

Competency Based Curriculum

National Skills Qualification Framework (NSQF)

Multi Skill Foundation Course (MSFC) Level I

(1)

**Workshop & Engineering
Techniques**



(2)

Energy & Environment



(3)

**Gardening, Nursery,
& Agriculture Techniques**



(4)

**Food Processing
Techniques**



Developed by:

Directorate of Vocational Education and Training, Maharashtra

Vetted by:

PSS Central Institute of Vocational Education, Bhopal

Introduction

The National Vocational Education Qualification Framework (NSQF) developed by the Ministry of Human Resource Development (MHRD), Government of India is a descriptive framework that provides a common reference for linking various qualifications. It is used for setting common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, and Universities/Colleges.

The NSQF organizes qualifications according to a series of levels of knowledge and skills. These levels are defined in terms of learning outcomes i.e., the competencies (knowledge, skills and attitude) which the learners must possess regardless of whether they were acquired through formal, non-formal or informal education and training system. Qualifications are made up of occupational standards for specific areas of learning units or unit of competency. Units of competency are the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance expected in the workplace. The Unit of competency or National Occupation Standards comprising generic and technical competencies an employee should possess are laid down by the Sector Skill Council of the respective economic or social sector.

Competency is defined in terms of what a person is required to do (performance), under what conditions it is done (conditions) and how well it is to be done (standards). It can be broadly categorized into foundational, practical and reflexive competencies. Generic competencies are considered essential for a person to participate effectively in the workforce, whereas technical competencies are an individual's knowledge and expertise in the specific group task and its processes and its rules and regulations. An executive order F.No.1-4/2011-VE dated 3 Sept., 2012 on the various aspects of NSQF has been issued by the MHRD. For more details on the NSQF, please visit the website of MHRD at [www: mhrd.gov.in](http://www.mhrd.gov.in).

The term “**curriculum**” (plural: *curricula or curriculums*) is derived from the Latin word for “*race course*”, referring to the course of deeds and experiences through which children grow to become mature adults. A competency based curriculum describes what learners must “know” and “be able to do” by the end of a program or study. It identifies the competencies and sub-competencies each learner is expected to master. It states clearly the criteria and conditions by which performance will be assessed. It also defines the learning activities that will lead to the learner to mastery of the targeted learning outcome.

Multi Skill Foundation Course (MSFC)

The **Multi-Skill Foundation Course curriculum** is broken down into coherent parts known as **Units**. Each unit is further broken down into knowledge and skills on the basis of which evidence is to be provided by the learner and the evaluation is to be done by the teacher or trainer.

“Multi-Skill Foundation Course”(MSFC) is revised version of pre-vocational program V-1 “Introduction to Basic Technology”, being implemented in Maharashtra since 1987. The new curriculum takes into account all learning’s of implementing the V-1 curriculum.

Nature of the course:

The course is divided into four modules:

1. Workshop & Engineering Techniques
2. Energy & Environment
3. Gardening, Nursery and Agriculture Techniques
4. Food Processing Techniques (Level 1) / Personal Health & Hygiene (Level 2)

The Engineering (material-joining, shaping and otherwise fabricating into usable articles, including housing) and Energy-Environment (application of electricity, non-conventional energy and systems, processes, and tools- computers, management techniques). It also covers basics of engineering and project management. Home-Health (related to human life), and Agriculture (Plant and animal kingdom) give the skills related to clothing food and health of human beings. Agriculture covers the skill needed for production and preservation of food of both plant and animal origin, including care of plants/crops.

Benefits:

- 1) Multi-skill nature of the program helps students to select choice of his/her future specialization. He/she is a jack of all skills and will be enabled to select one for his/her future.
- 2) Most importantly, the variety of experiences students gets during “Multi-Skill Foundation’ training will stimulate their intellect. Multidisciplinary knowledge will help him to appreciate underlying principles and processes and apply that knowledge in new areas.
- 3) All ground level work activities need multi skills. For e.g farmer need to have basic knowledge of electricity, food processing, agriculture and even construction. This helps him to become self-reliant under adverse conditions. A fabricator, who gets orders for construction of poultry, will be in better position to serve his client if he knows basics of poultry. This helps to develop such kinds of interdisciplinary approaches with appreciation for other fields.

Content and Methodology:

The content though it looks formidable, is easily worked through because of the 'learning while doing' method. The learning system in "Multi-Skill Foundation Course" is 'Learning while doing'. It is the same method, we used to learn to ride a bicycle, or to swim or do myriad new things we learn throughout life. Students will learn all principles and theoretical component by experience in real life work situations. 'Real life work' is at the center of all educational activities. Process of Knowledge acquisition will be centered on the work. Therefore 'Theory' and 'Practical's will not be separate but are integrated. Theory will be introduced after each stage of 'Work'. We not only learn how to do but also get an insight of how it works. This practical work needs to be supplemented with computer lessons which give a deeper understanding of the 'why' of it.

Work Centered Education Methodology: MSFC program implementation methodologies advice not to implement Theory and Practical's in different session. Selected 'Productive Work' should be at the center and teacher should introduce various principals and techniques as the work progresses. Involving students in the community service tasks and productive work is must from the beginning.

Community Services:

Instead of carrying out practical's for the sake of 'doing practicals', MSFC recommends to provide community services. A job should be selected based on the need of the community such work will able to cover many of the practical's. This will provide service to the community and students will get real on-the-job training. Community services are therefore essential part of BT implementation strategy. Examples of the community services are given in the annexure. School must try to provide services based on new technologies or services so that they will not be in competition with local entrepreneurs. Carrying out innovative projects, providing repair and services, selling products and services to the community are all essential to provide students necessary skills in business dealings.

Classroom Activities:

Classroom activities are an integral part of this programme and interactive lecture sessions, followed by discussions should be conducted by trained teachers. Teachers should make effective use of a variety of instructional aids, such as Videos, Colour Slides, Charts, Diagrams, Models, Exhibits, Handouts, Recorded Compact Discs, etc. to transmit knowledge in projective and interactive mode.

Practical Activities:

Activities that provide practical experience in chosen trade should include case based problems, role play, games, etc. and practical exercises using props, tools and equipment and drills. Equipment and supplies should be provided to enhance hands-on experiences for students in the chosen occupation. A training plan signed by the student, teacher, and employer that reflects equipment, skills and tasks should be prepared for training of the students in the organization/industry.

On-the-Job Training:

On-the-job training (OJT) occurs whenever more experienced employee or supervisor teaches less experienced person on how to do one or more tasks of a job. The training utilizes actual equipment and materials. OJT should be undertaken in a structured manner with a training plan under the supervision of an experienced trainer or supervisor. A training plan that reflects tasks to be performed and competencies to be imparted should be prepared and signed by the student, teacher, **and / or supervisor with a full report of the job undertaken with the economics of the job including costs and revenue earned in providing community service.** The trainer should break down all the steps of the job and train the students as per the training plan. In a structured OJT, the following steps should be followed:

- Step 1: The Instructor or the trainer tell, show, demonstrate, and explain. The trainer gives an overview of the task while explaining the constructional details and use of the tools, equipment, materials, etc. in performing the tasks.
- Step 2: The Instructor or the trainer demonstrates each step in detail, actually doing the steps of the task and explaining each step, one at a time, while the trainee watches. The steps may not necessarily be demonstrated in the sequence of actual operation, as sometimes it is better that simple tasks are demonstrated first to build confidence. Showing finished products at each appropriate step will help the learner understand what is required as outcome. While demonstrating, the trainer explains why each step is done in the way it is done.
- Step 3: It involves direct trainee participation. The trainer monitors the progress on a checklist of competencies and offers feedback and pointers where and when needed.
- Step 4: The trainee practices with clearly defined targets for performance standards.

Certification:

Upon successful completion of this course the State Education Board will provide a certificate to the student verifying the competencies acquired by the candidate.

NSQF Level 1: Multi-skill Foundation Course (MSFC)

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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level I

Workshop and Engineering Techniques



NSQF Level 1: Multi-skill Foundation Course (MSFC)

Module: Workshop and Engineering Techniques

Objectives of the Module

Upon completion of this module, you will be able to:

1. Demonstrate measurement capability using different measuring instruments such as meter tape, vernier caliper, and screw gauge. Able to measure different jobs in the surrounding environment viz. furniture, building dimensions etc.
2. Identify tools and equipment used in the workshop in this section
3. Demonstrate safe use and application of workshop tools and equipment, as per manufacturer's instructions;
4. Demonstrate making of an article from G.I. sheet according to given dimension (funnel, box)
5. Demonstrate the use of carpentry tools and equipment;
6. Identify and select timber, board, laminated sheet and other wooden materials for carpentry work;
7. Demonstrate the use of wooden materials for basic carpentry work;
8. Identify building materials, types of walls, types of mortar and types of bonds;
9. Demonstrate building different brickwork bonds up to 1 meter. Use of plumb-bob or a plummet & level tube.
10. Install simple pipe line connection using PVC pipes, connectors and other plumbing accessories;
11. Demonstrate drawing of 2D simple sketch using geometrical figures (Square, Circle, rectangle)
12. Draw a flow chart
13. Estimate costing of objects prepared / constructed during practical session.

Module Structure: This module is a planned sequence of instructions consisting of the following 02 units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1.	MSFC-WET101- NQ2015	Basic Workshop Tools and Techniques	30 (25+ 5)
2.	MSFC-WET102- NQ2015	Basic Techniques in Building Construction	20 (17 + 3)
Total			50

Successful completion of 8 hours of theory sessions and 42 hrs. of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-WET101- NQ2015	Unit Title: Basic Workshop Tools and Techniques			
Duration: 30 hours				
	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Location: Workshop	Carry out measurement using instruments such as meter tape, vernier caliper, and screw gauge, spring balance.	1. Describe the reason of selecting particular measuring instrument for certain task.	1. Select proper measuring instrument for given task. 2. To read the reading properly.	Practical & on the job instructions : Measure dimensions of different jobs in the surrounding viz. furniture, building dimensions etc. Understand least count on the measuring instrument.

	<p>Recognise basic workshop tools and equipment and demonstrate their safe use</p>	<p>1. Describe the main features and purpose of workshop tools and equipment like screw driver, hammer, chisel, saw, spanners, wrench, etc. 2. Describe the safety precautions to be followed while using the tools.</p>	<p>1. Identify the workshop tools and equipment like screw driver, hammer, chisel, saw, spanners, etc. 2. Demonstrate the use of safety gadgets 3. Clean the work area before and after the task (s)</p>	<p>Interactive Lecture: Tour to introduce workshop facility, locations of tools, electric board, first aid, Safety instructions, Do & Don't do Basic workshop tools and their safe use.</p> <p>Activity: Practice sessions on safe use of basic workshop tools like screw driver, hammer, chisel, saw, spanners, wrench, etc.</p>
	<p>Prepare a simple wooden object like pad for writing/newspaper holder, display board, stool, electric board etc.</p>	<p>1. Describe advantages and disadvantages of wood 2. Describe methods to prevent pest attack on wood</p>	<p>1. Marking of job 2. Sharpening of tools 3. Drilling hole in wood/plywood 4. Fixing sunmica on plywood surface 5. Finishing and polishing</p>	<p>Interactive lecture : wood & applications, advantages and disadvantages, plywood, pest and precautions</p> <p>Activity : 1. Sharpening of tools 2. Measurement and use of cutting tools viz. portable drill machine, hack saw. 3. Fixing hinges</p>

				4. Fixing sunmica Suggested Community Services : a job involving cutting of plywood, applying sun mica, drilling etc. job like electric board, Repair of doors/windows, installing hinges
	Prepare a "Garbage Scoop" or "GI Sheet Box" (or any other article of need viz funnel, electric meter box, rain gauge) with GI sheet using soldering method	3. Describe safety precautions to be followed while preparing the article	6. Make the article with given GI sheet according to given drawing/dimension using soldering method and following the relevant safety precautions 7. Draw a flow chart of this activity.	Interactive Lecture: Cutting and soldering of GI Sheet to make the article Activity: Select the article of need from G.I sheet. Practice sessions on soldering of an article with GI sheet
	Carry out drilling of MS flat, Threading and tapping on a MS rod.	1. Describe use of thread 2. Describe safety precautions to be followed while drilling.	1. Filing of rod and flat 2. Carry of Marking for Drilling 3. Select appropriate tap, die and drill 4. Do threading and tapping	Activity: Practice sessions on threading 6/ 12mm MS rod, drilling MS flat, tapping Interactive Lecture: Marking center on the job, use of vice to hold the job, safety while doing drilling

				Suggested Community Services - Making a paper weight, stands, bolt, repair jobs from community
	Make any one of the following objects: Shoe stand, Candle stand, Hanger, Garbage collector, Tin box, Bangle stand using T-fillet joint, Open corner joint, Single V-butt joint	<ol style="list-style-type: none"> 1. Describe safety precautions for making object 2. Describe the various types of material that can be used for making objects 	<ol style="list-style-type: none"> 1. Prepare the design and drawing for the object 2. Made necessary measurement and marking as per the specifications 3. Demonstrate to cut and weld given material for making the object as per the design and specification 4. Follow safety precautions 5. Demonstrate the use of personal protective clothing and equipment 6. Clean the work area before and after the task 7. Calculate the cost of the article prepared 	<p>Activity: Practice sessions on making chosen object by cutting and welding</p> <p>Interactive Lecture: Making objects using various types of joints (T-fillet Joint, Open Corner Joint, Single V-Butt Joint).</p> <p>Suggested Community Services- repair of benches, doors, make new objects or repair involving metal cutting, drilling, welding needed by school/community.</p>

