

TRAINING REGULATIONS

PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II



AGRICULTURE, FORESTRY AND FISHERY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

East Service Road, South Luzon Expressway (SLEX), Taguig City, Metro Manila

Technical Education and Skills Development Act of 1994

(Republic Act No. 7796)

Section 22, “Establishment and Administration of the National Trade Skills Standards” of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

The Training Regulations (TR) serves as basis for:

1. Development of curriculum and assessment tools
2. Registration and delivery of training programs; and
3. Establishment of competency assessment and certification arrangements.

Each TR has four sections:

- Section 1 **Definition of Qualification** - describes the qualification and defines the competencies that comprise the qualification.
- Section 2 **The Competency Standards** format was revised to include the Required Knowledge and Required Skills per element. These fields explicitly state the required knowledge and skills for competent performance of a unit of competency in an informed and effective manner. These also emphasize the application of knowledge and skills to situations where understanding is converted into a workplace outcome.
- Section 3 **Training Arrangements** – contain the information and requirements which serve as bases for training providers in designing and delivering competency-based curriculum for the qualification. The revisions to Section 3 entail identifying the Learning Activities leading to achievement of the identified Learning Outcome.
- Section 4 **Assessment and Certification Arrangements** - describe the policies governing assessment and certification procedures for the qualification.

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TRAINING REGULATIONS FOR

PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II

SECTION 1 PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II QUALIFICATION

The **PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II** Qualification consists of competencies that a person must achieve to install and maintain a pressurized irrigation system. It also includes competencies to perform installation of pumps and flow control devices, installation of pipelines and water distribution devices and maintenance of the system.

This Qualification is packaged from the competency map of the Agriculture, Forestry and Fishery Sector as shown in Annex A.

The Units of Competency comprising this Qualification include the following:

UNIT CODE	BASIC COMPETENCIES
400311210	Participate in workplace communication
400311211	Work in team environment
400311212	Solve/address general workplace problems
400311213	Develop career and life decisions
400311214	Contribute to workplace innovation
400311215	Present relevant information
400311216	Practice occupational safety and health policies and procedures
400311217	Exercise efficient and effective sustainable practices in the workplace
400311218	Practice entrepreneurial skills in the workplace
UNIT CODE	COMMON COMPETENCIES
AFF321201	Apply Safety Measures in Farm Operations
AFF321202	Use Farm Tools and Equipment
AFF321203	Perform Estimation and Basic Calculation
UNIT CODE	CORE COMPETENCIES
AFF712257	Perform installation of pumps and flow control devices
AFF712258	Perform installation of pipelines and water distribution devices
AFF712259	Perform maintenance of pressurized irrigation system

A person who has achieved this Qualification is competent to be:

- Pressurized Irrigation Technician
- Greenhouse Irrigator

SECTION 2 COMPETENCY STANDARDS

These guidelines are set to provide the Technical Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II**.

BASIC COMPETENCIES

UNIT OF COMPETENCY : PARTICIPATE IN WORKPLACE COMMUNICATION

UNIT CODE : 400311210

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from <i>appropriate sources</i> 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information 1.3 Appropriate <i>medium</i> is used to transfer information and ideas 1.4 Appropriate non-verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and <i>storage</i> of information are used	1.1 Effective verbal and nonverbal communication 1.2 Different modes of communication 1.3 Medium of communication in the workplace 1.4 Organizational policies 1.5 Communication procedures and systems 1.6 Lines of Communication 1.7 Technology relevant to the enterprise and the individual's work responsibilities 1.8 Workplace etiquette	1.1 Following simple spoken language 1.2 Performing routine workplace duties following simple written notices 1.3 Participating in workplace meetings and discussions 1.4 Preparing work-related documents 1.5 Estimating, calculating and recording routine workplace measures 1.6 Relating/ Interacting with people of various levels in the workplace 1.7 Gathering and providing basic information in response to workplace requirements 1.8 Basic business writing skills 1.9 Interpersonal skills in the workplace 1.10 Active-listening skills

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	1.7 Personal interaction is carried out clearly and concisely		
2. Perform duties following workplace instructions -	2.1 Written notices and instructions are read and interpreted in accordance with organizational guidelines 2.2 Routine written instruction are followed based on established procedures 2.3 Feedback is given to workplace supervisor based instructions/ information received 2.4 Workplace interactions are conducted in a courteous manner 2.5 Where necessary, clarifications about routine workplace procedures and matters concerning conditions of employment are sought and asked from appropriate sources 2.6 Meetings outcomes are interpreted and implemented	2.1 Effective verbal and non-verbal communication 2.2 Different modes of communication 2.3 Medium of communication in the workplace 2.4 Organizational/ Workplace policies 2.5 Communication procedures and systems 2.6 Lines of communication 2.7 Technology relevant to the enterprise and the individual's work responsibilities 2.8 Effective questioning techniques (clarifying and probing) 2.9 Workplace etiquette	2.1 Following simple spoken instructions 2.2 Performing routine workplace duties following simple written notices 2.3 Participating in workplace meetings and discussions 2.4 Completing work- related documents 2.5 Estimating, calculating and recording routine workplace measures 2.6 Relating/ Responding to people of various levels in the workplace 2.7 Gathering and providing information in response to workplace requirements 2.8 Basic questioning/querying 2.9 Skills in reading for information 2.10 Skills in locating

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Complete relevant work related documents	3.1 Range of forms relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Errors in recording information on forms/ documents are identified and acted upon 3.4 Reporting requirements to supervisor are completed according to organizational guidelines	3.1 Effective verbal and non-verbal communication 3.2 Different modes of communication 3.3 Workplace forms and documents 3.4 Organizational/ Workplace policies 3.5 Communication procedures and systems 3.6 Technology relevant to the enterprise and the individual's work responsibilities	3.1 Completing work- related documents 3.2 Applying operations of addition, subtraction, division and multiplication 3.3 Gathering and providing information in response to workplace requirements 3.4 Effective record keeping skills

RANGE OF VARIABLES

VARIABLES	RANGE
1. Appropriate sources	May include: <ul style="list-style-type: none"> 1.1. Team members 1.2. Supervisor/Department Head 1.3. Suppliers 1.4. Trade personnel 1.5. Local government 1.6. Industry bodies
2. Medium	May include: <ul style="list-style-type: none"> 2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information dissemination 2.5. Follow-up or verbal instructions 2.6. Face-to-face communication 2.7. Electronic media (disk files, cyberspace)
3. Storage	May include: <ul style="list-style-type: none"> 3.1. Manual filing system 3.2. Computer-based filing system
4. Workplace interactions	May include: <ul style="list-style-type: none"> 4.1. Face-to-face 4.2. Telephone 4.3. Electronic and two-way radio 4.4. Written including electronic means, memos, instruction and forms 4.5. Non-verbal including gestures, signals, signs and diagrams
5. Forms	May include: <ul style="list-style-type: none"> 5.1. HR/Personnel forms, telephone message forms, safety reports

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Prepared written communication following standard format of the organization 1.2. Accessed information using workplace communication equipment/systems 1.3. Made use of relevant terms as an aid to transfer information effectively 1.4. Conveyed information effectively adopting formal or informal communication
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Fax machine 2.2 Telephone 2.3 Notebook 2.4 Writing materials 2.5 Computer with Internet connection
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration with oral questioning 3.2 Interview 3.3 Written test 3.4 Third-party report
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed individually in the actual workplace or through an accredited institution

UNIT OF COMPETENCY : WORK IN A TEAM ENVIRONMENT

UNIT CODE : 400311211

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes to identify one’s roles and responsibilities as a member of a team.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Describe team role and scope	1.1 The role and objective of the team is identified from available sources of information 1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources	1.1 Group structure 1.2 Group development 1.3 Sources of information	1.1 Communicating with others, appropriately consistent with the culture of the workplace 1.2 Developing ways in improving work structure and performing respective roles in the group or organization
2. Identify one’s role and responsibility within a team	2.1 Individual roles and responsibilities within the team environment are identified 2.2 Roles and objectives of the team is identified from available sources of information 2.3 Team parameters, reporting relationships and responsibilities are identified based on team discussions and appropriate external sources	2.1 Team roles and objectives 2.2 Team structure and parameters 2.3 Team development 2.4 Sources of information	2.1 Communicating with others, appropriately consistent with the culture of the workplace 2.2 Developing ways in improving work structure and performing respective roles in the group or organization

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Work as a team member	3.1 Effective and appropriate forms of communications are used and interactions undertaken with team members based on company practices. 3.2 Effective and appropriate contributions made to complement team activities and objectives, based on workplace context 3.3 Protocols in reporting are observed based on standard company practices. 3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives	3.1 Communication Process 3.2 Workplace communication protocol 3.3 Team planning and decision making 3.4 Team thinking 3.5 Team roles 3.6 Process of team development 3.7 Workplace context	3.1 Communicating appropriately, consistent with the culture of the workplace 3.2 Interacting effectively with others 3.3 Deciding as an individual and as a group using group think strategies and techniques 3.4 Contributing to Resolution of issues and concerns -

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	May include but not limited to: <ul style="list-style-type: none"> 1.1. Work activities in a team environment with enterprise or specific sector 1.2. Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	May include but not limited to: <ul style="list-style-type: none"> 2.1. Standard operating and/or other workplace procedures 2.2. Job procedures 2.3. Machine/equipment manufacturer's specifications and instructions 2.4. Organizational or external personnel 2.5. Client/supplier instructions 2.6. Quality standards 2.7. OHS and environmental standards
3. Workplace context	May include but not limited to: <ul style="list-style-type: none"> 3.1. Work procedures and practices 3.2. Conditions of work environments 3.3. Legislation and industrial agreements 3.4. Standard work practice including the storage, safe handling and disposal of chemicals 3.5. Safety, environmental, housekeeping and quality guidelines

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Worked in a team to complete workplace activity 1.2 Worked effectively with others 1.3 Conveyed information in written or oral form 1.4 Selected and used appropriate workplace language 1.5 Followed designated work plan for the job
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2. Materials relevant to the proposed activity or tasks
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Role play involving the participation of individual member to the attainment of organizational goal 3.2 Case studies and scenarios as a basis for discussion of issues and strategies in teamwork 3.3 Socio-drama and socio-metric methods 3.4 Sensitivity techniques 3.5 Written Test
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while task are being undertaken whether individually or in group

UNIT OF COMPETENCY : SOLVE/ADDRESS GENERAL WORKPLACE PROBLEMS

UNIT CODE : 400311212

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to apply problem-solving techniques to determine the origin of problems and plan for their resolution. It also includes addressing procedural problems through documentation, and referral.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify routine problems	1.1 Routine problems or procedural problem areas are identified 1.2 Problems to be investigated are defined and determined 1.3 Current conditions of the problem are identified and documented	1.1 Current industry hardware and software products and services 1.2 Industry maintenance, service and helpdesk practices, processes and procedures 1.3 Industry standard diagnostic tools 1.4 Malfunctions and resolutions	1.1 Identifying current industry hardware and software products and services 1.2 Identifying current industry maintenance, services and helpdesk practices, processes and procedures. 1.3 Identifying current industry standard diagnostic tools 1.4 Describing common malfunctions and resolutions. 1.5 Determining the root cause of a routine malfunction

