COMPETENCY STANDARD

FOR

WEB DESIGN AND DEVELOPMENT FOR FREELANCER

(ICT Sector)

Level: 04

Competency Standard Code: ICTCS0008L4V1

National Skills Development Authority
Prime Minister's Office, Bangladesh

Contents

Introduction

The National Skills Development Authority aims to enhance an individual's employability by certifying completeness with skills. NSDA works to expand the skilling capacity of identified public and private training providers qualitatively and quantitatively. It also aims to establish and operationalize a responsive skill ecosystem and delivery mechanism through a combination of well-defined set of mechanisms and necessary technical supports.

Key priority economic growth sectors identified by the government have been targeted by NSDA to improve current job skills along with existing workforce to ensure required skills to industry standards. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training programme.

"**Web Design and Development for Freelancer**" is selected as one of the priority occupations of **Information and Communication Technology** Sector. This standard is developed to adopt a demand driven approach to training with effective inputs from Industry Skills Councils, employer associations and employers.

Generally, a competency standard informs curriculum, learning materials, assessment and certification of students enrolled in skills sector. Students who successfully pass the assessment will receive a qualification in the National Skills Qualification Framework and will be listed on the NSDA's online portal.

This competency standard is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements. A series of stakeholder consultations, workshops were held to develop this document.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

Overview

A **competency standard** is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of representative from NSDA, Key Institutions, ISC, and industry experts to identify the competencies required of an occupation in **Information and Communication Technology** sector.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. CS acknowledge that people can achieve technical and vocational competency in many ways by emphasizing what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of a number of units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guides

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements
- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide

Competency Standards for National Skill Certificate –4 in Web Design and Development for freelancer in ICT Sector
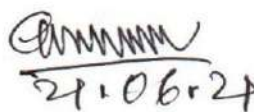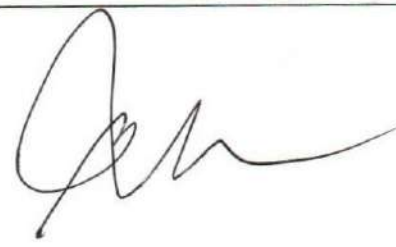
Level Descriptors of NTVQF / NSQF (BNQF 1-6

Level & Job classification	Knowledge Domain	Skills Domain	Responsibility Domain
6-Mid-Level Manager/ Sub Assistant Engineer	Comprehensive actual and theoretical knowledge within a specific work or study area with an awareness of the validity and limits of that knowledge, able to analyse, compare, relate and evaluate.	Specialised and wider range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems. Communicate professional issues and solutions to the team and to external partners/users.	Work under broad guidance and self-motivation to execute strategic and operational plan/s. Lead lower-level management. Diagnose and resolve problems within and among work groups.
5-Supervisor	Broad knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to scrutinize and break information into parts by identifying motives or causes.	Broad range of cognitive and practical skills required to generate solutions to specific problems in one or more work or study areas. Communicate practice-related problems and possible solutions to external partners.	Work under guidance of management and self-direction to resolve specific issues. Lead and take responsibility for the work and actions of group/team members. Bridge between management.
4-Highly Skilled Worker	Broader knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to solve problems to new situations by comparing and applying acquired knowledge.	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information. Communicate using technical terminology and IT technology with partners and users as per workplace requirements.	Work under minimal supervision in specific contexts in response to workplace requirements. Resolve technical issues in response to workplace requirements and lead/guide a team/ group.
3-Skilled Worker	Moderately broad knowledge in a specific work or study area, able to perceive ideas and abstract from drawing and design according to workplace requirements.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools. Communicate with his team and limited external partners upholding the values, nature and culture of the workplace	Work or study under supervision with considerable autonomy. Participate in teams and responsible for group coordination.
2-Semi Skilled Worker	Basic understanding of underpinning knowledge in a specific work or study area, able to interpret and apply common occupational terms and instructions.	Skills required to carry out simple tasks, communicate with his team in the workplace presenting and discussing results of his work with required clarity.	Work or study under supervision in a structured context with limited scope of manipulation
1 –Basic Skilled Worker	Elementary understanding of ability to interpret the underpinning knowledge in a specific study area, able to interpret common occupational terms and instructions.	Specific Basic skills required to carry out simple tasks. Interpret occupational terms and present the results of own work within guided work environment/ under supervision.	Work under direct supervision in a structured context with limited range of responsibilities.

List of Abbreviations

CS	- Competency Standard
CMS	- Content Management System
ICANN	- Internet corporation for assign names and numbers
DNS	- Domain Name Server
ISC	- Industry Skills Council
IDE	- Integrated Development Environment
IIS	- Internet Information Services
NSDA	- National Skills Development Authority
NSQF	- National Skills Qualifications Framework
NTVQF	- National Technical and Vocational Qualifications Framework
OSH	- Occupational Safety and Health
PPE	- Personal Protective Equipment
SCVC	- Standards and Curriculum Validation Committee
SSL	- Secure socket layer
SEO	- Search engine optimization
STP	- Skills Training Provider
SOP	- Standard Operating Procedures
UoC	- Unit of Competency
VCS	-Version control system
VPS	- Virtual Private Server
WSGI	- Web Server Gateway Interface