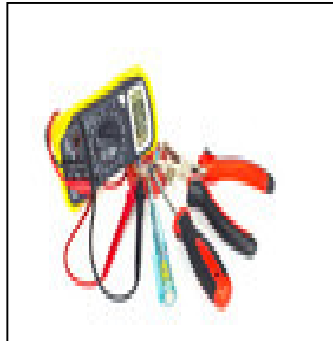
Unit Code: MSFC-WET102- NQ2015	Unit Title: Basic Techniques in Building Construction			
	Duration: 20 hours			
Location:	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Classroom, Workshop, Laboratory, Construction Site	Identify building materials and describe their uses. Also identify tools required in construction work	1. Describe various type of building materials and its applications (like iron, wood, aluminum, cement, sand, concrete, granite, marble, paint, chemicals, stone, cement composites, glass, plastics etc.) 2. Identify various types of construction tools and equipment and their purpose.	1. Identify various types of building materials	Interactive Lecture: Building Materials and their Applications Activity: Practice sessions on identification of building materials and their uses
	Identify the various types of walls	1. Describe the chief characteristics of various types of walls (partition walls, exterior boundary walls, separation walls, retaining walls, shared walls, portable walls, dry stone walls, etc.)	1. Identify the types of wall (building walls, exterior boundary walls and retaining walls)	Interactive Lecture: Types of Wall Activity: Visit to a construction site for identification of different types of wall
	Arrange bricks in different types of bond	1. Describe different types of bond and their application	1. Demonstrate how to arrange bricks in different bonds (Stretcher bond,	Interactive Lecture: Arranging Bricks

		<p>2. Describe safety precautions while handling and laying of the brick</p>	<p>English bond, Flemish bond, Header bond, Stack bond). The bricks are arranged in the required formation uniformly for each of the bond up to 1 meter</p> <p>2. Laying brick with mortar</p> <p>3. Use of spirit level, water tube and plumb bomb.</p>	<p>Activity: Practice sessions on arranging bricks in various types of bonds following relevant safety precautions. Preparing mortar and laying brick with mortar. Use of plumb bomb and spirit level and water tube.</p> <p>Suggested Community services activities - Making Stairs, construction of ramp in school/temple, benches (otta) in market, Otta for washing clothes, garden wall etc</p>
	<p>Make a simple pipe line by using plumbing accessories. Make sure that there is at least one joint.</p>	<p>1. Describe safety precautions while using piping material</p> <p>2. Describe various components of plumbing accessories such as elbow bend, coupling, cock, primer, connector, etc.</p>	<p>1. Cut PVC pipe with a hand saw</p> <p>2. Join PVC pipes with a connector& solution</p>	<p>Interactive Lecture: Cutting and Joining PVC pipes and use of Accessories</p> <p>Activity: Practice sessions on cutting and joining PVC pipes and use of accessories</p> <p>Suggested community service: Installing PVC pipeline, drip system, repair of pipeline, remove leakages</p>

Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level I

Energy and Environment



NSQF Level 1 - Multi-Skill Foundation Course (MSFC)

Module: Energy and Environment

Objectives of the module

Upon completion of this module, you will be able to:

1. Identify various tools and equipment required in the section and their usage
2. Demonstrate the understanding of safety measures required to be taken while using electrical and electronic tools and equipment;
3. Perform various types of joints for joining electrical wires;
4. Prepare a simple electrical circuit;
5. To take measurements of the room for electric wiring of the room & draw wiring diagram.
6. Demonstrate staircase and godown wiring;
7. Demonstrate the knowledge of earthing, fuse fitting, and miniature circuit breaker;
8. Demonstrate soldering of basic electronics components using soldering iron
9. Maintenance of lead acid batteries, Measuring its specific gravity
10. To demonstrate understanding of electricity consumption of various household electric fittings and kitchen equipments and calculate monthly electricity units usage by a family.
11. Demonstrate knowledge of electricity saving measures
12. To be able to use & maintain different stoves viz. wick / pressure stove / LPG / smokeless Chula
13. Demonstrate the knowledge of constructional details and working of soak pit, and why wet and dry garbage needs to be separated.
14. Estimate costing of electrical/environment projects such as earthing, electrical wiring etc.

Module Structure: This module is a planned sequence of instructions consisting of the following 03 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-EE201-NQ2015	Introduction to Electrical Techniques and Practices	30 (8+22)
2	MSFC-EE202-NQ2015	Introduction to Energy Conservation	10 (3+7)
3.	MSFC-EE203-NQ2015	Introduction to Waste Disposal and Recycling	10 (4+6)
Total			50

Successful completion of 15hrs of theory sessions and 35 hrs. of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-EE201- NQ2015	Unit Title: Introduction to Electrical Techniques and Practices			
Duration: hours				
Location: Classroom and Workshop	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Identify electrical tools and equipment, their usage and the safety measures to be taken while using them	<ol style="list-style-type: none"> 1. Read the symbols and describe their usage 2. Describe the purpose of symbols. 3. Describe health and safety risks and procedures involved in the use of electrical tools, equipment and materials 	<ol style="list-style-type: none"> 1. Match symbols and description 2. Identify various types of electrical tools and equipment. 3. Follows the manufacture's instruction for use. Clean the work area before and after the task 	<p>Interactive Lecture:</p> <ul style="list-style-type: none"> • Electrical tools and equipment • Symbols used in electrical work <p>Activity:</p> <p>Practice sessions on identifying electrical tools and equipment. Matching symbols with descriptions</p>

	Identify the various types of wire, cable and switches	1. State the purpose of different types of wire, cable and switches.	1. Identify different types of wire, cable and switches.	<p>Interactive Lecture: Introduction to electrical wire, cable and switches</p> <p>Activity: Practice sessions on identification of different types of wire, cable and switches</p>
	Demonstrate the use of Standard/ American wire gauge	1. Describe the use of Standard/ American wire gauge	1. Demonstrate the use of wire gauge for measuring the diameter of the wire	<p>Interactive Lecture: Electrical wire measuring tools</p> <p>Activity: Practice sessions on measuring different types of wire using wire gauge</p>
	Perform various types of joints used for joining electrical wires	<ol style="list-style-type: none"> 1. Recognize the type of joints 2. Describe the purpose of using the following types of joint: <ul style="list-style-type: none"> ○ Simple Twist Joint ○ Straight Joint ○ 	<ol style="list-style-type: none"> 1. Demonstrate the use of wire stripping hand tools for stripping wire 2. Demonstrate knife stripping of wire 3. Demonstrate the following for joining electrical wires: <ul style="list-style-type: none"> ○ Simple Twist Joint ○ Straight Joint 4. Demonstrate the use of plastic electrical tape 5. Clean the work area before and after the task 	<p>Interactive Lecture: Electrical wire joints</p> <p>Activity: Practice sessions on joining electrical wires employing the following type of jointing methods: <ul style="list-style-type: none"> ○ Simple Twist Joint ○ Straight Joint </p>

	Prepare a simple electrical circuit	<ol style="list-style-type: none"> 1. Explain the meaning of various terms used in simple circuit such as electrical potential difference/ voltage, conductive path, electrical resistance potential difference, transistor, conventional current, direct current, capacitor, attractive current, ohm's law, ohm's etc. 2. Describe the purpose of simple circuit 	<ol style="list-style-type: none"> 1. Prepare the diagram of a simple electrical circuit 2. Prepare a simple electrical circuit for operating one lamp by one switch and 2 lamps by two switches. 3. Connect two or more lamps in a series 4. Connect two or more lamps in parallel 	<p>Interactive Lecture: Simple circuit connection</p> <p>Activity: Practice sessions on drawing a diagram of simple electrical circuit and connecting lamps in series and parallel</p> <p>Suggested community Services - Carry out electric wiring of classroom /home /individual while learning all standard procedures.</p>
	Demonstrate staircase wiring	<ol style="list-style-type: none"> 1. Describe the factors to be considered for planning and executing staircase wiring 2. Identify the tools and materials to be used for staircase wiring 	<ol style="list-style-type: none"> 1. Draw a diagram of the circuit for staircase wiring method 2. Demonstrate staircase wiring 	<p>Interactive lecture: Staircase wiring</p> <p>Activity: Practice sessions on drawing a diagram and performing staircase wiring in the school</p>
	Demonstrate godown wiring	<ol style="list-style-type: none"> 1. Describe the factors to be considered for planning and executing godown wiring 2. Identify the tools and materials to be used for staircase wiring 	<ol style="list-style-type: none"> 1. Draw a diagram of the circuit for godown wiring method 2. Demonstrate godown wiring method 3. Use the resources economically, safely and for intended purpose only 	<p>Interactive Lecture: Godown wiring</p> <p>Activity: Practice sessions on performing godown wiring</p>
	Demonstrate	1. Explain the purpose of	1. Identify the	Interactive Lecture:

	earthing	<p>earthing</p> <ol style="list-style-type: none"> Describe the materials used for earthing Describe the precautions to be taken while earthing Describe the meaning of good earthing 	<p>materials used in earthing</p> <ol style="list-style-type: none"> Draw a diagram for earthing Demonstrate earthing installation by using appropriate materials and tools 	<p>Conventional and maintenance free earthing</p> <p>Activity: Practice sessions on installing earthing connection at school</p> <p>Suggested community service : Check earthing of all points in school, home. Conduct camp in village for testing earthing.</p>
	Demonstrate fuse fitting	<ol style="list-style-type: none"> Determine principle of fuse tripping Describe different types of fuse wires 	<ol style="list-style-type: none"> Demonstrate the use of different fuse wires 	<p>Interactive Lecture: Electric Fuse</p> <p>Activity: Practice sessions on fixing fuse by using different types of fuse wires</p>
	Recognize the main features of Miniature Circuit Breaker (MCB)	<ol style="list-style-type: none"> Describe the purpose of MCB Describe the main features of MCB Describe safety factors involved in MCB 	<ol style="list-style-type: none"> Explain the structure and working of MCB 	<p>Interactive Lecture: Miniature Circuit Breaker</p> <p>Activity: Practice sessions on installation of MCB</p>
	Demonstrate soldering of basic electronics components using soldering iron	<ol style="list-style-type: none"> Describe purpose of soldering Describe safety factors involved in soldering Describe qualities of good soldering joint 	<p>Recognize basic electronic component resistance, diode, transistors, capacitors.</p> <ol style="list-style-type: none"> Demonstrate soldering of basic electronics components using 	<p>Interactive Lecture: Soldering electronic component. Introduction to basic electronic component.</p> <p>Activity: Practice sessions soldering of</p>

			soldering iron	electronic component to make LED light units or simple hobby electronic circuits from given circuit diagram viz. door bell, water control alarm etc.
	Maintain lead acid batteries, Measuring its specific gravity	1. Describe various types of batteries and its comparison 2. Describe what is “specific gravity” and why is it important?	1. Demonstrate maintenance of lead battery and measuring of specific gravity	Interactive Lecture: Types of commonly used batteries. Viz. Lead acid, Ni Cd etc. Maintenance of batteries Activity: Testing charging of battery with multi-meter. Use of hydro meter to test specific gravity of lead acid battery.
	To be able to use & maintain different stoves viz. wick / pressure stove / LPG / smokeless Chula	1. Describe various types of stoves and its functioning 2. Start a stove and its cleaning 3. Replace the valve or check for leakage	1. Demonstrate working of various types of stoves	Interactive Lecture: Operating principles of stoves Activity: Practice sessions about use and maintenance of stoves

Unit Code: MSFC-EE202- NQ2015	Unit Title: Introduction to Energy Conservation			
Duration: hours				
Location: Classroom / Workshop	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Calculate monthly electricity unit consumption of a family using combination of lighting and kitchen equipment (blub, tubes, mixer, water heater etc.) Demonstrate knowledge of electricity saving measures.	1. Describe the unit of electricity and method to measure the consumption	1. Calculation of electricity bill for a given the load	Interactive Lecture: Electricity consumption and bill Activity: Reading of an electrical bill, calculating electricity bill for a given load
	Describe the advantages of different lighting solutions.	2. Describe the different types of lights, their advantages and disadvantages. 3. Describe the benefits of using LED bulb 4. Estimate the cost	2. Reading wattage of bulb. 3. Select appropriate solution for required light. 4. Selecting appropriate	Interactive Lecture: Lamps for domestic lighting, Incandlscent - Filament bulb, LED Lights, CFL and appropriate solution for lighting. Light intensity required in a house. Activity: Selection of appropriate lighting solution for home, room, class, street light etc.

