycle: • Project analysis phase • Design phase • Implementation phase • Testing phase • Maintenance and support phase | **Total:** 25 hours **Theory:** 10 hours **Practical:** 15 Hours | Books, Handouts, e-books, Class notes, Internet facility, and Microsoft Office. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

**3.5.** **Module 5:** Use Databases in Web Development

**Objective of the module:** The aim of this module is that the learner will be able to create a database of a website in any Database Management System.

**Duration** 75 hours **Theory:** 16 hours **Practical:** 59 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Discuss the basic and historical perspectives of databases | **The student will be able to:** Define the basic concepts of databases such as row, column, table, relationships, quires, normalization, denormalization, database, Relational Database Management System, Primary Key, Foreign Key, indexing, Entity Relationship Diagram etc. Distinguish between free database vs. licensed database Identify the role of database in web applications | Learn definition of basic database concepts such as Row, Column, Table, Relationships, Quires, Normalization, Denormalization, Database, Relational Database Management System, Primary Key, Foreign Key, indexing, Entity Relationship Diagram etc. Identify differences between free database and licensed database Elucidate the role of database in web applications | **Total:** 20 hours **Theory:** 4 hours **Practical:** 16 Hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU2:** Differentiate different Database Management Systems (DBMS) | **The student will be able to:** Compare the options and features of different database management systems Analyze and install different database management systems such as Microsoft Access, Microsoft SQL Server, MySQL | Carry out comparative study of Options/Features of different database management systems Practise installation of different database management systems on a computer Examine the features and options of different database management systems like Microsoft Access, Microsoft SQL Server and MySQL | **Total:** 40 hours **Theory:** 10 hours **Practical:** 30 Hours | Books, Handouts, e-books, Class notes, Internet facility, Licensed versions of different database management systems like: Microsoft Access, Microsoft SQL | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | | | | Server, MySQL, and Installation guides of database management systems. | |
| **LU3:** Create a database of a website in a database management system. | **The student will be able to:** Design a database for any web project in any database management system | Demonstrate database designing of a web project Create Tables Draw Entity Relationship Diagram Carry out Normalization / De-normalization of the Entity Relationship Diagram Implement indexing and cascading to the database | **Total:** 15 hours **Theory:** 2 hours **Practical:** 13 hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

**3.6. Module 6:** Develop Website using Client Side Scripting Languages

**Objective of the module:** The aim of this module is that the learner will be able to use JavaScript, html and cascading style sheets in a website System.

| Duration | 125 hours | Theory: | | 30 hours | Practical: | 95 hours |
|---|---|---|---|---|---|---|
| **LU1:** Write HTML code for a Website | **The student will be able to:** Define the Hypertext Mark-up Language (HTML) Execute implementation of the HTML concepts such as HTML Editors, Elements, Attributes, Headings, Paragraphs, Formatting, Links, Head, Images Tables, Lists, Block, Layout, Forms, IFrames, Colours, Entities, URL Encode, Form, input types, Media, Object, Audio and Video. | Learn definition of Hypertext Mark-up Language (HTML) Communicate and implement HTML concepts such as HTML Editors, Elements, Attributes, Headings, Paragraphs, Formatting, Links, Head, Images Tables, Lists, Block, Layout, Forms, IFrames, Colours, Entities, URL Encode, Form, input types, Media, Object, Audio, Video. Employ HTML in Macromedia Dreamweaver / Microsoft FrontPage. | **Total:** 50 hours **Theory:** 10 hours **Practical:** 40 Hours | Books, Handouts, e-books, Class notes, Internet facility: Macromedia, Dreamweaver / Microsoft, and FrontPage. | **For practical learning:** Computer Lab |

| LU2: Use JavaScript in a website | The student will be able to: Define client side scripting language Define JavaScript Explain the implement the basic JavaScript concepts such as JavaScript Statements, Objects, Output, Comments, Variables, Data Types, Functions, Operators, Comparisons, Conditions, Switch, and For Loop, While Loop, Breaks. Errors and Validation | Learn definition of client side scripting language Learn definition of JavaScript Communicate and implement the basic JavaScript concepts such as JavaScript Statements, Objects, Output, Comments, Variables, Data Types, Functions, Operators, Comparisons, Conditions, Switch, For Loop, While Loop, Breaks, Errors and Validation. | **Total:** 40 hours **Theory:** 10 hours **Practical:** 30 Hours | Books, Handouts, e-books, Class notes, and Internet facility. | **LU2:** Implement JavaScript in a website |
|---|---|---|---|---|---|