Approval of Competency Standard

Members of the Approval Committee:

Member	Signature
Dulal Krishna Saha Executive Chairman (Secretary) National Skills Development Authority	_21.06.21_
Md. Nurul Amin Member (Admin & Finance) and (Registration & Certification) Joint Secretary National Skills Development Authority	_21.06.21_
Alif Rudaba Member (Planning & Skills Standard) Joint Secretary National Skills Development Authority	

_21.06.21_

Dulal Krishna Saha

Executive Chairman (Secretary)

National Skills Development Authority

Date:

Course Structure

SL	Unit Code and Title		UoC Level	Nominal (Hours)
Generic Competencies				**40**
1	GU008L2V1	Work in a team environment	2	20
2	GU009L3V1	Practice negotiation skill	3	20
Occupation Specific Competencies				**320**
1	OUWDF001L4V1	Develop a dynamic website using server-side scripting language	4	100
2	OUWDF002L4V1	Design and Administer database	4	50
3	OUWDF003L4V1	Develop website using CMS	4	80
4	OUWDF004L4V1	Host a website	4	10
5	OUWDF005L4V1	Maintain and secure website	4	30
6	OUWDF006L4V1	Perform web analytics	4	30
7	OUWDF007L4V1	Use version control systems in web development environments	4	20
Total Nominal Learning Hours				**360**

Units & Elements at Glance

Generic Competencies

Code	Unit of Competency	Elements of Competency	Duration (Hours)
GU008L2V1	Work in a team environment	1. Define team role and scope 2. Identify individual role and responsibility 3. Participate in team discussions 4. Work as a team member	20
GU009L3V1	Practice negotiation skill	1. Plan negotiations 2. Participate in negotiations	20
		Total Hours:	40

Occupation Specific Competencies

Code	Unit of Competency	Elements of Competency	Duration (Hours)
OUWDF001L4V1	Develop a dynamic website using server-side scripting language (PHP/Python/JAVA /Asp.net/Ruby on rails/Node.js)	1. Plan for apply server-side scripting language 2. Apply server-side scripting language (PHP/Python/JAVA/Asp.net/Ruby/Node.js) 3. Test the website	100
OUWDF002L4V1	Design and Administer database	1. Plan to design database 2. Implement database 3. Test the database	50
OUWDF003L4V1	Develop website using CMS	1. Download and install the CMS 2. Develop website using CMS 3. Create rich content to website 4. Test the website	80
OUWDF004L4V1	Host a website	1. Select and configure the domain 2. Select and configure the server 3. Test the site	10
OUWDF005L4V1	Maintain and secure website	1. Identify security features 2. Plan a backup for file system and database 3. Design and apply security features 4. Check security logs, monitor performance and report security status	30
OUWDF006L4V1	Perform web analytics	1. Integrate web traffic monitoring tools 2. Monitor and report web traffic 3. Apply on-page SEO 4. Test the site	30
OUWDF007L4V1	Use version control systems in web development environments	1. Prepare to use VCS 2. Build files in VCS 3. Check and finalize use of VCS	20
		Total Hours:	320

Generic Competencies

Unit Code and Title	GU008L2V1: Work in a Team Environment
Unit Descriptor	This unit covers the knowledge, skills and attitudes required in working in a team environment. It includes defining team role and scope, identifying individual role and responsibility. Participating in team discussions and working as a team member.
Nominal Hours	20 Hours

Elements of Competency	Performance Criteria **Bold & Underlined** terms are elaborated in the Range of Variables
1. Define team role and scope	1.1. Role and objectives of the team are defined 1.2. Team structure, responsibilities and reporting relations are identified from team discussions and other external sources
2. Identify individual role and responsibility	2.1 Individual roles and responsibilities of **team members** are identified 2.2 Reporting relationships among team members are defined and clarified 2.3 Reporting relationships external to the team are defined and clarified
3. Participate in team discussions	3.1 Ideas related to team plans are contributed 3.2 Recommendations for improving team work are put forward
4. Work as a team member	4.1. Effective forms of communication are used to interact with team members 4.2. Communication channels are followed 4.3. OSH practices are followed

Range of Variables

Variables	Range (may include but not limited to):
1. Sources of information	1.1 Standard Operating Procedures 1.2 Job Description 1.3 Operations Manual 1.4 Organizational Structure
2. Team Members	2.1. Coach/mentor 2.2. Supervisor/Manager 2.3. Peers/Colleagues 2.4. Employee representative
3. Workplace context	3.1 National Laws and Statutes 3.2 Standard Operating Procedures 3.3 Workplace Rules and Regulations