				<p>Practice sessions on making LED torch and decorative strings</p> <p>Suggested Community Services: Assembly of LED lights, repair of CFL, replacement of filament lamp with low consumption solution.</p>
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Unit Code: MSFC-EE203- NQ2015	Unit Title: Introduction to Waste Disposal and Recycling			
	Duration: hours			
Location: Classroom, Workshop, Laboratory, Vermicompost Unit	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Recognize the various features of and describe the working principle of soak pit	<ol style="list-style-type: none"> 1. Explain the purpose and working principle of soak pit 2. Describe advantages and disadvantages of soak pit 3. Describe the applications of soak pit 	<ol style="list-style-type: none"> 1. Draw a diagram showing the various elements of soak pit 2. Prepare a soak pit 	<p>Interactive Lecture: Soak Pit</p> <p>Activity: Preparing a soak pit, either at school or at home</p>
	Identify the various types of garbage and explain the general procedures adopted for	<ol style="list-style-type: none"> 1. Describe the various types of garbage and methods used for their disposal 2. Explain the purpose of 	<ol style="list-style-type: none"> 1. Demonstrate the knowledge of appropriate methods used for disposal of different types of 	<p>Interactive Lecture: Garbage Disposal and Recycling</p> <p>Activity:</p>

	disposal of garbage in cities and rural areas	garbage separation and its processing 3. State the various precautions to be taken when separating and processing garbage for disposal	garbage - biodegradable and non-biodegradable, toxic materials, infected materials, radioactive materials, etc.	<ol style="list-style-type: none">1. Identifying various types of garbage materials2. Group discussion on safe garbage disposal.
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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level I

Gardening, Nursery & Agriculture Techniques



NSQF Level 1: Multi-skill Foundation Course (MSFC)

Module: Gardening, Nursery and Agriculture Techniques

Objectives of the module

Upon completion of this course, you will be able to:

1. Demonstrate knowledge of land preparation / pot filling for cultivating a crop either on a plot of land / terrace garden / in a pot
2. Select healthy seeds for sowing; Demonstrate the knowledge of basic seeds treatment.
3. Demonstrate growing of one vegetable crop on a small plot / kitchen garden / terrace garden
4. Demonstrate preparation and use of different compost and vermin-wash
5. Demonstrate making and use organic pesticide formulation
6. calculate profitability of one crop

Introduction to Animal Husbandry (additional inputs for rural/semi-rural schools)

1. Understand different breeds of animals - indigenous and breed variety
2. Determine age of the animal and their feed requirements
3. Understand different diseases for domesticized animals - at least two types - Cow, chicks or bullock and sheep
4. Demonstrate ability to estimate feed requirement, yield of the animal and its well-being (for any common animal/pet in the local area e.g. sheep, goat, poultry bird, cow/buffalo)
5. Determine costing of milk or milk product household business

Module Structure: This course is a planned sequence of instructions consisting of the following 02 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-GNA301 - NQ2015	Introduction to Basics of Gardening, Nursery and Agriculture Techniques	40 (6+34)
2	MSFC-GNA302A - NQ2015	<i>For Rural-Semi Rural Schools</i> Introduction to Animal Husbandry (for Rural /semi-rural Schools)	10 (3+7)
	MSFC-GNA302B - NQ2015	<i>For Urban Schools</i> Innovative Gardening Techniques for urban setting	
Total			50

Successful completion of 9 hours of theory sessions and 41 hrs. of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-GNA301 - NQ2015	Unit Title: Introduction to Basics of Gardening, Nursery and Agriculture Techniques			
Duration: hours				
Location: Classroom, farm, Plant Nursery, terrace garden	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	To learn to prepare land, or filling of pot To learn to take one crop using agriculture tools and standard agri. practices.	1. To describe steps taken in taking one crop. 2. To describe principles behind the basic agricultural procedures.	1. Growing one crop and do all tasks given below to achieve agriculture produce.	Suggested Community Service areas:- Taking at least one vegetable crop on small plot. Use of agriculture Diary published by Agriculture University or KVK to take crop. OJT - On farmer's field for at least 1 day. Activity: Students will carry out various tasks as given below in performing above task.
	Calculate the amount of seed/plants for the area	1. Describe the procedure for calculating the amount of seed/plant material for an area	1. Demonstrate the knowledge of calculating the amount of seed required for an area	Interactive Lecture: Calculating the amount of seed/plants needed for an area Activity: Practice sessions on calculating seed and plants for a given area

	Demonstrate to treating of seeds with traditional method/ biological agents/ chemicals/ fertilizers	<ol style="list-style-type: none"> 1. Describe precautions to be taken when selecting seeds 2. Describe advantages of seed treatment. 	<ol style="list-style-type: none"> 1. Select seed treatment method for selected crop using krishi Diary. Perform seed surface treatment 2. Treat seeds with recommended method. 	<p>Interactive Lecture: Seed Treatment , its benefit , referring Agri (Krishi) Diary for selecting appropriate method</p> <p>Activity: Practice sessions on treating seeds with traditional method / chemicals/fertilizers. Using Agri (Krishi) Diary.</p>
	Perform planting of seeds and intercultural operations (weeding, fertilizer application, mulching etc.)	<ol style="list-style-type: none"> 1. Describe the uses of various tools and equipment in intercultural operations (weeding, fertilizer application, mulching etc.) 	<ol style="list-style-type: none"> 1. Demonstrate the use of various tools and equipment in intercultural operations (weeding, fertilizer application, mulching etc.) 	<p>Interactive Lecture: Planting of seeds, watering of plants, Intercultural Operations (weeding, fertilizer application, mulching etc.)</p> <p>Activity: Practice sessions on planting of seeds, intercultural operations in nursery (weeding, fertilizer application, mulching etc.) and draw a flow chart</p>
	Prepare vermin composting and vermin wash	<ol style="list-style-type: none"> 1. Describe use & advantages of vermin compost and vermin wash. 	<ol style="list-style-type: none"> 1. Demonstrate preparing of bed for Vermin composting. 2. Preparing bed for preparing vermin wash. 3. Use of vermin compost and vermin wash in the plot. 	<p>Activity : Prepare vermin compost bed using cow dung, biomass and vermin culture. Prepare a vermin wash</p> <p>Interactive Lecture: Different method of Composting, its advantages.</p>

	Prepare organic pesticide formulation.	1. Describe procedure to make organic pesticide formulation. 2. Advantages of using organic pesticide.	1. Demonstrate organic preparing pesticide formulation. 2. Applying them if there is a problem.	Interactive lecture: Preparing pesticide formulation, its use. Common pest on the selected crop. Activity : Preparing any one traditional pesticide formulation with the help of Krishi Diary viz. Dashaparni Ark, AmrutJal etc.
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Unit Code: MSFC-GNA302A - NQ2015	Unit Title: Introduction to Animal Husbandry (For Rural-Semi Rural Schools))			
	Duration: hours			
Location: Classroom and Animal Husbandry Dept. / Cattle shade	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Determine the age of animals	1. Describe the methods of determining age of animals 2. Describe advantages of knowing age of the animal.	1. Determine the age of farming and milking animals	Interactive Lecture: Determining the age of milking and farm animals Activity: Practice sessions on determining age of milking or farm animal from its teeth methods
	Determine the weight of animals to estimate feed requirement	1. Describe the method of determining weight of animals and estimating feed requirement	1. Determine weight of animals by taking due precautions 2. Calculate fodder requirement of animal from TDN in different folder.	Interactive Lecture: Measuring Animal Weight and estimate feed requirement, TDN of different fodder. Activity: 1) Practice sessions on determining weight of an animal and its feed.

				2) Visit Dairy farm and learn feeding and milking procedures.
	Understand different diseases of domesticized animals	1. Describe the different types of diseases observed in domesticized animals 2. Methods of identification of diseases	1. Identification of different types of diseases. 2. Demonstrate methods of identification of different domesticated animals	Interactive lecture/Session: determining the different types of domesticized animals. Activity: Identify sickness by examining / studying the sick animal
	Determine ability to estimate feed requirement for animals	1. Describe the method of determining the quantity of feed requirement of different types of animals. 2. Describe the different types of feeds	1. Calculate estimated feed requirement of an animal by their age. 2. Calculate estimate of feed requirement of an animal by their weight. 3. Calculate estimated feed requirement of a milk giving animal	Interactive lecture/Session: Demonstrate different types of feeds Activity: Practice session on types of feeds. Practice session on estimated feed requirement for an animal
	Determine yield of animal and its well-being	1. Describe the yield of animal according to geographical area 2. Describe different types of domesticized animals and their importance. 3. Describe how to ensure wellbeing of domesticized animals	1. Demonstrate method of determining yield of domesticized animal 2.	Interactive lecture / session: 1. Comparison between healthy and unhealthy animal and their yield Activity: 2. Demonstrate the difference between well kept animals and its impact on the health of the animal

	Determine costing of Milk and milk products in a household business	1. Describe the process of costing of milk and milk products 2. Describe the difference between household business and commercial establishment	1. Calculate the cost of milk 2. Calculate the cost of different types of milk products which can be produced in a household	Interactive Lecture/Session: Prepare table for determining cost of milk and milk produce for an household maintaining two cows. Activity: Visit to a model/well kept household milk producing farmer
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Unit Code: MSFC-GNA302B - NQ2015	Unit Title: Innovative Gardening Techniques for urban setting (For Urban Schools)			
	Duration: hours			
Location: School Premises	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Learn window / balcony gardening	Describe the process of window/balcony gardening	Develop a window garden in a team	Interactive Lecture: Describe window/balcony gardening and appropriate plants Activity: Practice sessions on window/balcony gardening

Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level I

Food Processing Techniques



NSQF Level 1 - Multi-Skill Foundation Course (MSFC)

Module: Food Processing Techniques

Objectives of the course

Upon completion of this course, you will be able to:

1. Understand concept of calories, calories in the locally available food, calories requirement of an adult and child
2. Understand the nutrition values in the locally available food material
3. Demonstrate basic knowledge of cooking and baking using a recipe with basic kitchen equipment
4. Demonstrate the knowledge of preserving foods using simple preservation techniques
5. Identify factors affecting shelf life of food Demonstrate understanding of components of food labels and its interpretation
6. Demonstrate the knowledge of preparing a chart of balanced diet
7. Demonstrate and maintain personal hygiene& hygiene of cooking area
8. Demonstrate safety measures to be observed in the kitchen

Module Structure: This module is a planned sequence of instructions consisting of the following 2 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-FP401-NQ2015	Basic Food Cooking and Preservation Techniques	40 (6+ 34)
2	MSFC-FP402-NQ2015	Basic of Nutrition& Packaging	10 (2 + 8)
Total			50

Successful completion of 8 hours of theory sessions and 42 hrs. of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-FP401-NQ2015	Unit Title: Basic Cooking and Food Preservation Techniques 40 hrs.			
Duration: hours				
Location:	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Classroom, Science Laboratory, Kitchen and Food Preservation Unit	Able to prepare food items using safe and appropriate procedure.	1. Describe various methods of food preservation (salting, pickling, drying, smoking, preserving in brine water, etc.) 2. Describe principles behind basic preservation technique viz. use of high or low temperature, exclusion of air, removal of	A) Will demonstrate making of following food items as per the standard procedures given in following rows 1. Chikki 2. Sauce 3. Jam and Jelly 4. Dried product, roasted product viz. Papad, dried vegetables	Community Services :Students will make various food items as per the recipe. Activity: Students perform activities given in the following rows to achieve respective learning outcome. Will use oven, gas, kitchen equipment like

		moisture, use of preservatives, etc. 3. Describe importance of maintaining hygiene in cooking area.	5. Pickle 6. Biscuits and Nan Katai 7. Popcorn B) Calculate costing of these food items.	mixer etc.
	Identify the basic characteristics of raw food materials and apply cleaning and sanitation method	1. Describe the basic characteristics of raw food materials 2. Describe the basic principles and practices involved in cleaning and sanitation in food processing operations	1. Apply the basic principles and practices of cleaning and sanitation of food while preparing all above food product. 2. Demonstrate the use of personal clothing for working in food processing area such a headgear, apron, gloves, etc.	Interactive lecture: Characteristics of Raw Food Activity: Practice sessions on cleaning of raw food materials while preparing above food items.
	Identify and handle utensils and equipment used in cooking and baking	1. Describe the safety precautions to be taken for using utensils and equipment (measuring cups, spoons, knife, cutting board, frying pan, grate, etc.)	1. Demonstrate the use of knife/mixer/oven/ stove / gas. 2. Identify flavors and uses of various spices, herbs, grains and greens 3. Clean the utensils and work area after cooking	Interactive Lecture: Use of equipment and utensils in cooking. Controlling quality of products, color, taste etc. Activity: Will use kitchen equipment to make food products as listed in row one above.

