



## **COMPETENCY STANDARD**

# **Web Application Development with Python**

**Level: 04**

**(ICT Sector)**

**Competency Standard Code: CS-ICT-WADP-L4-EN-V1**



**National Skills Development Authority  
Prime Minister's Office  
Government of the People's Republic of Bangladesh**



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This Competency Standard for Web Application Development with Python, Level 4 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 to meet the qualification of individuals who graduated through the established standard via competency-based assessment for a relevant job.

This document has been developed by NSDA in association with ICT Sector ISC, industry representatives, academia, related specialist, trainer and related employee.

Public and private institutions may use the information contained in this standard for activities benefitting Bangladesh.

## **Introduction**

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The NSDA 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 skills 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 program. "Web Application Development with Python", Level 4 is selected as one of the priority occupations of ICT Sector. This standard is developed to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

Generally, a competency standard informs curriculum, learning materials, assessment and certification of trainees enrolled in Skills Training. Trainees who successfully pass the assessment will receive a qualification in the National Skills Qualification Framework (NSQF) under Bangladesh National Qualification Framework (BNQF) 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 Informal 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.



**Level Descriptors of NSQF (BNQF 1-6)**

| <b>Level &amp; Job Classification</b>       | <b>Knowledge Domain</b>  | <b>Skills Domain</b>  | <b>Responsibility Domain</b>   |
|---|--|---|--|
| 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

| <b>General</b>             |   |
|----------------------------|---|
| NSDA                       | National Skills Development Authority         |
| BMET                       | Bureau of Manpower Employment and Training    |
| ILO                        | International Labor Organization              |
| ISC                        | Industry Skills Council                       |
| NPVC                       | National Pre-Vocation Certificate             |
| NSQF                       | National Skills Qualifications Framework      |
| PPP                        | Public Private Partnership                    |
| SCVC                       | Standards and Curriculum Validation Committee |
| STP                        | Skills Training Provider                      |
| UoC                        | Unit of Competency                            |
| <b>Occupation Specific</b> |   |
| IDE                        | Integrated Development Environment            |
| OS                         | Operating System                              |
| EoF                        | End of File                                   |
| PIP                        | Package Installer for Python                  |
| OOP                        | Object Oriented Programming                   |
| MRO                        | Method Order Resolution                       |
| SQL                        | Structured Query Language                     |
| CRUD                       | Create, Retrieve, Update, Delete              |
| DAO                        | Data access object                            |
| UI                         | User Interface                                |
| CSS                        | Cascading Style Sheets                        |
| DB API                     | DataBase Application Programming Interface    |
| SRS                        | Shock Response Spectrum                       |
| SSH                        | Secure Shell                                  |



**Approval of Competency Standard**

Approved by  
23<sup>rd</sup> Authority Meeting of NSDA Held on 26.12.2022

*Saniul*  
*26.12.22*

Md. Saniul Ferdous  
Deputy Director (Admin)  
National Skills Development Authority  
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Deputy Director (Admin)

and

Officer of Secretarial Duties for Authority Meeting  
National Skills Development Authority



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**Competency Standards for National Skill Certificate – 4 in  
Web Application Development with Python in ICT Sector  
Course Structure**

| SL   | Unit Code and Title  |  | UoC Level | Nominal Duration (Hours) |
|--|----------------------|--|-----------|--------------------------|
| <b>Generic Units of Competencies</b>             |                      |  |           | <b>20</b>                |
| 1.   | GU-11-L4-V1          | Lead Small Team                                  | 4         | 20                       |
| <b>Sector Specific Units of Competencies</b>     |                      |  |           | <b>15</b>                |
| 2.   | SU-ICT-03-L3-V1      | Comply to Ethical Standards in the ICT Workplace | 3         | 15                       |
| <b>Occupation Specific Units of Competencies</b> |                      |  |           | <b>325</b>               |
| 3.   | OU-ICT-WADP-01-L4-V1 | Enable Django Framework Environment              | 4         | 10                       |
| 4.   | OU-ICT-WADP-02-L4-V1 | Develop dynamic web pages                        | 4         | 40                       |
| 5.   | OU-ICT-WADP-03-L4-V1 | Use Django model                                 | 4         | 40                       |
| 6.   | OU-ICT-WADP-04-L4-V1 | Process Forms                                    | 4         | 30                       |
| 7.   | OU-ICT-WADP-05-L4-V1 | Customize UI                                     | 4         | 10                       |
| 8.   | OU-ICT-WADP-06-L4-V1 | Apply User Management                            | 4         | 60                       |
| 9.   | OU-ICT-WADP-07-L4-V1 | Create API using Django REST Framework           | 4         | 75                       |
| 10.  | OU-ICT-WADP-08-L4-V1 | Create Final project                             | 4         | 60                       |
| Total Nominal Learning Hours                     |                      |  |           | 360                      |

## Units & Elements at Glance

### Generic Units of Competencies

| <b>Code</b> | <b>Unit of Competency</b> | <b>Elements of Competency</b>  | <b>Duration (Hours)</b> |
|-------------|---------------------------|--|-------------------------|
| GU-11-L4-V1 | Lead Small Team           | <ol style="list-style-type: none"><li>1. Provide team leadership</li><li>2. Assign responsibilities</li><li>3. Set performance expectations for team members</li><li>4. Supervise team performance</li></ol> | 20                      |

### Sector Specific Units of Competencies

| <b>Code</b>     | <b>Unit of Competency</b>                        | <b>Elements of Competency</b>  | <b>Duration (Hours)</b> |
|-----------------|--|--|-------------------------|
| SU-ICT-03-L3-V1 | Comply to Ethical Standards in the ICT Workplace | <ol style="list-style-type: none"><li>1. Uphold the requirements of clients</li><li>2. Deliver quality products and services</li><li>3. Maintain professionalism at workplace</li><li>4. Maintain workplace code of conduct.</li></ol> | 15                      |