| LU3: Implement Cascading Style Sheets (CSS) in a website | **The student will be able to:** Define and illustrate Cascading Style Sheets (CSS) Elucidate and implement the basic concepts of CSS such as CSS Syntax, Id and Class, Styling of Backgrounds, Text, Fonts, Links, Lists and Tables, CSS Border, Outline, Margin, Padding, Dimension, Positioning, Floating, Align, Colors, and Colour HEX. | Learn definition and share explanation of Cascading Style Sheets (CSS) Recount and put into practice the basic concepts of CSS such as CSS Syntax, Id and Class, Styling of Backgrounds, Text, Fonts, Links, Lists & and Tables, CSS Border, Outline, Margin, Padding, Dimension, Positioning, Floating, Align, Colours, and Colour HEX. Employ CSS using Macromedia Dreamweaver / Microsoft FrontPage | **Total: 35 hours Theory: 10 hours Practical: 25 Hours** | Books, Handouts, e-books, Class notes, and Internet facility: Macromedia, Dreamweaver / Microsoft and FrontPage | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |
|---|---|---|---|---|---|

**3.7. Module 7:** Develop Website using Server Side Scripting Languages

**Objective of the module:** The aim of this module is to develop the skills, knowledge and understanding required to develop a website in PHP and ASP.Net.

**Duration** 380 hours **Theory:** 80 hours **Practical:** 300 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Develop a website using ASPNET | **The student will be able to:** Define ASP Net Install Visual Studio.Net / Visual Web Developer to your computer Share details of Dot Net Framework Describe the environment of Visual Studio.Net / Visual Web Developer Explore the toolbars and windows of Visual Studio.Net / Visual Web Developer Illustrate the Design View, Source View and Code View of a web page Implement the HTML Controls such as Table, Div, Image, Text area etc. Execute application of: <br>• Server Controls such as Button, Textbox, Hyperlink, Radio Button, Calendar, Panel, Label etc. <br>• Data Server Controls such as Grid View, Details View, Form View, Sql DataSource, Access DataSource, etc. <br>• Validation Controls such as | Learn definition of Asp.Net Installation of Visual Studio.Net / Visual Web Developer to a computer Spell out the Dot Net Framework Communicate details of the environment of Visual Studio.Net / Visual Web Developer Explore the toolbars and windows of Visual Studio.Net / Visual Web Developer Recount what is the Design View, Source View and Code View of a web page Illustrate and implement: <br>• HTML Controls such as Table, Div, Image, Text area etc. <br>• Server Controls such as Button, Textbox, Hyperlink, Radio Button, Calendar, Panel, Label etc. <br>• Data Server Controls such as Grid View, Details View, Form View, SqlDataSource, AccessDataSource etc. <br>Share details of and implement: <br>• Validation Controls such as RequiredFieldValidator, Range Validator, Validation Summary, etc. <br>• Navigation Controls such as Menu, Tree View etc. <br>• Give an account of and implement Login Controls such as Login, Login View, and Password Recovery etc. <br>• Web Form, Master Page, Web User Control, HTML Page and Style Sheet. | **Total:** 190 hours **Theory:** 40 hours **Practical:** 150 Hours | Books, Handouts, e-books, Class notes, and Internet facility: Visual Studio.Net or Visual Web Developer. | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | Required Field Validator, Range Validator, Validation Summary, etc. Control navigation such as Menu, Tree View etc.<br>• Implement:<br>• Login Controls such as Login, Login View, and Password Recovery etc.<br>• Web Form, Master Page, Web User Control, HTML Page and Style Sheet. | | | | |
| **LU2:** Develop a website using PHP | **The student will be able to:** Define PHP Install a PHP Editor such as Macromedia Dreamweaver to a computer Communicate details of the PHP Environment and Syntax Recognize the PHP Variable Types Apply the PHP Constants Recognize the Operator Types Make PHP decision Making | Learn definition of PHP Install PHP Editor such as Macromedia Dreamweaver to a computer Narrate details of the PHP Environment and Syntax Identify and implement PHP Variable Types Give an account of and implement:<br>• PHP Constants<br>• Operator Types<br>• PHP Decision Making<br>• PHP Loop Types<br>• PHP Arrays | **Total:** 190 hours **Theory:** 40 hours **Practical:** 150 Hours | Books, Handouts, e-books, Class notes, and Internet facility: PHP and MySQL PHP Editor like Dreamweaver | **For theoretical learning:** Class room with multimedia aid and audio facility<br><br>**For practical learning:** Computer Lab |

