

National Vocational Certificate Level 4 in Information Technology (E-Commerce)

CBT Curriculum



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1. Introduction

The structure of this course

This curriculum comprises 5 modules. The recommended delivery time is 803 hours. Delivery of the course could 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: Business Analysis	96	234	340
Module 2: Web Designing / Development	32	120	152
Module 3: Quality Assurance	35	110	145
Module 4: E-Marketing	36	76	112

¹ Learning Module hours in training provider premises

² Training workshop, laboratory and on-the-job workplace

Module 5: Legal and Ethical Aspects	18	36	54
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This is a curriculum of Electronic Commerce programme which has been developed for implementation throughout Pakistan. This curriculum provides stakeholders with guidance on how to design and develop Electronic Commerce web applications. These good practices produced by participants belonging to the different sub domains of this field and allied fields.

Main objectives of this course

The overall objective of this program is to produce employable E-Commerce designers and developers who could provide web enabled E-Commerce software design and development services in nearly any industry or organization, which involves web applications in its operations. The graduates of this program will also be able to become entrepreneurs. But 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 action oriented work. Action 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 students in developing their 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, practically oriented methods. They will also need to develop a programme of practical assessment that reflects the learning outcomes stated in the curriculum.

Students will also develop ability as an individual to clarify issues, think through and to assess development opportunities. They will learn to consider requirements and constraints in day to day routine life and to develop their own projects / products.

Teaching staff will also support students 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 their capacity to produce resources for E-Commerce. By leveraging the guided discussions, activities, resources, and other materials in these trainings, participants will build their knowledge, skills, and abilities related to:

- Knowledge about Electronic Commerce
- Differentiation between different types of websites
- Explanation of problem solving techniques
- Practical experience of designing E-Commerce software
- Understanding of the web enabled Marketing
- Ability to deal with clients
- Information about major threats and their security measures
- Practical experience of HTML / JavaScript / CSS

- Sound knowledge about Database Management Systems
- Adequate presentation skills
- Team coordination skills

Entry level for trainees

Intermediate certificate (HSSC) with moderate Web Development knowledge and satisfactory completion of appropriate admission assessment.

Minimum teaching qualification

Teaching staff should have at least Seven (7) years' experience in the field of Web Development, Electronic Commerce, Mobile Commerce and a Masters degree (18 years) in Computer Science, Software Engineering or Information Technology with Research publications and international certifications. They should also hold or be working towards a formal teaching qualification.

Medium of instruction

Instruction will be in Urdu and English language. For employment in the other countries orientation to specific linguistic expression with language conversion tools (worked with UNI codes) are recommended.

Terminology

This curriculum is for E-Commerce Development. Some organisations may use alternative terms to describe this job role, for example web designer, web2 programmer or web developer. Training providers should examine the Overview of the Curriculum to determine whether this curriculum meets the needs of potential candidates/incumbents.

Laws and Regulations

E-Commerce is governed by the specific applicable territorial laws, Cyber Crime Wing; Ministry of Interior-Pakistan is the regulation body in compliance with Electronic Transaction Ordinance 2001.

Suggested distribution of modules

This qualification is made up of Five (5) modules excluding the final software development project. Suggested distribution of these modules is presented overleaf. This is not prescriptive and training providers may modify this according to given circumstances.

Three (3) modules are interdependent: Module 1: Business Analysis; Module 2: Web Designing / Development; Module 3: Quality Assurance. This is illustrated in the distribution table.

Module 4: Electronic Marketing – can be delivered at any stage. The distribution table suggests that this should be delivered at any stage after the Module-1. Whereas Module-5 is recommended for the visit in the later stages of teaching exercise.

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: Business Analysis 340 hours	Module 3: Quality Assurance 145 hours
Module 2: Web Designing / Development 152 hours	
Module 5: Legal & Ethical Aspects 54 hours	Module 4 E-Marketing 112 hours

Definition

Web designer designs the Graphical User Interface (GUI) of a website and a Web developer does the coding / programming of dynamic web application with online transaction support in server side scripting languages

Overall objectives of this course

- ✓ To lead and supervise software development teams and ensure organisational service standards are upheld
- ✓ Equipped resources with web designing skills
- ✓ 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 requirements
- ✓ Achieve optimal utilisation of the E-Commerce libraries.