## Occupation Specific Units of Competencies

| Code                 | Unit of Competency                     | Elements of Competency  | Duration (Hours) |
|----------------------|--|---|------------------|
| OU-ICT-WADP-01-L4-V1 | Enable Django Framework Environment    | <ol style="list-style-type: none"> <li>1. Install python and Django</li> <li>2. Start a project</li> </ol>  | 10               |
| OU-ICT-WADP-02-L4-V1 | Develop dynamic web pages              | <ol style="list-style-type: none"> <li>1. Use Django urls and Views</li> <li>2. Apply Django Templates</li> <li>3. Implement Django Application Management</li> </ol>   | 40               |
| OU-ICT-WADP-03-L4-V1 | Use Django Model                       | <ol style="list-style-type: none"> <li>1. Create model</li> <li>2. Implement Django model Queries and Managers</li> <li>3. Create class-based view</li> </ol>   | 40               |
| OU-ICT-WADP-04-L4-V1 | Process Forms                          | <ol style="list-style-type: none"> <li>1. Create forms</li> <li>2. Submit forms from scratch</li> <li>3. Use Model Form</li> <li>4. Use Django Custom Form Fields and Widgets</li> </ol>                            | 30               |
| OU-ICT-WADP-05-L4-V1 | Customize UI                           | <ol style="list-style-type: none"> <li>1. Manage static resources</li> <li>2. Apply Bootstrap on templates</li> </ol>   | 10               |
| OU-ICT-WADP-06-L4-V1 | Apply User Management                  | <ol style="list-style-type: none"> <li>1. Elements of Competency</li> <li>2. Use built-in user management</li> <li>3. Apply custom user management</li> <li>4. Apply notification and activation process</li> </ol> | 60               |
| OU-ICT-WADP-07-L4-V1 | Create API using Django REST Framework | <ol style="list-style-type: none"> <li>1. Apply DRF concepts</li> <li>2. Create CRUD project</li> </ol>   | 75               |
| OU-ICT-WADP-08-L4-V1 | Create Final project                   | <ol style="list-style-type: none"> <li>1. Create project</li> <li>2. Deploy project</li> <li>3. Apply notification and activation process through</li> </ol>  | 60               |



## **Generic Units of Competencies**



|  |   |
|--|---|
| <b>Unit Code and Title</b>                       | <b>GU11L4V1: Lead Small Team</b>  |
| <b>Unit Descriptor</b>                           | This unit covers the knowledge, skills and attitudes required to lead small team. It specifically includes – provide team leadership; assign responsibilities; set performance expectations for team members; and supervised team performance.  |
| <b>Nominal Hours</b>                             | <b>20 Hours</b>   |
| <b>Elements of Competency</b>                    | <b>Performance Criteria</b><br><b>Bold &amp; Underlined</b> terms are elaborated in the Range of Variables  |
| 1. Provide team leadership                       | 1.1 <b><u>Work requirements</u></b> are identified and presented to team members<br>1.2 Reasons for instructions and requirements are communicated to team members<br>1.3 <b><u>Team members' queries and concerns</u></b> are recognized, discussed and dealt with   |
| 2. Assign responsibilities                       | 2.1 Duties, and responsibilities are allocated having regard to the skills, knowledge and attitudes required to properly undertake the assigned task<br>2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible  |
| 3. Set performance expectations for team members | 3.1 Performance expectations are established based on client needs and according to assignment requirements<br>3.2 Performance expectations are based on individual team members' duties and area of responsibility<br>3.3 Performance expectations are discussed and directed to implement in the workplace  |
| 4. Supervise team performance                    | 4.1 <b><u>Monitoring of performance</u></b> are taken place against defined performance criteria and / or assignment instructions and corrective action taken if required<br>4.2 Team members are provided <b><u>feedback</u></b> , positive support and advice on strategies to overcome any deficiencies<br>4.3 <b><u>Performance issues</u></b> which cannot be rectified or addressed within the team are referenced to appropriate personnel<br>4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on clients' / customers' needs and satisfaction<br>4.5 Team operations are monitored to ensure that employer / client needs and requirements are met<br>4.1 Follow-up communication is provided on all issues affecting the team<br>4.6 All relevant documentation is completed |
| <b>Range of Variables</b>                        |   |
| <b>Variable</b>                                  | <b>Range</b> (may include but are not limited to):  |
| 1. Work requirements                             | 1.1 Client Profile<br>1.2 Assignment instructions   |

|   |   |
|---|---|
| 2. Team member's queries and concerns   | 2.1 Roster<br>2.2 Shift details   |
| 3. Monitoring of performance  | 3.1 Formal process<br>3.2 Informal process  |
| 4. Feedback   | 4.1 Formal process<br>4.2 Informal process<br>4.3 Sandwich process  |
| 5. Performance issues   | 5.1 Work output<br>5.2 Work quality<br>5.3 Team participation<br>5.4 Compliance with workplace protocols<br>5.5 Safety<br>5.6 Customer service  |
| <b>Evidence Guide</b>   |   |
| 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   | 1.1 Maintained or improved individuals and / or team performance given a variety of possible scenario<br>1.2 Assessed and monitored team and individual performance against set criteria<br>1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf<br>1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and attitude and the needs of the tasks to be performed<br>1.5 Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members |
| 2. Underpinning knowledge   | 2.1 Company policies and procedures<br>2.2 Relevant legal requirements<br>2.3 How performance expectations are set<br>2.4 Methods of Monitoring Performance<br>2.5 Client expectations<br>2.6 Team members' duties and responsibilities   |
| 3. Underpinning skills  | 3.1 Informal performance counselling skills<br>3.2 Team building skills<br>3.3 Negotiating skills   |
| 4. Required attitudes   | 4.1 Commitment to occupational health and safety<br>4.2 Promptness in carrying out activities<br>4.3 Sincere and honest to duties<br>4.4 Environmental concerns<br>4.5 Eagerness to learn<br>4.6 Tidiness and timeliness<br>4.7 Respect for rights of peers and seniors in workplace<br>4.8 Communicate with peers and seniors in workplace   |