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| | Identify and administer:<br>• PHP Loop Types<br>• PHP Arrays<br>• PHP Strings<br>• PHP GET and POST<br>• Upload PHP Files<br>• PHP Functions<br>Conduct PHP Cookies and Sessions<br>Send PHP Emails<br>Upload PHP File<br>Demonstrate:<br>• PHP Coding Standard<br>    • PHP Predefined Variables<br>    • PHP Regular Expressions<br>Handle:<br>    • PHP Error<br>    • PHP Built-in Functions<br>Install and Configure MySQL Database with PHP website<br>Create dynamic web pages in PHP | • PHP Strings<br>• PHP GET and POST<br>• PHP Files<br>• PHP Functions<br>• PHP Cookies and Sessions<br>• PHP Sending Emails<br>PHP File Uploading<br>Study and demonstrate:<br>• PHP Coding Standard<br>• PHP Predefined Variables<br>• PHP Regular Expressions<br>• PHP Error Handling<br>• PHP Built-in Functions<br>Installation and configure MySQL database with a PHP website<br>Create dynamic web pages in PHP | | | |

**3.8.** **Module 8:** Design and Present Final Project

**Objective of the module:** The aim of this module is that the learner will be able to develop a dynamic web application in any of the taught web development technologies.

**Duration**     100 hours     **Theory:**     20 hours     **Practical:**     80 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Develop a dynamic website in ASP.Net / PHP | **The student will be able to:** Design the interface of a website in a designing software. Develop a static or dynamic website in a web development software Implement software development life cycle (SDLC) phases in a web project | Practice interface design in designing software. Carry out development of a static or dynamic website in a web development software Put into practice Software Development Life Cycle (SDLC) phases in a web project | **Total:** 85 hours **Theory:** 5 hours **Practical:** 80 Hours | Books, Handouts, e-books, Class notes, and Internet facility: Visual Studio.Net / Visual Web Developer, SQL Server/Microsoft Access OR Dreamweaver, PHP and MySQL | **For theoretical learning:** Class room with multimedia aid and audio facility **For practical learning:** Computer Lab |

| LU2:<br>Prepare a project document | **The student will be able to:**<br>Create:<br>• Web project's Analysis document<br>• web project's Design document<br>• Web project's Implementation document<br>• Web project's Testing document<br>• Web project's Deployment document<br>• Web project's Maintenance and Support document<br>• Web project's User Manual | Analyze web project document<br>Devise:<br>Web project's Design document<br>Web project's Implementation document<br>Web project's Testing document<br>Web project's Deployment document<br>Web project's Maintenance & Support document<br>Web project's User Manual | **Total:**<br>15 hours<br>**Theory:**<br>15 hours<br>**Practical:**<br>0 Hours | Books,<br>Handouts,<br>e-books,<br>Class notes, and<br>Internet facility:<br>Microsoft Office | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |
| --- | --- | --- | --- | --- | --- |

**3.9. Module 9:** Perform Duties and Exhibit Rights at the workplace

**Objective of the module:** The aim of this module is that the learner will be able to develop a dynamic web application in any of the taught web development technologies.