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency

1. Critical aspects of competency	Assessment required evidence that the candidate:
	1.1 demonstrated knowledge in working in a team environment.
	1.2 satisfied the requirements mentioned in the Performance Criteria and Range of Variables
2. Underpinning knowledge	2.1 Team Structure, Role and Responsibility
	2.2 Individual Members' Roles and Responsibilities
	2.3 Communication Flow and Reporting Structures
	2.4 Team Planning
	2.5 Interpersonal Communication Skills
	2.6 Team Meeting Procedures
3. Underpinning skills	3.1 Handling personal computer/devices
	3.2 Planning for own work activities
	3.3 Interpreting instructions
	3.4 Interpreting team plans
	3.5 Communicating with team members and superiors
	3.6 Identifying communication channels
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety
	4.2 Environmental concerns
	4.3 Eagerness to learn
	4.4 Tidiness and timeliness
	4.5 Respect for rights of peers and seniors in workplace
	4.6 Communication with peers and seniors in Workplace
5. Resource implications	5.1 Pens
	5.2 Telephone
	5.3 Computer
	5.4 Writing materials
	5.5 Internet connectivity
6. Methods of assessment	Methods of assessment may include but not limited to:
	6.1. Workplace observation
	6.2. Demonstration
	6.3. Oral questioning
	6.4. Written test
	6.5. Portfolio
7. Context of assessment	7.1 Competency assessment will be done in NSDA accredited center or in online platform
	7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

Training Providers must be accredited by NSDA, the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of national skills qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

Unit Code and Title	GU009L3V1: Practice Negotiation Skills
Nominal Hours	**20 Hours**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to practice negotiation skills. It specifically includes – planning negotiations and participating in negotiations.
Elements of Competency	**Performance Criteria** **Bold & Underlined** terms are elaborated in the Range of Variables Training Components
1. Plan for negotiations	1.1 Information on **preparing for negotiation** is identified and included in the plan 1.2 Information on creating **non-verbal environments** for positive negotiating is identified and included in the plan 1.3 Information on **active listening** is identified and included in the plan 1.4 Information on different **questioning techniques** is identified and included in the plan 1.5 Information is checked to ensure it is correct and up-to-date
2. Participate in negotiations	2.1 Criteria for successful outcome are agreed upon by all parties 2.2 Desired outcome of all parties is considered 2.3 Appropriate language is used throughout the negotiation 2.4 A variety of questioning techniques are used 2.5 The issues and processes are documented and agreed upon by all parties 2.6 Possible solutions are discussed and their viability is assessed 2.7 Areas for agreement are confirmed and recorded 2.8 Follow-up action is agreed upon by all parties

Range of Variables

Variable	Range (May include but not limited to)

1. Preparing for negotiation	1.1 Background information on other parties to the negotiation
	1.2 Good understanding of topic to be negotiated
	1.3 Clear understanding of desired outcome/s
	1.4 Personal attributes
	    1.4.1 Self esteem
	    1.4.2 Objectivity

	1.4.3 Empathy
	1.4.4 Respect for others
	1.5 Interpersonal skills
	1.5.1 Listening / reflecting
	1.5.2 Non-verbal communication
	1.5.3 Assertiveness
	1.5.4 Behavior labeling
	1.5.5 Testing understanding
	1.5.6 Seeking information
	1.5.7 Self-disclosure
	1.6 Analytic skills
	1.6.1 Observing differences between content and process
	1.6.2 Identifying bargaining information
	1.6.3 Applying strategies to manage process
	1.6.4 Applying steps in negotiating process
	1.6.5 Strategies to manage conflict
	1.6.6 Steps in negotiating process
	1.7 Options within organization and externally for resolving conflict
2. Non-verbal environments	2.1 Friendly reception
	2.2 Warm and welcoming room
	2.3 Lead in conversation before negotiation begins
3. Active listening	3.1 Attentive
	3.2 Don't interrupt
	3.3 Good posture
	3.4 Maintain eye contact
	3.5 Reflective listening
4. Questioning techniques	4.1 Direct
	4.2 Indirect
	4.3 Human Open-ended

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment required evidences that the candidate:
	1.1 demonstrated sufficient knowledge of the factors influencing negotiation to achieve agreed outcome.
	1.2 participated in negotiation with at least one person to achieve an agreed outcome.
2. Underpinning knowledge	2.1. Codes of practice and guidelines for the organization.
	2.2. Organization policy and procedures for negotiations.
	2.3. Decision making and conflict resolution strategies procedures.

	2.4. Problem solving strategies on how to deal with unexpected questions and attitudes during negotiation 2.5. Flexibility 2.6. Empathy
3. Underpinning skill	3.1 Interpersonal skills to develop rapport with other parties. 3.2 Planning for own work activities 3.3 Communication skills (verbal and listening). 3.4 Observation skills. 3.5 Negotiation skills.
4. Required attitude	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in workplace
5. Resource implication	The following resources MUST be provided: 5.1 Workplace (actual or simulated) 5.2 Human resources (negotiators)
6. Methods of assessment	6.1 Demonstration 6.2 Oral questioning 6.3 Written test
7. Context of assessment	7.1 Competency assessment will be done in NSDA accredited center or in online platform 7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Occupation Specific Competencies