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Look for solutions to routine problems	2.1 Potential solutions to problem are identified 2.2 Recommendations about possible solutions are developed, documented , ranked and presented to appropriate person for decision	2.1 Current industry hardware and software products and services 2.2 Industry service and helpdesk practices, processes and procedures 2.3 Operating systems 2.4 Industry standard diagnostic tools 2.5 Malfunctions and resolutions. 2.6 Root cause analysis	2.1 Identifying current industry hardware and software products and services 2.2 Identifying services and helpdesk practices, processes and procedures. 2.3 Identifying operating system 2.4 Identifying current industry standard diagnostic tools 2.5 Describing common malfunctions and resolutions. 2.6 Determining the root cause of a routine malfunction
3. Recommend solutions to problems	3.1 Implementation of solutions are planned 3.2 Evaluation of implemented solutions are planned 3.3 Recommended solutions are documented and submit to appropriate person for confirmation	3.1 Standard procedures 3.2 Documentation produce	3.1 Producing documentation that recommends solutions to problems 3.2 Following established procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Problems/Procedural Problem	May include but not limited to: <ul style="list-style-type: none"> 1.1 Routine/non – routine processes and quality problems 1.2 Equipment selection, availability and failure 1.3 Teamwork and work allocation problem 1.4 Safety and emergency situations and incidents 1.5 Work-related problems outside of own work area
2. Appropriate person	May include but not limited to: <ul style="list-style-type: none"> 2.1 Supervisor or manager 2.2 Peers/work colleagues 2.3 Other members of the organization
3. Document	May include but not limited to: <ul style="list-style-type: none"> 3.1 Electronic mail 3.2 Briefing notes 3.3 Written report 3.4 Evaluation report
4. Plan	May include but not limited to: <ul style="list-style-type: none"> 4.1 Priority requirements 4.2 Co-ordination and feedback requirements 4.3 Safety requirements 4.4 Risk assessment 4.5 Environmental requirements

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Determined the root cause of a routine problem 1.2 Identified solutions to procedural problems. 1.3 Produced documentation that recommends solutions to problems. 1.4 Followed established procedures. 1.5 Referred unresolved problems to support persons.
<p>2. Resource Implications</p>	<p>2.1. Assessment will require access to a workplace over an extended period, or a suitable method of gathering evidence of operating ability over a range of situations.</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Case Formulation 3.2 Life Narrative Inquiry 3.3 Standardized test <p>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p>
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.</p>

UNIT OF COMPETENCY : DEVELOP CAREER AND LIFE DECISIONS

UNIT CODE : 400311213

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes in managing one’s emotions, developing reflective practice, and boosting self-confidence and developing self-regulation.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Manage one’s emotion	1.1 <i>Self-management strategies</i> are identified 1.2 Skills to work independently and to show initiative, to be conscientious, and persevering in the face of setbacks and frustrations are developed 1.3 Techniques for effectively handling negative emotions and <i>unpleasant situation</i> in the workplace are examined	1.1 Self-management strategies that assist in regulating behavior and achieving personal and learning goals (e.g. Nine self-management strategies according to Robert Kelley) 1.2 Enablers and barriers in achieving personal and career goals 1.3 Techniques in handling negative emotions and unpleasant situation in the workplace such as frustration, anger, worry, anxiety, etc.	1.1 Managing properly one’s emotions and recognizing situations that cannot be changed and accept them and remain professional 1.2 Developing self-discipline, working independently and showing initiative to achieve personal and career goals 1.3 Showing confidence, and resilience in the face of setbacks and frustrations and other negative emotions and unpleasant situations in the workplace

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Develop reflective practice	2.1 Personal strengths and achievements, based on self-assessment strategies and teacher feedback are contemplated 2.2 Progress when seeking and responding to feedback from teachers to assist them in consolidating strengths, addressing weaknesses and fulfilling their potential are monitored 2.3 Outcomes of personal and academic challenges by reflecting on previous problem solving and decision making strategies and feedback from peers and teachers are predicted	2.1 Basic SWOT analysis 2.2 Strategies to improve one's attitude in the workplace 2.3 Gibbs' Reflective Cycle/Model (Description, Feelings, Evaluation, Analysis, Conclusion, and Action plan)	2.1 Using the basic SWOT analysis as self-assessment strategy 2.2 Developing reflective practice through realization of limitations, likes/ dislikes; through showing of self-confidence 2.3 Demonstrating self-acceptance and being able to accept challenges
3. Boost self-confidence and develop self-regulation	3.1 Efforts for continuous self-improvement are demonstrated 3.2 Counter-productive tendencies at work are eliminated 3.3 Positive outlook in life are maintained.	3.1 Four components of self-regulation based on Self-Regulation Theory (SRT) 3.2 Personality development concepts 3.3 Self-help concepts (e. g., 7 Habits by Stephen Covey, transactional analysis, psycho-spiritual concepts)	3.1 Performing effective communication skills – reading, writing, conversing skills 3.2 Showing affective skills – flexibility, adaptability, etc. 3.3 Self-assessment for determining one's strengths and weaknesses

RANGE OF VARIABLES

VARIABLE	RANGE
1. Self-management strategies	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 1.1 Seeking assistance in the form of job coaching or mentoring 1.2 Continuing dialogue to tackle workplace grievances 1.3 Collective negotiation/bargaining for better working conditions 1.4 Share your goals to improve with a trusted co-worker or supervisor 1.5 Make a negativity log of every instance when you catch yourself complaining to others 1.6 Make lists and schedules for necessary activities
2. Unpleasant situation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 2.1 Job burn-out 2.2 Drug dependence 2.3 Sulking

EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Express emotions appropriately 1.2 Work independently and show initiative 1.3 Consistently demonstrate self-confidence and self-discipline
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1. Access to workplace and resources 2.2. Case studies
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1. Demonstration or simulation with oral questioning 3.2. Case problems involving work improvement and sustainability issues 3.3. Third-party report
4. Context for Assessment	<ul style="list-style-type: none"> 4.1. Competency assessment may occur in workplace or any appropriately simulated environment

UNIT OF COMPETENCY : CONTRIBUTE TO WORKPLACE INNOVATION

UNIT CODE : 400311214

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to make a pro-active and positive contribution to workplace innovation.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify opportunities to do things better.	1.1 Opportunities for improvement are identified proactively in own area of work. 1.2 Information are gathered and reviewed which may be relevant to ideas and which might assist in gaining support for idea.	1.1 Roles of individuals in suggesting and making improvements. 1.2 Positive impacts and challenges in innovation. 1.3 Types of changes and responsibility. 1.4 Seven habits of highly effective people.	1.1 Identifying opportunities to improve and to do things better. Involvement. 1.2 Identifying the positive impacts and the challenges of change and innovation. 1.3 Identifying examples of the types of changes that are within and outside own scope of responsibility
2. Discuss and develop ideas with others	2.1 People who could provide input to ideas for improvements are identified. 2.2 Ways of approaching people to begin sharing ideas are selected. 2.3 Meeting is set with relevant people. 2.4 Ideas for follow up are review and selected based on feedback. 2.5 Critical inquiry method is used to discuss and develop ideas with others.	2.1 Roles of individuals in suggesting and making improvements. 2.2 Positive impacts and challenges in innovation. 2.3 Types of changes and responsibility. 2.4 Seven habits of highly effective people.	2.1 Identifying opportunities to improve and to do things better. Involvement. 2.2 Identifying the positive impacts and the challenges of change and innovation. 2.3 Providing examples of the types of changes that are within and outside own scope of responsibility 2.4 Communicating ideas for change through small group discussions and meetings.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Integrate ideas for change in the workplace.	<p>3.1 Critical inquiry method is used to integrate different ideas for change of key people.</p> <p>3.2 Summarizing, analyzing and generalizing skills are used to extract salient points in the pool of ideas.</p> <p>3.3 Reporting skills are likewise used to communicate results.</p> <p>3.4 Current Issues and concerns on the systems, processes and procedures, as well as the need for simple innovative practices are identified.</p>	<p>3.1 Roles of individuals in suggesting and making improvements.</p> <p>3.2 Positive impacts and challenges in innovation.</p> <p>3.3 Types of changes and responsibility.</p> <p>3.4 Seven habits of highly effective people.</p> <p>3.5 Basic research skills.</p>	<p>3.1 Identifying opportunities to improve and to do things better. Involvement.</p> <p>3.2 Identifying the positive impacts and the challenges of change and innovation.</p> <p>3.3 Providing examples of the types of changes that are within and outside own scope of responsibility.</p> <p>3.4 Communicating ideas for change through small group discussions and meetings.</p> <p>3.5 Demonstrating skills in analysis and interpretation of data.</p>

RANGE OF VARIABLES

VARIABLES	RANGE
1. Opportunities for improvement	May include: 1.1 Systems. 1.2 Processes. 1.3 Procedures. 1.4 Protocols. 1.5 Codes. 1.6 Practices.
2. Information	May include: 2.1 Workplace communication problems. 2.2 Performance evaluation results. 2.3 Team dynamics issues and concerns. 2.4 Challenges on return of investment 2.5 New tools, processes and procedures. 2.6 New people in the organization.
3. People who could provide input	May include: 3.1 Leaders. 3.2 Managers. 3.3 Specialists. 3.4 Associates. 3.5 Researchers. 3.6 Supervisors. 3.7 Staff. 3.8 Consultants (external) 3.9 People outside the organization in the same field or similar expertise/industry. 3.10 Clients

<p>4. Critical inquiry method</p>	<p>May include:</p> <ul style="list-style-type: none"> 4.1 Preparation. 4.2 Discussion. 4.3 Clarification of goals. 4.4 Negotiate towards a Win-Win outcome. 4.5 Agreement. 4.6 Implementation of a course of action. 4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 4.8 Listening. 4.9 Reducing misunderstandings is a key part of effective negotiation. 4.10 Rapport Building. 4.11 Problem Solving. 4.12 Decision Making. 4.13 Assertiveness. 4.14 Dealing with Difficult Situations.
<p>5. Reporting skills</p>	<p>May include:</p> <ul style="list-style-type: none"> 5.1 Data management. 5.2 Coding. 5.3 Data analysis and interpretation. 5.4 Coherent writing. 5.5 Speaking.

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Identified opportunities to do things better. 1.2 Discussed and developed ideas with others on how to contribute to workplace innovation. 1.3 Integrated ideas for change in the workplace. 1.4 Analyzed and reported rooms for innovation and learning in the workplace.
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Pens, papers and writing implements. 2.2 Cartolina. 2.3 Manila papers.
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Psychological and behavioral Interviews. 3.2 Performance Evaluation. 3.3 Life Narrative Inquiry. 3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance. 3.5 Sensitivity analysis. 3.6 Organizational analysis. 3.7 Standardized assessment of character strengths and virtues applied.
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : PRESENT RELEVANT INFORMATION

UNIT CODE : 400311215

UNIT DESCRIPTOR : This unit of covers the knowledge, skills and attitudes required to present data/information appropriately.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Gather data/information	1.1 Evidence, facts and information are collected 1.2 Evaluation, terms of reference and conditions are reviewed to determine whether data/information falls within project scope	1.1 Organisational protocols 1.2 Confidentiality 1.3 Accuracy 1.4 Business mathematics and statistics 1.5 Data analysis techniques/procedures 1.6 Reporting requirements to a range of audiences 1.7 Legislation, policy and procedures relating to the conduct of evaluations 1.8 Organisational values, ethics and codes of conduct	1.1 Describing organisational protocols relating to client liaison 1.2 Protecting confidentiality 1.3 Describing accuracy 1.4 Computing business mathematics and statistics 1.5 Describing data analysis techniques/procedures 1.6 Reporting requirements to a range of audiences 1.7 Stating legislation, policy and procedures relating to the conduct of evaluations 1.8 Stating organisational values, ethics and codes of conduct
2. Assess gathered data/information	2.1 Validity of data/information is assessed 2.2 Analysis techniques are applied to assess data/information. 2.3 Trends and	2.1 Business mathematics and statistics 2.2 Data analysis techniques/procedures 2.3 Reporting requirements to a	2.1 Computing business mathematics and statistics 2.2 Describing data analysis techniques/procedures

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>anomalies are identified</p> <p>2.4 Data analysis techniques and procedures are documented</p> <p>2.5 Recommendations are made on areas of possible improvement.</p>	<p>range of audiences</p> <p>2.4 Legislation, policy and procedures relating to the conduct of evaluations</p> <p>2.5 Organisational values, ethics and codes of conduct</p>	<p>2.3 Reporting requirements to a range of audiences</p> <p>2.4 Stating legislation, policy and procedures relating to the conduct of evaluations</p> <p>2.5 Stating organisational values, ethics and codes of conduct</p>
<p>3. Record and present information</p>	<p>3.1 Studied data/information are recorded.</p> <p>3.2 Recommendations are analysed for action to ensure they are compatible with the project's scope and terms of reference.</p> <p>3.3 Interim and final reports are analysed and outcomes are compared to the criteria established at the outset.</p> <p>3.4 Findings are presented to stakeholders.</p>	<p>3.1 Data analysis techniques/procedures</p> <p>3.2 Reporting requirements to a range of audiences</p> <p>3.3 Legislation, policy and procedures relating to the conduct of evaluations</p> <p>3.4 Organisational values, ethics and codes of conduct</p>	<p>3.1 Describing data analysis techniques/procedures</p> <p>3.2 Reporting requirements to a range of audiences</p> <p>3.3 Stating legislation, policy and procedures relating to the conduct of evaluations</p> <p>3.4 Stating organisational values, ethics and codes of conduct practices</p>

RANGE OF VARIABLES

VARIABLES	RANGE
1. Data analysis techniques	May include but not limited to: <ul style="list-style-type: none"> 1.1. Domain analysis 1.2. Content analysis 1.3. Comparison technique

EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Determine data / information 1.2 Studied and applied gathered data/information 1.3 Recorded and studied studied data/information <p>These aspects may be best assessed using a range of scenarios what ifs as a stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.</p>
2. Resource Implications	<p>Specific resources for assessment</p> <ul style="list-style-type: none"> 2.1. Evidence of competent performance should be obtained by observing an individual in an information management role within the workplace or operational or simulated environment.