Competencies gained after completion of the course:

- ✓ At the end of the course, the student must have attained the following competencies:
- ✓ Design & develop a dynamic web based E-Commerce software application
- ✓ Prepare the technical documentation
- ✓ Manage a web project
- ✓ Database designing of an e-commerce project
- ✓ Dealing with clients
- ✓ Web development in high level language or tool

- ✓ Software development in closed team environment
- ✓ Supervise the delivery of effective software service solution to clients
- ✓ Implementation of standardized E-Commerce Architecture

Personal requirements

Trainee needs the following characteristics:

- A genuine interest in software industry
- Good health and stamina – able to work for a longer period of time in tough environment
- Able to lead and work as a member of a team
- Willing to maintain the high standard of coding necessary in any project / product
- Organizational skills
- Flexibility, Integrity
- Teamwork and leadership
- Desire to learn

Opportunities for employment and advancement

Trainees can be employed in government / semi-government / private (MNC's) organizations as well as in 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 Web2 Engineer
- Technical Team Lead
- Project Manager
- Project Architect

Some experienced trainees achieve a highly respected level of salaries. 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 E-Commerce

Module Title and Aim	Learning Units	Timeframe of module
Module 1: Business Analysis Aim: Apply different methods to collect the E-Commerce application requirements, transform them in any appropriate design tool, create test case(s) for requirements and assess / analyze the contemporary trends in global village.	LU-1: Explain Concept and Terminologies LU2: Market Intelligence LU3: Requirement Analysis LU4: Requirement Designing LU5: Test Case Design	340 hours
		Theory Days/hours
		96 hours
		Workplace Days/hours
		234 hours
Module 2: Web Designing / Development Aim: The aim of this module is to develop the skills, knowledge and understanding to design and develop a web based software application (E-Commerce enabled) in any web design/development software.	LU1: Software Languages {In Compliance with IT Trade of Web Design and Development} LU2: Framework LU3: Database LU4: Security (HTTPS) LU5: Payment Modes	Timeframe of module
		152 hours
		Theory Days/hours
		32 hours
		Workplace Days/hours
		120 hours
Module 3: Quality Assurance	LU1: Validation and Verification LU2: Testing	
		145 hours

Aim: The aim of this module is to develop the understanding for the importance and the capability to test, validate and verify the quality features of the E-Commerce application/business.		Theory Days/hours
		35 hours
		Workplace Days/hours
		110 hours
Module 4: E-Marketing Aim: The aim of this module is to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means.	LU1: SEO (Search Engine Optimization) LU2: SCM (Supply Chain Management) LU3: Social Media Marketing	Timeframe of module
		112 hours
		Theory Days/hours
		36 hours
		Workplace Days/hours
		76 hours
Module 5: Legal and Ethical Aspects Aim: The aim of this module is to develop Code of Ethics and Professional Conduct, improve Planning Capabilities, and Awareness to Provision of applicable territorial Taxation / Business	LU1: Ethics and Professional Conduct LU2: Planning of Business-process activities LU3: Awareness to Rights	Timeframe of module
		54 hours
		Theory Days/hours
		18 hours
		Workplace Days/hours

/ Employment Rights for duties & rights at workplace.		36 hours
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3. Teaching and Learning Guide for Electronic Commerce

The aim of the training for students is to be able to act independently and responsibly in their field of study, by following an educational program where this is part of the overall methodological concept.

Different methodologies can therefore contribute to achieving this objective. Theory methodologies should be well 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 could 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 ups, role plays, emergency and contingency situational training, case studies, situational problem solving, body language, positive impressions, dignity in labor, and therefore should be included appropriately in the teaching approach.

3.1. Module 1: Business Analysis

Objective of the module: Apply different methods to collect the E-Commerce application requirements, transform them in any appropriate design tool, create test case(s) for requirements and assess / analyze the contemporary trends in global village.