**Duration**   30 hours   **Theory:**   30 hours   **Practical:**   0 hours

| Learning Unit | Learning Outcomes | Learning Elements | Duration | Materials Required | Learning Place |
|---|---|---|---|---|---|
| **LU1:** Demonstrate Ethics and Professional Conduct | **The student will be able to:** Extend the mandatory standard for <ul><li>Responsibility</li><li>Respect</li><li>Fairness</li><li>Honesty</li></ul> | Exhibit ownership of the decisions/actions s/he makes or fails to make and their consequences. (Role Play) Show high regard for resources entrusted to him/her. Including subordinates, tangible assets (equipment), company profile. Make decisions and act impartially/objectively free from self-interest. (Quantified Self-assessment can be performed e.g. case studies/white papers.) Areas like Conflict of Interest<br><br>Act in truthful manner in conduct/communication. e.g. daily attendance enrolment on register- "What you say is what you did" | **Total:** 10 hours **Theory:** 10 hours **Practical:** 0 Hours | Books, Handouts, e-books, Class notes, and Internet facility. | **For theoretical learning:** Class room with multimedia aid and audio facility<br><br>**For practical learning:** Computer Lab |

| LU2:<br>Plan Business-Process Activities | **The student will be able to:**<br>Identify tasks, their scheduling<br> Define milestones<br>Demonstrate optimal utilization of resources. | Provide due assistance to in-line manager e.g. coordinate recurring meetings, intimate resource availability, create and keep documentations, validate applicable company defined standards.<br>Define activities, e.g. Apply specific life cycle methodologies – (Requirement gathering, design solution, prototype, testing, documentations)<br>Estimate time, e.g. calculation of hours for an activity; consider calendar year official leaves, company working timings.<br>Achieve work breakdowns, divide module in smaller and more manageable components. e.g. test a product that may have components like interface, performance, and test cases.<br>Level resource due to work load, e.g. calculation of leisure hours of a worker. | **Total:**<br>10 hours<br>**Theory:**<br>10 hours<br>**Practical:**<br>0 hours | Books<br>Handouts<br>e-books<br>Class notes<br>Internet facility | **For theoretical learning:**<br>Class room with multimedia aid & audio facility<br><br>**For practical learning:**<br>Computer Lab |
|---|---|---|---|---|---|
| LU3:<br>Develop awareness of rights | **The student will be able to:**<br>Recognize the inspirational requirements of human rights in employment context. | Inform the concerned authority and uphold the policies, rules/regulations that govern the work and workplace.<br>Report illegal conduct or illegitimate action to appropriate management.<br>Protect propriety or confidential information. | **Total:**<br>10 hours<br>**Theory:**<br>10 hours<br>**Practical:**<br>0 hours | Books,<br>Handouts,<br>e-books,<br>Class notes, and Internet facility. | **For theoretical learning:**<br>Class room with multimedia aid and audio facility<br><br>**For practical learning:**<br>Computer Lab |

## 4. Assessment guidance

Good practice in Pakistan makes use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

**Sessional assessment** is goes on all the time. Its purpose is to provide feedback on learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy.

**Final assessment** is taken on completion of a course or module, which says whether or not the student has "passed". It is – or should be

– undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

**Methods of assessment**

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student's performance.

Examples of direct assessment include:

- Surprise quizzes, for example conduct small test on the fly

- Work performances, for example supervising the task given in the computer lab

- Demonstrations, for example demonstrating the use of a particular training tool in preparation for staff development

- Direct questioning, where the assessor will ask the student from the syllabus taught in the class room or lab

- Paper-based tests, such as multiple choice or short questions answers form taught material

Indirect assessment is the method used where the performance cannot be watched and evidence is gained indirectly. Examples for indirect assessment of a web designer and developer include:

- Home Work, such as assignments are given to be completed from home

- Design and Present Final Project at the end of each module; a project is given to check the progress of the trainee

In some cases, it may not even be guaranteed that the work products were produced by the person being assessed. Therefore, assessor must take necessary steps to stop such happening.

**Module wise assessment methods**

This course contains nine modules. Suggestions for assessment of these modules are given below.