<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <p>3.1. Written Test 3.2. Interview 3.3. Portfolio</p> <p>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p>
<p>4. Context for Assessment</p>	<p>4.1. In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

UNIT OF COMPETENCY : PRACTICE OCCUPATIONAL SAFETY AND HEALTH POLICIES AND PROCEDURES

UNIT CODE : 400311216

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to identify OSH compliance requirements, prepare OSH requirements for compliance, perform tasks in accordance with relevant OSH policies and procedures

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify OSH compliance requirements	1.1 Relevant OSH requirements, regulations, policies and procedures are identified in accordance with workplace policies and procedures 1.2 OSH activity non-conformities are conveyed to appropriate personnel 1.3 OSH preventive and control requirements are identified in accordance with OSH work policies and procedures	1.1. OSH preventive and control requirements 1.2. Hierarchy of Controls 1.3. Hazard Prevention and Control 1.4. General OSH principles 1.5. Work standards and procedures 1.6. Safe handling procedures of tools, equipment and materials 1.7. Standard emergency plan and procedures in the workplace	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Prepare OSH requirements for compliance	2.1 OSH work activity material, tools and equipment requirements are identified in accordance with workplace policies and procedures 2.2. Required OSH materials, tools and equipment are acquired in accordance with workplace policies and procedures 2.3. Required OSH materials, tools and equipment are arranged/ placed in accordance with OSH work standards	2.1. Resources necessary to execute hierarchy of controls 2.2. General OSH principles 2.3. Work standards and procedures 2.4. Safe handling procedures of tools, equipment and materials 2.5. Different OSH control measures	2.1. Communication skills 2.2. Estimation skills 2.3. Interpersonal skills 2.4. Critical thinking skills 2.5. Observation skills 2.6. Material, tool and equipment identification skills
3. Perform tasks in accordance with relevant OSH policies and procedures	3.1 Relevant OSH work procedures are identified in accordance with workplace policies and procedures 3.2 Work Activities are executed in accordance with OSH work standards 3.3 Non-compliance work activities are reported to <i>appropriate personnel</i>	3.1. OSH work standards 3.2. Industry related work activities 3.3. General OSH principles 3.4. OSH Violations Non-compliance work activities	3.1 Communication skills 3.3 Interpersonal skills 3.4 Troubleshooting skills 3.5 Critical thinking skills 3.6 Observation skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Requirements, Regulations, Policies and Procedures	May include: <ul style="list-style-type: none"> 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Permit to Operate 1.6 Philippine Occupational Safety and Health Standards 1.7 Department Order No. 13 (Construction Safety and Health) 1.8 ECC regulations
2. Appropriate Personnel	May include: <ul style="list-style-type: none"> 2.1 Manager 2.2 Safety Officer 2.3 EHS Offices 2.4 Supervisors 2.5 Team Leaders 2.6 Administrators 2.7 Stakeholders 2.8 Government Official 2.9 Key Personnel 2.10 Specialists 2.11 Himself
3. OSH Preventive and Control Requirements	May include: <ul style="list-style-type: none"> 3.1 Resources needed for removing hazard effectively 3.2 Resources needed for substitution or replacement 3.3 Resources needed to establishing engineering controls 3.4 Resources needed for enforcing administrative controls 3.5 Personal Protective equipment
4. Non OSH-Compliance Work Activities	May include non-compliance or observance of the following safety measures: <ul style="list-style-type: none"> 4.1 Violations that may lead to serious physical harm or death 4.2 Fall Protection 4.3 Hazard Communication 4.4 Respiratory Protection 4.5 Power Industrial Trucks

	<ul style="list-style-type: none">4.6 Lockout/Tag-out4.7 Working at heights (use of ladder, scaffolding)4.8 Electrical Wiring Methods4.9 Machine Guarding4.10 Electrical General Requirements4.11 Asbestos work requirements4.12 Excavations work requirements
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EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Convey OSH work non-conformities to appropriate personnel 1.2. Identify OSH preventive and control requirements in accordance with OSH work policies and procedures 1.3. Identify OSH work activity material, tools and equipment requirements in accordance with workplace policies and procedures 1.4. Arrange/Place required OSH materials, tools and equipment in accordance with OSH work standards 1.5. Execute work activities in accordance with OSH work standards 1.6. Report OSH activity non-compliance work activities to appropriate personnel
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Facilities, materials tools and equipment necessary for the activity
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation/Demonstration with oral questioning 3.2 Third party report
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : EXERCISE EFFICIENT AND EFFECTIVE SUSTAINABLE PRACTICES IN THE WORKPLACE

UNIT CODE : 400311217

UNIT DESCRIPTOR This unit covers knowledge, skills and attitude to identify the efficiency and effectiveness of resource utilization, determine causes of inefficiency and/or ineffectiveness of resource utilization and Convey inefficient and ineffective environmental practices

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify the efficiency and effectiveness of resource utilization	1.1 Required resource utilization in the workplace is measured using appropriate techniques 1.2 Data are recorded in accordance with workplace protocol 1.3 Recorded data are compared to determine the efficiency and effectiveness of resource utilization according to established <i>environmental work procedures</i>	1.1. Importance of Environmental Literacy 1.2. Environmental Work Procedures 1.3. Waste Minimization 1.4. Efficient Energy Consumptions	1.1 Recording Skills 1.2 Writing Skills 1.3 Innovation Skills
2. Determine causes of inefficiency and/or ineffectiveness of resource utilization	2.1 Potential causes of inefficiency and/or ineffectiveness are listed 2.2 Causes of inefficiency and/or ineffectiveness are identified through deductive reasoning 2.3 Identified causes of inefficiency and/or ineffectiveness are validated thru established environmental procedures	2.1 Causes of environmental inefficiencies and ineffectiveness	2.1 Deductive Reasoning Skills 2.2 Critical thinking 2.3 Problem Solving 2.4 Observation Skills
3. Convey inefficient and ineffective environmental	3.1 Efficiency and effectiveness of resource utilization are	3.1 Appropriate Personnel to address the	3.1 Written and Oral Communication Skills

practices	<p>reported to <i>appropriate personnel</i></p> <p>3.2 Concerns related resource utilization are discussed with appropriate personnel</p> <p>3.3 Feedback on information/ concerns raised are clarified with appropriate personnel</p>	<p>environmental hazards</p> <p>3.2 Environmental corrective actions</p>	<p>3.2 Critical thinking</p> <p>3.3 Problem Solving</p> <p>3.4 Observation Skills</p> <p>3.5 Practice Environmental Awareness</p>
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RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Work Procedures	<p>May include:</p> <p>1.1 Utilization of Energy, Water, Fuel Procedures</p> <p>1.2 Waster Segregation Procedures</p> <p>1.3 Waste Disposal and Reuse Procedures</p> <p>1.4 Waste Collection Procedures</p> <p>1.5 Usage of Hazardous Materials Procedures</p> <p>1.6 Chemical Application Procedures</p> <p>1.7 Labeling Procedures</p>
2. Appropriate Personnel	<p>May include:</p> <p>2.1 Manager</p> <p>2.2 Safety Officer</p> <p>2.3 EHS Offices</p> <p>2.4 Supervisors</p> <p>2.5 Team Leaders</p> <p>2.6 Administrators</p> <p>2.7 Stakeholders</p> <p>2.8 Government Official</p> <p>2.9 Key Personnel</p> <p>2.10 Specialists</p> <p>2.11 Himself</p>

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Measured required resource utilization in the workplace using appropriate techniques 1.2. Recorded data in accordance with workplace protocol 1.3. Identified causes of inefficiency and/or ineffectiveness through deductive reasoning 1.4. Validate the identified causes of inefficiency and/or ineffectiveness thru established environmental procedures 1.5. Report efficiency and effectiveness of resource utilization to appropriate personnel 1.6. Clarify feedback on information/concerns raised with appropriate personnel
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Workplace 2.2 Tools, materials and equipment relevant to the tasks 2.3 PPE 2.4 Manuals and references
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency assessment may occur in workplace or any appropriately simulated environment 4.2 Assessment shall be observed while task are being undertaken whether individually or in-group

UNIT OF COMPETENCY : PRACTICE ENTREPRENEURIAL SKILLS IN THE WORKPLACE

UNIT CODE : 400311218

UNIT DESCRIPTOR : This unit covers the outcomes required to apply entrepreneurial workplace best practices and implement cost-effective operations

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Apply entrepreneurial workplace best practices	1.1 Good practices relating to workplace operations are observed and selected following workplace policy. 1.2 Quality procedures and practices are complied with according to workplace requirements. 1.3 Cost-conscious habits in resource utilization are applied based on industry standards.	1.1 Workplace best practices, policies and criteria 1.2 Resource utilization 1.3 Ways in fostering entrepreneurial attitudes: <ul style="list-style-type: none"> • Patience • Honesty • Quality-consciousness • Safety-consciousness • Resourcefulness 	1.1 Communication skills 1.2 Complying with quality procedures
2. Communicate entrepreneurial workplace best practices	2.1 Observed good practices relating to workplace operations are communicated to appropriate person . 2.2 Observed quality procedures and practices are communicated to appropriate person 2.3 Cost-conscious habits in resource utilization are communicated based on industry standards.	2.1 Workplace best practices, policies and criteria 2.2 Resource utilization 2.3 Ways in fostering entrepreneurial attitudes: <ul style="list-style-type: none"> • Patience • Honesty • Quality-consciousness • Safety-consciousness • Resourcefulness 	2.1 Communication skills 2.2 Complying with quality procedures 2.3 Following workplace communication protocol

<p style="text-align: center;">ELEMENTS</p>	<p style="text-align: center;">PERFORMANCE CRITERIA</p> <p><i>Italicized terms</i> are elaborated in the Range of Variables</p>	<p style="text-align: center;">REQUIRED KNOWLEDGE</p>	<p style="text-align: center;">REQUIRED SKILLS</p>
<p>3. Implement cost-effective operations</p>	<p>3.1 Preservation and optimization of workplace resources is implemented in accordance with enterprise policy</p> <p>3.2 Judicious use of workplace tools, equipment and materials are observed according to manual and work requirements.</p> <p>3.3 Constructive contributions to office operations are made according to enterprise requirements.</p> <p>3.4 Ability to work within one's allotted time and finances is sustained.</p>	<p>3.1 Optimization of workplace resources</p> <p>3.2 5S procedures and concepts</p> <p>3.3 Criteria for cost-effectiveness</p> <p>3.4 Workplace productivity</p> <p>3.5 Impact of entrepreneurial mindset to workplace productivity</p> <p>3.6 Ways in fostering entrepreneurial attitudes:</p> <ul style="list-style-type: none"> • Quality-consciousness • Safety-consciousness 	<p>3.1 Implementing preservation and optimizing workplace resources</p> <p>3.2 Observing judicious use of workplace tools, equipment and materials</p> <p>3.3 Making constructive contributions to office operations</p> <p>3.4 Sustaining ability to work within allotted time and finances</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Good practices	May include: 1.1 Economy in use of resources 1.2 Documentation of quality practices
2. Resources utilization	May include: 2.1 Consumption/ use of consumables 2.2 Use/Maintenance of assigned equipment and furniture 2.3 Optimum use of allotted /available time