|   |   |
|---|---|
| 5. Resource implications  | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace (actual or simulated)</li> <li>5.2 Tools, equipment and facilities appropriate to processes or activity</li> <li>5.3 Materials relevant to the proposed activity</li> <li>5.4 Equipment and outfits appropriate in applying safety measures</li> <li>5.5 Relevant drawings, manuals, codes, standards and reference material</li> </ul> |
| 6. Methods of assessment  | <p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1 Written test</li> <li>6.2 Demonstration</li> <li>6.3 Oral questioning</li> <li>6.4 Portfolio</li> </ul>   |
| 7. Context of assessment  | <ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in a training centre or in an actual or simulated workplace after completion of the training module</li> <li>7.2 Assessment should be done by NSDA certified assessor</li> </ul>  |
| <p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (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 any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |   |



## **Sector Specific Units of Competencies**



|  |  |
|--|--|
| <b>Unit Code and Title</b>   | <b>SU-ICT-04-L3-V1: Comply to Ethical Standards in the ICT Workplace</b>   |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to comply to ethical standards in the ICT workplace. It specifically includes the task of upholding the requirements of clients, delivering quality products and services, maintaining professionalism at workplace, and maintaining workplace code of conduct.  |
| <b>Nominal Hours</b>   | <b>15 Hours</b>  |
| <b>Elements of Competency</b>  | <b>Performance Criteria</b><br><b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables  |
| 1. Uphold the requirements of clients  | 1.1 Clients' requirements are identified.<br>1.2 Confidentiality of information is maintained in accordance with workplace policies / organizational policies/ national legislation.<br>1.3 Potential conflicts of interest are identified and involved parties of potential conflicts are notified.<br>1.4 Proprietary rights of client/customer is asserted.   |
| 2. Deliver quality products and services   | 2.1. Products and services are provided according to the clients' requirements.<br>2.2. Work is completed as per standards.<br>2.3. Quality processes are implemented when developing products and services.   |
| 3. Maintain professionalism at workplace   | 3.1 Work processes are delivered as per standards.<br>3.2 Skills, knowledge and qualifications are presented in a professional manner.<br>3.3 Services and products developed by self and others are delivered as per workplace standard.<br>3.4 Unbiased and objective information are provided to clients.<br>3.5 Realistic estimates for time, cost and delivery of outputs are presented during negotiation. |
| 4. Maintain workplace code of conduct.   | 4.1 Workplace code of conduct are interpreted<br>4.2 Workplace code of conduct is followed.  |
| <b>Range of variables</b>  |  |
| <b>Variables</b>   | <b>Range</b> (may include but not limited to):   |
| <b>Evidence Guide</b><br>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 evidence that the candidate:<br>1.1 asserted proprietary rights of client/customer.<br>1.2 completed work to industry and international standards.<br>1.3 implemented quality processes when developing products and services.<br>1.4 delivered services and products developed by self and others.<br>1.5 provided unbiased and objective information to clients.                           |

|   |  |
|---|--|
|   | 1.6 followed workplace code of conduct.  |
| 2. Underpinning knowledge   | 2.1. Corporate code of confidentiality of information<br>2.2. organizational policies, national legislation and workplace policies in relation to IT sector<br>2.3. Law and regulations pertaining to proprietary rights<br>2.4. Quality processes for products and services<br>2.5. Procedure of provided to client information<br>2.6. Method of estimating for time, cost and delivery products and services<br>2.7. Workplace code of conduct in IT sector   |
| 3. Underpinning Skills  | 3.1. Upholding confidentiality of information in accordance with organizational policies, national legislation and workplace policies<br>3.2. Asserting proprietary rights of client/customer<br>3.3. Completing work in accordance with industry and international standards<br>3.4. Implementing quality processes when developing products and services<br>3.5. Delivering correctly services and products developed by self and others<br>3.6. Providing unbiased and objective information are to clients.<br>3.7. Presenting realistic estimates for time, cost and delivery of outputs during negotiation<br>3.8. Following workplace code of conduct |
| 4. Underpinning Attitudes   | 4.1 Commitment to occupational health and safety<br>4.2 Promptness in carrying out activities<br>4.3 Sincere and honest to duties<br>4.4 Environmental concerns<br>4.5 Eagerness to learn<br>4.6 Tidiness and timeliness<br>4.7 Respect for rights of peers and seniors in workplace<br>4.8 Communication with peers and seniors in workplace.   |
| 5. Resource Implications  | The following resources must be provided:<br>5.1 Relevant tools, Equipment, software and facilities needed to perform the activities.<br>5.2 Required learning materials.  |
| 6. Methods of Assessment  | 6.1 Written Test<br>6.2 Demonstration<br>6.3 Oral Questioning  |
| 7. Context of Assessment  | 7.1. Competency assessment must be done in NSDA accredited center.<br>7.2. Assessment should be done by NSDA certified/ nominated assessor   |
| <p><b>Accreditation Requirements</b><br/>Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |  |