- **Assessment of Module 1: Explain Internet Working**

  Learner may be asked to:

  o Define and explain internet and its working

  o Connect a computer to internet and open a specific website in a browser

  o Explain different types of networks

- **Assessment of Module 2: Elaborate World Wide Web**

  Learner may be asked to:

  o Explain and differentiate the three web eras

  o Search and show some Web 1.0 and Web 2.0 websites on internet

  o Explain different types of websites

  o List down some E-commerce websites


- **Assessment of Module 3: Design a Website**

  Learner may be asked to:

  o Design the Graphical User Interface (GUI) of your favourite website in any design software

  o Search and down load ten free website templates from internet

  o Design your personal website using a free website template


- **Assessment of Module 4: Plan Website and Explain Software Development Life Cycle for Web Applications**

  Learner may be asked to:

  o Explain how will you plan to develop a website

  o Explain the phases of Software Development Life Cycle (SDLC)

- **Assessment of Module 5: Use Databases in Web Development**

  Learner may be asked to:
  - Compare different database management systems (DBMS)
  - Design the database of your personal website in a database management system.

- **Assessment of Module 6: Develop Website using Client Side Scripting Languages**

  Learner may be asked to:
  - Explain the role of client side scripting language in a website
  - Explain the basic HTML tags
  - Create a Cascading Style Sheet (CSS) of your website

- **Assessment of Module 7: Develop Website using Server Side Scripting Languages**

  Learner may be asked to:
  - Explain the role of server side scripting language in a website
  - Differentiate between ASP.NET and PHP
  - Develop a three page website using ASP.NET
  - Develop a three page website using PHP

- **Assessment of Module 8: Design and Present Final Project**

  Learner may be asked to:
  - Explain the working and functionality of his/her developed web project
  - Demonstrate the Design and Present Final Project
  - Explain the Software Development Life Cycle (SDLC) phases of his/her web project

- **Assessment of Module 9: Perform Duties and Exhibit Rights at the workplace**

    Learner may be asked to:

  - Explain the professional conduct and ethics
  - Explain the inspirational requirements of human rights in employment context

**Principles of assessment**

All assessments should be valid, reliable, fair and flexible:

**Fairness** means that there should be no advantages or disadvantages for any assessed person. For example, it should not happen that one student gets prior information about the type of work performance that will be assessed, while another candidate does not get any prior information.

**Validity** means that a valid assessment assesses what it claims to assess.

**Flexibility** means that the assessor has to be flexible concerning the assessment approach. For example, if there is a power failure during the assessment, the assessor should modify the arrangements to accommodate the student's needs.

# Assessment strategy

This curriculum consists of 8 modules:

- Module 1: Explain Internet Working
- Module 2: Elaborate World Wide Web
- Module 3: Design a Website
- Module 4: Plan Website and Explain Software Development Life Cycle for Web Applications
- Module 5: Use Databases in Web Development

- Module 6: Develop Website using Client Side Scripting Languages
- Module 7: Develop Website using Server Side Scripting Languages
- Module 8: Design and Present Final Project
- Module 9: Perform Duties and Exhibit Rights at the workplace

## Sessional assessment

The sessional assessment for all modules shall be in two parts: theoretical assessment and practical assessment. The sessional marks shall contribute to the final qualification.

Theoretical assessment for all learning modules must consist of a written paper lasting at least one hour per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

## Final assessment

Final assessment shall be in two parts: theoretical assessment and practical assessment. The final assessment marks shall contribute to the final qualification.

The final theoretical assessment shall consist of one 3-hour paper. The paper shall include at least two extended answer questions. The remainder shall consist of half multiple choice and half short-answer questions.

For the final practical assessment, each student shall be assessed over a period of two days, with two 3-hour sessions on each day. This represents a total of four sessions totalling 12 hours of practical assessment for each student. During this period, each student must be assessed using either subjective paper or practical lab assignment, depending on his or her circumstances.

## Planning for assessment

**Sessional assessment:** Assessors need to plan in advance how they will conduct sessional assessments for each module. The tables on the following pages are for assessors to use to insert how many hours of theoretical and practical assessment will be conducted and what the scheduled

dates are.

**Final assessment:** Training providers need to decide ways to combine modules and practical assignments into a cohesive two-day final assessment programme. This should include a meeting with the assessors to discuss a standardized methodology for awarding marks.