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrated ability to identify and sustain cost-effective activities in the workplace 1.2 Demonstrated ability to practice entrepreneurial knowledge, skills and attitudes in the workplace.
2. Resource Implications	The following resources should be provided: 2.1 Simulated or actual workplace 2.2 Tools, materials and supplies needed to demonstrate the required tasks 2.3 References and manuals 2.3.1 Enterprise procedures manuals 2.3.2 Company quality policy
3. Methods of Assessment	Competency in this unit should be assessed through: 3.1 Interview 3.2 Third-party report
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

UNIT OF COMPETENCY : APPLY SAFETY MEASURES IN FARM OPERATIONS

UNIT CODE : AFF321201

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to perform safety measures effectively and efficiently. It includes identifying areas, tools, materials, time and place in performing safety measures.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine areas of concern for safety measures	1.1 Work tasks are identified in line with farm operations 1.2 Place for safety measures are determined in line with farm operations 1.3 Time for safety measures are determined in line with farm operations 1.4 Appropriate tools, materials and outfits are prepared in line with job requirements	1.1 Different work tasks in farm operations 1.2 Place and time for implementation of safety measures 1.3 Different hazards in the workplace 1.4 Types of tools, materials and outfits 1.5 Preparation of tools, materials and outfits	1.1 Identifying work tasks in farm operations 1.2 Determining place and time for implementation of safety measures 1.3 Reading labels, manuals and other basic safety information 1.4 Identifying effective/functional tools, materials and outfit 1.5 Preparing tools, materials and outfits 1.6 Discarding defective tools, and materials
2. Apply appropriate safety measures	2.1 Tools and materials are used according to specifications and procedures	2.1 Uses and functions of tools 2.2 Outfits and how to wear it.	2.1 Using tools and materials in the workplace 2.2 Wearing of outfits

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.2 Outfits are worn according to farm requirements 2.3 Effectivity/shelf life/expiration of materials are strictly observed 2.4 Emergency procedures are known and followed to ensure a safe work requirement 2.5 Hazards in the workplace are identified and reported in line with farm guidelines	2.3 Expiration/shelf life of materials 2.4 Proper disposal of expired materials 2.5 Environmental rules and regulations 2.6 Emergency procedures 2.7 Hazards identification and reporting 2.8 Communication skills 2.9 OSHS	2.3 Observing expiration/shelf life of materials 2.4 Disposing of expired materials 2.5 Following emergency procedures 2.6 Identifying and reporting of hazards in workplace area.
3. Safe keep /dispose tools, materials and outfit	3.1 Used tools and outfit are cleaned after use and stored in designated areas 3.2 Unused materials are properly labeled and stored according to manufacturers recommendation and farm requirements 3.3 Waste materials are disposed according to manufacturers, government and farm requirements	3.1 Procedures of cleaning used tools and outfits 3.2 Label and storage unused materials 3.3 Disposal of wastes materials 3.4 Manufacturers recommendation on keeping materials 3.5 Environmental rules and regulations	3.1 Cleaning used tools and outfit 3.2 Labelling and storing unused materials 3.3 Disposing waste materials

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work tasks	Work task may be selected from any of the subsectors: 1.1 Crop Production 1.2 Post-harvest 1.3 Agri-marketing 1.4 Farm Equipment
2. Place	2.1 Stock room/storage areas/warehouse 2.2 Field/farm/orchard
3. Time	3.1 Fertilizer and pesticides application 3.2 Feed mixing and feeding 3.3 Harvesting and hauling
4. Tools, materials and outfits	4.1 Tools 4.1.1 Wrenches 4.1.2 Screw driver 4.1.3 Pliers 4.2 Outfit 4.2.1 Masks 4.2.2 Gloves 4.2.3 Boots 4.2.4 Overall coats 4.2.5 Hat 4.2.6 Eye goggles
5. Emergency procedures	5.1 Location of first aid kit 5.2 Evacuation 5.3 Agencies contract 5.4 Farm emergency procedures
6. Hazards	6.1 Chemical 6.2 Electrical 6.3 Falls

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Determined areas of concern for safety measures 1.2 Applied appropriate safety measures according to industry requirements 1.3 Prepared tools, materials and outfit needed 1.4 Performed proper disposal of used materials 1.5 Cleaned and stored tools, materials and outfit in designated facilities
2. Resource Implications	The following resources should be provided: 2.1 Farm location 2.2 Tools, equipment and outfits appropriate in applying safety measures
3. Method of Assessment	Competency in this unit must be assessed through: 3.1 Practical demonstration 3.2 Third Party Report
4. Context of Assessment	Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision

UNIT OF COMPETENCY : USE FARM TOOLS AND EQUIPMENT

UNIT CODE : AFF321202

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to use farm tools and equipment. It includes selection, operation and preventive maintenance of farm tools and equipment.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
<ul style="list-style-type: none"> • Select and use farm tools 	1.1 Appropriate farm tools are identified according to requirement/use 1.2 Farm tools are checked for faults and defective tools reported in accordance with farm procedures 1.3 Appropriate tools are safely used according to job requirements and manufacturers conditions	1.1 Types and uses of farm tools 1.2 Characteristics of functional tools 1.3 Checking tools for defects/faults 1.4 Segregation and reporting defective tools 1.5 Uses of tools and equipment	1.1 Identifying farm tools for the work 1.2 Checking the conditions of tools 1.3 Reporting defective tools 1.4 Using tools
2 Select and operate farm equipment	2.1 Identify appropriate farm equipment 2.2 Instructional manual of the farm tools and equipment are carefully read prior to operation 2.3 Pre-operation check-up is conducted in line with manufacturers manual 2.4 Faults in farm equipment are identified and reported in line	2.1 Types and operations of farm equipment 2.2 Standards operating procedures of farm equipment 2.3 Instructional manual of equipment 2.4 Pre-operation check-up 2.5 Equipment Specification 2.6 Procedures in calibrating and use of equipment 2.7 Equipment faults identification and reporting 2.8 Operation of equipment	2.1 Identifying appropriate farm equipment for the work 2.2 Reading instructional manual. 2.3 Conducting pre-operation check-up 2.4 Identifying faults/defects of farm equipment 2.5 Reporting on defective farm equipment 2.6 Operating farm equipment 2.7 Following safety procedures.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>with farm procedures</p> <p>2.5 Farm equipment used according to its function</p> <p>2.6 Safety procedures are followed.</p>	<p>2.9 Codes and Regulations on environmental protection</p> <p>2.10 Safety and keeping of equipment every after use</p> <p>2.11 Safety measures</p>	
3 Perform preventive maintenance	<p>3.1 Tools and equipment are cleaned immediately after use in line with farm procedures</p> <p>3.2 Routine check-up and maintenance are performed</p> <p>3.3 Tools and equipment are stored in designated areas in line with farm procedures</p>	<p>2.1 Cleaning procedures of tools and equipment</p> <p>3.2 Maintenance procedures of farm equipment</p> <p>3.3 Storage of tools and equipment</p> <p>3.4 Designated storage areas</p>	<p>3.1 Cleaning tools and equipment</p> <p>3.2 Performing routinary check-up of tools and equipment</p> <p>3.3 Maintaining farm equipment</p> <p>3.4 Storing tools and equipment</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Farm equipment	Farm equipment include: 1.1 Engine 1.2 Pumps 1.3 Generators 1.4 Sprayers
2. Farm tools	Farm tools includes: 2.1 Sickle 2.2 Cutters 2.3 Weighing scales 2.4 Hand tools 2.5 Measuring tools 2.6 Garden tools
3. Pre-operation check-up	Pre-operation check –up includes: 3.1 Tires 3.2 Brake fluid 3.3 Fuel 3.4 Water 3.5 Oil 3.6 Lubricants 3.7 Battery

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Correctly identified appropriate farm tools and equipment 1.2 Operated farm equipment according to manual specification 1.3 Performed preventive maintenance
2. Resource Implications	The following resources should be provided: 2.1 Service/operational manual of farm tools and equipment 2.2 Tools and equipment 2.3 Farm implements
3. Method of Assessment	Competency in this unit must be assessed through: 3.1 Direct observation 3.2 Practical demonstration 3.3 Third Party Report
4. Context of Assessment	Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision

UNIT OF COMPETENCY : PERFORM ESTIMATION AND BASIC CALCULATION

UNIT CODE : AFF321203

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to perform basic workplace calculations.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform estimation	1.1 Job requirements are identified from written or oral communications 1.2 Quantities of materials and resources required to complete a work task are estimated 1.3 The time needed to complete a work activity is estimated 1.4 Accurate estimate for work completion are made 1.5 Estimate of materials and resources are reported to appropriate person	1.1 Job requirements/labor needs 1.2 Calculation of quantities of materials and resources required 1.3 Calculation of time for job completion 1.4 Preparation of estimate report 1.5 Basic mathematical operations 1.6 Percentage and ratios 1.7 Unit Conversion	1.1 Identifying job requirements/labor 1.2 Estimating quantities of materials and resources required 1.3 Estimating time for job completion 1.4 Performing basic calculation 1.5 Compute percentage 1.6 Convert English to metric systems of measurement 1.7 Preparing estimate report
2. Perform basic workplace calculation	2.1 System and units of measurement to be followed are ascertained 2.2 Calculation needed to complete work tasks are performed using the four basic mathematical operation 2.3 Calculate whole fraction, percentage and mixed when are used to complete the instructions 2.4 Number computed is checked following work requirements	2.1 Four basic mathematical operation 2.2 System and units of measurement 2.3 Fraction, percentage and ratio 2.4 Material takeoff 2.5 Materials costing	2.1 Compute bill of materials 2.2 Compute project cost

RANGE OF VARIABLES

VARIABLE	RANGE
1. Four basic mathematical operation	1.1 Addition 1.2 Subtraction 1.3 Multiplication 1.4 Division
2. System of measurement	2.1 English 2.2 Metric
3. Units of measurement	3.1 Area 3.2 Volume 3.3 Weight 3.4 Length

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Performed estimation 1.2 Performed basic workplace calculation 1.3 Applied corrective measures as maybe necessary
2. Resource Implications	The following resources should be provided: 2.1 Relevant tools and equipment for basic calculation 2.2 Recommended data
3. Method of Assessment	Competency in this unit must be assessed through: 3.1 Practical demonstration 3.2 Written examination
4. Context of Assessment	Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision

CORE COMPETENCIES

UNIT OF COMPETENCY : **PERFORM INSTALLATION OF PUMPS AND FLOW CONTROL DEVICES**

UNIT CODE : **AFF712257**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to prepare work plan, select equipment and tools, install pumps and control devices, evaluate installation, perform minor repairs, and perform shutting down activities.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
1. Plan and prepare for work on pumping and flow control systems	1.1 Work plan and timetable is prepared based on work requirements 1.2 Hazards are identified 1.3 Equipment and tools are selected and checked 1.4 Personal protective equipment (PPE) are selected and worn based on Rule 1080 of OSHS	1.1 Interpretation of symbols and use of a legend on site plans and specifications, particularly in relation to the location of existing features 1.2 Understanding of compass directions and how to locate North from a site plan 1.3 An awareness of other plans that may be referred to when setting out a site for irrigation 1.4 Recognition of site features and actions that can be taken to either clear the site or adjust the system to fit 1.5 Hazard identification and safe work procedures. 1.6 Rule 1080 of OSHS	1.1 Preparing work plan and timetable 1.2 Identifying hazards 1.3 Selecting and checking equipment and tools 1.4 Selecting and wearing of personal protective equipment (PPE) 1.5 Practicing occupational health, safety and hazards elimination