	Apply appropriate cooking methods for preparation of various culinary	<ol style="list-style-type: none"> Describe various methods of wet, dry and combination cooking methods Read the names of vegetables, grains, spices, herbs, etc. used in preparation of culinary 	<ol style="list-style-type: none"> Adapt small recipes and cooking methods to prepare dishes Apply fuel conservation methods Clean the utensils and work area after cooking 	<p>Interactive Lecture:</p> <p>Cooking</p> <p>Activity:</p> <p>Practice sessions on shallow frying, boiling, steaming and other cooking processes using locally available foods, fruits, for the product given above etc.</p>
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Unit Code: MSFC-FP402-NQ2015	Unit Title: Basic of Nutrition and Packaging			
	Duration: 10 hours			
Location: Classroom and Food Nutrition Laboratory and Kitchen	Learning Outcome Identify food requirements of adolescent male and female	Knowledge Evaluation 1. Describe daily food requirement (nutrient) of adolescent male and female	Performance Evaluation 1. Prepare a diet chart to meet the nutrient requirements of adolescent male and female from locally available food	Teaching and Training Method Interactive Lecture: Food and Nutrition Activity: Practice sessions on putting together combination of foods to meet the daily calorie requirement of adult male and female
	To demonstrate understanding of information on the packaging label&	<ol style="list-style-type: none"> Describe food label. Describe advantages of different food packaging types. 	<ol style="list-style-type: none"> Interprete food label Weight and packaging of food product using sealing method. 	Interactive session: Packaging label, packaging method, manufacturing date, expiry date, shelf

	packaging of food products.	3. Describe shelf life and factors affecting shelf life of food items.	3. Identify different food packets	life, quality of food items Activity: To read label of different food products. Design food label for food items made in the class.
	Demonstrate the knowledge of methods of identifying adulteration.	1. Describe the methods of assessing adulteration.	1. Demonstrate detection of adulteration in milk & its product with the use of lactometer and other appropriate technique 2. Demonstrate other method of detecting adulteration in other food products.	Interactive session : Adulteration, its effect. Physical, visual, taste and chemical testing method Activity : Testing turmeric, milk, milk product, Ghee, spices etc. for adulteration

Assessment Guide

Assessment is a process used for determining an individual's progress or level of mastery/competence in an occupational area. It may be formative (continuous) and/or summative (final). It is a process of collecting evidence and making judgment about the extent to which a person demonstrates the knowledge and skills set out in the standards or learning outcomes of a unit of competency.

S.No.	Method of Assessments	Weightage	Evaluator
1.	Theory Paper	30	School / The State Board
2.	Practical Exam	30	Certified Assessor #
3.	Term Work	10	School Instructor / trainer
4.	Project Work	10	School Instructor / trainer
5.	Oral / Viva Vocu	10	Certified Assessor #
6.	Direct Observation (safety measures, cleanliness, care of tools and equipment during the examination)	10	Certified Assessor #
Total		100	

Assessors will be certified by the State Education Board.

- Theory Paper:** It allows candidates to demonstrate that they have the knowledge and understanding of a given topic.
- Practical Exam:** It allows candidates to demonstrate application of skills in simulated or real work conditions against competency standards (skill and academic standards).
- Term Work:** It is a compilation of documents that supports the candidate's claim of competence that was acquired from prior learning and experience. Documents (including photo's, newspaper articles, reports, etc.) of practical experience in the workplace or the community and photographs of the products prepared by the candidates related to the units of competency should be included in the portfolio.
- Project Work:** Projects (individual or group projects) are a great way to assess the practice skills on a deadline, but these should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project.

Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation.

5. **Oral / viva voce:** It allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of oral test or viva voce.
6. **Direct Observation** - Safety measures, cleanliness, care of tools and equipment during the practical examination

List of Tools, Equipment and Materials

The list given below is suggestive and an exhaustive list should be prepared by the teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

Workshop & Engineering Techniques

1. Adhesives for Carpentry Work
2. Adjustable Wrench
3. Air Filters
4. American Wire Gauge
5. Ammeter
6. Arc Welding Machine
7. Ball Peen Hammer
8. Bar Level
9. Bending Tool
10. Blueprint
11. Borax
12. Boring Tools - Auger Bit, Brace, Gimlet, Hand Drill
13. Branch Rule
14. Buzzers
15. Capacitor
16. C-Clamps
17. Chimes
18. Circuit Breaker/Safety Switch/Fuses
19. Clamp Ammeter
20. Clamp Meter
21. Claw Hammer
22. Condenser (Fan Motor)
23. Condulets
24. Crimping Tools

25. Cutting Tools - Back Saw, Cross Cut Saw, Rip Saw
26. Defective Capacitors
27. Defective Electrical Controls
28. Diagonal Cutting Pliers
29. Electrical Metallic Tubing
30. Electrical Power Tools
31. Electrical Tape
32. Electrical Wire
33. Electrician's Holster
34. Electrician's Knife
35. EMT Adapters
36. Evaporator Fan and Motor
37. Fan Motor
38. Fastening Devices
39. Filler Rolls (Bronze, Steel, Aluminum Relevant To Required Activity/ Task)
40. Filter
41. Filter Drier
42. Filter Drier Connection
43. Fish Tape Reel
44. Fittings
45. Flaring Tool
46. Flat Screwdriver
47. Fluxes (Borax, Aluminum and Silver)
48. Frequency Meter
49. Gimlet
50. Good Condition Electrical Controls
51. Grease
52. Hacksaw
53. Hacksaw Pliers
54. Holding Tools - Vise Grip, C-Clamp, Bench Vise

55. Insulation Resistance Tester
56. Intercom Cables
57. Intermediate Metal Conduit
58. Junction Box
59. Kilowatt Hour Meter
60. Leak Detector
61. Level Bar
62. Linesman's Pliers
63. Lock Nut And Bushing
64. Long Nose Pliers
65. Manufacturer's Manual for various Tools and Equipment
66. Masonry Drill
67. Measuring Tools - Pull-Push Rule, Meter, Ruler, Zigzag Rule
68. Megger Tester
69. Metal Moulding
70. Metric Rule
71. Mica Tube
72. Micrometer Clipper
73. Motor Compressor
74. Multi-Tester
75. Ohmmeter
76. Oil
77. Open End Wrench
78. Overload Protector
79. Oxy-Acetylene Welding Outfit
80. Personal Protective Equipment- Gloves, Mask, Apron, etc.
81. Philippine Electrical Code
82. Philips Screwdriver
83. Pipe Bender
84. Pipe Cutter

85. Pipe Reamer
86. Pipe Wrench
87. Pliers
88. Plumb Bob
89. Pull Box
90. Pull-Push Switch
91. Push and Pull Rule
92. Push Tape Rule
93. PVC Adapters
94. PVC Moulding
95. PVC Pipe
96. Rags
97. Recovery/Recycling Machine
98. Refrigerant Cylinder
99. Relay
100. Relays
101. Requisition Slip
102. Rigid Steel Conduit
103. Rotary Switch
104. Sand Paper
105. Screw Driver
106. Sealant
107. Set Of Screw Drivers
108. Sharpening Tools
109. Soap
110. Solid Wire 2.0 Mm²
111. Solid Wire 2.6 Mm²
112. Solid Wire 3.5 Mm²
113. Spirit Level/Water Level
114. Steel Rule

115. Straight Edge
116. Strike Lighter
117. Swaging Tool
118. Switch
119. Switch Pull-Push/Rotary
120. System Analyzer
121. Teflon Tape
122. Thermostat
123. Timer
124. Tri-Square
125. Tube Cutters
126. Tubes (Copper, Steel, Aluminum Relevant To Required Activity Task.
127. Utility Box
128. Vacuum Pump
129. Vernier Caliper
130. Voltmeter
131. Voltmeter
132. Wattmeter
133. Wire Gauge
134. Wire Stripper
135. Wiring Diagrams
136. Wood Moulding
137. Wrench Box

Energy & Environment

1. ACSR Conductors
2. Air Circuit Breaker
3. Allen Wrench Set (Hex Set)
4. Battery
5. Cables

6. Channel Lock Pliers
7. Discharge Rod
8. Earth Leakage Circuit Breaker
9. Earthing Pipe
10. Earthing Plate
11. EarthingRod
12. Fish Tape
13. G I Wire
14. Hammer
15. HT Tray Set
16. Inverter
17. Light Emission Diode
18. Lighting arrestors
19. Linesman Pliers
20. Manual Cover
21. Miniature Circuit Breaker
22. Model of Biogas Plant
23. Model of Soak Pit
24. Model of Simple Electrical Circuit
25. Model of Windmill
26. Moulded Case Circuit Breaker
27. Non-contact Voltage Detector
28. Razor Blade Knife (Utility Knife)
29. Residual Circuit Breaker with Overload
30. Rubber Matting
31. Screwdriver
32. Side Cutter Diagonal Pliers
33. Solar Lights and Devices
34. Stay Wire
35. Switches

36. Tape Measure
37. Telescopic type Operating Rod
38. Torpedo Level
39. Vacuum Circuit Breaker
40. Voltmeter
41. Wire Crimpers
42. Wire gauge
43. Wire Strippers
44. Wires

Gardening, Nursery and Agriculture Techniques

1. Bamboo Sticks
2. Blotting Paper
3. Budding Knife
4. Chemical Balance
5. Clay Pots
6. Compost
7. Dutch Hand Hoe
8. Edger
9. Farmyard manure
10. Fertilizers
11. Garden Hand Tools
12. Garden Hoes
13. Garden Knife
14. Garden Rake
15. Garden/Digging Fork
16. Garden/Digging Spade
17. Grafting Knife
18. Hoe
19. Hori Hori Knife

20. Leaf Rake
21. Long Handle Hoes
22. Loppers or Pruning Saw
23. Nursery Recordbook
24. Personal Protective Clothing (Apron, Mask, Gloves, Boots, etc.)
25. Petri Dishes
26. Plastic Baskets
27. Plastic Pots
28. Polybags
29. Pruners
30. Pruning Knife
31. Pruning Shears
32. Rabbiting Spade
33. Secateurs
34. Seeds of Vegetables and Field Crops
35. Shade Net/Green Net
36. Shovels and Specialty Spades
37. Soil Auger
38. Soil Scoop
39. Soil Testing Kit
40. Trowels
41. Vermicompost
42. Water Hose
43. Watering Can
44. Weighing Balance
45. Wheelbarrow or Garden Cart

Food Processing Techniques

1. Aluminum Foil
2. Baking Sheet
3. Beeswax/Candle
4. Bent-Handled Shears
5. Bowls
6. Candy Thermometer
7. Casserole Dish with Lid
8. Coffee Grinder and Press Pot
9. Corer
10. Corkscrew
11. Cutting Board/Table
12. Cutting boards
13. Dish towels
14. Emery Bag
15. Thread
16. Freezer Bags
17. Glass Dishes with Lids
18. Graters
19. Hem Gauge
20. Kettle
21. Knives
22. Labels
23. Measuring Cups
24. Melon Baller
25. Microplane Grater
26. Needles
27. Nonstick pan with high, curved sides

28. Openers for Cans, Bottles, Cartons
29. Pasta Spoon or Server
30. Pin Cushion and Pins
31. Pinking Shears
32. Potato Masher
33. Pressure Cooker
34. Seam Ripper
35. Serving and Salad Spoons
36. Serving Tongs
37. Serving tray or platter
38. Sewing and Embroidery Scissors
39. Sewing Box
40. Sewing Gauge
41. Soup Ladle
42. Spatulas
43. Splatter Screen
44. Spoons
45. Tape Measure
46. Thimble
47. Toaster
48. Trimming Scissors
49. Vegetable Peelers
50. Waterproof pens and markers
51. Whisks
52. Wooden Spoons
53. Metre Stick
54. Zester

Teacher's Qualifications

Qualification, competencies and other requirements for instructor on contractual basis are as follows:

Qualification	Minimum Competencies
Diploma, degree or ITI certificate in relevant field (mechanical, electrical, welding, fitter, turner, agriculture, home science) / HSC –vocational / DBRT / RPL Level 3 and above	<ul style="list-style-type: none"> • Effective communication skills (oral and written) • Basic computing skills. • Technical competencies

(* RPL = Recognition of prior learning/skills & demonstrable skills, DBRT – Diploma in Basic Rural Technology)

Examples of Community Service

Vaccination of animals

There is a misconception about vaccinating animals among tribals. They fear that it will reduce productivity of animal or they fall sick. In Dhule district, Animal husbandry department trained high school children about vaccination and its benefits. They also corrected misunderstanding. Once students are convinced, with the help of these school children from 7 schools, government veterinary doctors could vaccinate 6449 (cows, buffalo and goats) in 15days. Children talked to villagers, and explained to them, some of them got trained to administer vaccine under supervision of doctors.

Nursery and environment

The schools in Nandurbar district learned to grow plants in nursery. Against an order from a local NGO, they prepared 9020 plants. They took out a rally in the village to create awareness about environmental issues and carry out plantation drive. Many students adopted 1-2 plants. After seeing success of school nursery, farmer Mr.Jagannath Gaikwad from Tisangi took help of school instructors and made nursery on his own farm.

Sanitation

Construction of soak pit to stop breeding of mosquitoes is regular activity in MSFC schools. Every year hundreds of soak pits are made by students for e.g Botoni school made 10 soak pit this year. They also breed Gappi fish which eat mosquito's eggs. Construction of low cost toilets, toilets with less water can all demonstrated and used in school. Testing portability of water, soil testing, blood group and hemoglobin test are carried out in school laboratory. Last year, Hingangaon school found out 2 wells out of 4 in the village is not good for drinking water. They informed Village council head about their result to take action.

ICT for Development

School with internet access provides 'Agricultural information service' to farmer using website www.aqua.org. They post the question on the website and get the advice from experts in agricultural science center. 18 schools also subscribed to weather forecast on SMS. Students are given responsibility to write it on village and school notice board for benefit of all farmers.

Drip Irrigation

Farmer in Brahmanwel village gave order to school to install drip irrigation system in his farm. Students completed it as part of their project work. Farmer got services at low cost and students get hands on training. Like drip irrigation, schools also provides service of sprinklers, mulching, vermi composting etc. to farmers.