Duration 340 hours **Theory:** 96 hours **Practical:** 234 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1: Concept and Terminologies	<p>The learner will be able to understand/perfor m the:</p> <ol style="list-style-type: none"> 1. Evolution of Electronic Commerce 2. Categories of E-Commerce Sites 3. Types of E-Commerce Sites 4. Concerns related to E-Commerce (Business, 	<ol style="list-style-type: none"> 1. Time line for the development and gradual growth of E-Commerce e.g. 1995: eBay is founded by computer programmer. 2. Inception of E-tailing or "virtual storefronts" on websites with online catalogues, Electronic Data Interchange (EDI), the business-to-business exchange of data 3. Online Transaction Processing using 	<p>Total: 72 hours</p> <p>Theory: 24 hours</p> <p>Practical: 48 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, http://www.ebay.com, http://www.amazon.com, templates for industry standards, industrial research articles, e-books, video assistance.</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	Consumer)	<p>Electronic Funds Transfer (EFT)</p> <p>4. Categories including but not limited to (B-B, B-C, C-C, and G-C)</p> <p>5. Types including but not limited to Financial, Auction, Entertainment, and Educational sites)</p> <p>6. Issues including Currency Conversion, Copy Rights, Product Delivery, Product EULA (End User License Agreement), Taxation, Linguistics)</p>			

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Market Intelligence	<p>The learner will be able to understand/perfor m the:</p> <ol style="list-style-type: none"> Identify the market demands for Products, Services, and Tasks (e.g. Applied Research) Gather and analyse the data Decision making in determining market opportunity 	<ol style="list-style-type: none"> Trend analysis including products sales information e.g. purchase records for iPhone, newly launched services e.g. distance learning. Application of Competitive Intelligence (Promotions and advertisement offered by competitors for relevant products, services offered.) Decision making using What-if scenario (Cost-Benefit Analysis) for Market and Product/Service segmentation. 	<p>Total: 84 hours</p> <p>Theory: 28 hours</p> <p>Practical: 56 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, http://www.ebay.com, http://www.amazon.com, templates for industry standards, industrial research articles, e-books, video assistance.</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU3: Requirement Analysis	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Process to Document the requirements 2. Technical writing skills 	<ol style="list-style-type: none"> 1. Create functional Requirements 2. Enable traceability methodology for requirements (Requirements Traceability Matrix) 	<p>Total: 24 hours</p> <p>Theory: 04 hours</p> <p>Practical: 20 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books, templates for industry standards (ISO, IEEE), industrial research articles, video assistance.</p> <p>Reference tool: IBM Rational Requisite Pro</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Exercise at workplace using internet</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Requirement Designing	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Procedure to Create software design(s) 2. Develop links with Requirements traceability 	<ol style="list-style-type: none"> 1. Techniques of designing including but not limited to DFD, ERD, OMT and UML (Use Case, Class, Activity, Sequence, Component, State, Deployment Diagrams) 	<p>Total: 70 hours</p> <p>Theory: 20 hours</p> <p>Practical: 50 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books, templates for industry, industrial research articles, video assistance.</p> <p>Designing tools as Reference: (ArguUML, Sparx Enterprise Architect)</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU5: Test Case Design	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Test Case development with requirements 2. Methods to Design test case for each Use Case of design 3. Procedure to Identify different scenarios 4. Techniques to Apply 	<ol style="list-style-type: none"> 1. Techniques to analyse Use Case using UML 2. Procedure to design test case from use case 3. Design conditions from operators (==, !=, , &&, <=, >=, <, >) 4. Specialized Testing Circumstances (Stress, Load-Balancing, Page Level Security, etc.) 	<p>Total: 80 hours</p> <p>Theory: 20 hours</p> <p>Practical: 60 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books, templates for industry, industrial research articles, video assistance.</p> <p>Testing tools as Reference: Automated tools (Quick test pro, Bugzilla, Issuezilla).</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>logical conditions</p> <p>5. Integrate traceability options</p>				

3.2. Module 2: Web Design / Development

Objective of the module: The aim of this module is to develop the skills, knowledge and understanding to design and develop a web based software application (E-Commerce enabled) in any web design/development software.