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
2. Carry out installation tasks for pumps and control devices	2.1 Installation tasks for pumps are carried out according to manufacturer guidelines and legislative requirements 2.2 Installation tasks for control devices are carried out according to manufacturer guidelines 2.3 Pumps and control devices are checked based on functionality 2.4 Safety practices on handling of pumps and control devices are applied following OSHS Rule 1150, 1080 and Rule 1200 2.5 Electrical safety practices are applied following PNS PAES 129	2.1 Types of pumps and their function and use 2.1 Types of flow control devices and their purpose 2.2 Basic principles of hydraulics and the operation of flows 2.3 System layout 2.4 Principles of electricity and safe work procedures 2.5 Lock-out procedures for mechanical and electrical installations 2.6 Effective workplace communication processes 2.7 Materials handling 2.8 Landscape and ground structure of work area 2.9 Risk factors and potential hazards 2.10 Equipment operation, capacity and limitations 2.11 Effects of weather and conditions on operation of system, site and plant 2.12 Flow measurement principles and procedures 2.13 Layout and performance of pipes and fittings 2.14 Function of	2.1 Installing pumps Installing control devices 2.1 Checking pumps and control devices 2.2 Applying safety practices based on OSHS Rule 1150, Rule 1200, and Rule 1080 2.3 Applying electrical safety practices based on PNS PAES 129 2.4 Practicing occupational health, safety and hazards elimination

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
		control systems. 2.15 PNS PAES 129 – Electric Motor 2.16 OSHS - Rule 1200 - Rule 1150 - Rule 1080	
3. Monitor required flows and water pressure of irrigation systems	3.1 Installed pumps and control devices are evaluated following monitoring schedule 3.2 Potential operational problems are identified 3.3 Water pressure is checked through pressure gauge 3.4 Identified problems are recorded and reported to immediate authorities 3.5 PPEs are worn following OSHS Rule 1080	3.1 Impact of the principles of hydraulics on the operation of flows 3.2 System layout 3.3 Risk factors and potential hazards 3.4 Equipment operation, capacity and limitations 3.5 Effects of weather and conditions on operation of system and site 3.6 System flow control mechanisms 3.7 Relevant lock-out procedures for mechanical and electrical installations 3.8 OSHS – Rule 1080 - IRR of RA 11058	3.1 Evaluating installed pumps and control devices 3.2 Identifying potential operational problems 3.3 Checking water pressure 3.4 Recording and reporting identified problems 3.5 Wearing of PPEs following OSHS Rule 1080 3.6 Practicing occupational health, safety and hazards elimination
5. Perform shutting down activities	5.1 Waste management is practiced according to Ecological Solid Waste Management Act of 2000. 5.2 Good housekeeping is practiced following 5S 5.3 Work site is restored based on environmental and organizational requirements	5.1 System flow control mechanisms 5.2 Relevant lock-out procedures for mechanical and electrical installations 5.3 OSHS – Rule 1080 5.3 Safety orientation on Basic Health	5.1 Disposing wastes 5.2 Practicing good housekeeping 5.3 Restoring work site 5.4 Recording and reporting activities 5.5 Practicing occupational health, safety and hazards elimination

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
	5.4 Tools and equipment are clean and store following workplace procedures. 5.5 Activities are recorded and reported in accordance with organizational procedures	and Safety Practice 5.4 Principles of 5S 5.5 Effective Communication and Record keeping. RA 9003- Ecological Solid Waste Management Act of 2000	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hazards	Hazards may include but not limited to: 1.1 Snake bites 1.2 Solar radiation 1.3 Dust 1.4 Noise 1.5 Air- and soil-borne micro-organisms 1.6 Chemicals 1.7 Hazardous substances 1.8 Sharp hand tools and equipment 1.9 Holes 1.10 Slippery 1.11 Uneven surfaces
2. PPEs	PPEs may include but not limited to: 2.1 Long sleeves 2.2 Gloves 2.3 Rubber boots 2.4 Working hat 2.5 Sun glasses
3. Pumps	Pumps may include but not limited to: 3.1 Centrifugal 3.2 Archimedes screw type 3.3 Submersible 3.4 Positive displacement
4. Control devices	Control devices may include but not limited to: 4.1 Regulators 4.2 Valves 4.3 Controller
5. Functionality	Functionality may include but not limited to: 5.1 Suction 5.2 Discharge
6. Evaluation of devices	Evaluation of devices may include but not limited to: 6.1 Using flow meter 6.2 Timed-volume method

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Planned and prepared for work on pumping and flow control systems 1.2 Carried out installation tasks for pumps and control devices 1.3 Monitored required flows and water pressure of irrigation systems 1.4 Performed shutting down activities
2. Resource implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools, materials, supplies and equipment needed to perform required tasks 2.3 References and manuals 2.4 PPEs 2.5 First aid kit
3. Methods of assessment	Competency in this unit must be assessed through: 3.1 Demonstration/direct observation with oral questioning 3.2 Written examination
4. Context for assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY : PERFORM INSTALLATION OF PIPES AND WATER DISTRIBUTION DEVICES

UNIT CODE : AFF712258

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to prepare tools, materials, and equipment for installation work, perform staking/marketing, install pressurized irrigation components, inspect and adjust installed system, and perform good housekeeping.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
1. Carry out preparatory activities	1.1 Tools, materials, and equipment for installation work are prepared 1.2 Site is checked for readiness of installation 1.3 Existing infrastructure is identified and reported 1.4 Lay-out plan and design of pipes and water distribution devices is interpreted 1.5 Staking and markings is done following lay-out plan and design.	1.1 methods and techniques of pressurized irrigation 1.2 components of a pressurized irrigation system 1.3 characteristics and operation of joints, valves, drippers and sprinkler components 5.6 OSHS and Safety orientation on Basic Health and Safety Practice	.1 Tools, materials, and equipment for installation work are prepared .2 Site is checked for readiness of installation .3 Existing infrastructure is identified and reported .4 Design/plan of irrigation system is interpreted .5 Staking/markings is done .6 Practicing occupational health, safety and hazards elimination
2. Install pipelines and water distribution devices	2.1 <i>Pipelines and water distribution devices</i> are laid following lay-out plan and design 2.2 Pipelines and water distribution devices are installed according to design plan and	2.1 Components of a micro-irrigation system 2.2 Characteristics and operation of joints, valves, drippers and sprinkler components 2.3 Emitter spacing and coverage 2.4 OSHS and Safety orientation on	2.1 Laying pipelines 2.2 Installing irrigation components 2.3 Flushing skills 2.4 Practicing occupational health, safety and hazards elimination

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
	<p>following Ecological Solid Waste Management Act of 2000</p> <p>2.3 Flushing is carried out following established industry procedures.</p> <p>2.4 Safety practices are applied following OSHS Rule 1150</p>	<p>Basic Health and Safety Practice OSHS</p> <p>2.5 Rule 1150</p> <p>2.6 RA 9003- Ecological Solid Waste Management Act of 2000</p>	
3. Conduct preliminary test run	<p>3.1 Installed pipelines and water distribution devices are inspected for functionality following industry procedures</p> <p>3.2 Test run is conducted following industry procedures.</p> <p>3.3 Adjustment is conducted following manufacturer's procedures</p> <p>3.4 Defects and performance of pipelines and water distribution devices are recorded and reported following organizational procedures.</p> <p>3.5 PPEs are worn following OSHS Rule 1080</p>	<p>3.1 Characteristics and operation of joints, valves, drippers and sprinkler components</p> <p>3.2 Basic calculations for water delivery</p> <p>3.3 OHS and enterprise procedures.</p> <p>3.4 OSHS Rule 1080</p> <p>3.5 OSHS and Safety orientation on Basic Health and Safety Practice</p>	<p>3.1. Inspecting installed system</p> <p>3.2 Conducting test run</p> <p>3.3 Adjust installed system</p> <p>3.4 Recording and reporting defects and performance of system</p> <p>3.5 Practicing occupational health, safety and hazards elimination</p>
4. Perform post-installation activities	4.1 Waste management is practiced according to	4.1 Characteristics and operation of joints, valves, drippers and sprinkler	<p>4.1 Disposing wastes</p> <p>4.2 Practicing 5S of Good Housekeeping</p> <p>4.3 Cleaning and storing</p>

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
	Ecological Solid Waste Management Act of 2000. 4.2 Housekeeping is practiced following 5S 4.3 Tools and equipment are clean and stored following workplace procedures 4.4 Documentation is prepared and submitted according to organization procedures.	components 4.2 Indicators of over and under watering 4.3 Water requirements of relevant plants 4.4 OHS and enterprise procedures. 4.5 RA 9003-Ecological Solid Waste Management Act of 2000 4.6 OSHS Rule 1080 4.7 OSHS and Safety orientation on Basic Health and Safety Practice	of tools and equipment 4.4 Preparing and submitting documentation 4.5 Practicing occupational health, safety and hazards elimination

RANGE OF VARIABLES

VARIABLE	RANGE
1. Pipelines and water distribution devices	Pipelines and water distribution devices may include: 1.1 Distribution pipes 1.2 Manifolds 1.3 Control valves drip 1.4 Emitter
2. Defects	Defects may include: 2.1 Non-compatibility of fittings 2.2 Inappropriate material/supply used
3. Performance	Performance includes: 3.1 Efficiency of pipeline installation 3.2 Performance of emitter

EVIDENCE GUIDE

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Carried out preparatory activities 1.2 Installed pipelines and water distribution devices 1.3 Conducted preliminary test run 1.4 Performed post-installation activities
2. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tool, materials, supplies and equipment needed to perform required tasks 2.3 Irrigation system design/plan 2.4 References and manuals 2.5 PPEs 2.6 First-aid kit
3. Methods of assessment	<p>Competency in this unit must be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration/direct observation with oral questioning 3.2 Written examination
4. Context for assessment	<p>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions</p>

UNIT OF COMPETENCY : PERFORM MAINTENANCE OF PRESSURIZED IRRIGATION SYSTEM

UNIT CODE : AFF712259

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to troubleshoot installed system, prepare findings and recommendations, perform minor repairs, conduct counter-checking, clean tools, equipment, and workplace, and perform recordkeeping and reporting.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
1. Perform pre-maintenance activities	1.1 Tools, materials, and measuring devices are prepared based on work requirements and manuals. 1.2 Troubleshooting is performed following industry standard procedures. 1.3 Inventory of materials is checked according to organizational procedures. 1.4 Findings and recommendations are prepared based on workplace procedures. 1.5 Safety measures are practiced following OSHS Rule 1080, Rule 1150 and Rule 1200	1.1 Purpose and principles of pressurized irrigation 1.2 Identification, characteristics and operation of replaceable components of pressurized irrigation systems 1.3 Emitter spacing and coverage 1.4 Emitter volume and pressure 1.5 System malfunctions and their likely causes 1.6 Environmental impacts of irrigation, using water from any ground or underground source. 1.7 OSHS - Rule 1080 - Rule 1150 - Rule 1200	1.1 Preparing tools, materials, and measuring devices 1.2 Troubleshooting skills 1.3 Checking inventory of materials 1.4 Preparing findings and recommendations 1.5 Practicing occupational health, safety and hazards elimination
2. Carry out maintenance activities	2.1 De-clogging and cleaning is performed according to industry standards	2.1 Purpose and principles of pressurized irrigation	2.1 De-clogging and cleaning skills 2.2 Performing minor repair

