Model Curriculum

Standalone NOS: Design and construct Vertical Garden

NOS Code: AGR/N0856

Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Agriculture Skill Council of India || Unit No. 101, First Floor, Greenwoods Plaza,

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Table of Contents

Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Landscaping, Gardening and Urban Farming
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO/2015-NIL
Minimum Educational Qualification and Experience	12th or equivalent OR Pursuing 2nd year of 3 year diploma in *Agriculture/Horticulture/Forestry/ Agriculture Engineering* after 10th pass OR Previous relevant Qualification of NSQF Level 3.5 with 1.5-year of relevant experience in Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level 3 with 3-year of relevant experience in Agriculture and allied sectors
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	30-04-2024
Next Review Date	30-04-2027
NSQC Approval Date	30-04-2024
QP Version	1.0
Model Curriculum Creation Date	30-04-2024
Model Curriculum Valid Up to Date	30-04-2027
Model Curriculum Version	1.0
Minimum Duration of the Course	37.5 Hours
Maximum Duration of the Course	37.5 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Plan and Design vertical garden
- Plan and construct vertical garden
- Perform waste management

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0856: Design and construct Vertical Garden **NOS Version: 1** **NOS Level: 4**	**22:30**	**15:00**	**0:00**	**0:00**	**37:30**
Module 1: Plan and Design vertical garden	12:30	8:00	0:00	0:00	20:30
Module 2: Plan and construct vertical garden	10:00	7:00	0:00	0:00	17:00
Total Duration	**22:30**	**15:00**	**0:00**	**0:00**	**37:30**

Module Details

Module 1: Plan and Design vertical garden

Bridge Module, Mapped to AGR/N0856

Terminal Outcomes:

- Plan and Design vertical garden

Duration: 12:30	**Duration: 08:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the environmental and energy efficiency impacts of green infrastructure designs • Discuss the purpose, functions, benefits and risks associated with vertical gardens • explain the specifications for waterproofing, irrigation and drainage systems and/or lighting, including recommended suppliers • Explain the factors that will impact vertical garden • Describe the purpose, functions, benefits and risks associated with the vertical gardens • Explain various types, purpose and preference of vertical garden and design features and requirements • Explain the professional practice requirements in vertical garden design • Discuss the factors influencing vertical gardens and design for existing and new buildings • Discuss about recirculating and non-recirculating/flood-drain vertical garden systems • Discuss about climatic factors of wind, temperature, sunlight, rainfall and irrigation, site access for construction and installation and ongoing maintenance • Describe features, benefits and risks of vertical gardens • Explain the characteristics, properties and limitations of materials used for vertical gardens • Explain the types of vertical garden	• examine the building for feasibility to complete site analysis • Confirm structural principles relating to vertical garden with relevant specialists • Examine the construction plans of the client's building to identify type of vertical garden best suited for building type and required outcomes • Determine location, aspect and dimensions of vertical garden • determine growing media characteristics and functionality, and select plants based on location conditions and maintenance requirements • Calculate total weight of vertical garden materials and fixing fastening system in consultation with suppliers, green infrastructure and/or building professionals to ensure total weight complies with parameters • Demonstrate preparing the design plans, specifications, maintenance plan and estimated costs for vertical garden and present to client • Estimate project cost and planning

Classroom Aids
White board, Marker, Overhead projector, Laptop, Internet access,
Tools, Equipment and Other Requirements
vertical garden design prints

Module 2: Plan and construct vertical garden

Mapped to AGR/N0856

Terminal Outcomes:

- Plan and construct vertical garden

Duration: 10:00	**Duration: 07:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain about various tools and equipment required for constructing vertical garden • Explain the techniques of installing vertical garden • Explain drainage and irrigation systems, storing and recycling water system • Explain the components of vertical garden • Explain the risks associated with construction of vertical gardens • Discuss about the planting methods that comply with the growing requirements of individual plant species and cultivars • Explain plant, equipment, hand and power tools, and operator certification requirements for operation, for construction of vertical garden • Explain the maintenance requirements and schedules of green infrastructure • Explain plant maintenance and cultural requirements of plants used for vertical garden • Discuss soil or growing media maintenance including ameliorants and additives • Explain the importance of segregating and disposing the waste • Explain the pest and disease control measures • Discuss safe waste disposal methods	• Calculate material and component quantities and check material availability with suppliers • Select plant, equipment and tools, check for serviceability • Inspect and report any faults, and confirm required operator certifications • Demonstrate marking position, levels and fixing points appropriate for the selected vertical garden configuration • carryout installing the waterproofing to the specified area by waterproofer using approved materials • Demonstrate installing irrigation and drip tray system, and check for leaks • Demonstrate installing lighting and/or air flow equipment according to specifications • Fix vertical garden panels according to manufacturers' specifications • Demonstrate Installing and finish growing media to specified levels • Demonstrate planting specified vegetation to meet design patterns according to designer and/or supplier establishment information • Demonstrate segregating waste into different categories • Demonstrate disposing the recyclable non-recyclable waste appropriately and reusable material at the identified location
Classroom Aids	
White board, Marker, Overhead projector, Laptop, Internet access,	
Tools, Equipment and Other Requirements	
Drip tray system, plantlets, wall planter kits, planting media	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Diploma(landscaping/Agriculture/Horticulture)	3	Gardening/Landscaping	0		
Any Graduate	Graduate	2	Gardening/Landscaping	0		For school Program minimum qualification of Trainer should be Graduate. Their Teaching experience will be considered industry experience
Graduate	Graduate (Agriculture / Horticulture)	0.5	Gardening/Landscaping	0		
Post- Graduate	Post-Graduate (Agriculture / Horticulture/ Agriculture Statistics)	0	Gardening/Landscaping	0		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for NOS "**Design and Construct Vertical Garden**", mapped to NOS: "AGR/N0856, v1.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Graduation	B.Sc (Agriculture/Botany/ Agriculture Statistics /Horticulture and related streams)	5	Gardening/Landscaping	0		
Post-graduation	M.Sc (Agriculture/Botany/ Agriculture Statistics /Horticulture and related streams)	2	Gardening/Landscaping	0		
PhD	PhD (Agriculture/Botany/Agriculture Statistics/Horticulture and related streams)	1	Gardening/Landscaping	0		

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for NOS "**Design and Construct Vertical Garden**", mapped to NOS: "AGR/N0856, v1.0", Minimum accepted score is 80%	Certified for the Job Role: "Assessor (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0", with a minimum score of 80%.

Assessment Strategy

Assessment System Overview

In Agriculture Sector it is of ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake the task. Based on the Assessment Criteria, SSC in association with empaneled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

1. Multiple Choice Questions: To assess basic knowledge (Objective/Subjective)
2. Viva: To assess awareness on processes (Oral and/or written questioning)
3. Practical: To evaluate skills and identify competencies. (Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real-time' internet-based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on the ground through qualified and ToA certified assessors.

An individual must have adequate knowledge and skills to perform a specific task, weightage for different aspects of the assessment is given as follows:

- Multiple Choice Questions: 20%-30%, depending on the specific QP
- Viva: 20%
- Practical: 50% - 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)
- Assessment will be carried out by certified assessors through empaneled assessment partners. Based on the results of the assessment; ASCI will certify the learners/candidates

Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at the assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of the Internet.

- Multilingual assessments (ASCI is conducting the assessments in 13 + languages pan India)
- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback are stored digitally on the cloud
- Advanced auto-proctoring features – photographs, time-stamp, geographic-tagging, toggle- screen/copy-paste disabled, etc.
- Android-based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention
- Assessment will normally be fixed for a day after the end date of the training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- The room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practice will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple-choice questions, pictorial questions, etc. which will test the trainee on his theoretical knowledge of the subject.