Duration 152 hours **Theory:** 32 hours **Practical:** 120 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Software Languages {In Compliance with IT Trade of Web Design and Development}	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Different coding standards in any of the computer language (Sun J2EE, MS ASP.Net, PHP) to meet the market requirements. 2. Execution/Implementation for the concept of Object Oriented Programming (OOP) to solve the real life problem by doing Server/Client side scripting. 3. Unit testing to check the correctness of the software 	<ol style="list-style-type: none"> 1. Coding standards 2. OOP concepts 3. Unit testing 4. Coding terminologies 5. Coding techniques 6. Development of site map 	<p>Total: 44 hours</p> <p>Theory: 04 hours</p> <p>Practical: 40 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books.</p> <p>Tools (Netbeans IDE, Eclipse, Adobe Dreamweaver, Adobe Photoshop)</p> <p>Enterprise Content</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

	program			Management (ECM) tools, e.g. Drupal, Wordpress, Joomla, Magento Web Server, e.g. IIS, Apache Tomcat, Glassfish, JBoss, Bea WebLogic	
LU2: Framework	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Different frameworks (e.g. Spring MVC, JSF, Struts, CodeIgnator, Zend, Entity Framework) 2. Develop a software application using frameworks 3. Efficiently use framework libraries to develop the software application 	<ol style="list-style-type: none"> 1. Frameworks usage to develop the software application 2. Develop software application with reference to requirements 3. Use of Programming Language / tool libraries in software application 	<p>Total: 26 hours</p> <p>Theory: 06 hours</p> <p>Practical: 20 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books, templates for industry, industrial research articles, video assistance.</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

				<p>Tools (Netbeans IDE, Eclipse, Adobe dreamviewer, Microsoft Visual Studio)</p> <p>Plug-in and libraries</p>	
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LU3: Database	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Entity classes 2. Relationship between identified entity classes 3. Design ERD diagram from entity classes 4. Applying normalization and de-normalization techniques 5. Identify P.K (primary key), C.P.K (composite primary key) and F.K (foreign key) 6. Design database queries (e.g create, insert, update, delete etc) 7. Design database in different tools 	<ol style="list-style-type: none"> 1. Entity classes 2. Database designing 3. Relationships (1:1, 1:M, M:M) 4. Entity Relationship Diagram (ERD) 5. Normalization / De-normalization technique 6. Steps in identifying / applying keys (primary key, foreign key, composite key) 7. Query designing (Projection, Selection, Join etc.) 8. Use of database design tool 	<p>Total: 20 hours</p> <p>Theory: 04 hours</p> <p>Practical: 16 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, e-books, templates for industry, industrial research articles, video assistance.</p> <p>Tools: Oracle, Microsoft Access, MySQL, MS SQL, Postgres etc)</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>
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LU4: Security (HTTPS)	The learner will be able to understand/perform the: <ol style="list-style-type: none"> 1. Security techniques on server side (64/32-bit) 2. Process to achieve Privacy, Integrity, and Confidentiality (Terms of Use, Disclaimer) 3. Secure Programming Techniques for Hyper Text 4. Implementation of Cryptology (Encryption) standards 5. HTTPS internet protocol integration 6. Auditing (Vulnerabilities) of Technical Infrastructure 	<ol style="list-style-type: none"> 1. Implement Secure Socket Layer-128 bit at page-level 2. Implement Web Services or XML for SET (Secure Electronic Transfer) for Visa and Master Cards 3. Design Public Key Encryption (PKI) for public-private keys, AES (Advance Encryption Standard), Below Fish for Cypher development 4. Integrate Firewalls (Packet Filtering, Proxy Server) 5. Deploy SE (Security Enhanced) Linux 6. Usage of Anti- 	Total: 30 hours Theory: 10 hours Practical: 20 hours	Participants should have their own working computers, workbooks and pens. Manuals and handouts, CBT, Case studies, e-books, templates for industry, industrial research articles, video assistance. Industry standard: (PCI DSS-Ecommerce)	For theoretical learning: Class rooms For practical learning: Simulation exercise at workplace using internet
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		<p>Hacking (Intrusion Detections, Worms Attacks, Denial of Service-DoS) tools</p> <p>7. Illustration to Short comings of different Internet protocol (UDP, etc.)</p>			
LU5: Payment Modes	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Different payment systems 2. Transaction mechanism 	<ol style="list-style-type: none"> 1. Integration with renowned Payment modes (Credit/Debit cards) 2. Integration via Web Services with VeriSign 3. Working of financial networks e.g. Union Pay, Visa, MasterCard, ORIX Leasing, 1-Link, MNet, Phoenix) 4. Implementation of Internationality 	<p>Total: 32 hours</p> <p>Theory: 08 hours</p> <p>Practical: 24 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies (WorldPay), CISP by Visa USA, e-books, templates for industry, industrial research articles, video</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p> <p>Visit to Bank ATM for the working of</p>

		<p>recognized</p> <p>Payment protocol including ACH (American Clearing House, PayPal)</p>		assistance.	<p>Debit card,</p> <p>Visit to any shopping mall for the illustration of working of credit card on any Point of Sale</p>
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3.3. Module 3: Quality Assurance

Objective of the module: The aim of this module is to develop the understanding for the importance and the capability to test, validate and verify the quality features of the E-Commerce application/business.