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
	<p><i>environmental laws.</i></p> <p>2.2 <i>Minor repair</i> is performed according to industry procedures and manuals.</p> <p>2.3 <i>Damage part</i> is replaced following manufacturer's manual and Ecological Solid Waste Management Act of 2000.</p> <p>2.4 Safety measures are practiced following OSHS Rule 1080, Rule 1150 and Rule 1200</p> <p>2.5 Test-run is conducted following industry standards.</p>	<p>2.2 Identification, characteristics and operation of replaceable components of sprinkler irrigation systems</p> <p>2.3 Use of simple irrigation controllers</p> <p>2.4 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>2.5 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>2.6 OSHS</p> <ul style="list-style-type: none"> - Rule 1080 - Rule 1150 - Rule 1200 	<p>2.3 Replacing damage part</p> <p>2.4 Practicing safety measures</p> <p>2.5 Test-run skills</p> <p>2.6 Practicing occupational health, safety and hazards elimination</p>
<p>3. Conduct post-maintenance activities</p>	<p>3.1 Tools, equipment, and workplace is cleaned following 5S of Good Housekeeping</p> <p>3.2 Waste management is practiced according to <i>environmental laws.</i></p> <p>3.3 Safety measures are practiced following OSHS</p> <p>3.4 Recordkeeping is performed based on industry standards</p> <p>3.5 Report is prepared based on industry standards</p>	<p>3.1 Environmental impacts of irrigation, using water from any ground or underground source.</p> <p>3.2 5S of Good Housekeeping</p> <p>3.3 Communication skills</p> <p>3.4 OHS and enterprise procedures.</p> <p>3.5 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>3.6 RA 6969-Toxic Substances and Hazardous and</p>	<p>3.1 Cleaning tools, equipment, and workplace</p> <p>3.2 Disposing wastes</p> <p>3.3 Practicing safety measures</p> <p>3.4 Recordkeeping skills</p> <p>3.5 Reporting skills</p> <p>3.6 Practicing occupational health, safety and hazards elimination</p>

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILLS
		Nuclear Wastes Control Act of 1990 3.7 OSHS Rule 1080 OSHS and Safety orientation on Basic Health and Safety Practice	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools, materials, and measuring devices	Tools, materials and measuring devices may include: 1.1 Tools: 1.1.1 Cutting tools 1.1.2 Boring tools 1.1.3 Set of wrench 1.1.4 Set of screw drivers 1.1.5 Pliers 1.1.6 Hacksaw 1.2 Materials: 1.2.1 Oil 1.2.2 Grease 1.2.3 Fuel 1.2.4 Electrical wires 1.3 Measuring devices: 1.3.1 Flow meter 1.3.2 Pressure gauge
2. Minor repair	Minor repair may include: 2.1 Tightening of pipe fittings 2.2 Repair of valves 2.3 Repair of centrifugal pumps -check valve 2.4 Replacement of clogged emitters, sprinklers
3. Damage part	Damage part may include: 3.1 Sprinkler heads 3.2 Drip lines 3.3 PE pipes 3.4 Valves 3.5 Pressure gauge 3.6 Control devices
4. Environmental Laws	Environmental laws may include: 4.1 RA 9003-Ecological Solid Waste Management Act of 2000 4.2 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed pre-maintenance activities 1.2 Carried out maintenance activities 1.3 Conducted post-maintenance activities
2. Resource implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools, materials, supplies and equipment needed to perform required tasks 2.3 References and manuals 2.4 PPEs 2.5 First-aid kit
3. Methods of assessment	Competency in this unit must be assessed through: 3.1 Demonstration/direct observation with oral questioning 3.2 Written examination
4. Context for assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

SECTION 3 TRAINING ARRANGEMENTS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for **PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II**.

They include information on curriculum design; training delivery; trainee entry requirements; tools and equipment; training facilities; and trainer's qualification.

3.1 CURRICULUM DESIGN

TESDA shall provide the training on the development of competency-based curricula to enable training providers develop their own curricula with the components mentioned below.

Delivery of knowledge requirements for the basic, common and core units of competency specifically in the areas of mathematics, science/technology, communication/language and other academic subjects shall be contextualized. To this end, TVET providers shall develop a Contextual Learning Matrix (CLM) to include Technology, Science, Math, English/Communication, and Safety to Environment. Includes also green technology, issues on health and drugs and cater to person with disabilities (PWD's).

Course Title: **IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC Level NC II**

Nominal Training Duration:

37 hrs	Basic Competencies
72 hrs	Common Competencies
70 hrs	Core Competencies
Total	179 hrs

Course Description:

This course is designed to provide the students/learner with knowledge, desirable attitudes and skills required to perform the following competencies in accordance with industry standards: perform installation of pumps and flow control devices, perform installation of pipelines and water distribution devices and perform maintenance of pressurized irrigation system.

To obtain this, all units prescribed for this qualification must be achieved.

BASIC COMPETENCIES

(37 HOURS)

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Participate in workplace communication	1.1. Obtain and convey workplace information	<ul style="list-style-type: none"> • Describe Organizational policies • Read: <ul style="list-style-type: none"> ○ Effective communication ○ Written communication ○ Communication procedures and systems • Identify: <ul style="list-style-type: none"> ○ Different modes of communication ○ Medium of communication ○ Flow of communication ○ Available technology relevant to the enterprise and the individual's work responsibilities • Prepare different Types of question • Gather different sources of information • Apply storage system in establishing workplace information • Demonstrate Telephone courtesy 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration 	<ul style="list-style-type: none"> • Oral evaluation • Written examination • Observation 	2 hours
	1.2. Perform duties following workplace instructions -	<ul style="list-style-type: none"> • Read: <ul style="list-style-type: none"> ○ Written notices and instructions ○ Workplace interactions and procedures • Read instructions on work related forms/documents • Perform workplace duties scenario following workplace instructions 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration 	<ul style="list-style-type: none"> • Oral evaluation • Written examination • Observation 	2 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	1.3. Complete relevant work related documents	<ul style="list-style-type: none"> • Describe Communication procedures and systems • Read: <ul style="list-style-type: none"> ○ Meeting protocols ○ Nature of workplace meetings ○ Workplace interactions ○ Barriers of communication • Read instructions on work related forms/documents • Practice: <ul style="list-style-type: none"> ○ Estimate, calculate and record routine workplace measures ○ Basic mathematical processes of addition, subtraction, division and multiplication • Demonstrate office activities in: <ul style="list-style-type: none"> ○ workplace meetings and discussions scenario • Perform workplace duties scenario following simple written notices • Follow simple spoken language • Identify the different Non-verbal communication • Demonstrate ability to relate to people of social range in the workplace • Gather and provide information in response to workplace requirements • Complete work related documents 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration • Role play 	<ul style="list-style-type: none"> • Oral evaluation • Written examination • Observation 	2 hours
2. Work in a team environment	2.1 Describe team role and scope	<ul style="list-style-type: none"> • Discussion on team roles and scope • Participate in the discussion: <ul style="list-style-type: none"> ○ Definition of Team ○ Difference between team and group ○ Objectives and goals of team • Locate needed information from the different sources of information 	<ul style="list-style-type: none"> • Lecture/ Discussion • Group Work • Individual Work • Role Play 	<ul style="list-style-type: none"> • Role Play • Case Study • Written Test 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	2.2 Identify one's role and responsibility within team	<ul style="list-style-type: none"> • Role play : <ul style="list-style-type: none"> ○ individual role and responsibility • Role Play <ul style="list-style-type: none"> ○ Understanding Individual differences • Discussion on gender sensitivity 	<ul style="list-style-type: none"> •Role Play •Lecture/ Discussion 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour
	2.3 Work as a team member	<ul style="list-style-type: none"> • Participate in group planning activities • Role play : Communication protocols • Participate in the discussion of standard work procedures and practices 	<ul style="list-style-type: none"> •Group work •Role Play •Lecture/ Discussion 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour
3. Solve/address routine problems	3.1 Identify routine problems	<ul style="list-style-type: none"> • Review of the current industry hardware and software products and services • Identify correctly the industry maintenance, service and helpdesk practices, processes and procedures • Make use of the industry standard diagnostic tools • Share best practices in determining basic malfunctions and resolutions to general problems in the workplace • Analyze routine/procedural problems 	<ul style="list-style-type: none"> •Group discussion •Lecture •Demonstration •Role playing 	<ul style="list-style-type: none"> •Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	1 hour
	3.2 Look for solutions to routine problems	<ul style="list-style-type: none"> • Review of the current industry hardware and software products and services • Identify correctly the industry maintenance, service and helpdesk practices, processes and procedures • Make use of the industry standard diagnostic tools • Share best practices in determining basic malfunctions and resolutions to general problems in the workplace 	<ul style="list-style-type: none"> •Group discussion •Lecture •Demonstration •Role playing 	<ul style="list-style-type: none"> •Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		<ul style="list-style-type: none"> Formulate possible solutions to problems and document procedures for reporting 			
	3.1 Recommend solutions to problems	<ul style="list-style-type: none"> Discuss standard operating procedures and documentation processes 	<ul style="list-style-type: none"> Group discussion Lecture Demonstration Role playing 	<ul style="list-style-type: none"> Case Formulation Life Narrative Inquiry (Interview) Standardized test 	1 hour
4. Develop Career and Life Decisions	4.3 Manage one's emotion	<ul style="list-style-type: none"> Demonstrate self-management strategies that assist in regulating behavior and achieving personal and learning goals Explain enablers and barriers in achieving personal and career goals Identify techniques in handling negative emotions and unpleasant situation in the workplace such as frustration, anger, worry, anxiety, etc. Manage properly one's emotions and recognize situations that cannot be changed and accept them and remain professional Recall instances that demonstrate self-discipline, working independently and showing initiative to achieve personal and career goals Share experiences that show confidence, and resilience in the face of setbacks and frustrations and other negative emotions and unpleasant situations in the workplace 	<ul style="list-style-type: none"> Discussion Interactive Lecture Brainstorming Demonstration Role-playing 	<ul style="list-style-type: none"> Demonstration or simulation with oral questioning Case problems involving workplace diversity issues 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	4.4 Develop reflective practice	<ul style="list-style-type: none"> • Enumerate strategies to improve one's attitude in the workplace • Explain Gibbs' Reflective Cycle/Model (Description, Feelings, Evaluation, Analysis, Conclusion, and Action plan) • Use basic SWOT analysis as self-assessment strategy • Develop reflective practice through realization of limitations, likes/ dislikes; through showing of self-confidence • Demonstrate self-acceptance and being able to accept challenges 	<ul style="list-style-type: none"> • Small Group Discussion • Interactive Lecture • Brainstorming • Demonstration • 5 Role-playing 	<ul style="list-style-type: none"> • Demonstration or simulation with oral questioning • Case problems involving workplace diversity issues 	1 hour
	4.5 Boost self-confidence and develop self-regulation	<ul style="list-style-type: none"> • Describe the components of self-regulation based on Self-Regulation Theory (SRT) • Explain personality development concepts • Cite self-help concepts (e. g., 7 Habits by Stephen Covey, transactional analysis, psycho-spiritual concepts) • Perform effective communication skills – reading, writing, conversing skills • Show affective skills – flexibility, adaptability, etc. • Determine strengths and weaknesses 	<ul style="list-style-type: none"> • Small Group Discussion • Interactive Lecture • Brainstorming • Demonstration • Role-playing 	<ul style="list-style-type: none"> • Demonstration or simulation with oral questioning • Case problems involving workplace diversity issues 	1 hour
5. Contribute to workplace innovation	5.1 Identify opportunities to do things better	<ul style="list-style-type: none"> • Identify different roles of individuals in contributing to doing things better in the workplace • Appreciate positive impacts and challenges in innovation • Show mastery of the different types of changes and levels of participation in the workplace • Discuss 7 habits of highly effective people 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration • Group work 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation • Life Narrative Inquiry • Review of portfolios of evidence and third-party workplace 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
				reports of on-the-job performance. • Standardized assessment of character strengths and virtues applied	
	5.2 Discuss and develop ideas with others	<ul style="list-style-type: none"> • Identify different roles of individuals in contributing to doing things better in the workplace • Appreciate positive impacts and challenges in innovation • Show mastery of the different types of changes and levels of participation in the workplace • Discuss 7 habits of highly effective people • Communicate ideas through small group discussions and meetings 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration • Group work 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation • Life Narrative Inquiry • Review of portfolios of evidence and third-party workplace reports of on-the-job performance. • Standardized assessment of character strengths and virtues applied 	1 hour
	5.3 Integrate ideas for change in the workplace	<ul style="list-style-type: none"> • Identify different roles of individuals in contributing to doing things better in the workplace • Appreciate positive impacts and challenges in innovation • Show mastery of the different types of changes and levels of participation in the workplace • Discuss 7 habits of highly effective people 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration • Group work 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation • Life Narrative Inquiry • Review of portfolios of 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		<ul style="list-style-type: none"> Communicate ideas through small group discussions and meetings Demonstrate basic skills in data analysis 		evidence and third-party workplace reports of on-the-job performance. <ul style="list-style-type: none"> Standardized assessment of character strengths and virtues applied 	
6. Present relevant information	6.1 Gather data/ information	<ul style="list-style-type: none"> Lecture and discussion on: <ul style="list-style-type: none"> Organisational protocols Confidentiality and accuracy Business mathematics and statistics Legislation, policy and procedures relating to the conduct of evaluations Reviewing data/ information 	<ul style="list-style-type: none"> Group discussion Lecture Demonstration Role Play 	<ul style="list-style-type: none"> Oral evaluation Written Test Observation Presentation 	2 Hours
	6.2 Assess gathered data/ information	<ul style="list-style-type: none"> Lecture and discussion on: <ul style="list-style-type: none"> Data analysis techniques/ procedures Organisational values, ethics and codes of conduct Trends and anomalies Computing business mathematics and statistics Application of data analysis techniques 	<ul style="list-style-type: none"> Group discussion Lecture Demonstration Role Play Practical exercises 	<ul style="list-style-type: none"> Oral evaluation Written Test Observation Presentation 	3 Hours
	6.3 Record and present information	<ul style="list-style-type: none"> Lecture and discussion on: <ul style="list-style-type: none"> Reporting requirements to a range of audiences Recommendations for possible improvements Analysis and comparison of interim and final reports' outcomes Reporting of data findings 	<ul style="list-style-type: none"> Group discussion Lecture Demonstration Role Play Practical exercises 	<ul style="list-style-type: none"> Oral evaluation Written Test Observation Presentation 	3 Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
7. Practice Occupational Safety And Health Policies And Procedures	7.1 Identify OSH compliance requirements	<ul style="list-style-type: none"> • Discussion regarding: <ul style="list-style-type: none"> - Hierarchy of Controls - Hazard Prevention and Controls - Work Standards and Procedures - Personal Protective Equipment 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 Hour
	7.2 Prepare OSH requirements for compliance	<ul style="list-style-type: none"> • Identification of required safety materials, tools and equipment • Handling of safety control resources 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 Hour
	7.3 Perform tasks in accordance with relevant OSH policies and procedures	<ul style="list-style-type: none"> • Discussion of General OSH Standards and Principles • Performing industry related work activities in accordance with OSH Standards 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	2 Hours
8. Exercise Efficient and Effective Sustainable Practices in the Workplace	8.1 Identify the efficiency and effectiveness of resource utilization	<ul style="list-style-type: none"> - Discussion on the process how Environmental Policies coherence is achieved • Discussion on Necessary Skills in response to changing environmental policies needs <ul style="list-style-type: none"> - Waste Skills - Energy Skills - Water Skills - Building Skills - Transport Skills - Material Skills 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Simulation • Demonstration 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 Hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	8.2 Determine causes of inefficiency of resource utilization	<ul style="list-style-type: none"> • Discussion of Environmental Protection and Resource Efficiency Targets • Analysis on the Relevant Work Procedure 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Demonstration 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 Hour
	8.3 Convey inefficient and ineffective environmental practices	<ul style="list-style-type: none"> • Identification of (re)training needs and usage of environment friendly methods and technologies • Identification of environmental corrective actions • Practicing Environment Awareness 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Role Play • Demonstration 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 Hour
9. Practice Entrepreneurial Skills in the Workplace	9.1 Apply entrepreneurial workplace best practices	<ul style="list-style-type: none"> • Case studies on Best entrepreneurial practices • Discussion on Quality procedures and practices • Case studies on Cost consciousness in resource utilization 	<ul style="list-style-type: none"> • Case Study • Lecture/Discussion 	<ul style="list-style-type: none"> • Case Study • Written Test • Interview 	1 Hour
	9.2 Communicate entrepreneurial workplace best practices	<ul style="list-style-type: none"> • Discussion on communicating entrepreneurial workplace best practices 	<ul style="list-style-type: none"> • Lecture/Discussion 	<ul style="list-style-type: none"> • Written Test • Interview 	1 Hour
	9.3 Implement cost-effective operations	<ul style="list-style-type: none"> • Case studies on Preservation, optimization and judicious use of workplace resources 	<ul style="list-style-type: none"> • Case Study • Lecture/Discussion 	<ul style="list-style-type: none"> • Case Study • Written Test • Interview 	2 Hours