Fertiliser in Agriculture

9th class students from Tandulwadi village learn new agriculture techniques from 'Farmers Diary' published by agricultural university. They created a demonstration plot of Zendu flowers. They prepared the land, carry out seeds treatment. They prepared seedlings in nursery for 21days. They used bio fertilizers and planted plants by leaving proper distance between the crops. Based on the soil testing, they decided quantity of fertilizers. They planted the plants by estimating flowering time will come during festival seasons. No wonder they got bumper crop!

Agricultural Tools

Small farmers normally do not buy agricultural tools like Knapsack pump for spraying pesticide. 13 farmers from Chaddwel village took knapsack pump from the school on rent of Rs.20/- per day. Repairing of agricultural tools or get the tools made as per own design is always done by students. Students from Mangli village sold 35 tree guards. Nagaj school sold 5 poultry cages.

Watershed Development

Students at Gawadewadi constructed a small dam by doing dumpy table and plane table survey. They contributed their labor to construct it. Survey sites for watershed development are part of MSFC curriculum.

Food Preservation

Schools try to make different food items using local agriculture produce. Jams, Jelly, cake, Biscuits, local snacks, chikki etc. are common in MSFC schools. Snacks on annual day, school functions etc. is responsibility of school. This also helps in standardization of some local snacks. Some of the instructors run their enterprises once they get confidence.

List of Contributors

- 1) Prof. R.B. Shivagunde, Joint Director, PSS Central Institute of Vocational Education, a constituent unit of NCERT, Ministry of Human Resource Development, Government of India, Bhopal
- 2) Dr. Vinay Swarup Mehrotra, Professor, Department of Agriculture and Animal Husbandry & Head, Curriculum Development and Evaluation Centre, PSS Central Institute of Vocational Education, Bhopal
- 3) Dr. V.K.Jain, Associate Professor, Department of Humanities, Science and Education Research, PSS Central Institute of Vocational Education, Bhopal
- 4) Dr. Abhijit Nayak, Associate Professor, Department of Health and Paramedical Sciences, PSS Central Institute of Vocational Education, Bhopal
- 5) Dr. R.K.Pathak, Professor, Department of Agriculture and Animal Husbandry, PSS Central Institute of Vocational Education, Bhopal
- 6) Dr. Saurabh Prakash, Associate Professor, Department of Agriculture and Animal Husbandry, PSS Central Institute of Vocational Education, Bhopal
- 7) Dr. Mridula Saxena, Professor, Department of Home Science and Hospitality Management, PSS Central Institute of Vocational Education, Bhopal
- 8) Prof. R.K.Shukla, Professor, Department of Business and Commerce, PSS Central Institute of Vocational Education, Bhopal
- 9) Ms. Sunanda Mane, Co-founder & President, Lend-A-Hand India, Pune
- 10) Ms.Yeshodhara Bhalerao, Director Training & Development , Lend-A-Hand India, Pune
- 11) Ms.Sukhwinder Multani, Lend-A-Hand India, Pune
- 12) Mr. R.S. Ghume, Dist.Vocational Education & Training Officer, Pune.
- 13) Dr.Yogesh Kulkarni, Vigyan Ashram, Pabal Dist.Pune
- 14) Dr.Arun Dixit, General Manager , SI Group, Mumbai
- 15) Mr.Ashok Kalbag, Pan IIT Alumni Association, Mumbai
- 16) Mrs.Seemantinee Khot , Consultant CSR, Pune
- 17) Mr. B.B.Patil, Head Master, T.S.H. Ghole Road, Pune
- 18) Mr.Raj Gilda, Co-founder Lend-a-hand-India, Pune

Competency Based Curriculum

National Skills Qualification Framework (NSQF)

Multi Skill Foundation Course (MSFC) Level II

(1)

**Workshop & Engineering
Techniques**



(2)

Energy & Environment



(3)

**Gardening, Nursery,
& Agriculture Techniques**



(4)

**Personal Health
& Hygiene**



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PSS Central Institute of Vocational Education, Bhopal

Introduction

The National Vocational Education Qualification Framework (NSQF) developed by the Ministry of Human Resource Development (MHRD), Government of India is a descriptive framework that provides a common reference for linking various qualifications. It is used for setting common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, and Universities/Colleges.

The NSQF organizes qualifications according to a series of levels of knowledge and skills. These levels are defined in terms of learning outcomes i.e., the competencies (knowledge, skills and attitude) which the learners must possess regardless of whether they were acquired through formal, non-formal or informal education and training system. Qualifications are made up of occupational standards for specific areas of learning units or unit of competency. Units of competency are the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance expected in the workplace. The Unit of competency or National Occupation Standards comprising generic and technical competencies an employee should possess are laid down by the Sector Skill Council of the respective economic or social sector.

Competency is defined in terms of what a person is required to do (performance), under what conditions it is done (conditions) and how well it is to be done (standards). It can be broadly categorized into foundational, practical and reflexive competencies. Generic competencies are considered essential for a person to participate effectively in the workforce, whereas technical competencies are an individual's knowledge and expertise in the specific group task and its processes and its rules and regulations. An executive order F.No.1-4/2011-VE dated 3 Sept., 2012 on the various aspects of NSQF has been issued by the MHRD. For more details on the NSQF, please visit the website of MHRD at [www: mhrd.gov.in](http://www:mhrd.gov.in).

The term “**curriculum**” (plural: *curricula or curriculums*) is derived from the Latin word for “*race course*”, referring to the course of deeds and experiences through which children grow to become mature adults. A competency based curriculum describes what learners must “know” and “be able to do” by the end of a program or study. It identifies the competencies and sub-competencies each learner is expected to master. It states clearly the criteria and conditions by which performance will be assessed. It also defines the learning activities that will lead to the learner to mastery of the targeted learning outcome.

Multi Skill Foundation Course (MSFC)

The **Multi-Skill Foundation Course curriculum** is broken down into coherent parts known as **Units**. Each unit is further broken down into knowledge and skills on the basis of which evidence is to be provided by the learner and the evaluation is to be done by the teacher or trainer.

“Multi-Skill Foundation Course”(MSFC) is revised version of successful pre-vocational program V-1 “Introduction to Basic Technology”, being implemented in Maharashtra since 1987. The new curriculum takes into account all learning’s while implementing V-1 program.

Nature of the course:

The course is divided into four modules, two of them related to the living world and two to the non-living.

1. Workshop & Engineering Techniques
2. Energy & Environment
3. Nursery, Gardening and Agriculture Techniques
4. Food Processing Techniques (Level 1) / Personal Health & Hygiene (Level 2)

The Engineering (material-joining, shaping and otherwise fabricating into usable articles, including housing) and Energy-Environment (application of electricity, non-conventional energy and systems, processes, and tools- computers, management techniques). It also covers basics of engineering and project management. Home-Health (related to human society), and Agriculture (Plant and animal kingdom) give the skills related to clothing food and health of the society. Agriculture covers the skill needed for production and preservation of food of both plant and animal origin, including care of plants/crops.

Benefits:

- 1) Multi-skill nature of the program helps students to select choice of his/her future specialization. He/she is a jack of all skills and will be enabled to select one for his/her future.
- 2) Most importantly, the variety of experiences students gets during “Multi-Skill Foundation’ training will stimulate their intellect. Multidisciplinary knowledge will help him to appreciate underlying principles and processes and apply that knowledge in new areas.
- 3) All ground level work activities need multi skills. For e.g farmer need to have basic knowledge of electricity, food processing, agriculture and even construction. This helps him to become self-reliant under adverse conditions. A fabricator, who gets orders for construction of poultry, will be in better position to serve his client if he knows basics of poultry. The helps to develop such kinds of interdisciplinary approaches with appreciation for other fields.

Content and Methodology :

The content though it looks formidable, is easily worked through because of the ‘learning while doing’ method. The learning system in “Multi-Skill Foundation Course” is ‘Learning while doing’. It is the same method, we used to learn to ride a bicycle, or to swim or do myriad new things we learn throughout life. Students will learn all principles and theoretical component by experience in real life work situations. ‘Real life work’ is at the center of all educational activities. Process of Knowledge acquisition will be centered on the work. Therefore ‘Theory’ and ‘Practical’s will not be separate but are integrated. Theory will be introduced after each stage of ‘Work’. We not only learn how to do but also get an insight of how it works. This practical work needs to be supplemented with computer lessons which give a deeper understanding of the ‘why’ of it.

Work Centered Education Methodology : MSFC program implementation methodologies advice not to implement Theory and Practical’s in different session. Selected ‘Productive Work’ should be at the center and teacher should introduce various principals and techniques as the work progresses. Involving students in the community service tasks and productive work is must from the beginning.

Community Services :

Instead of carrying out practical’s for the sake of ‘doing practical’s’, MSFC recommends to provide community services. A job should be selected based on the need of the community such work will able to cover many of the practical’s. This will provide service to the community and students will get real on-the-job training. Community services are therefore essential part of BT implementation strategy. Examples of the community services are given in the annexure. School must try to provide services based on new technologies or services so that they will not be in competition with local entrepreneurs. Carrying out innovative projects, providing repair and services, selling products and services to the community are all essential to provide students necessary skills in business dealings.

Classroom Activities:

Classroom activities are an integral part of this programme and interactive lecture sessions, followed by discussions should be conducted by trained teachers. Teachers should make effective use of a variety of instructional aids, such as Videos, Colour Slides, Charts, Diagrams, Models, Exhibits, Handouts, Recorded Compact Discs, etc. to transmit knowledge in projective and interactive mode.

Practical Activities:

Activities that provide practical experience in chosen trade should include case based problems, role play, games, etc. and practical exercises using props, tools and equipment and drills. Equipment and supplies should be provided to enhance hands-on experiences for students in the chosen

occupation. A training plan signed by the student, teacher, and employer that reflects equipment, skills and tasks should be prepared for training of the students in the organization/industry.

On-the-Job Training:

On-the-job training (OJT) occurs whenever more experienced employee or supervisor teaches less experienced person on how to do one or more tasks of a job. The training utilizes actual equipment and materials. OJT should be undertaken in a structured manner with a training plan under the supervision of an experienced trainer or supervisor. A training plan that reflects tasks to be performed and competencies to be imparted should be prepared and signed by the student, teacher, and / or supervisor with a full report of the job undertaken with the economics of the job including costs and revenue earned in providing community service. The trainer should break down all the steps of the job and train the students as per the training plan. In a structured OJT, the following steps should be followed:

- Step 1: The Instructor or the trainer tell, show, demonstrate, and explain. The trainer gives an overview of the task while explaining the constructional details and use of the tools, equipment, materials, etc. in performing the tasks.
- Step 2: The Instructor or the trainer demonstrates each step in detail, actually doing the steps of the task and explaining each step, one at a time, while the trainee watches. The steps may not necessarily be demonstrated in the sequence of actual operation, as sometimes it is better that simple tasks are demonstrated first to build confidence. Showing finished products at each appropriate step will help the learner understand what is required as outcome. While demonstrating, the trainer explains why each step is done in the way it is done.
- Step 3: It involves direct trainee participation. The trainer monitors the progress on a checklist of competencies and offers feedback and pointers where and when needed.
- Step 4: The trainee practices with clearly defined targets for performance standards.

Certification:

Upon successful completion of this course the State Education Board will provide a certificate to the student verifying the competencies acquired by the candidate.

NSQF Level 2: Multi-skill Foundation Course (MSFC)

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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level II

Workshop and Engineering Techniques



NSQF Level 2: Multi-skill Foundation Course (MSFC)

Module: Workshop and Engineering Techniques

Objectives of the Module

Upon completion of this module, you will be able to:

1. Identify tools and equipment used in the workshop in this section
2. Demonstrate safe use and application of workshop tools and equipment, as per manufacturer's instructions;
3. Prepare objects from M.S. Angle and Rods using techniques such as welding and soldering; Demonstrate ability to fabricate articles using welding m/c viz. Table , stool, shoe rack.
4. Prepare concrete sheet and Ferro cement structures
5. Demonstrate preparing mortar, plastering of a wall
6. Demonstrate painting of a wall
7. Demonstrate making of an RCC column
8. Make drawing of plinth, foundation
9. Demonstrate understanding of concept of plan, elevation and side-view(orthographic and isometric projections)
10. Estimate costing of projects such as fabrication work, ferro cement articles, carpentry work and RCC or brick construction etc.
11. Draw simple orthographic projection of square, cylinder, cone (3 sheets)
12. Draw sketch map of ground/ city/ place
13. Calculate cost of the construction job done , distinguish between quotation, invoice and challan

Module Structure: This module is a planned sequence of instructions consisting of the following 02 units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1.	MSFC-WET101- NQ2015	Basic Workshop Tools and Techniques	20 (3+17)
2.	MSFC-WET102- NQ2015	Basic Techniques in Building Construction	30 (5+25)
Total			50

Successful completion of 8 hours of theory sessions and 42 hrs of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-WET101- NQ2015	Unit Title: Basic Workshop Tools and Techniques			
Duration: 20 hours				
Location:	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Classroom and Workshop	Make any one of the following objects: Shoe stand, Candle stand, Hanger, Garbage collector, Tin box, Bangle stand using T-fillet joint, Open corner joint, Single V-butt joint	<ol style="list-style-type: none"> Describe safety precautions for making object Describe the various types of material that can be used for making objects 	<ol style="list-style-type: none"> Prepare the design and drawing for the object Made necessary measurement and marking as per the specifications Demonstrate to cut and weld given material for making the object as per the design and specification Follow safety precautions Demonstrate the use of 	<p>Suggested Community Services- repair of benches, doors, make new objects or repair involving metal cutting, drilling, welding needed by school/community.</p> <p>Interactive Lecture:</p> <p>Making objects using various types of joints (T-fillet Joint, Open</p>