Duration 145 hours **Theory:** 35 hours **Practical:** 110 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Validation and Verification	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Techniques to validate the requirements against applicable industry/regularity standards 2. Techniques to verify the system against business requirements 	<ol style="list-style-type: none"> 1. Gape analysis with followed industrial standards 2. Quality Assurance Audit e.g. comparison to CMMI/ISO/SPICE/IE EE process standards 3. Quality Control e.g. Defects findings with reference to requirements (Customer/Business) 	<p>Total: 80 hours</p> <p>Theory: 20 hours</p> <p>Practical: 60 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, templates for industry, e-books, industrial research articles, video assistance.</p> <p>Bug Tracking tools as Reference: (Quick test pro, Bugzilla, Issuezilla).</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>

LU2: Testing	<p>The learner will be able to understand/perform the:</p> <ol style="list-style-type: none"> 1. Execution of the test cases using automated tool(s) 2. Perform applicable testing techniques (Alpha, Beta, Integration, System, Regression, Stress, UAT) 	<ol style="list-style-type: none"> 1. Usage of testing tools e.g. E-Tester 2. Testing techniques including Quality Measurement Indicator (Robustness, Integrity) Cyclomatic Complexity, etc.) 	<p>Total: 65 hours</p> <p>Theory: 15 hours</p> <p>Practical: 50 hours</p>	<p>Participants should have their own working computers, workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, templates for industry, e-books, industrial research articles, video assistance.</p> <p>Automated Testing tools as Reference: E-Tester</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace using internet</p>
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3.4. Module 4: E-Marketing

Objective of the module: The aim of this module is to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means.

Duration 112 hours **Theory:** 36 hours **Practical:** 76 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: SEO (Search Engine Optimization)	The learner will be able to understand/perform the: <ol style="list-style-type: none"> 1. Methods for SEO 2. Use of SEO key words 3. SEO techniques to priorities their site or web application using automated tools 	<ol style="list-style-type: none"> 1. Usage of SEO Methods including but not limited to Getting Indexed, Preventing Crawling, and Increasing Prominence. 2. Implementation for White-hat, Black-hat SEO techniques for web application 3. SEO key words for translation of web pages. 4. Use of SEO tools 	Total: 52 hours Theory: 12 hours Practical: 40 hours	Participants should have their own working computers, workbooks and pens. Manuals and handouts, CBT, Case studies, templates for industry, e-books, industrial research articles, video assistance. Tools (typo generator, page comparison tool)	For theoretical learning: Class rooms For practical learning: Simulation exercise at workplace using internet

LU2: SCM (Supply Chain Management)	The learner will be able to understand/perform the: <ol style="list-style-type: none"> 1. Procurement procedure 2. Inventory Control / store keeping techniques 3. Logistics (Operational aspect) 4. Reverse SCM 	<ol style="list-style-type: none"> 1. Procurement Cycle (Launch of RFP/RFQ, Tender, Bidding, Comparative Statement, Award of Contract, Maintenance) 2. Different techniques to manage goods, avoid their depreciation e.g. JIT (Just In Time) 3. Track and trace of the product delivery to customer premises. 4. Incorporation of Outsourcing in logistics. 5. Methods for handling of the Return of used/un-used products within stipulated time. 	Total: 36 hours Theory: 16 hours Practical: 20 hours	Participants should have their own working computers, workbooks and pens. Manuals and handouts, CBT, Case studies, templates for industry, e-books, industrial research articles, video assistance. Tools: SCM applications	For theoretical learning: Class rooms For practical learning: Simulation exercise at workplace using internet
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		6. Electronic Data Interchange methodologies and format.			
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LU3: Social Media Marketing	The learner will be able to understand/perform the: <ol style="list-style-type: none"> 1. Social Networking Advertisement 2. Online Classified Advertisement 3. Electronic Mail Marketing 4. Creations of Blogs 	<ol style="list-style-type: none"> 1. Create Brand pages on social networking sites including Facebook, and Twitter. 2. Integrate Banner ads on popular web sites like newspaper sites in any demographic region. 3. Regularly update brand/product/service blogs. 4. Direct marketing techniques e.g. Email, SMS (Mobile-Commerce) for the projection of company newsletters. 	Total: 24 hours Theory: 08 hours Practical: 16 hours	Participants should have their own working computers, workbooks and pens. Manuals and handouts, CBT, Case studies, templates for industry, e-books, industrial research articles, video assistance.	For theoretical learning: Class rooms For practical learning: Simulation exercise at workplace using internet
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3.5. Module 5: Legal and Ethical Aspects