## **Occupation Specific Units of Competencies**



|  |  |
|--|--|
| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-01-L4-V1: Enable Django Framework Environment</b>   |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitude required to enable django framework environment.<br>It specifically includes the requirements of installing python and Django, and starting a project. |
| <b>Nominal Hours</b>   | <b>10 hours</b>  |
| <b>Elements of Competency</b>  | <b>Performance Criteria</b><br><b><u>Bold and underlined</u></b> terms are elaborated in the range of variables  |
| 1. Install python and Django   | 1.1 python is installed<br>1.2 Django is installed<br>1.3 <b><u>Database</u></b> is set up   |
| 2. Start a project   | 2.1 working environment is explored<br>2.2 <b><u>Project structure</u></b> is explored<br>2.3 The development server is started  |
| <b>Range of Variables</b>  |  |
| <b>Variable</b>  | <b>Range</b> (May include but not limited to: )  |
| 1. Database  | 1.1 PostgreSQL<br>1.2 SQLite<br>1.3 MySQL<br>1.4 Without a Database  |
| 2. Project structure   | 2.1 __init__.py<br>2.2 manage.py<br>2.3 settings.py<br>2.4 urls.py   |
| <b>Evidence Guide</b>  |  |
| 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 evidence that the candidate:<br>1.1 Started a project  |
| 2. Underpinning knowledge  | 2.1 GitHub<br>2.2 Version Control<br>2.3 Python<br>2.4 Django<br>2.5 Database<br>2.6 Project and project structure<br>2.7 Development Server   |
| 3. Underpinning skill  | 3.1 installing python and Django<br>3.2 starting a project   |

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| 4. Required attitude   | 4.1 Commitment to occupational safety and health.<br>4.2 Promptness in carrying out activities.<br>4.3 Sincere and honest to duties.<br>4.4 Eagerness to learn the document preparation process.<br>4.5 Tidiness and timeliness.<br>4.6 Environmental concerns.<br>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.<br>4.8 Communication with peers, subordinates and seniors in the workplace.<br>4.9 Keeps a clean and orderly workplace and equipment. |
| 5. Resource implication  | 5.1 Relevant tools, Equipment, software and facilities needed to perform the activities.<br>5.2 Required learning materials.   |
| 6. Methods of assessment   | 6.1 Written test<br>6.2 Demonstration<br>6.3 Oral questioning  |
| 7. Context of assessment   | 7.1 Competency assessment must be done in NSDA accredited center.<br>7.2 Assessment should be done by NSDA certified/ nominated assessor   |
| <p><b>Accreditation Requirements</b><br/> Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |  |

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| <b>Unit Code Title</b>   | <b>OU-ICT-WADP-02-L4-V1: Develop dynamic web pages</b>  |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to develop dynamic web pages.<br>This specifically includes the requirements of using Django urls and views, applying Django templates, and implementing Django application management.                                     |
| <b>Nominal Hours</b>   | <b>40 Hours</b>   |
| <b>Elements of Competencies</b>  | <b>Performance Criteria</b><br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables)  |
| 1. Use Django urls and Views   | 1.1 Common Url Patterns are applied<br>1.2 Url Parameters, Extra Options, and Query Strings are used<br>1.3 Url Naming and Namespaces are implemented<br>1.4 Url Method Requests are implemented<br>1.5 View Method Requests are implemented<br>1.6 View Method Responses are implemented |
| 2. Apply Django Templates  | 2.1 <b><u>Django Template Syntaxes</u></b> are applied<br>2.2 <b><u>Built-In Django Filters</u></b> are applied   |
| 3. Implement Django Application Management   | 2.1. Django settings.py for the Real World is set<br>2.2. ALLOWED_HOSTS is defined<br>2.3. Application is allowed<br>2.4. Static web page resources are accumulated<br>2.5. Images, CSS, JavaScript are applied   |
| <b>Range of Variables</b>  |   |
| <b>Variable</b>  | <b>Range</b> (may include but not limited to):  |
| 1. Django Template Syntaxes  | 1.1 Django Templates are configuration<br>1.2 Template Search Paths   |
| 2. Built-In Django Filters   | 2.1 Dates<br>2.2 Strings<br>2.3 Lists<br>2.4 Numbers  |
| <b>Evidence Guide</b><br>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:<br>1.1 Used Django Urls and Views<br>1.2 Applied Django Templates<br>1.3 Implemented Django Application Management   |

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| 2. Underpinning knowledge  | <ul style="list-style-type: none"> <li>2.1 Django url</li> <li>2.2 Django view</li> <li>2.3 Django filter</li> <li>2.4 Django Application Management</li> <li>2.5 CSS</li> <li>2.6 JavaScript</li> </ul>   |
| 3. Underpinning skills   | <ul style="list-style-type: none"> <li>3.1 Using Django urls and Views</li> <li>3.2 Applying Django Templates</li> <li>3.3 Implementing Django Application Management</li> </ul>   |
| 4. Required attitudes  | <ul style="list-style-type: none"> <li>4.1 Commitment to occupational safety and health.</li> <li>4.2 Promptness in carrying out activities.</li> <li>4.3 Sincere and honest to duties.</li> <li>4.4 Eagerness to learn the document preparation process.</li> <li>4.5 Tidiness and timeliness.</li> <li>4.6 Environmental concerns.</li> <li>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.</li> <li>4.8 Communication with peers, subordinates and seniors in the workplace.</li> <li>4.9 Keeps a clean and orderly workplace and equipment.</li> </ul> |
| 5. Resource implication  | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace (actual or simulated).</li> <li>5.2 Tools, equipment and physical facilities appropriate to perform activities.</li> <li>5.3 Materials consumable to perform activities.</li> </ul>  |
| 6. Methods of assessment   | <p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1 Written test</li> <li>6.2 Demonstration</li> <li>6.3 Oral questioning</li> </ul>   |
| 7. Context of assessment   | <ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited center.</li> <li>7.2 Assessment should be done by NSDA certified/ nominated assessor</li> </ul>   |
| <p><b>Accreditation Requirements</b><br/> Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |  |