## Planning aid for sessional assessments

| Module 1: Explain Internet Working | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Explain the history and evolution of internet | | | |
| LU2: Define and differentiate between software and hardware | | | |
| LU3: Explain the working of computer networks | | | |
| LU4: Differentiate between different types of networks | | | |
| Module 2: Elaborate World Wide Web | | | |
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1 : Explain the history and different eras of web | | | |
| LU2 : Compare static websites with dynamic websites | | | |
| LU3 : Elaborate and differentiate different web browsers | | | |
| LU4: Compare different types of websites | | | |
| LU5: Identify different web threats and explain their security measures | | | |

| Module 3: Design a Website | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Define and explain the basics of Design a Website | | | |
| LU2: Analyze different software for Website Designs | | | |
| LU3: Implement website templates in website | | | |

| Module 4: Plan Website and Explain Software Development Life Cycle for Web Applications | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Devise website project plan | | | |
| LU2: Implement Software Development Life Cycle in a web project | | | |

| Module 5: Use Databases in Web Development | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Discuss the basic and historical perspectives of Databases | | | |
| LU2: Compare different database management systems (DBMS) | | | |
| LU3: Create a database of a website in a database management system. | | | |

| Module 6: Develop Website using Client Side Scripting Languages | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1 : Write HTML for a website | | | |
| LU2 : Implement JavaScript in a website | | | |
| LU3 : Implement Cascading Style Sheets (CSS) in a website | | | |

| Module 7: Develop Website using Server Side Scripting Languages | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Develop a website using PHP | | | |
| LU2: Develop a website using ASP.NET | | | |

| Module 8: Design and Present Final Project | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Develop a dynamic website in ASP.Net / PHP | | | |
| LU2: Prepare a project document | | | |

| Module 9: Perform Duties and Exercise Rights at the workplace | | | |
|---|---|---|---|
| **Learning Units** | **Recommended formative assessment** | **Recommended Methodology** | **Scheduled Dates** |
| LU1: Demonstrate Ethics and Professional Conduct | | | |
| LU2: Plan Business-process activities | | | |
| LU3: Develop awareness of Rights | | | |

## 5.    Tools and equipment

**Documents, policies and guidelines**

(Class size: 20 trainees/students)

| | |
|---|---|
| 20 copies per class | Text books for this course |
| 20 copies per class | Organisational procedures for dealing with problems |
| 20 copies per class | Organisational guidelines for responding to and reporting accidents |
| 1 class set | Organisational policy and procedures for performing day to day task |
| 5 copies per class | Directories of existing businesses |
| 1 completed class copy as example<br><br>20 blank copies | Examples of business plans |
| 1 completed class copy as example<br><br>20 blank copies | Examples of financial plans |
| 1 class set | Advertising materials for potential business premises |
| 1 class set | Copies of job advertisements |
| 1 class set | Information on sources of finance |
| 1 completed class copy as example<br><br>20 blank copies | Business planner templates |
| 1 completed class copy as example<br><br>20 blank copies | Start-up-costs estimator |
| Contact details for colleagues, supervisor | |

**Tools and Equipment**
(Class size: 20 trainees/students)

| 1 set | Fire equipment, including the provision of fire exits, fire doors, fire extinguishers, alarm systems, emergency lighting, fire safety and exit signs |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 set | Computers, Scanner, Printer, Multimedia Projector, Microphone and Speakers |
| 1 set | Software<br><br>• Visual Studio.Net (any version) OR Visual Web Developer (any version)<br><br>• PHP (any version)<br>• MySQL and SQL Server (any version)<br>• Macromedia Dreamweaver (any version)<br>• Adobe Photoshop (any version)<br>• Microsoft FrontPage & Microsoft Publisher (any version)<br>• Microsoft Office (any version) |

## 6. List of consumables

Notebooks,

CDs,

CD/DVD Writers,

Photocopy Papers

Ball pens, Pencils, Erasers, Sharpeners,

Board Markers,

Plastic files,

Paper markers

Flip chart papers

Pin board pins

Whiteboards,

Whiteboard Erasers,

Paper knives,

Glue sticks,

Paper clips,

Scissors, and

Punching machines.

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