Objective of the module: The aim of this module is to develop Code of Ethics and Professional Conduct, improve Planning Capabilities, and Awareness to Provision of applicable territorial Taxation / Business / Employment Rights for duties & rights at workplace.

Duration 54 hours **Theory:** 18 hours **Practical:** 36 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Ethics and Professional Conduct	<p>The learner will be able to understand/perform the mandatory standard for</p> <p>Responsibility</p> <p>Respect</p> <p>Fairness</p> <p>Honesty</p> <p>Against the applicable territorial laws.</p>	<p>1. Duty to take Ownership for the decisions/actions s/he make or fail to make and their consequences. (Role Play)</p> <p>2. Duty to show a high regard for resources entrusted to s/he. Including subordinates, tangible assets (equipment's),</p>	<p>Total: 10 hours</p> <p>Theory: 04 hours</p> <p>Practical: 06 hours</p>	<p>Participants should have their own workbooks and pens.</p> <p>Manuals and handouts, CBT, Case studies, templates for industry standards, video assistance.</p>	<p>For theoretical learning:</p> <p>Class rooms</p> <p>For practical learning:</p> <p>Simulation exercise at workplace</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>company profile.</p> <p>3. Duty to make decisions and act impartially/objectively free from self interest.</p> <p>(Quantified Self assessment can be performed e.g. case studies/white papers.) Areas like Conflict of Interest</p> <p>4. Duty to understand truth and act in truthful manner in conduct/communication. E.g. daily attendance enrolment on register, “What you say is what you did”</p>			

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Planning of Business-process activities	The learner will be able to identify tasks, their scheduling, define milestones, and learn optimal utilization of resources.	<ol style="list-style-type: none"> 1. Provide due assistance to in-line manager e.g. coordinating recurring meetings, intimate resource availability, create and keep documentations, validate applicable company defined standards. 2. Define activities, e.g. Apply specific life cycle methodologies – (Requirement gathering, design solution, prototype, testing, documentations) 3. Estimate time, e.g. hours calculations 	<p>Total: 26 hours</p> <p>Theory: 06 hours</p> <p>Practical: 20 hours</p>	<p>Manuals and handouts, CBT, Case studies, templates for industry standards, video assistance.</p> <p>Orientation to “Project planning tool” is recommended.</p>	<p>For theoretical learning:</p> <p>In class room</p> <p>For practical learning:</p> <p>Computer-aided exercises at workplace</p>

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>for an activity, consider calendar year official leaves, company working timings.</p> <p>4. Achieve work breakdowns, divide module in smaller and more manageable components. E.g. testing a product may have components like interface, performance, and test cases.</p> <p>5. Resource levelling due to work load, e.g. calculations of leisure hours of a worker.</p>			

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU3: Awareness to Rights	The learner will be able to recognize the aspirational requirements of human rights in employment context.	<ol style="list-style-type: none"> 1. Inform ourselves and uphold the policies, rules/regulations that governs the work and workplace. 2. Report illegal conduct or illegitimate action to appropriate management. 3. Protect propriety or confidential information. (Intellectual Property Rights, Copy Rights, Consumer Protection, Data Protection Act). 	Total: 18 hours Theory: 08 hours Practical: 10 hours	Manuals and handouts	For theoretical learning: Orientation sessions at workplace For practical learning:

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
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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 going on all the time. Its purpose is to provide feedback on what students are 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 the assessment, usually 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 for 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 would ask the student from the syllabus taught in the class room or lab
- Paper-based tests, such as multiple choice or short answer questions form taught material

Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a captain include:

- Home Work, such as assignments are given to be completed from home
- 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: Business Analysis**
 - Learner may be asked to;
 - Define and explain categories of E-Business

- Identify Market demand for a product
- Describe Functional requirements.
- Draw UML diagrams.
- Elaborate the working of Automated Testing CASE tools.
- Etc,

- **Assessment of Module 2: Web Design / Development**

Learner may be asked to;

- List down some ecommerce websites
- Design the database of your personal website in a database management system.
- Design the graphical user interface (GUI) of your favourite website in any web designing software
- Explain how SSL work.
- Write Web Service to connect with VeriSign
- Etc,

- **Assessment of Module 3: Quality Assurance**

Learner may be asked to;

- Explain Quality Metrics
- Explain the phases of Software Development Life Cycle (SDLC)
- Etc,

- **Assessment of Module 4: E-Marketing**

Learner may be asked to;

- Achieve SEO for any search engine (Opera etc.) for your web portal
- Tweet for your E-Commerce Application
- Build Inventory record program

- **Assessment of Module 5: Legal and Ethical Aspects**

Learner may be asked to;

- Explain the Conflict of Interest
- What ETO says for Cyber Crime
- Etc,

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 students' needs.

Assessment strategy for the Web Design & Development Curriculum

This curriculum consists of five modules:

- Module 1: Business Analysis
- Module 2: Web Design / Development
- Module 3: Quality Assurance
- Module 4: E-Marketing
- Module 5: Legal and Ethical Aspects

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 standardised methodology for awarding marks.

Planning aid for sessional assessments

Module 1: Business Analysis			
Learning Units	Recommended formative assessment	Recommended Methodology	Scheduled Dates
LU-1: Concept and Terminologies			
LU2: Market Intelligence			
LU3: Requirement Analysis			
LU4: Requirement Designing			

LU5: Test Case Design			
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Module 2: Web Designing / Development			
Learning Units	Recommended formative assessment	Recommended Methodology	Scheduled Dates
LU1: Software Languages {In Compliance with IT Trade of Web Design and Development}			
LU2: Framework			
LU3: Database			
LU4: Security (HTTPS)			
LU5: Payment Modes			

Module 3: Quality Assurance			
Learning Units	Recommended formative assessment	Recommended Methodology	Scheduled Dates
LU1: Validation and Verification			
LU2: Testing			

Module 4: E-Marketing			
Learning Units	Recommended formative assessment	Recommended Methodology	Scheduled Dates
LU1: SEO (Search Engine Optimization)			
LU2: SCM (Supply Chain Management)			
LU3: Social Media Marketing			

Module 5: Legal and Ethical Aspects			
Learning Units	Recommended formative assessment	Recommended Methodology	Scheduled Dates
LU1: Ethics and Professional Conduct			
LU2: Planning of Business-process activities			
LU3: Awareness to Rights			

5. Tools and equipment

Documents, policies and guidelines

(Anticipated Class size: 20 trainees/students, it may vary)

20 copies per class	Text book(s) for this course
20 copies per class	Reference book(s) for this course
20 copies per class	Syllabus for this course
1 class set	Bio-Sketch of Trainer
5 copies per class	Directories of E- business companies
1 completed class copy as example 20 blank copies	Examples of business plans
1 completed class copy as example 20 blank copies	Examples of Technical plans
1 class set	Advertising materials for E-Business promo
1 class set	Copies of job advertisements extracts
1 class set	Information on sources of Knowledge Management
1 completed class copy as example 20 blank copies	Business planner templates

1 completed class copy as example 20 blank copies	Start-up-time 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, Speakers, Reliable Public Internet Connectivity
1 set	Software <ul style="list-style-type: none"> • Visual Studio.Net (any version) OR Visual Web Developer (any version) • PHP (any version) • MySQL and SQL Server (any version) • Macromedia Dreamweaver (any version) • Adobe Photoshop (any version) • Microsoft FrontPage & Microsoft Publisher (any version) • Microsoft Office (any version) • ECM tools (any)

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

Punching machines



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