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| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-03-L4-V1: Use Django Model</b>   |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to use Django model.<br>This specifically includes the task of creating model, implementing Django model Queries and Managers, and creating class-based view.   |
| <b>Nominal Hours</b>   | <b>60 Hours</b>   |
| <b>Elements of Competency</b>  | <b>Performance Criteria</b><br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables   |
| 1. Create model  | 1.1 Model class is defined with proper <b><u>model data type</u></b> and relationships<br>1.2 Model migration is performed  |
| 2. Implement Django model Queries and Managers   | 2.1 CRUD single records in Django Models are performed using shell and Admin<br>2.2 CRUD multiple records in Django Models are performed using shell and admin<br>2.3 CRUD relationship records across Django models are performed<br>2.4 <b><u>Model queries</u></b> are performed<br>2.5 Custom and multiple model managers are created |
| 3. Create class-based view   | 3.1 Model records with class-based view are created<br>3.2 CRUD with class-based view is performed<br>3.3 Mixin is applied with class-based view  |
| <b>Range of Variables</b>  |   |
| <b>Variable</b>  | <b>Range</b> (may include but not limited to):  |
| 1. Model data type   | 1.1 Binary<br>1.2 Boolean<br>1.3 Date/time<br>1.4 Number<br>1.5 Text  |
| 2. Model queries   | 2.1 By SQL Key word<br>2.2 Raw method<br>2.3 Python DB API  |
| <b>Evidence Guide</b><br>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:<br>1.1 Created model<br>1.2 Implemented Django model Queries and Managers  |

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| 2. Underpinning knowledge | <ul style="list-style-type: none"> <li>2.1 Model class</li> <li>2.2 Model Datatype</li> <li>2.3 Model Migration</li> <li>2.4 Class-based view</li> <li>2.5 CRUD</li> <li>2.6 Mixin</li> </ul>  |
| 3. Underpinning skills    | <ul style="list-style-type: none"> <li>3.1 Creating model</li> <li>3.2 Implementing Django model queries and managers</li> </ul>   |
| 4. Required attitudes     | <ul style="list-style-type: none"> <li>4.1 Commitment to occupational safety and health.</li> <li>4.2 Promptness in carrying out activities.</li> <li>4.3 Sincere and honest to duties.</li> <li>4.4 Eagerness to learn the document preparation process.</li> <li>4.5 Tidiness and timeliness.</li> <li>4.6 Environmental concerns.</li> <li>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.</li> <li>4.8 Communication with peers, subordinates and seniors in the workplace.</li> <li>4.9 Keeps a clean and orderly workplace and equipment.</li> </ul> |
| 5. Resource implication   | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace (actual or simulated).</li> <li>5.2 Tools, equipment and physical facilities appropriate to perform activities.</li> <li>5.3 Materials consumable to perform activities.</li> </ul>  |
| 6. Methods of assessment  | <p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1 Written test</li> <li>6.2 Demonstration</li> <li>6.3 Oral questioning</li> </ul>   |
| 7. Context of assessment  | <ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited center.</li> <li>7.2 Assessment should be done by NSDA certified/ nominated assessor</li> </ul>   |

**Accreditation Requirements**

Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

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| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-04-L4-V1: Process Forms</b>  |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to process forms.<br>This specifically includes the tasks of creating forms, submitting forms from scratch, using model form, and using Django custom form fields and widgets |
| <b>Nominal Hours</b>   | <b>30 Hours</b>   |
| <b>Elements of Competency</b>  | <b>Performance Criteria</b><br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables   |
| 1. Create forms  | 1.1 Form is initialized with fields and forms using init method<br>1.2 <b><u>Django form field types</u></b> are set.<br>1.3 <b><u>Field Layout Values</u></b> are initiated.<br>1.4 Form is Rendered                                       |
| 2. Submit forms from scratch   | 2.1 Form data is sent with post request<br>2.2 Form data is validated<br>2.3 Data is saved to database<br>2.4 Partial form is used  |
| 3. Use Model Form  | 3.1 Model form is created<br>3.2 Model form is rendered<br>3.3 Model form is validated and saved  |
| 4. Use Django Custom Form Fields and Widgets   | 4.1 Custom Form Fields are created<br>4.2 Built-In Widgets are customized<br>4.3 Custom Form Widgets are created<br>4.4 Custom Form Widget Configuration Options are created  |
| <b>Range of Variables</b>  |   |
| <b>Variable</b>  | <b>Range</b> (may include but not limited to):  |
| 1. Django form field types   | 1.1 Widgets<br>1.2 Options<br>1.3 Validations   |
| 2. Field Layout Values   | 2.1 label<br>2.2 label_suffix<br>2.3 help_text  |
| <b>Evidence Guide</b><br>The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency. |   |
| 1. Critical aspects of competency  | Assessment required evidence that the candidate:<br>1.1 Created forms<br>1.2 Submitted forms from scratch<br>1.3 Used Model Form  |