- The theory, practical and viva assessments will be carried out on the same day. In case of a greater number of candidates, the number of assessors and venue facilitation be increased and facilitated

Assessment			
Assessment Type	**Formative or Summative**	**Strategies**	**Examples**
Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on the usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling the job situation

The question paper is pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.

Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioural traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by a theoretical understanding of the testing objectives and published research about the item types and constructs that have shown statistical validity towards measuring the construct. Test item types that have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of the testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation-based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against a set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, dos and don'ts, subjective questions to check the understanding of practical tasks.

The assessor has to go through an orientation program organized by the Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. The assessor shall be given a NOS and PC level overview of each QP as applicable. The overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework that will maintain the standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidence collected by AAs and ASCI are:

- GeoTagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidence (photos and videos) to the assessor one day before the assessment. The list is mentioned below:
    - Signed Attendance sheet
    - Assessor feedback sheet
    - Candidate feedback sheet

- Assessment checklist for assessor
- Candidate Aadhar/ID card verification
- Pictures of the classroom, labs to check the availability of adequate equipment's and tools to conduct the training and assessment
- Pictures and videos of Assessment, training feedback and infrastructure.

- Apart from the Assessor, a Technical assistant is popularly known as Proctor also ensures the proper documentation and they verify each other's tasks.
- To validate their work on the day of the assessment, regular calls and video calls are done.
- On-boarding and training of the assessor and proctor are done on a timely basis to ensure that the quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

Methods of Validation

- Morning Check (Pre-Assessment): Backend team of AA calls and confirms assessor/technical SPOC event status. Assessor/Technical SPOC are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- Video Calls: Random video calls are made to the technical SPOC/assessor so as to keep a check on assessment quality and ensure assessment is carried out in a fair and transparent manner
- Aadhar verification of candidates
- Evening Check (Post Assessment): Calls are made to the ground team to ensure the event is over by what time and the documentation is done properly or not.
- TP Calling: To keep a check on malpractices, an independent audit team calls the TP on a recorded line to take confirmation if there was any malpractice activity observed in the assessment on part of the AA/SSC team. If calls are not connected, an email is sent to TP SPOC for taking their confirmation
- Video and Picture Evidence: Backend team collects video and pictures for assessment on a real-time basis and highlights any issue such as students sitting idle/ trainer helping the candidates during the assessment.
- Surprise Visit: Time to time SSC/AA Audit team can visit the assessment location and conduct a surprise audit for the assessment carried out by the ground team.
- Geo Tagging: On the day of the assessment, each technical SPOC is required to login into our internal app which is Geotagged. Any deviation with the centre address needs to be highlighted to the assessment team on a real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI have a fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks form the basis of the results and encrypted files generated to avoid data manipulation. All responses were captured and stored in the System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can

be generated.

- Maker Checker concept: One person prepares the results and another audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All softcopies of documents are received from the on-ground tech team over email. The same is downloaded by our internal backend team and saved in Repository. The repository consists of scheme-wise folders. These scheme-wise folders have two job role-specific folders. These specific folders have Year wise and Month wise folders where all documents are saved in Batch specific folders. All Hard copies are filed and stored in the storeroom.

Result Review & Recheck Mechanism –

- Time-stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidates shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	The key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
AGR	Agriculture
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
DF	Dense Forest
PA	Protected Areas
NTFP	Non-Timber Forest Produce
MFFCM	Modern Forest fire Control Methods
JFM	Joint Forest Management
FSI	Forest Survey of India
FRI	Forest Research Institute
FFCM	Forest Fire Control & Management
CS	Conservation & Survey
CNFA	Cultivable Non-Forest Area
AFM	Advanced Forest Management
PPE	Personal Protective Equipment
WII	Wildlife Institute of India
OJT	On-the-job Training
PwD	People with Disability
PPE	Personal Protective Equipment