			<p>personal protective clothing and equipment</p> <ol style="list-style-type: none"> 6. Clean the work area before and after the task 7. Calculate the cost of the article prepared 	<p>Corner Joint, Single V-Butt Joint).</p> <p>Activity:</p> <p>Practice sessions on making chosen object by cutting and welding</p>
	Carry out GI piping by carrying out treading, coupling two or more pipes using different fittings.	<ol style="list-style-type: none"> 1. Describe use of different piping fitting used in GI piping. 	<ol style="list-style-type: none"> 1. Installing die in pipe wrench 2. Adjusting pipe wrench for threading 3. Carry out threading 4. Connect pipes using appropriate coupling. 	<p>Suggested Community Services - Removal of leakages, installing pipeline, making stand using GI pipe</p> <p>Activity:</p> <p>Practice sessions on threading pipe and couple it in GI elbow, socket, coupling</p> <p>Interactive Lecture: pipe threading</p>
	Draw plan, elevation of simple objects (Cone, cylinder, cube)	<ol style="list-style-type: none"> 1. Identify orthographic and isometric view. 2. Read and understand orthographic drawing and its dimension. 3. Able to interpret scale on the drawing. 	<ol style="list-style-type: none"> 1. Draw plan, elevation and side view of an object. 2. Selecting scale 3. Draw drawing using proper Line, lettering and system of giving dimensions in drawing. 	<p>Interactive session :</p> <p>Draw and explain concept of plan, elevation and side view of simple objects. Orthographic and isometric projection. Line, letters and giving dimensions, selection of scale</p>

				Activity : Draw 3 sheets of orthographic projection of square, cylinder and cone
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Unit Code: MSFC-WET102- NQ2015	Unit Title: Basic Techniques in Building Construction			
	Duration: 30 hours			
	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Location: Classroom, Workshop, Laboratory, Construction Site	Prepare a Ferro cement object (Sheet / tank) as per given specifications	<ol style="list-style-type: none"> 1. Describe what is Ferro cement and state its applications 2. Describe advantages of ferro cement. 3. Describe the safety precautions to be followed when preparing a Ferro cement structure 	<ol style="list-style-type: none"> 1. Construct a Ferro cement job, following relevant safety precautions 2. Weld mesh cutting, welding, tieing weld mesh with wire 3. Preparing mortar 4. Curing of job 5. Draw orthographic sketch of job with dimension. 6. To calculate costing of job. 	Suggested community services - Cover for water tank, cover for gutters, small water tank, dust bin etc. Interactive Lecture: Constructing Structures using Ferro Cement Activity: Practice sessions on constructing a structure of Ferro

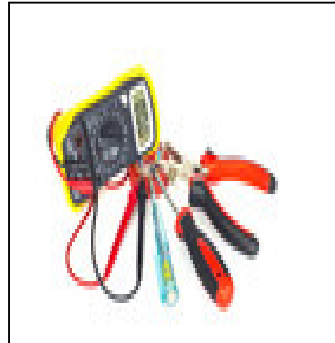
	Prepare Reinforced Cement Concrete (RCC)column	<ol style="list-style-type: none"> 1. Describe what is an RCC work and its applications. 2. Describe function of Torsion bar. 3. Describe safety precautions while constructing Reinforced Cement Concrete (RCC) work 	<ol style="list-style-type: none"> 1. Identify materials used in Reinforced Cement Concrete (RCC)work 2. Perform Reinforced Cement Concrete (RCC)work to prepare column as per given specifications and following necessary safety precautions 3. Make wooden mould from plywood sheets 4. Cutting of torsion bar and bending of 6mm bar 	<p>Suggested Community Services -RCC column for fencing, small column for structure</p> <p>Interactive Lecture: Reinforced Cement Concrete Work</p> <p>Activity: Practice sessions on preparing 1 meter RCC column work.</p>
	Plaster & painting of the brick work of min 1 sq. meter.	<ol style="list-style-type: none"> 1. Describe safety precautions while plastering with mortar 2. Describe the benefits of plastering 3. Describe the benefits of painting 4. Function of cement, sand and water 	<ol style="list-style-type: none"> 1. Demonstrate the use of personal protective clothing and equipment 2. Plaster an area of 1 sq. meter 3. Painting of wall 	<p>Suggested community service activities - Repair of walls, fencing, bench, steps etc.</p> <p>Interactive Lecture: Mortar Joints and Plastering, paints and types</p> <p>Activity: Practice sessions on preparing mortar. Laying brick, plastering, curing, painting</p>

	Prepare bill for the job.	<ol style="list-style-type: none">1. Describe difference between bills , estimate and quotation2. Describe component of costing and basis for calculating sales price.	<ol style="list-style-type: none">1. Calculate costing of job2. Raise bill to customer	<p>Interactive session - Difference between estimate, quotation, invoice and challan</p> <p>Activity : Prepare bill for the job done in the workshop.</p>
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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level II

Energy and Environment



NSQF Level 2 - Multi-Skill Foundation Course (MSFC)

Module: Energy and Environment

Objectives of the module

Upon completion of this module, you will be able to:

1. Calculate electrical consumption and inverter capacity;
2. Demonstrate understanding of inverter/UPS functions and its basic maintenance
3. Demonstrate installation of DOL/starter to motor.
4. Describe the functioning and operation of a Petrol or diesel Engine
5. Demonstrate the understanding of motor / pump and its operation viz. Priming, foot valve etc
6. Demonstrate making of charcoal using biomass.
7. Demonstrate installation of solar lights
8. Demonstrate understanding of biogas or windmill and its application
9. To be able to select site for rain Water harvesting
10. To make rain gauge & measure rainfall and understand weather parameters
11. Estimate costing of electrical/environment projects such as earthing, electrical wiring etc.

Module Structure: This module is a planned sequence of instructions consisting of the following 03 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-EE201-NQ2015	Introduction to Electrical Techniques and Practices	30 (5+25)
2	MSFC-EE202-NQ2015	Introduction to Energy Conservation	10 (2+8)
3.	MSFC-EE203-NQ2015	Introduction to Waste Disposal and Recycling	10 (1+9)
Total			50

Successful completion of 8 hrs of theory sessions and 42 hrs of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-EE201- NQ2015	Unit Title: Introduction to Electrical Techniques and Practices			
Duration: hours				
Location: Classroom and Workshop	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Prepare a simple electrical circuit	1. Explain the meaning of various terms used in simple circuit such as electrical potential difference/ voltage, conductive path, electrical resistance potential difference, transistor, conventional current, direct current, capacitor, attractive	1. Prepare the diagram of a simple electrical circuit 2. Prepare a simple electrical circuit for operating one lamp by one switch and 2 lamps by two switches. 3. Connect two or more lamps in a series	Suggested community service :Carry out connection of tube light or bulb. Interactive Lecture: Simple circuit connection Activity: Practice sessions on drawing a diagram of simple electrical circuit and

		current, ohm's law, ohm's etc. 2. Describe the purpose of simple circuit	4. Connect two or more lamps in parallel	connecting lamps in series and parallel
	Demonstrate the knowledge of the basic features and capacity of Inverter and its maintenance	1. Describe the working principle of Inverter and state the various components of an inverter 2. Describe various maintenance needs and procedure to perform the maintenance	1. Identify the various parts of an inverter 2. Determine inverter capacity for various combinations of electrical and electronic gadgets (e.g. two tube light and one fan) 3. Perform maintenance of an inverter	Interactive Lecture: Inverter: Working Principle and Calculation of Capacity Activity: Practice session on estimating inverter capacity and its maintenance
	Demonstrate installation of DOL/starter to motor	1. Describe purpose of DOL/Starter and how it works	1. Open DOL Starter 2. 3. connect DOL starter with the given motor 4. Make proper cable joint.	Interactive Lecture: DOL/Starter and motor Activity: Practice sessions on installation of DOL/starter to motor
	Demonstrate the understanding of motor / pump and its operation viz. Priming, foot valve etc	1. Describe various parts of motor/pump. 2. Demonstrate understanding of specification written on pump. Viz. Head/flow/HP 3. Describe the need of priming , foot valve, starter etc.	1. 1. Carry out priming of motor. 2. Start the pump/motor.	Interactive Lecture: Electric pump and motor, principles and function and types. Specification of pump : Head, flow, HP Activity: Practice sessions on operating pump/ motor,

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Unit Code: MSFC-EE202- NQ2015	Unit Title: Introduction to Energy Conservation			
	Duration: hours			
Location: Classroom / Workshop	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Demonstrate the knowledge of functioning of solar lights and devices	<ol style="list-style-type: none"> 1. Explain the working principle of solar panel and solar devices (any one of solar cooker, solar heater, solar lamp, etc.) 2. Describe the advantages and limitations of the use of solar energy 	<ol style="list-style-type: none"> 1. Identify the various components of solar devices and gadgets (any one of solar cooker, solar heater, solar lamp, etc.) 2. Demonstrate the knowledge of functioning and maintenance of solar devices and gadgets (any one of solar cooker, solar heater, solar lamp, etc.) 	<p>Interactive Lecture: Solar Lights and Devices (any one of solar cooker, solar heater, solar lamp, etc.)</p> <p>Activity: Practice sessions on use of solar devices (any one of solar cooker, solar heater, solar lamp, etc.)</p>
	Describe the functioning and operation of a Petrol or diesel Engine	<ol style="list-style-type: none"> 1. Describe the design and working principle of petrol or diesel engine 2. Describe the operation of petrol or diesel engine. 3. Describe the functioning of 	<ol style="list-style-type: none"> 1. Draw a diagram demonstrating the working of petrol or diesel engine. 2. Start & stop diesel/petrol engine. 3. 	<p>Interactive Lecture: Petrol Engine or diesel engine. Its different parts.</p> <p>Activity: Practice sessions on starting petrol / diesel engine.</p>

		important parts like piston, spark plug, cylinder.		
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Unit Code: MSFC-EE203- NQ2015	Unit Title: Introduction to Waste Disposal and Recycling			
	Duration: hours			
Location: Classroom, Workshop, Laboratory, Vermicompost Unit	Learning Outcome Demonstrate the knowledge of biogas.	Knowledge Evaluation 1. Describe the various components of Floating Dome Type and Fixed Dome Type Biogas Plants 2. Describe the basic principle involved in biogas production 3. Describe the working principle of biogas plant	Performance Evaluation 1. Identify the various components of a biogas plant 2. Identify different types of feeds for biogas plant viz.cowdung, poultry litter, starchy biomass kitchen waste etc. 3. Draw a diagram of a biogas unit	Teaching and Training Method Interactive Lecture: Biogas from Kitchen Waste, biomass, cow dung. Activity: Practice sessions on preparing a model of biogas unit. Visiting a biogas plant in locality.

	Demonstrate making of charcoal using biomass	<ol style="list-style-type: none"> 1. Describe what is a biomass and examples of bio mass material 2. Describe the purpose of making charcoal from biomass 3. Describe steps to make charcoal from biomass 	<ol style="list-style-type: none"> 1. Make charcoal out of locally available biomass material 	<p>Interactive Lecture: Charcoal from biomass</p> <p>Activity: Student project to make charcoal out of biomass</p>
	Select site for rain Water harvesting	<ol style="list-style-type: none"> 1. Describe what is rainwater harvesting and why it is necessary 2. Describe what is a contour lines and what are they used for 3. Describe application of different survey instruments. 	<ol style="list-style-type: none"> 1. Make “A” frame out of the local available wooden material 2. Find points on the ground which are at the same level and draw contour. 3. Use plain table/dumpy level to mark contours. 	<p>Interactive Lecture: Rainwater harvesting and contouring.</p> <p>Activity:</p> <ol style="list-style-type: none"> i) Practice session on drawing contours using “A” frame ii) Use of plain table/sumpy level method to mark contours.

	To make rain gauge & measure rainfall and understand weather parameters	<ol style="list-style-type: none"> 1. Describe why do we need to measure rainfall 2. Describe what are the different weather parameters 	<ol style="list-style-type: none"> 1. Make a rain gauge using a plastic bottle and funnel 2. Record the rainfall 3. Analyze the results 4. Analyze other weather parameters measurement from a secondary source (e.g. newspaper, TV) 	<p>Community service activity :Carry out water audit of the village.</p> <p>Interactive Lecture: Rainwater harvesting and measuring rainfall.</p> <p>Activity: Practice session on making of a rain gauge and getting information about other weather parameters from secondary sources.</p>
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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level II

Gardening, Nursery & Agriculture Techniques



NSQF Level 2: Multi-skill Foundation Course (MSFC)

Module: Gardening, Nursery and Agriculture Techniques

Objectives of the module

Upon completion of this course, you will be able to:

1. Demonstrate the knowledge of applying basic techniques in cultivation and maintenance of nursery plants (To be able to use humidity chamber, raised beds for making seedlings);
2. Propagate plants asexually;
3. Demonstrate testing of soil and use its results.
4. Maintain records of nursery operations;
5. Demonstrate installation of drip/sprinkler.
6. Demonstrate understanding of vaccination of animals by visit an AI center
7. To produce for animal feed/fodder for dairy/poultry.