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|   | 1.4 Used Django Custom Form Fields and Widgets   |
| 2. Underpinning knowledge   | 2.1 Form<br>2.2 init method<br>2.3 Django form field types<br>2.4 Field Layout Values<br>2.5 Form data<br>2.6 Partial form   |
| 3. Underpinning skills  | 3.1 Creating forms<br>3.2 Submitting forms from scratch<br>3.3 Using Model form<br>3.4 Using Django custom form fields and widgets   |
| 4. Required attitudes   | 4.1 Commitment to occupational safety and health.<br>4.2 Promptness in carrying out activities.<br>4.3 Sincere and honest to duties.<br>4.4 Eagerness to learn the document preparation process.<br>4.5 Tidiness and timeliness.<br>4.6 Environmental concerns.<br>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.<br>4.8 Communication with peers, subordinates and seniors in the workplace.<br>4.9 Keeps a clean and orderly workplace and equipment. |
| 5. Resource implication   | The following resources must be provided:<br>5.1 Workplace (actual or simulated).<br>5.2 Tools, equipment and physical facilities appropriate to perform activities.<br>5.3 Materials consumable to perform activities.  |
| 6. Methods of assessment  | Methods of assessment may include but not limited to:<br>6.1 Written test<br>6.2 Demonstration<br>6.3 Oral questioning   |
| 7. Context of assessment  | 7.1 Competency assessment must be done in NSDA accredited center.<br>7.2 Assessment should be done by NSDA certified/ nominated assessor   |
| <p><b>Accreditation Requirements</b><br/>Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |  |

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| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-05-L4-V1: Customize UI</b>   |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to customize UI.<br>It specifically includes the task of managing static resources, applying bootstrap on templates.              |
| <b>Nominal Hours</b>   | <b>20 Hours</b>   |
| <b>Elements of Competency</b>  | <b>Performance Criteria</b><br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables   |
| 1. Manage static resources   | 1.1 Static directory is set up<br>1.2 Static resources are collected and repositied.<br>1.3 Static-based url is set up<br>1.4 Statics files are used on templates                               |
| 2. Apply Bootstrap on templates  | 2.1 Bootstrap form class is applied<br>2.2 Card layout is used<br>2.3 Table is designed<br>2.4 Navigation is applied using Navbar<br>2.5 Validation alert is used                               |
| <b>Range of Variables</b>  |   |
| Variable   | Range (may include but not limited to):   |
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| <b>Evidence Guide</b><br>The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency. |   |
| 1.Critical Aspects of Competency   | Assessment required evidence that the candidate:<br>1.1 Managed static resources<br>1.2 Applied Bootstrap on templates  |
| 2.Underpinning knowledge   | 2.1 Static directory<br>2.2 Static resources<br>2.3 Static-based url<br>2.4 Statics files<br>2.5 Bootstrap form class<br>2.6 Card layout<br>2.7 Table<br>2.8 Navigation<br>2.9 Validation alert |
| 1.Underpinning skills  | 3.1 Managing static resources<br>3.2 Applying Bootstrap on templates  |

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| 2.Required attitudes   | <ul style="list-style-type: none"> <li>2.1 Commitment to occupational safety and health.</li> <li>2.2 Promptness in carrying out activities.</li> <li>2.3 Sincere and honest to duties.</li> <li>2.4 Eagerness to learn the document preparation process.</li> <li>2.5 Tidiness and timeliness.</li> <li>2.6 Environmental concerns.</li> <li>2.7 Respect for the rights of peers, subordinates and seniors at the workplace.</li> <li>2.8 Communication with peers, subordinates and seniors in the workplace.</li> <li>2.9 Keeps a clean and orderly workplace and equipment</li> </ul> |
| 3.Resource implications  | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace (actual or simulated);</li> <li>5.2 Relevant tools, equipment, software and facilities needed to perform the activities; and</li> <li>5.3 Required learning materials.</li> </ul>   |
| 4.Methods of assessment  | <p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1 Written test;</li> <li>6.2 Demonstration;</li> <li>6.3 Oral questioning;</li> </ul>   |
| 5.Context of assessment  | <ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited center.</li> <li>7.2 Assessment should be done by NSDA certified/ nominated assessor</li> </ul>  |
| <p><b>Accreditation Requirements</b><br/> Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |   |

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| <b>Unit Code and Title</b>  | <b>OU-ICT-WADP-06-L4-V1: Apply User Management</b>  |
| <b>Unit Descriptor</b>  | This unit covers the knowledge, skills and attitudes required to apply user management.<br>It specifically includes the tasks of using built in user management, applying custom user management, and applying notification and activation process.               |
| <b>Nominal Hours</b>  | <b>80 Hours</b>   |
| Elements of Competency  | Performance Criteria<br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables  |
| 1. Use built-in user management   | 1.1 <b><u>Database system</u></b> is selected to work with<br>1.2 Selected database is connected<br>1.3 Database is designed and created from specific scenario<br>1.4 CRUD is implemented through database system<br>1.5 Data access object (DAO) is implemented |
| 2. Apply custom user management   | 2.1 Flask is installed<br>2.2 Project layout is created<br>2.3 Application setup<br>2.4 Database is set up<br>2.5 Blue print and views<br>2.6 Make project installable  |
| 3. Apply notification and activation process  | 1.1 SRS is created from the assigned case<br>1.2 Database and classes are designed following flow diagram<br>1.3 User Interface (UI) is designed flask<br>1.4 All functionalities are implemented and tested<br>1.5 Project is deployed                           |
| <b>Range of Variables</b>   |   |
| Variable  | Range (may include but not limited to):   |
| 1. Database system  | 1.1 MySQL<br>1.2 NoSQL (MongoDB)<br>1.3 PostgreSQL  |
| Evidence Guide<br>The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency. |   |
| 1. Critical Aspects of Competency   | Assessment required evidence that the candidate:<br>1.1 Used built in user management<br>1.2 Applied custom user management<br>1.3 Applied notification and activation process  |