Unit Code and Title	OUWDF001L4V1: Develop a dynamic website using a server-side scripting language (PHP/Python/JAVA /Asp.net/Ruby on rails/Node.js)
Nominal Hours	**100 Hours**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to develop a dynamic website using server-side scripting language. It specifically includes planning for apply server-side scripting language, applying server-side scripting language (PHP/Python/JAVA /Asp.net/Ruby on rails/Node.js) and testing website.
Elements of Competency	**Performance Criteria** **Bold and Underlined** terms are elaborated in the Range of Variables
1. Plan for apply Server-side scripting language	1.1 The purpose and intended audience of the website are identified 1.2 Functional requirements and constraints are identified. 1.3 Coding plan is developed as required 1.4 Necessary **software** is installed and checked for requirements
2. Apply server-side scripting language (PHP/Python/JAVA /Asp.net/Ruby/Node.js)	2.1 Dynamic website is developed using server-side scripting language based on client requirements 2.2 Structure and element tags are added and attributes are assigned 2.3 Application Programming Interface (API) is developed and integrated as required 2.4 **Contents** are added to the site, and also formatted in accordance with client requirements by maintain standards and be aware of **legislation** 2.5 The website is compiled and run for the task
3. Test the website	3.1 The website is tested according to the **testing** procedures in the plan to ensure requirements 3.2 The website is opened with common **browsers** and checked and corrected as required 3.3 The website is confirmed as per client specification and requirement
Range of Variables	
Variables	**Range** (may include but not limited to):

1. Software	1.1 local server
	   1.1.1 Xampp
	   1.1.2 Wamp
	   1.1.3 Lamp
	1.2 IDE
	   1.2.1 VS code
	   1.2.2 Sublime text
	   1.2.3 Brackets
	   1.2.4 PHP storm
	   1.2.5 Notepad++

2. Contents	2.1 Text 2.2 Graphics 2.3 Media
3. Legislation	3.1 Relevant section of copyright Act 3.2 Relevant section of ICT act 3.3 Relevant section of national cyber policy 3.4 Intellectual property rights law and subsequent amendments
4. Testing	4.1 Unit testing 4.2 Functional 4.3 Non-functional 4.4 Load testing 4.5 Usability 4.6 Performance 4.7 Security
5. Browser	5.1 Google chrome 5.2 Mozilla Firefox 5.3 Microsoft edge 5.4 Safari 5.5 Opera

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency

1. Critical aspects of competency	1.1 Installed necessary software 1.2 Applied server-side scripting language 1.3 Saved website to a file 1.4 Tested the website **Note:** Critical aspects will cover only for one of the following server-side scripting language PHP/Python/JAVA /Asp.net/Ruby/Node.js as per STPs Requirements

2. Underpinning knowledge	2.1	HTML tags and attributes
	2.2	CSS syntax
	2.3	File management
	2.4	Application Programming Interface (API)
	2.5	Uses of IDE
	2.6	Browser
	2.7	Scripting language – JavaScript
		2.7.1 jQuery
		2.7.2 Ajax
		2.7.3 Json
	2.8	Server-side scripting language
	2.9	Legislation
		2.9.1 Relevant section of copyright Act
		2.9.2 Relevant section of ICT act
		2.9.3 Relevant section of cyber policy
		2.9.4 Relevant section of intellectual property rights law and subsequent amendments
3. Underpinning Skills	3.1	Operating personal computer
	3.2	Planning for own work activities
	3.3	Using text editors
	3.4	Using office application software
	3.5	Using design related software
	3.6	Using development related software
	3.7	Communicating with competent personnel
	3.8	Using file and folders
	3.9	Handling computer peripherals
	3.10	Using HTML tags and attributes
	3.11	Using CSS syntax
4. Required attitude	4.1	Commitment to occupational health and safety
	4.2	Promptness in carrying out activities
	4.3	Sincere and honest to duties
	4.4	Environmental concerns
	4.5	Eagerness to learn
	4.6	Tidiness and timeliness
	4.7	Respect for rights of peers and seniors in workplace
	4.8	Communication with peers and seniors in workplace
5. Resource Implication	The following resources must be provided:	
	5.1	Well-equipped computer lab with audio visual accessories
	5.2	Uninterrupted internet facilities

	5.3 Relevant tools, Equipment, software and facilities needed to perform the activities 5.4 Uninterrupted powers supply source 5.5 Required learning materials
6. Methods of Assessment	Methods of assessment may include but not limited to: 6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio **Note:** Assessment will cover only for one of the following server-side scripting language: PHP/Python/JAVA /Asp.net/Ruby/Node.js as per demand of STP/assessment centre.
7. Context of Assessment	7.1 Competency assessment will be done in NSDA accredited center or in online platform 7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Unit Code and Title	OUWDF002L4V1: Design and Administer Database
Nominal Hours	**50 Hours**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to design and administer database. It specifically includes planning to design database, implementing database and testing the database.
Elements of Competency	**Performance Criteria** **Bold and Underlined** terms are elaborated in the Range of Variables
1. Plan to design database	1.1 Purpose of database are identified 1.2 Database is planned as per requirements 1.3 The design requirements and constraints are identified 1.4 A conceptual design is developed 1.5 Necessary **software** is installed and checked for requirement
2. Implement database	2.1 **Database** is created as per plan 2.2 Database is connected to server as required 2.3 Table is created maintaining data relation as per standard procedure 2.4 Data is inserted and retrieved as required 2.5 Data is selected, deleted, updated and searched as required 2.6 Multiple data are inserted as required
3. Test the database	3.1 The database is tested according to the testing procedures in the plan to ensure requirements 3.2 The database is checked and corrected as required 3.3 The database is confirmed as per client specification and requirement
Range of Variables	
Variables	**Range** (may include but not limited to):
1. Software	1.1 local server 1.2 IDE
2. Database	2.1 Relational 2.2 Non-relational or Repository