**COMMON COMPETENCIES
72 HRS**

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
1. Apply safety measures in farm operations	1.1 Determine areas of concern for safety measures	<ul style="list-style-type: none"> Identify work tasks in farm operations 	<ul style="list-style-type: none"> Lecture Discussion Incomplete worksheet Power point presentation Video presentation 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	(Total-7 hrs) 1 hr
		<ul style="list-style-type: none"> Discuss safety measures in a workplace during farm operations 	<ul style="list-style-type: none"> Lecture Discussion Incomplete worksheet Power point presentation Video presentation Role playing 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Explain farm operations situations and period when to observe safety 	<ul style="list-style-type: none"> Lecture Discussion Incomplete worksheet Power point presentation Video presentation Role playing 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Identify appropriate tools, 	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		materials and outfits to be used	<ul style="list-style-type: none"> • Discussion • Incomplete worksheet • Power point presentation • Video presentation 	examination <ul style="list-style-type: none"> • Interview • Oral questioning • Demonstration 	
		<ul style="list-style-type: none"> • Prepare tools, materials and outfits for the farm operation 	<ul style="list-style-type: none"> • Lecture • Discussion • Power point presentation • Video presentation • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
	1.2 Apply appropriate safety measures	<ul style="list-style-type: none"> • Enumerate uses and functions of tools and materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	(Total -11 hrs.) 1 hr
		<ul style="list-style-type: none"> • Explain procedures of wearing personal protective equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
			<ul style="list-style-type: none"> • Discuss topics on 	<ul style="list-style-type: none"> • Discussion 	<ul style="list-style-type: none"> • Written

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		effectivity, shelf life and expirations of materials to be used.	<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet 	examination <ul style="list-style-type: none"> • Interview • Oral questioning 	
		<ul style="list-style-type: none"> • Identify the emergency procedures 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	2 hrs
		<ul style="list-style-type: none"> • Identify hazards in a farm workplace 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	2 hrs
		<ul style="list-style-type: none"> • Use tools and materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
		<ul style="list-style-type: none"> • Wear personal protective 	<ul style="list-style-type: none"> • Discussion 	<ul style="list-style-type: none"> • Written 	0.5 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		equipment	<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	examination <ul style="list-style-type: none"> • Interview • Oral questioning • Demonstration 	
		<ul style="list-style-type: none"> • Prepare report on hazards in the workplace 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Report on hazards in the workplace 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Role playing 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	0.5 hr
	1.3 Safekeep/ dispose of tools, materials and outfit	<ul style="list-style-type: none"> • Explain cleaning and storing procedures of the used tools and outfit 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	(Total – 6 hrs) 1 hr
		<ul style="list-style-type: none"> • State labelling and storing 	<ul style="list-style-type: none"> • Discussion 	<ul style="list-style-type: none"> • Written 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		procedures for unused materials	<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet 	examination <ul style="list-style-type: none"> • Interview • Oral questioning 	
		<ul style="list-style-type: none"> • Explain proper wastes disposal 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Clean and store used tools and outfit 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Label and store unused materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
			<ul style="list-style-type: none"> • Dispose waste materials 	<ul style="list-style-type: none"> • Discussion 	<ul style="list-style-type: none"> • Written

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • examination • Interview • Oral questioning • Demonstration 	
2.Use farm tools	2.1 Select and use farm tools	<ul style="list-style-type: none"> • Identify farm tools 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	(Total -6 hrs) 1 hr
		<ul style="list-style-type: none"> • Describe faults and defective tools 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
	<ul style="list-style-type: none"> • Discuss using of tools and equipment relating to manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr	

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Check farm tools for faults and defects 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Use tools and equipment relating to manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
	2.2 Select and operate farm equipment	<ul style="list-style-type: none"> • Identify farm equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	(Total -19 hrs) 1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Explain importance of reading manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Discuss pre-operation check and its importance 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Identify different types of faults in farm equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Enumerate reporting procedures 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Role playing 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Enumerate procedures in using farm equipment 	<ul style="list-style-type: none"> • Discussion • Power point 	<ul style="list-style-type: none"> • Written examination 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Interview • Oral questioning 	
		<ul style="list-style-type: none"> • Discuss safety procedures for farm operation 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Read manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Conduct pre-operation check-up 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Report identified faults 	<ul style="list-style-type: none"> • Discussion • Power point presentation 	<ul style="list-style-type: none"> • Written examination • Interview 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Oral questioning • Demonstration 	
		<ul style="list-style-type: none"> • Operate farm equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on • Field visit 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	8 hrs
		<ul style="list-style-type: none"> • Follow safety procedures 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
	2.3 Perform preventive maintenance	<ul style="list-style-type: none"> • Enumerate cleaning procedures for tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	(Total -7 hrs) 1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Discuss significance of routine check-up and maintenance 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain procedures in storing tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Clean tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> Perform routine check – up and maintenance 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Demonstration Hands-on 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Store tools and equipment 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Demonstration Hands-on 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
3. Perform estimation and basic calculation	3.1 Perform estimation	<ul style="list-style-type: none"> Identify job requirements and work task/activity 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	(Total -8 hrs) 1 hr
		<ul style="list-style-type: none"> Identify materials and resources of job requirements 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Estimate time to complete work task/activity 	<ul style="list-style-type: none"> Lecture Discussion Demonstration Video presentation 	<ul style="list-style-type: none"> Written exam Oral questioning 	2 hrs
		<ul style="list-style-type: none"> Estimate quantities of materials and resources 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> Prepare and submit bill of materials 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Demonstration 	2 hrs
	3.2 Perform basic workplace calculation	<ul style="list-style-type: none"> Describe different types of calculation 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	(Total -8 hrs) 1 hr
		<ul style="list-style-type: none"> Discuss different methods of calculation 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Describe system and unit of measurement 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	2 hrs
		<ul style="list-style-type: none"> Compute quantity of feeds, amount of fertilizer and amount of medicines using methods of calculation, system of measurement and units of measurement 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	4 hrs

CORE COMPETENCIES
70 HRS

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
1. Perform installation of pumps and flow control devices	1.1 Plan and prepare for work on pumping and flow control systems	1.1.1 Prepare work plan and timetable 1.1.2 Identify hazards 1.1.3 Select and check equipment and tools 1.1.4 Select and wear personal protective equipment (PPE)	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours
	1.2 Carry out installation tasks for pumps and control devices	1.2.1 Carry out installation tasks pumps 1.2.2 Carry out installation tasks for control devices 1.2.3 Pumps and control devices are checked based on functionality 1.2.4 Apply safety practices 1.2.5 Apply electrical safety practices	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	8 hours
	1.3 Monitor required flows and water pressure of irrigation systems	1.3.1 Evaluate installed pumps and control devices 1.3.2 Identify potential operational problems 1.3.3 Check water pressure 1.3.4 Record and report identified problems 1.3.5 Wear PPEs	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours
	1.4 Perform shutting down activities	1.4.1 Practice waste management 1.4.2 Practice good housekeeping 1.4.3 Restore work site 1.4.4 Clean and store tools and equipment 1.4.5 Record and report activities	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours

2. Perform installation of pressurized irrigation system	2.1 Carry out preparatory activities	2.1.1 Prepare tools, materials, and equipment for installation work 2.1.2 Check site for readiness of installation 2.1.3 Identify and report existing infrastructure 2.1.4 Interpret lay-out plan and design of pipes and water distribution devices. 2.1.5 Perform staking and markings	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	8 hours
	2.2 Install pipelines and water distribution devices	2.2.1 Lay pipelines and water distribution devices 2.2.2 Install pipelines and water distribution devices 2.2.3 Conduct flushing 2.2.4 Apply safety practices	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	16 hours
	2.3 Conduct preliminary test run	2.3.1 Inspect functionality of installed pipelines and water distribution devices 2.3.2 Conduct test run 2.3.3 Perform adjustment 2.3.4 Record and report defects and performance of pipelines and water distribution devices 2.3.5 Wear PPEs	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	6 hours
	2.4 Perform post-installation activities	2.4.1 Practice waste management 2.4.2 Practice good housekeeping 2.4.3 Clean and store tools and equipment 2.4.4 Prepare and submit documentation	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours
3. Perform maintenance of pressurized irrigation system	3.1 Perform pre-maintenance activities	3.1.1 Prepare tools, materials, and equipment 3.1.2 Perform troubleshooting 3.1.3 Check inventory of materials 3.1.4 Prepare findings and recommendations 3.1.5 Apply safety measures	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours

	3.2 Carry out maintenance activities	3.2.1 Perform de-clogging and cleaning 3.2.2 Perform minor repair 3.2.3 Replace damage part 3.2.4 Apply safety measures 3.2.5 Conduct test-run	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	8 hours
	3.3 Conduct post-maintenance activities	3.3.1 Clean tools, equipment, and workplace 3.3.2 Practice waste management 3.3.3 Apply safety measures 3.3.4 Perform recordkeeping 3.3.5 Prepare report	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Demonstration 	4 hours

3.2 TRAINING DELIVERY

The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the principles of competency-based TVET.