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| 2. Underpinning knowledge   | <ul style="list-style-type: none"> <li>2.1 Database</li> <li>2.2 CRUD</li> <li>2.3 Data access object (DAO)</li> <li>2.4 Flask</li> <li>2.5 Blueprint</li> <li>2.6 Shock Response Spectrum (SRS)</li> <li>2.7 User Interface (UI)</li> </ul>  |
| 3. Underpinning skills  | <ul style="list-style-type: none"> <li>3.1 Using built-in user management</li> <li>3.2 Applying custom user management</li> <li>3.3 Applying notification and activation process</li> </ul>   |
| 4. Required attitudes   | <ul style="list-style-type: none"> <li>4.1 Commitment to occupational safety and health.</li> <li>4.2 Promptness in carrying out activities.</li> <li>4.3 Sincere and honest to duties.</li> <li>4.4 Eagerness to learn the document preparation process.</li> <li>4.5 Tidiness and timeliness.</li> <li>4.6 Environmental concerns.</li> <li>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.</li> <li>4.8 Communication with peers, subordinates and seniors in the workplace.</li> <li>4.9 Keeps a clean and orderly workplace and equipment</li> </ul> |
| 5. Resource implications  | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace (actual or simulated);</li> <li>5.2 Relevant tools, equipment, software and facilities needed to perform the activities; and required learning materials.</li> </ul>  |
| 6. Methods of assessment  | <p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1. Written test;</li> <li>6.2. Demonstration;</li> <li>6.3. Oral questioning</li> </ul>   |
| 7. Context of assessment  | <ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited center.</li> <li>7.2 Assessment should be done by NSDA certified/ nominated assessor</li> </ul>  |
| <p><b>Accreditation Requirements</b><br/> Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |   |

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| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-07-L4-V1: Create API using Django REST Framework</b>  |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to create API using Django REST framework.<br>It specifically includes the tasks of applying DRF concepts, and creating CRUD project.  |
| <b>Nominal Hours</b>   | <b>80 Hours</b>  |
| Elements of Competency   | Performance Criteria<br><b>Bold &amp; Underlined</b> terms are elaborated in the Range of Variables  |
| 1. Apply DRF concepts  | 1.1 Serializers and views are applied<br>1.2 Class-based views are used<br>1.3 Mixins and generic class based views are applied<br>1.4 Authentication, Token, Permission are implemented<br>1.5 Searching, filtering, and pagination are implemented |
| 2. Create CRUD project   | 2.1 Flask is installed<br>2.2 Project layout is created<br>2.3 Application setup<br>2.4 Database is set up<br>2.5 Blue print and views are applied<br>2.6 Project is made installable  |
| <b>Range of Variables</b>  |  |
| Variable   | Range (may include but not limited to):  |
|  |  |
| <b>Evidence Guide</b><br>The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency. |  |
| 1. Critical Aspects of Competency  | Assessment required evidence that the candidate:<br>1.1 Applied DRF concepts<br>1.2 Created CRUD project   |
| 2. Underpinning knowledge  | 2.1 Serializers<br>2.2 Mixins<br>2.3 Class based views<br>2.4 Authentication, Token, and Permission<br>2.5 Searching, filtering, and pagination  |
| 3. Underpinning skills   | 3.1 Applying DRF concepts<br>3.2 Creating CRUD project   |

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| 4. Required attitudes   | 4.1 Commitment to occupational safety and health.<br>4.2 Promptness in carrying out activities.<br>4.3 Sincere and honest to duties.<br>4.4 Eagerness to learn the document preparation process.<br>4.5 Tidiness and timeliness.<br>4.6 Environmental concerns.<br>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.<br>4.8 Communication with peers, subordinates and seniors in the workplace.<br>4.9 Keeps a clean and orderly workplace and equipment |
| 5. Resource implications  | The following resources must be provided:<br>5.1 Workplace (actual or simulated);<br>5.2 Relevant tools, equipment, software and facilities needed to perform the activities; and required learning materials.  |
| 6. Methods of assessment  | Methods of assessment may include but not limited to:<br>6.1. Written test;<br>6.2. Demonstration;<br>6.3. Oral questioning   |
| 7. Context of assessment  | 7.1 Competency assessment must be done in NSDA accredited center.<br>7.2 Assessment should be done by NSDA certified/ nominated assessor  |
| <p><b>Accreditation Requirements</b><br/> Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |   |

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| <b>Unit Code and Title</b>   | <b>OU-ICT-WADP-08-L4-V1: Create Final project</b>   |
| <b>Unit Descriptor</b>   | This unit covers the knowledge, skills and attitudes required to create final project.<br>It specifically includes the tasks of creating project, deploying project, and applying notification and activation process through.  |
| <b>Nominal Hours</b>   | <b>60 Hours</b>   |
| Elements of Competency   | Performance Criteria<br><b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables  |
| 1. Create project  | 1.1 SRS is created from the assigned case<br>1.2 Models are designed and class diagram is created<br>1.3 User Interface (UI) is designed<br>1.4 GitHub repo is managed<br>1.5 All functionalities are implemented and tested  |
| 2. Apply notification and activation process through   | 2.1 Database and classes are designed following flow diagram<br>2.2 User Interface (UI) is designed flask<br>2.3 All functionalities are implemented and tested   |
| 3. Deploy project  | 3.1 Create a hosting account on <b><u>preferred platform</u></b><br>3.2 <b><u>Preparation for hosting</u></b> is performed<br>3.3 Django project is uploaded<br>3.4 Project is enabled  |
| <b>Range of Variables</b>  |   |
| Variable   | Range (may include but not limited to):   |
| 1. preferred platform  | 1.1 Pythonanywhere<br>1.2 Linode<br>1.3 Heroku<br>1.4 GitHub  |
| 2. Preparation for hosting   | 2.1 Hosting environment is setup<br>2.2 Settings are changed on Local settings.py<br>2.3 Change local settings.py<br>2.4 Connect via SSH<br>2.5 Install pip, Apache, mod-wsgi<br>2.6 Create software repository<br>2.7 Create virtual environment<br>2.8 Install dependencies<br>2.9 Change remote settings.py<br>2.10 Apache config file<br>2.11 Upload database<br>2.12 Change ownership/permissions database |
| <b>Evidence Guide</b><br>The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of the current version of the Unit of Competency. |   |