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency

1. Critical aspects of competency	1.1	Planed to design database
	1.2	Created and implemented database
	1.3	Database tested and confirmed as per client specification and requirement
2. Underpinning knowledge	2.1	State database
	2.2	Types of databases
	2.3	Local server
	2.4	Query language
	2.5	Relation Database Management System (RDBMS)
	2.6	Types of data
	2.7	Data relation
	2.8	Database integrity and constraints
	2.9	SQL injection
	2.10	Database optimization
	2.11	Database normalization
3. Underpinning Skills	3.1	Operating personal computer
	3.2	Using IDE
	3.3	Using development related software
	3.4	Using file and folders
	3.5	Handling computer peripherals
	3.6	Using HTML tags and attributes
	3.7	Using CSS syntax
	3.8	Using JavaScript language
	3.9	Using Server-side scripting language for development
4. Required attitude	4.1	Commitment to occupational health and safety
	4.2	Promptness in carrying out activities
	4.3	Sincere and honest to duties
	4.4	Environmental concerns
	4.5	Eagerness to learn
	4.6	Tidiness and timeliness
	4.7	Respect for rights of peers and seniors in workplace
	4.8	Communication with peers and seniors in workplace
5. Resource Implication	The following resources must be provided:	
	5.1	Well-equipped computer lab with audio visual accessories
	5.2	Uninterrupted internet facilities
	5.3	Relevant tools, Equipment, software and facilities needed to perform the activities
	5.4	Uninterrupted powers supply source
	5.5	Required learning materials

	Methods of assessment may include but not limited to:
6. Methods of Assessment	6.1 written test 6.2 demonstration 6.3 oral questioning 6.4 portfolio
7. Context of Assessment	7.1 Competency assessment will be done in NSDA accredited center or in online platform 7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Unit Code and Title	OUWDF003L4V1: Develop Website Using CMS
Nominal Hours	**80 Hours**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to develop website using CMS. It specifically includes downloading and installing the CMS, developing website using CMS, creating rich content to website and testing website.
Elements of Competency	**Performance Criteria** **Bold and Underlined** terms are elaborated in the Range of Variables
1 Download and install the CMS	1.1 Client requirements are collected 1.2 Client requirements are analyzed 1.3 Specification of **CMS** is interpreted as per requirement 1.4 Appropriate CMS is downloaded and installed
2 Develop website using CMS	2.1 CMS is configured as per required 2.2 Admin panel is interpreted 2.3 Theme is enhanced using given templates design following the web and CMS standards 2.4 Convert **design** to HTML document as per CMS theme development guideline 2.5 Structures, element tags, necessary files are added and attributes are assigned to meet client requirements in terms of the layout 2.6 HTML file is converted to theme as required 2.7 Content is added to the site, and also formatted in accordance with client requirements and be aware of **legislation**
3 Create rich content to website	3.1 Special codes, required files are derived and added to enrich the content of website 3.2 Element tags are added and attributes are assigned to enrich the content maintaining **standards** and be aware of legislation 3.3 Audio and Video content is embedded in accordance with client requirement
4 Test the website	4.1 The website is tested to ensure compatibility, functionality, correct any errors and log in according to the **testing** procedures in the plan 4.2 The website is opened in a variety of **common browsers**, devices and check for **accessibility**,

	readability, legibility and presentation in accordance with client requirements
Range of Variables	
Variables	**Range** (may include but not limited to):
1. CMS	1.1 WordPress 1.2 Joomla! 1.3 Drupal 1.4 DotNetNuke
2. Design	2.1 PSD 2.2 InDesign 2.3 PDF 2.4 Figma 2.5 Image
3. Legislation	3.1 Relevant section of Copyright Act 3.2 Relevant section of ICT Act 3.3 Relevant section of National Cyber Policy 3.4 Relevant section of Intellectual Property Rights law and subsequent amendments 3.5 GNU license 3.6 CMS rules
4. Standards	4.1 World Wide Web (www.w3c.org) standards as well as any design. 4.2 Each CMS has its own rule to develop theme, ensure these rules are applied while developing a theme for CMS.
5. Testing	5.1 Unit testing 5.2 Functional 5.3 Non-functional 5.4 Load testing 5.5 Usability 5.6 Performance 5.7 Security
6. Common browsers	6.1 Mozilla Firefox 6.2 Google Chrome 6.3 Safari 6.4 Opera 6.5 Microsoft edge
7. Accessibility	7.1 Cultural awareness 7.2 Ethnicity 7.3 Physical impairments 7.4 Remote locations
Evidence Guide	