Module Structure: This course is a planned sequence of instructions consisting of the following 02 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-NGA301 - NQ2015	Introduction to Nursery technique	40 (6+34)
2	MSFC-NGA302 - NQ2015	Introduction to Dairy Technology	10 (2+8)
Total			50

Successful completion of **8 hours of theory sessions and 42 hrs** of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-NGA301 - NQ2015	Unit Title: Introduction to Introduction to Nursery technique			
Duration: hours				
Location: Classroom and Agricultural Farm, nursery	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Apply nursery techniques	<ol style="list-style-type: none"> 1. Describe the various components of a plant nursery 2. Describe the procedure of potting and repotting of plants 3. Describe the precautions to be taken when sowing seed/planting plant materials. 	<ol style="list-style-type: none"> 1. Identify various plants suitable for growing in nursery 2. Prepare seed bed/raised bed 3. Sow seeds in propagation trays and seed bed 4. Prepare pots for growing plants 5. Perform potting 6. Perform depotting 7. Maintaining records of plant growth 	<p>Suggested Community Services: Preparing seedlings using seedling tray technique & sale it, prepare plants for plantation drive in community.</p> <p>Interactive Lecture: Nursery Techniques , Grafting technique</p> <p>Activity:</p> <p>Practice sessions on identifying plants to be grown in nursery, preparation of seed bed, seed sowing in trays and seed bed, potting, repotting and depotting. Raised bed, humidity chamber etc.</p>

	<p>Demonstrate the knowledge and application of different irrigation and water conservation methods</p>	<ol style="list-style-type: none"> 1. Describe the advantages and limitations of various irrigation methods (surface, sprinkler, drip, basin, furrow, etc.) and water conservation methods (bund, rainwater harvesting, trenching etc.) 	<ol style="list-style-type: none"> 1. Identify various irrigation methods 2. Demonstrate installation and maintenance of drip/sprinkler irrigation system 2. Demonstrate various water conservation methods (bund, rainwater harvesting, trenching etc.) 	<p>Interactive Lecture: Irrigation methods</p> <p>Activity: Practice sessions on installation and use of sprinkler and drip irrigation system in nursery or on farm.</p> <p>Practice sessions on assembling and dismantling sprinkler and drip irrigation system</p> <p>Practice session on various water conservation methods (bund, rainwater harvesting, trenching etc.)</p>
	<p>Demonstrate the knowledge of interpreting results of soil testing</p>	<ol style="list-style-type: none"> 1. Describe the importance and purpose of soil testing 2. Describe how to collect soil sample 3. List the methods used for testing nitrogen, phosphorus and potash in soil 	<ol style="list-style-type: none"> 1. Demonstrate the use of soil auger 2. Demonstrate the procedure for collecting soil sample for testing 3. Interpret the results of soil test for fertilizer application 	<p>Interactive Lecture: Soil Testing</p> <p>Activity: Practice sessions on how to collect soil sample and testing for basic NPK parameter.</p> <p>Interpretation of the soil test results for</p>

				application of fertilizers.
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Unit Code: MSFC-NGA302 - NQ2015	Unit Title: Introduction to Dairy Technology			
	Duration: hours			
Location: Classroom , Dairy Farm / Dairy Plant	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
		1.	1.	
	Assist in artificial insemination	1. Explain artificial insemination and its benefits 2. Describe the AI process	1. Identify breeds used for artificial insemination	Interactive Lecture: Different Insemination method, breeding technique Activity: Visit nearby Artificial Insemination Center and assist in Artificial Insemination, tools and instrument used for AI.
	Prepare fodder for animals	1) Describe different fodder making techniques. 2) Advantages of giving particular type of	1)To select best fodder for animal in the surrounding. 2) Carry out the procedure for preparing fodder. 3) Maintain record and	Interactive Lecture : Introduction to Different fodder making techniques Activity : Prepare fodder by at least

		fodder to cattle.	costing of fodder preparation and its effect.	any of the one technology : 1) Azolla 2) Silage 3) Concentrate feed for cow etc. 4) Aquaponics
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Competency Based Curriculum

Multi Skill Foundation Course (MSFC) Level II

Personal Health and Hygiene



NSQF Level 2 - Multi-Skill Foundation Course (MSFC)

Module: Personal Health and Hygiene

Objectives of the course

Upon completion of this course, you will be able to:

1. Demonstrate good health behaviour and practices for maintaining personal hygiene and wellness;
2. Prepare a personal hygiene plan;
3. Demonstrate and maintain personal hygiene;
4. Demonstrate the knowledge of blood group testing;
5. Demonstrate the knowledge of taking hemoglobin count; measuring blood pressure using self-administered test and preparing Oral Rehydration Salt (ORS) solution;
6. Identify and reflect upon various issues and problems related to sanitation;
7. Identify and reflect upon various issues and problems related to water consumption and conservation and take appropriate action (e.g. testing water quality for potability, basic water filtration methods)
8. Identify and reflect upon various issues and problems related to food consumption (e.g. detection of food adulteration and interpretation) and take appropriate action;

Module Structure: This module is a planned sequence of instructions consisting of the following 2 Units.

S.No.	Unit Code	Unit Title	No. of Notional Learning Hours
1	MSFC-PHH401-NQ2015	Introduction to Health Wellness	30 (5+25)
2	MSFC-PHH402-NQ2015	Community & Environment care	20 (3+17)
Total			50

Successful completion of 8 hours of theory sessions and 42 hrs of on-the-job learning (practice sessions) is to be done for full qualification.

Unit Code: MSFC-PHH401- NQ2015	Unit Title: Introduction to Health and Wellness			
Duration: hours				
Location: Classroom, Health Centre, Hospital	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
	Identify the symptoms of nutrient deficiencies	<ol style="list-style-type: none"> Describe the importance of balanced diet in health and wellness Describe the advantages of being healthy (mental, physical and social wellness) 	<ol style="list-style-type: none"> Identify the symptoms of nutrient deficiencies Identify how families can influence personal health 	Suggested Community Services : Students will visit public hospital and help health staff in their duties as OJT for one day. Interactive lecture: Importance of Balanced Diet in Nutrition and Health Activity: OJT in hospital and patient care. Practice sessions on preparing a diet chart and including healthy food
	Identify the personal health behaviours and factors affecting personal health	<ol style="list-style-type: none"> Describe the importance of a healthy and safe environment. Define the terms communicable (infectious) and non-communicable (noninfectious) diseases and identify 	<ol style="list-style-type: none"> Identify the personal health behaviours and factors affecting personal health Perform hand washing as per the standard procedure Identify and practice ways to prevent disease and other health 	Interactive lecture: Personal Health, vaccination. Essential vaccination for child. Activity: Participating in national vaccination drive such as

		<p>ways that help to prevent diseases</p> <ol style="list-style-type: none"> 3. List personal health behaviours (e.g. hand washing, teeth brushing, use of tissues, explaining feelings, making healthy food choices, daily physical activity) 4. Describe how families and peers can influence the health of adolescents 5. Describe Importance of vaccination & essential vaccines for a child. 	<p>problems</p> <ol style="list-style-type: none"> 4. Maintain a wellness log including exercise and food intake for a particular period of time 	<p>polio etc.</p>
	<p>Demonstrate the knowledge of identifying causes and treating dehydration</p>	<ol style="list-style-type: none"> 1. Describe dehydration and its effect 2. Recognize physiological indicators (e.g., heart rate, body temperature, perspiration, thirst) of health and physical activity 	<ol style="list-style-type: none"> 1. Identify symptoms of dehydration and take remedial measures. 2. Prepare Oral Rehydration Salt (ORS) solution. 	<p>Interactive Lecture:</p> <p>Dehydration</p> <p>Activity: Practice sessions on making ORS solution and using home made remedies for treating dehydration</p>

	Demonstrate knowledge and measurement of blood pressure, hemoglobin count and identify blood group using self-administered kits	<ol style="list-style-type: none"> 1. 2. Describe the importance of blood pressure 3. Describe the precautions to be taken while measuring blood pressure, hemoglobin count or identifying blood group 	<ol style="list-style-type: none"> 1. Determine blood pressure using blood pressure machine, measure hemoglobin count and identify blood group 2. Analyze the results 	<p>Interactive Lecture:</p> <p>Blood pressure, blood group and hemoglobin count</p> <p>Activity:</p> <p>Practice session on measuring blood pressure, measuring hemoglobin count and identify blood group</p>
	Test quality of water using H2O strip test	<ol style="list-style-type: none"> 1. Describe harmful ingredients in a contaminated water 2. Describe how to analyze results of water quality test 	<ol style="list-style-type: none"> 1. Perform water quality test using H2O strip testing kit 2. Analyze the results 	<p>Interactive Lecture:</p> <p>Water quality</p> <p>Activity:</p> <p>Practice session testing quality of water. Test quality of water in community well/ hand pump/water tank etc.</p>

Unit Code: MSFC-PHH402- NQ2015	Unit Title: Community and Environment Care			
	Duration: hours			
	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method

Location: Classroom, Science Laboratory,	Identify various community services and programmes	<ol style="list-style-type: none"> 1. Describe the needs of disadvantaged people, people with special needs, travelers, people affected with natural and manmade disasters, aged people, etc. 2. Describe need of preventive health care for maintaining personal health by calculating health expenses of family. 3. Describe emergency first aid help to needy. 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> i) Calculate medical / health expenses of a family in previous year. ii) Learn to use first aid kits in emergency. 	Interactive Lecture: Health scheme by Govt. Public health care system. Rights of patients. First aid Activity: <ol style="list-style-type: none"> iii) Calculate medical / health expenses of a family in previous year. iv) Learn to use first aid kits in emergency. v) Role play : First aid to patient in emergency viz. accident/ snake bite/ heart attack bleeding etc/
	Identify measures for pollution control and take appropriate action	<ol style="list-style-type: none"> 1. Explain different sources of pollution 2. Describe the effects of pollution on environment and on living beings 3. Describe different measures for prevention and control of pollution 	<ol style="list-style-type: none"> 1. Identify the sources of pollution 2. Identify the effects of pollution on environment and on living beings 3. Demonstrate the measures to control pollution 	Interactive Lecture: Pollution Control Activity: Discussion on implication of pollution and measures to control them Participate in a drive to reduce pollution of river/nala/air/public place by community. Viz. throwing

				wastage in dustbin, immersion of idol like Ganesh in river etc.
	Identify food related issues and problems and take appropriate action	<ol style="list-style-type: none"> 1. Differentiate between fresh and stale food 2. Describe the advantages and disadvantages of loose and packed food 3. Describe how to handle and serve food for maintaining personal hygiene and health 	<ol style="list-style-type: none"> 1. Identify the hygienic practices/methods adopted for handling of food 2. Demonstrate the knowledge of safe transportation of food 	<p>Interactive Lecture: Food Safety</p> <p>Activity: Practice session on identifying fresh and stale food, handling and serving food in hygienic manner</p> <p>Develop and administer a questionnaire on food habits and hygienic practices</p>

Assessment Guide

Assessment is a process used for determining an individual's progress or level of mastery/competence in an occupational area. It may be formative (continuous) and/or summative (final). It is a process of collecting evidence and making judgment about the extent to which a person demonstrates the knowledge and skills set out in the standards or learning outcomes of a unit of competency.

S.No.	Method of Assessments	Weightage	Evaluator
1.	Theory Paper	30	School / The State Board
2.	Practical Exam	30	Certified Assessor #
3.	Term Work	10	School Instructor / trainer
4.	Project Work	10	School Instructor / trainer
5.	Oral / Viva Vocu	10	Certified Assessor #
6.	Direct Observation (safety measures, cleanliness, care of tools and equipment during the examination)	10	Certified Assessor #
Total		100	

Assessors will be certified by the State Education Board.

- Theory Paper:** It allows candidates to demonstrate that they have the knowledge and understanding of a given topic.
- Practical Exam:** It allows candidates to demonstrate application of skills in simulated or real work conditions against competency standards (skill and academic standards).
- Term Work:** It is a compilation of documents that supports the candidate's claim of competence that was acquired from prior learning and experience. Documents (including photo's, newspaper articles, reports, etc.) of practical experience in the workplace or the community and photographs of the products prepared by the candidates related to the units of competency should be included in the portfolio.
- Project Work:** Projects (individual or group projects) are a great way to assess the practice skills on a deadline, but these should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project.

Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation.