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| 1. Critical Aspects of Competency  | Assessment required evidence that the candidate:<br>1.1 Create project<br>1.2 Apply notification and activation process through<br>1.3 Deploy project   |
| 2. Underpinning knowledge  | 2.1 User Interface<br>2.2 GitHub repo<br>2.3 preferred platform<br>2.4 Preparation for hosting<br>2.5 Project Deployment  |
| 3. Underpinning skills   | 3.1 Creating project<br>3.2 Applying notification and activation process through<br>3.3 Deploying project   |
| 4. Required attitudes  | 4.1 Commitment to occupational safety and health.<br>4.2 Promptness in carrying out activities.<br>4.3 Sincere and honest to duties.<br>4.4 Eagerness to learn the document preparation process.<br>4.5 Tidiness and timeliness.<br>4.6 Environmental concerns.<br>4.7 Respect for the rights of peers, subordinates and seniors at the workplace.<br>4.8 Communication with peers, subordinates and seniors in the workplace.<br>4.9 Keeps a clean and orderly workplace and equipment |
| 5. Resource implications   | The following resources must be provided:<br>5.1 ` (actual or simulated);<br>5.2 Relevant tools, equipment, software and facilities needed to perform the activities; and required learning materials.  |
| 6. Methods of assessment   | Methods of assessment may include but not limited to:<br>6.1. Written test;<br>6.2. Demonstration;<br>6.3. Oral questioning   |
| 7. Context of assessment   | 7.1 Competency assessment must be done in NSDA accredited center.<br>7.2 Assessment should be done by NSDA certified/ nominated assessor  |
| <p><b>Accreditation Requirements</b><br/>Training Providers must be accredited by National Skills Development Authority (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 qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p> |   |

### Development of Competency Standard

The Competency Standards for National Skills Certificate in Problem Solving with Python, Level-3 is developed by NSDA on 10-13 October 2022.

### List of Members

| S/N | Name and Address  | Position in the committee |
|-----|---|---------------------------|
| 1.  | Md. Nasimul Kader, Senior Faculty, Daffodil International University, Cell: 01712949753, Email: nasimulkader@daffodil.ac  | Chairperson               |
| 2.  | Md. Abdulla Al Mabud, Specialist (LMD), Bangladesh Technical Education Board, Cell: 01718406271, Email: mabud82@gmail.com   | Member                    |
| 3.  | Manash Sarker, Lecturer, Department of Computer and Communication Engineering, Patuakhali Science and Technology University, Cell: 01712149555, email: <a href="mailto:manash.sarker@pstu.ac.bd">manash.sarker@pstu.ac.bd</a> | Member                    |
| 4.  | Zahed Ahmed Chowdhury, Chief Instructor & HoD, Computer Science & Technology, Dhaka Polytechnic Institute. Cell: 01676041925, Email: zahed.sylhet.official@gmail.com  | Member                    |
| 5.  | Md. Shahed Islam Noyon, Lecturer, Daffodil international Academy, \Cell : 01715124025, Email : durzoy1@gmail.com  | Member                    |
| 6.  | Arbab Ur Rahman, Consultant, Learning and Development, Brainstation 23 Limited, Cell: 01755633742, Email: arbabrahman@gmail.com   | Member                    |
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| 10. | Md. Rifat Sanaullah, Designation: Associate Software Engineer, Company Name: Brain Station 23 Ltd., Mobile: 01571737107, Email:rifat.sanaullah@brainstation-23.com  | Member                    |
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| 12. | Md Rashed Karim, Managing Director, Full Stack Ltd., Authorized Trainer, ISTQB, Assessor, BTEB, Cell: 01711605286, Email: mail4rashed@gmail.com   | Member                    |
| 13. | Mahbub Huda, Consultant, Specialist, NSDA, Email: huda73@gmail.com, Mobile: 01735490491.  | Member                    |



### Validation of Competency Standard

The Competency Standards for National Skills Certificate in Web Application Development with Python, Level-3 is validated by NSDA on 28 November 2022.

#### Members of the SCVC

| S/N | Name and Address  | Position in the committee | Signature and Date |
|-----|---|---------------------------|--------------------|
| 1.  | Shafquat Haider, Chairman, ICT ISC, <a href="mailto:ciproco@bol-online.com">ciproco@bol-online.com</a> , shafquat.haider@gmail.com, Mobile No. 01711532597              | Chairperson               |                    |
| 2.  | Md. Nasimul Kader, Senior Faculty, Daffodil International Academy, Cell: 01712949753, Email: nasimulkader@daffodil.ac   | Member                    |                    |
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| 6.  | Mahbub Huda, Consultant, Specialist, NSDA, Email: <a href="mailto:huda73@gmail.com">huda73@gmail.com</a> , Mobile: 01735490491.   | Member                    |                    |