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency		
1. Critical aspects of competency	1.1	installed the CMS
	1.2	CMS is configured and develop website
	1.3	Embedded special code, files, Audio and Video content to enrich website
	1.4	Tested website for accessibility, readability, legibility
2. Underpinning knowledge	2.1	Basic website design using HTML
	2.2	Scripting languages
	2.3	Web server
	2.4	State Database
	2.5	CMS
	2.6	Customization of Theme
	2.7	Customization of Plug-in and extension
	2.8	Creation of theme
3. Underpinning Skills	3.1	Operating personal computer
	3.2	Using IDE
	3.3	Using internet and browsers
	3.4	Using file and folders
	3.5	Using HTML tags and attributes
	3.6	Using CSS syntax
	3.7	Using JavaScript language
	3.8	Using database
4. Required attitude	4.1	Commitment to occupational health and safety
	4.2	Promptness in carrying out activities
	4.3	Sincere and honest to duties
	4.4	Environmental concerns
	4.5	Eagerness to learn
	4.6	Tidiness and timeliness
	4.7	Respect for rights of peers and seniors in workplace
	4.8	Communication with peers and seniors in workplace
5. Resource Implication		The following resources must be provided:
	5.1	Well-equipped computer lab with audio visual accessories
	5.2	Uninterrupted internet facilities
	5.3	Relevant tools, Equipment, software and facilities needed to perform the activities
	5.4	Uninterrupted powers supply source
	5.5	Required learning materials
6. Methods of Assessment	6.1	Written test
	6.2	Demonstration
	6.3	Oral questioning
	6.4	Portfolio

| 7. Context of Assessment | 7.1 Competency assessment will be done in NSDA accredited center or in online platform |
| | 7.2 Assessment should be done by NSDA certified/ nominated assessor |

Accreditation Requirements

Training Providers must be accredited by NSDA, the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of national skills qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

Unit Code and Title	OUWDF004L4V1: Host A Website
Nominal Hours	10 hours
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude to host the website. It specifically includes choosing and configuring the domain and server, hosting and testing the site.
Elements of Competency	Performance Criteria **Bold and Underlined** terms are elaborated in the Range of Variable
1. Select and configure the domain	1.1 Domain is selected as per client requirement 1.2 DNS is configured as per client specification 1.3 Name server is assigned properly with the domain name
2. Select and configure the server	2.1 **Hosting** and **hosting configuration** are selected in accordance with client requirements 2.2 Appropriate **Web Application Server** is selected 2.3 Security options like SSL are selected in accordance with client requirements 2.4 Virtual website or folder is created and mapped with the domain 2.5 The entire site is deployed into the virtual folder
3. Test the site	3.1 The website is tested to ensure functionality, correct any errors and log in according to the **testing** procedures in the plan 3.2 The website is opened in a variety of common browsers and check for **accessibility**, readability, compatibility, legibility and presentation in accordance with client requirements 3.3 The website is evaluated for purpose in terms of the purpose, target audience and specifications of client requirements
Range of Variables	
Variable	Range (May include but not limited to:)
1. Hosting	1.1. Linux 1.2. Windows hosting 1.3. Shared hosting 1.4. Cloud server 1.5. VPS

	1.6. Dedicated Server
2. Hosting configuration	2.1 Space size
	2.2 Bandwidth
	2.3 Load optimization
	2.4 Back-up options
3. Web Application Server	3.1 Apache
	3.2 IIS
	3.3 Tomcat
	3.4 Gunicorn
	3.5 Glassfish
	3.6 WSGI
4. Testing	3.4 Unit testing
	3.5 Functional
	3.6 Non-functional
	3.7 Load testing
	3.8 Usability
	3.9 Performance
	3.10 Security
5. Accessibility	5.1 Cultural awareness
	5.2 Ethnicity
	5.3 Physical impairments
	5.4 Remote locations

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	1.1 Configured the domain
	1.2 Configured the server
	1.3 Tested the website for accessibility, readability, compatibility, legibility and presentation in accordance with client requirements
2. Underpinning knowledge	2.1. The ICANN
	2.2. Types of Hosting
	2.3. Types of domains
	2.4. DNS
	2.5. SSL
	2.6. Website hosting
	2.7. Hosting configuration
	2.8. Web Application Server
	2.9. Website testing
	2.10. Accessibility of website

3. Underpinning skill	3.1. Operating personal computer
	3.2. Operating computer peripherals
	3.3. Using internet and browsers
	3.4. Communicating with competent personnel
	3.5. Using file and folders
4. Required attitude	4.1 Commitment to occupational health and safety
	4.2 Promptness in carrying out activities
	4.3 Sincere and honest to duties
	4.4 Environmental concerns
	4.5 Eagerness to learn
	4.6 Tidiness and timeliness
	4.7 Respect for rights of peers and seniors in workplace
	4.8 Communication with peers, sub-ordinates and seniors in workplace
5. Resource implication	The following resources must be provided:
	5.1 Well-equipped computer lab with audio visual accessories
	5.2 Uninterrupted internet facilities
	5.3 Relevant tools, Equipment, software and facilities needed to perform the activities
	5.4 Uninterrupted powers supply source
	5.5 Required learning materials
6. Methods of assessment	6.1 Demonstration with oral questioning
	6.2 Direct observation
	6.3 Written test
	6.4 Portfolio
7. Context of Assessment	7.1 Competency assessment will be done in NSDA accredited center or in online platform
	7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Unit Code and Title	OUWDF005L4V1: Maintain and Secure Website
Nominal Hours	**30 hours**
Unit Descriptor	This unit of competency specifies the knowledge, skills and attitude to maintain and secure website. It specifically includes identify security features, backup for file system and database, designing and applying security features and checking security logs, monitor performance and report security status.
Elements of Competency	**Performance Criteria** **Bold and underlined** terms are elaborated in the Range of Variable.
1. Identify security features	1.1 The purpose and intended uses of the website are identified as required 1.2 Common and specific **security threats** are identified 1.3 **Security features** are identified 1.4 Security model is developed to meet client requirements
2. Plan a backup for file system and database	2.1 Backup plan is identified and selected as required. 2.2 Backup process is implemented as per client requirement 2.3 Backup process is monitored as required
3. Design and apply security features	3.1 Security features of the website are designed to meet the specifications of the security model 3.2 Security features are maintained as required
4. Check security logs, monitor performance and report security status	4.1 Security logs are checked and performance is monitored 4.2 Security status is reported as required 4.3 Necessary action is taken as per security status and reported as required
Range of Variables	
Variable	**Range** (May include but not limited to)
1. Security threats	1.1 Ransomware 1.2 Malware 1.3 SQL injection 1.4 DoS attack 1.5 Phishing 1.6 Accidental file deletion 1.7 Group force attacks
2. Security features	2.1 Secure Sockets Layer (SSL) 2.2 Secure File Transfer Protocol (SFTP)