5. **Oral / viva voce:** It allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of oral test or viva voce.
6. **Direct Observation** - Safety measures, cleanliness, care of tools and equipment during the practical examination

List of Tools, Equipment and Materials

The list given below is suggestive and an exhaustive list should be prepared by the teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

Workshop & Engineering Techniques

1. Adhesives for Carpentry Work
2. Adjustable Wrench
3. Air Filters
4. American Wire Gauge
5. Ammeter
6. Arc Welding Machine
7. Ball Peen Hammer
8. Bar Level
9. Bending Tool
10. Blueprint
11. Borax
12. Boring Tools - Auger Bit, Brace, Gimlet, Hand Drill
13. Branch Rule
14. Buzzers
15. Capacitor
16. C-Clamps
17. Chimes
18. Circuit Breaker/Safety Switch/Fuses
19. Clamp Ammeter
20. Clamp Meter
21. Claw Hammer
22. Condenser (Fan Motor)
23. Condulets
24. Crimping Tools

25. Cutting Tools - Back Saw, Cross Cut Saw, Rip Saw
26. Defective Capacitors
27. Defective Electrical Controls
28. Diagonal Cutting Pliers
29. Electrical Metallic Tubing
30. Electrical Power Tools
31. Electrical Tape
32. Electrical Wire
33. Electrician's Holster
34. Electrician's Knife
35. EMT Adapters
36. Evaporator Fan and Motor
37. Fan Motor
38. Fastening Devices
39. Filler Rolls (Bronze, Steel, Aluminum Relevant To Required Activity/ Task)
40. Filter
41. Filter Drier
42. Filter Drier Connection
43. Fish Tape Reel
44. Fittings
45. Flaring Tool
46. Flat Screwdriver
47. Fluxes (Borax, Aluminum and Silver)
48. Frequency Meter
49. Gimlet
50. Good Condition Electrical Controls
51. Grease
52. Hacksaw
53. Hacksaw Pliers
54. Holding Tools - Vise Grip, C-Clamp, Bench Vise

55. Insulation Resistance Tester
56. Intercom Cables
57. Intermediate Metal Conduit
58. Junction Box
59. Kilowatt Hour Meter
60. Leak Detector
61. Level Bar
62. Linesman's Pliers
63. Lock Nut And Bushing
64. Long Nose Pliers
65. Manufacturer's Manual for various Tools and Equipment
66. Masonry Drill
67. Measuring Tools - Pull-Push Rule, Meter, Ruler, Zigzag Rule
68. Megger Tester
69. Metal Moulding
70. Metric Rule
71. Mica Tube
72. Micrometer Clipper
73. Motor Compressor
74. Multi-Tester
75. Ohmmeter
76. Oil
77. Open End Wrench
78. Overload Protector
79. Oxy-Acetylene Welding Outfit
80. Personal Protective Equipment- Gloves, Mask, Apron, etc.
81. Philippine Electrical Code
82. Philips Screwdriver
83. Pipe Bender
84. Pipe Cutter

85. Pipe Reamer
86. Pipe Wrench
87. Pliers
88. Plumb Bob
89. Pull Box
90. Pull-Push Switch
91. Push and Pull Rule
92. Push Tape Rule
93. PVC Adapters
94. PVC Moulding
95. PVC Pipe
96. Rags
97. Recovery/Recycling Machine
98. Refrigerant Cylinder
99. Relay
100. Relays
101. Requisition Slip
102. Rigid Steel Conduit
103. Rotary Switch
104. Sand Paper
105. Screw Driver
106. Sealant
107. Set Of Screw Drivers
108. Sharpening Tools
109. Soap
110. Solid Wire 2.0 Mm²
111. Solid Wire 2.6 Mm²
112. Solid Wire 3.5 Mm²
113. Spirit Level/Water Level
114. Steel Rule

115. Straight Edge
116. Strike Lighter
117. Swaging Tool
118. Switch
119. Switch Pull-Push/Rotary
120. System Analyzer
121. Teflon Tape
122. Thermostat
123. Timer
124. Tri-Square
125. Tube Cutters
126. Tubes (Copper, Steel, Aluminum Relevant To Required Activity Task.
127. Utility Box
128. Vacuum Pump
129. Vernier Caliper
130. Voltmeter
131. Voltmeter
132. Wattmeter
133. Wire Gauge
134. Wire Stripper
135. Wiring Diagrams
136. Wood Moulding
137. Wrench Box

Energy & Environment

1. ACSR Conductors
2. Air Circuit Breaker
3. Allen Wrench Set (Hex Set)
4. Battery
5. Cables

6. Channel Lock Pliers
7. Discharge Rod
8. Earth Leakage Circuit Breaker
9. Earthing Pipe
10. Earthing Plate
11. EarthingRod
12. Fish Tape
13. G I Wire
14. Hammer
15. HT Tray Set
16. Inverter
17. Light Emission Diode
18. Lighting arrestors
19. Linesman Pliers
20. Manual Cover
21. Miniature Circuit Breaker
22. Model of Biogas Plant
23. Model of Soak Pit
24. Model of Simple Electrical Circuit
25. Model of Windmill
26. Moulded Case Circuit Breaker
27. Non-contact Voltage Detector
28. Razor Blade Knife (Utility Knife)
29. Residual Circuit Breaker with Overload
30. Rubber Matting
31. Screwdriver
32. Side Cutter Diagonal Pliers
33. Solar Lights and Devices
34. Stay Wire
35. Switches

36. Tape Measure
37. Telescopic type Operating Rod
38. Torpedo Level
39. Vacuum Circuit Breaker
40. Voltmeter
41. Wire Crimpers
42. Wire gauge
43. Wire Strippers
44. Wires

Gardening, Nursery and Agriculture Techniques

1. Bamboo Sticks
2. Blotting Paper
3. Budding Knife
4. Chemical Balance
5. Clay Pots
6. Compost
7. Dutch Hand Hoe
8. Edger
9. Farmyard manure
10. Fertilizers
11. Garden Hand Tools
12. Garden Hoes
13. Garden Knife
14. Garden Rake
15. Garden/Digging Fork
16. Garden/Digging Spade
17. Grafting Knife
18. Hoe
19. Hori Hori Knife

20. Leaf Rake
21. Long Handle Hoes
22. Loppers or Pruning Saw
23. Nursery Recordbook
24. Personal Protective Clothing (Apron, Mask, Gloves, Boots, etc.)
25. Petri Dishes
26. Plastic Baskets
27. Plastic Pots
28. Polybags
29. Pruners
30. Pruning Knife
31. Pruning Shears
32. Rabbiting Spade
33. Secateurs
34. Seeds of Vegetables and Field Crops
35. Shade Net/Green Net
36. Shovels and Specialty Spades
37. Soil Auger
38. Soil Scoop
39. Soil Testing Kit
40. Trowels
41. Vermicompost
42. Water Hose
43. Watering Can
44. Weighing Balance
45. Wheelbarrow or Garden Cart

Food Processing Techniques / Personal Health & Hygiene

1. Aluminum Foil
2. Baking Sheet
3. Beeswax/Candle
4. Bent-Handled Shears
5. Bowls
6. Candy Thermometer
7. Casserole Dish with Lid
8. Coffee Grinder and Press Pot
9. Corer
10. Corkscrew
11. Cutting Board/Table
12. Cutting boards
13. Dish towels
14. Emery Bag
15. Thread
16. Freezer Bags
17. Glass Dishes with Lids
18. Graters
19. Hem Gauge
20. Kettle
21. Knives
22. Labels
23. Measuring Cups
24. Melon Baller
25. Microplane Grater
26. Needles
27. Nonstick pan with high, curved sides

28. Openers for Cans, Bottles, Cartons
29. Pasta Spoon or Server
30. Pin Cushion and Pins
31. Pinking Shears
32. Potato Masher
33. Pressure Cooker
34. Seam Ripper
35. Serving and Salad Spoons
36. Serving Tongs
37. Serving tray or platter
38. Sewing and Embroidery Scissors
39. Sewing Box
40. Sewing Gauge
41. Soup Ladle
42. Spatulas
43. Splatter Screen
44. Spoons
45. Tape Measure
46. Thimble
47. Toaster
48. Trimming Scissors
49. Vegetable Peelers
50. Waterproof pens and markers
51. Whisks
52. Wooden Spoons
53. Metre Stick
54. Zester

Teacher's Qualifications

Qualification, competencies and other requirements for instructor on contractual basis are as follows:

Qualification	Minimum Competencies
Diploma, degree or ITI certificate in relevant field (mechanical, electrical, welding, fitter, turner, agriculture, home science, food processing) / HSC – vocational / DBRT / RPL Level 3	<ul style="list-style-type: none"> • Effective communication skills (oral and written) • Basic computing skills. • Technical competencies

(* RPL = Recognition of prior learning/skills & demonstrable skills, DBRT – Diploma in Basic Rural Technology)

Examples of Community Service

Vaccination of animals

There is a misconception about vaccinating animals among tribals. They fear that it will reduce productivity of animal or they fall sick. In Dhule district, Animal husbandry department trained high school children about vaccination and its benefits. They also corrected misunderstanding. Once students are convinced, with the help of these school children from 7 schools, government veterinary doctors could vaccinate 6449 (cows, buffalo and goats) in 15days. Children talked to villagers, and explained to them, some of them got trained to administer vaccine under supervision of doctors.

Nursery and environment

The schools in Nandurbar district learned to grow plants in nursery. Against an order from a local NGO, they prepared 9020 plants. They took out a rally in the village to create awareness about environmental issues and carry out plantation drive. Many students adopted 1-2 plants. After seeing success of school nursery, farmer Mr.Jagannath Gaikwad from Tisangi took help of school instructors and made nursery on his own farm.

Sanitation

Construction of soak pit to stop breeding of mosquitoes is regular activity in MSFC schools. Every year hundreds of soak pits are made by students for e.g Botoni school made 10 soak pit this year. They also breed Gappi fish which eat mosquito's eggs. Construction of low cost toilets, toilets with less water can all demonstrated and used in school. Testing portability of water, soil testing, blood group and hemoglobin test are carried out in school laboratory. Last year, Hingangaon school found out 2 wells out of 4 in the village is not good for drinking water. They informed Village council head about their result to take action.

ICT for Development

School with internet access provides 'Agricultural information service' to farmer using website www.aqua.org. They post the question on the website and get the advice from experts in agricultural science center. 18 schools also subscribed to weather forecast on SMS. Students are given responsibility to write it on village and school notice board for benefit of all farmers.

Drip Irrigation

Farmer in Brahmanwel village gave order to school to install drip irrigation system in his farm. Students completed it as part of their project work. Farmer got services at low cost and students get hands on training. Like drip irrigation, schools also provides service of sprinklers, mulching, vermi composting etc. to farmers.

Fertiliser in Agriculture

9th class students from Tandulwadi village learn new agriculture techniques from 'Farmers Diary' published by agricultural university. They created a demonstration plot of Zendu flowers. They prepared the land, carry out seeds treatment. They prepared seedlings in nursery for 21days. They used bio fertilizers and planted plants by leaving proper distance between the crops. Based on the soil testing, they decided quantity of fertilizers. They planted the plants by estimating flowering time will come during festival seasons. No wonder they got bumper crop!

Agricultural Tools

Small farmers normally do not buy agricultural tools like Knapsack pump for spraying pesticide. 13 farmers from Chaddwel village took knapsack pump from the school on rent of Rs.20/- per day. Repairing of agricultural tools or get the tools made as per own design is always done by students. Students from Mangli village sold 35 tree guards. Nagaj school sold 5 poultry cages.

Watershed Development

Students at Gawadewadi constructed a small dam by doing dumpy table and plane table survey. They contributed their labor to construct it. Survey sites for watershed development are part of MSFC curriculum.

Food Preservation

Schools try to make different food items using local agriculture produce. Jams, Jelly, cake, Biscuits, local snacks, chikki etc. are common in MSFC schools. Snacks on annual day, school functions etc. is responsibility of school. This also helps in standardization of some local snacks. Some of the instructors run their enterprises once they get confidence.

List of Contributors

- 1) Prof. R.B. Shivagunde, Joint Director, PSS Central Institute of Vocational Education, a constituent unit of NCERT, Ministry of Human Resource Development, Government of India, Bhopal
- 2) Dr. Vinay Swarup Mehrotra, Professor, Department of Agriculture and Animal Husbandry & Head, Curriculum Development and Evaluation Centre, PSS Central Institute of Vocational Education, Bhopal
- 3) Dr. V.K.Jain, Associate Professor, Department of Humanities, Science and Education Research, PSS Central Institute of Vocational Education, Bhopal
- 4) Dr. Abhijit Nayak, Associate Professor, Department of Health and Paramedical Sciences, PSS Central Institute of Vocational Education, Bhopal
- 5) Dr. R.K.Pathak, Professor, Department of Agriculture and Animal Husbandry, PSS Central Institute of Vocational Education, Bhopal
- 6) Dr. Saurabh Prakash, Associate Professor, Department of Agriculture and Animal Husbandry, PSS Central Institute of Vocational Education, Bhopal
- 7) Dr. Mridula Saxena, Professor, Department of Home Science and Hospitality Management, PSS Central Institute of Vocational Education, Bhopal
- 8) Prof. R.K.Shukla, Professor, Department of Business and Commerce, PSS Central Institute of Vocational Education, Bhopal
- 9) Ms. Sunanda Mane, Co-founder & President, Lend-A-Hand India, Pune
- 10) Ms.Yeshodhara Bhalerao, Director Training & Development , Lend-A-Hand India, Pune
- 11) Ms.Sukhwinder Multani, Lend-A-Hand India, Pune
- 12) Mr. R.S. Ghume, Dist.Vocational Education & Training Officer, Pune.
- 13) Dr.Yogesh Kulkarni, Vigyan Ashram, Pabal Dist.Pune
- 14) Dr.Arun Dixit, General Manager , SI Group, Mumbai
- 15) Mr.Ashok Kalbag, Pan IIT Alumni Association, Mumbai
- 16) Mrs.Seemantinee Khot , Consultant CSR, Pune
- 17) Mr. B.B.Patil, Head Master, T.S.H. Ghole Road, Pune
- 18) Mr.Raj Gilda, Co-founder Lend-a-hand-India, Pune