- a. Course design is based on competency standards set by the industry or recognized industry sector; (**Learning system is driven by competencies written to industry standards**)
- b. Learning is modular in structure;
- c. Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
- d. Training is supplemented with appropriate instructional materials to carry-out individualized and self-paced learning strategies;
- e. Training can be done on an actual workplace setting, simulation of a workplace and/or through adoption of modern technology.
- f. Criteria for assessment and promotion are based on the standards set by the industry in competently performing a workplace function. Ways of collecting evidence may come in various forms.
- g. Assessment criteria, conditions and progress-monitoring mechanism are transparent and explained in advance.
- h. Assessment of competency takes the trainee's knowledge and attitude into account but requires evidence of actual performance of the competency as the primary source of evidence.
- i. Training program allows for recognition of prior learning (RPL) or current competencies;
- j. Training completion is based on satisfactory completion of all specified competencies not on the specified nominal duration of learning.

The competency-based TVET system recognizes various types of delivery modes, both on-and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities and their variations/components may be adopted singly or in combination with other modalities when designing and delivering training programs:

School/Institution- Based:

- **Dual Training System (DTS)/Dualized Training Program (DTP)** which contain both in-school and in-industry training or fieldwork components.

Details can be referred to the Implementing Rules and Regulations of the DTS Law and the TESDA Guidelines on the DTP;

- **Supervised Industry Training (SIT) or on-the-job training (OJT)** is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies as prescribed in the training regulations. It is imperative that the deployment of trainees in the workplace is adhered to training programs agreed by the institution and enterprise and status and progress of trainees are closely monitored by the training institutions to prevent opportunity for work exploitation. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

There would be no across-the-board SIT or OJT for all programs covered by the TRs. Whether SIT/OJT along a particular qualification will be mandatory or not shall be defined in the TR to be promulgated. A curriculum mix with dominant practicum component is preferred.

The SIT or OJT component **may** be considered optional for the trainees who have had previous relevant work experience in the qualification for a period of time considered as sufficient by the qualified trainer concerned as indicated in the Training regulations.

- **Project-based instruction** is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.

Enterprise-Based:

- **Formal Apprenticeship** – Training within employment involving a contract between an apprentice and an enterprise on an approved apprenticeable occupation.
- **Enterprise-based Training**- where training is implemented within the company in accordance with the requirements of the specific company. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

Community-Based – refers to short term programs conducted by non-government organizations (NGOs), LGUs, training centers and other TVET providers which are intended to address the specific needs of a community. Such programs can be conducted in informal settings such as barangay hall, basketball courts, etc. These programs can also be mobile training program (MTP).

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students who want to enroll in this course should possess the following requirements:

- Able to read and write;
- Able to communicate both orally and written
- Have basic mathematical skills

3.4 TOOLS AND EQUIPMENT

PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II

Recommended list of tools, equipment and materials for the training of 25 trainees for **PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II**.

TOOLS

QTY	DESCRIPTION
6 pcs	Cutting tools
25 pcs	Boring tools
6 sets	Set of wrench
6 sets	Set of screw drivers
6 pcs	Pliers
6 pcs	Hacksaw
5 pcs	Measuring tape, 100m

EQUIPMENT

QTY	DESCRIPTION
2units	Flow meter
6units	Pressure gauge

MATERIALS

QTY	DESCRIPTION
4 L	Oil
1 kg	Grease
20 L	Fuel
2 rolls	Electrical wires
100pcs	Sprinkler heads
1 roll	Drip lines, 200m
50 m	PE pipes

10 pcs	Valves
25 pcs	Record book, 100pp
25 pcs	Ball pen
25 pcs	Calculator
50 pcs	Stakes, 30 cm
	PPEs
25 pcs	Long sleeves
25 pairs	Gloves
25 pairs	Rubber boots
25 pcs	Working hat
25 pcs	Sun glasses

Note: Access to and use of equipment/facilities can be provided through cooperative arrangements of MOA with other partner-companies/institutions.

3.5 TRAINING FACILITIES

PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II

Based on a class size of 25 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS	GRAND TOTAL AREA IN SQ. METERS
A. Building (permanent)				224
• Lecture Room	2.00 x 2.00 per student/trainee	4.00 per student	100.00	
• Learning Resource Center	8.00 x 5.00	40.00	40.00	
• Equipment Storage Room	8.00 x 5.00	40.00	40.00	
• Comfort room				
- Male	3.00 x 4.00		12.00	
- Female	3.00 x 4.00		12.00	
- PWD	4.00 x 5.00		20.00	
B. Demo Farm				1,000
• Irrigation site			1,000.00	
TOTAL AREA				1,224

Note: Access to and use of equipment/facilities can be provided through cooperative arrangements of MOA with other partner-companies/institutions.

3.6 TRAINER'S QUALIFICATIONS FOR AGRICULTURE, FORESTRY SECTOR

Trainers who will deliver the training on **PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NC II** should have the following:

- Must be a holder of National TVET Training Certification (NTTC) in Pressurized Irrigation System Installation and Maintenance NC II
- Must have at least two (2) years relevant industry experience within the last five (5) years

3.7 INSTITUTIONAL ASSESSMENT

Institutional Assessment is undertaken by trainees in a structured learning program to determine their achievement of units of competencies. It is administered by the trainer/assessor at end of each learning module.

The result of the institutional assessment may be considered as evidence for the assessment for national certification.

As a matter of policy, graduates of programs registered with TESDA under these training regulations are required to undergo mandatory national competency assessment upon completion of the program.

SECTION 4 ASSESSMENT AND CERTIFICATION ARRANGEMENT

Competency Assessment is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

The assessment process is based on evidence or information gathered to prove achievement of competencies. The process may be applied to a full qualification or employable unit(s) of competency in partial fulfillment of the requirements of the national qualification.

4.1. NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1.1 A National Certificate (NC) is issued when a candidate has demonstrated competence in all units of competency listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.1.2 The qualification of **Pressurized Irrigation System Installation and Maintenance NC II** can be attained by demonstration of competence through full assessment covering all the units required.

4.1.3 The qualification of **Pressurized Irrigation System Installation and Maintenance NC II** may be acquired through the accumulation of Certificates of Competency in the following units of competencies:

- COC 1** Perform installation of pumps and flow control devices
- COC 2** Perform installation of pipes and water distribution devices
- COC 3** Perform maintenance of pressurized irrigation system

Upon accumulation and submission of the above COCs acquired, an individual shall be issued the corresponding National Certificate signed by the TESDA Director General. Certificates of Competency (COCs) shall be issued to candidates who have been assessed as competent in any of the above COCs (COC 1, COC 2, COC 3).

4.1.4 Assessment shall cover all competencies with basic and common integrated or assessed concurrently with the core units of competency.

4.1.5 Any of following are qualified to apply for assessment :

- 4.1.5.1** Graduating students/trainees of WTR-registered programs, graduates of NTR programs or graduates of formal/non-formal/informal including enterprise-based training programs

related to PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCE NCII

4.1.5.2 Industry workers in PRESSURIZED IRRIGATION SYSTEM INSTALLATION AND MAINTENANCES NCII

4.1.6 The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Competency Assessment and Certification System (PTCACS)".

4.2. COMPETENCY ASSESSMENT REQUISITE

4.2.1 **Self-Assessment Guide.** The self-assessment guide (SAG) is accomplished by the candidate prior to actual competency assessment. SAG is a pre-assessment tool to help the candidate and the assessor determine what evidence is available, where gaps exist, including readiness for assessment.

This document can:

- a) Identify the candidate's skills and knowledge
- b) Highlight gaps in candidate's skills and knowledge
- c) Provide critical guidance to the assessor and candidate on the evidence that need to be presented
- d) Assist the candidate to identify key areas in which practice is needed or additional information or skills that should be gained prior to assessment

4.2.2 **Accredited Assessment Center.** Only Assessment Center accredited by TESDA is authorized to conduct competency assessment. Assessment centers undergo a quality assured procedure for accreditation before they are authorized by TESDA to manage the assessment for National Certification.

4.2.3 **Accredited Competency Assessor.** Only accredited competency assessor is authorized to conduct assessment of competence. Competency assessors undergo a quality assured system of accreditation procedure before they are authorized by TESDA to assess the competencies of candidates for National Certification.

COMPETENCY MAP FOR AGRICULTURE, FORESTRY AND FISHERY SECTOR

BASIC COMPETENCIES	Participate in workplace communication	Work in team environment	Solve/address general workplace problems	Develop career and life decisions	
	Contribute to workplace innovation	Present relevant information	Practice occupational safety and health policies and procedures	Exercise efficient and effective sustainable practices in the workplace	Practice entrepreneurial skills in the workplace

COMMON COMPETENCIES	Apply Safety Measures in Farm Operations	Use Farm Tools and Equipment	Perform Estimation and Basic Calculation
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CORE COMPETENCIES	Perform installation of pumps and flow control devices	Perform installation of pipelines and water distribution devices	Perform maintenance of pressurized irrigation system
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GLOSSARY OF TERMS

- 1. FLOW**

The movement of fluids, through pipe, fittings, valves or other vessels generally measured in Gallons Per Minute (GPM), Gallons Per Hour (GPH), Cubic Feet Per Second (ft³/s), Cubic Meters Per Hour (m³/h), Liters Per Minute (l/m), or Liters Per Second (l/s)
- 2. FLOW CONTROL**

is a mechanism that regulates the flow or pressure of liquid. To be able to effectively manage flow control, flow control valves are used. The flow control of liquids is regulated as these respond to signals that are produced by independent devices like temperature gauges as well as flow meters. Flow control is an important aspect in process plants where there are many control loops that hold essential process variables like flow, pressure, temperature and level. With proper flow control the quality of the end product can be guaranteed and disturbances that could cause corrosion damage can be prevented.
- 3. FLOW CONTROL VALVE**

regulates the flow or pressure of a fluid. Control valves normally respond to signals generated by independent devices such as flow meters
- 4. MAINLINE**

is pressurized pipe running from the point of connection to the zone control valves.
- 5. MANIFOLD**

refers to group of valves
- 6. PRESSURE**

is measured with a pressure gauge and expressed in pounds per square inch (PSI), bars or kPa. It is the amount of energy available to move water through pipe, valves, sprinklers or other components. Static pressure is the pressure measured when no water is flowing through a closed system. Dynamic pressure is the pressure measured when the system is open, or water is flowing through the system.
- 7. PRESSURIZED IRRIGATION SYSTEMS**

water is pressurized and precisely applied to the plants under pressure through a system of pipes. Pressurized irrigation systems, as opposed to the surface irrigation systems, are more effective in application of irrigation water to the crops
- 8. PUMP**

is a mechanical device that converts mechanical forms of energy into hydraulic energy.
- 9. VALVE**

is a device to control flow.
- 10. VOLUME**

is expressed in gallons per minute (GPM), gallons per hour (GPH) cubic feet per second (ft³/s), cubic meters per hour m³/h, liters per minute (l/m), or liters per second (l/s). Volume is used to describe either the amount of water available or the amount of water used.



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