	2.3	Secure Shell Host (SSH)
	2.4	DoS prevention
	2.5	Preventing Spam
	2.6	Protecting the Hot Links

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent &recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	1.1	Identified security features
	1.2	Planned backup for file system and database
	1.3	Designed and applied security features
	1.4	Checked security logs, monitored performance and reported security status
2. Underpinning knowledge	2.1.	Security threats
	2.2.	Security features
	2.3.	Security model
	2.4.	Back up files and database
	2.5.	Security logs
	2.6.	Troubleshooting
3. Underpinning skill	3.1.	Operating personal computer
	3.2.	Planning for own work activities
	3.3.	Using internet and browsers
	3.4.	Using file and folders
	3.5.	Handling computer peripherals
	3.6.	Communicating with clints
	3.7.	Reporting procedure and pathways
4. Required attitude	4.1	Commitment to occupational health and safety
	4.2	Promptness in carrying out activities
	4.3	Sincere and honest to duties
	4.4	Environmental concerns
	4.5	Eagerness to learn
	4.6	Tidiness and timeliness
	4.7	Respect for rights of peers and seniors in workplace
	4.8	Communication with peers, sub-ordinates and seniors in workplace
5. Resource implication	The following resources must be provided:	
	5.1	Well-equipped computer lab with audio visual accessories
	5.2	Uninterrupted internet facilities
	5.3	Relevant tools, Equipment, software and facilities needed to perform the activities

	5.4	Uninterrupted powers supply source Required learning materials
6. Methods of assessment	6.1	Demonstration
	6.2	Oral questioning
	6.3	Direct observation
	6.4	Written test
	6.5	Portfolio
7. Context of assessment	7.1	Competency assessment will be done in NSDA accredited center or in online platform
	7.2	Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Unit Code and Title	OUWDF006L4V1: Perform Web Analytics
Nominal Hours	**30 hours**
Unit Descriptor	This unit of competency specifies the knowledge, skills and attitude required to perform web analytics. It specifically includes selecting web traffic monitoring tools, monitoring and reporting web traffic, applying on-page SEO and testing the site.
Elements of Competency	**Performance Criteria** **Bold and underlined** terms are elaborated in the Range of Variable.
1. Integrate web traffic monitoring tools	1.1 Plan site analysis software is identified and analyzed with reference to client requirements and website architecture 1.2 Suitable site analysis software is installed according to client requirements 1.3 Required report options are identified with reference to client requirements and website architecture 1.4 The traffic-monitoring plan is developed 1.5 Necessary **web traffic monitoring tools** is integrated and checked for requirement
2. Monitor and report web traffic	2.1 Traffic monitoring tool is configured as required 2.2 Required traffic reports are specified according to information requirements 2.3 Reports are analyzed to identify improvements to server/site performance 2.4 Forecasting methodologies are applied to predict traffic peaks 2.5 Monitoring tools integration is tested as standard procedure
3. Apply on-page SEO	3.1 SEO techniques are listed for maintaining **standards** to meet client requirement 3.2 SEO techniques are applied and tested using **appropriate tools**
4. Test the site	4.1 Analytic engine and SEO tools are used 4.2 Analytic data is tested as standard procedure
Range of Variables	
Variable	**Range (May include but not limited to)**
1. Web traffic monitoring tools	1.1 Google analytics 1.2 Ahref 1.3 Alexa

	1.4	Moz	
	1.5	SEMrush	
	1.6	Piwik	
2. Standards	2.1	Browser page title	
	2.2	Meta keywords	
	2.3	Meta description	
	2.4	Heading	
	2.5	Image alt tag	
	2.6	Internal link	
	2.7	External link	
3. Appropriate tools	3.1	Google webmaster	
	3.2	Bing webmaster	
	3.3	Moz	
	3.4	SEMrush	

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent &recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	1.1	Installed site analysis software
	1.2	Integrate web traffic monitoring tools
	1.3	Monitored and reported web traffic
	1.4	Applied on-page SEO
	1.5	Tested the site
2. Underpinning knowledge	2.1	Site analysis software
	2.2	Website architecture
	2.3	Traffic-monitoring plan
	2.4	Web traffic monitoring tools
	2.5	Forecasting methodologies
	2.6	SEO standards
	2.7	On page SEO
	2.8	Monitoring tools
	2.9	SEO reporting procedure
3. Underpinning skill	3.1.	Using traffic monitoring plan
	3.2.	Planning for own work activities
	3.3.	Using web traffic monitoring tools
	3.4.	Applying forecasting methodologies
	3.5.	Applying SEO techniques
	3.6.	Using SEO tools
4. Required attitude	4.1	Commitment to occupational health and safety
	4.2	Promptness in carrying out activities
	4.3	Sincere and honest to duties
	4.4	Environmental concerns
	4.5	Eagerness to learn
	4.6	Tidiness and timeliness

	4.7	Respect for rights of peers and seniors in workplace	
	4.8	Communication with peers, sub-ordinates and seniors in workplace	
5. Resource implication	The following resources must be provided:		
	5.1	Well-equipped computer lab with audio visual accessories	
	5.2	Uninterrupted internet facilities	
	5.3	Relevant tools, Equipment, software and facilities needed to perform the activities	
	5.4	Uninterrupted powers supply source	
	5.5	Required learning materials	
6 Methods of assessment	6.1	Demonstration with oral questioning	
	6.2	Direct observation	
	6.3	Written test	
	6.4	Portfolio	
7 Context of assessment	7.1	Competency assessment will be done in NSDA accredited center or in online platform	
	7.2	Assessment should be done by NSDA certified/ nominated assessor	

Accreditation Requirements

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Unit Code and Title	OUWDF007L4V1: Use Version Control Systems in Web Development Environments
Nominal Hours	20 hours
Unit Descriptor	This unit of competency specifies the knowledge, skills and attitude required to use version control systems in web development environments.
	It specifically includes preparing to use VCS, building files in VCS and checking and Finalizing use of VCS.
Elements of Competency	Performance Criteria **Bold and underlined** terms are elaborated in the Range of Variable.
1. Prepare to use VCS	1.1 **VCS** is chosen as per requirements
	1.2 Required subversion and VCS pre-installation factors are Identified
	1.3 Installation disruption is determined and communicated to required personnel according to standard procedures
	1.4 VCS is Installed and personal account is created and changes are pushed from branches as required
	1.5 Tools and user interface of VCS are configured as required
2. Build files in VCS	2.1 Local repository is created according to service provider procedures
	2.2 Required directory is created according to service provider procedures as required
	2.3 Required staging environment structures and branches are created and accessed
	2.4 Files are created and accessed in the repository according to service provider procedures
	2.5 Files are added and committed to staging environment as per standard procedure
	2.6 Required files are committed to local repository
	2.7 Locate track of initial version change and confirm new status according to service provider procedures
	2.8 Respond to remote pull requests according to service provider procedures
	2.9 Retrieve remote commits and locally merge according to service provider procedures
3. Check and Finalize use of VCS	3.1 VCS outcomes are documented according to organizational requirements

	3.2 Documented outcomes are submitted to required personnel
	3.3 Feedback on documented outcomes from required personnel is responded
	3.4 VCS is finalized as per feedback

Range of Variables

Variable	Range (May include but not limited to)
1. Version control system	1.1 GIT
	1.2 Bit bucket

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent &recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	1.1 Prepared to use VCS
	1.2 Build files in VCS
	1.3 Checked and Finalized use of VCS
2. Underpinning knowledge	2.1 Version control system
	2.2 Branching
	2.3 Commit
	2.4 Merge
	2.5 Push and Pull
	2.6 Configuring
	2.7 Update
	2.8 Repository
3. Underpinning skill	3.1 Operating personal computer
	3.2 Planning for own work activities
	3.3 Installing software
	3.4 Operating computer peripherals
	3.5 Using internet and browsers
	3.6 Communicating with competent personnel
	3.7 Handling clients
	3.8 Using command line
	3.9 Using Graphical User Interface (GUI)
4. Required attitude	4.1 Commitment to occupational health and safety
	4.2 Promptness in carrying out activities
	4.3 Sincere and honest to duties
	4.4 Environmental concerns
	4.5 Eagerness to learn
	4.6 Tidiness and timeliness
	4.7 Respect for rights of peers and seniors in workplace
	4.8 Communication with peers, sub-ordinates and seniors in workplace
5. Resource implication	5.1 Well-equipped computer lab with audio visual

		accessories
	5.2	Uninterrupted internet facilities
	5.3	Relevant tools, Equipment, software and facilities needed to perform the activities
	5.4	Uninterrupted powers supply source
	5.5	Required learning materials
6. Methods of assessment	6.1	Demonstration with oral questioning
	6.2	Direct observation
	6.3	Written test
	6.4	Portfolio
7 Context of assessment	7.1	Competency assessment will be done in NSDA accredited center or in online platform
	7.2	Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

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Development of First Draft of Competency Standard

The Competency Standards for National Skills Certificate, level-04 in **Web Design and Development for freelancer** is developed by the following members and approved by NSDA

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Development of Second Draft of Competency Standard

The Competency Standards for National Skills Certificate, level-04 in **Web Design and Development for freelancer** is developed by the following members and approved by NSDA.

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Validation of Competency Standard by SCVC

The Competency Standards for National Skills Certificate level-04 in **Web Design and Development for freelancer,** is validated by SCVC on 30 and 31 May 2021 and approved by NSDA.

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This Competency Standard for **Web Design and Development for freelancer** is a document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the document for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

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