



**National Vocational Certificate Level 4 in Seed Processing & Biotechnology
(Seed Processing Plant Supervisor)**



**National Vocational Certificate Level 4 in Seed Processing & Biotechnology
(Seed Processing Plant Supervisor)**



(Curriculum)

**National Vocational and Technical Training Commission (NAVTTC)
Government of Pakistan**



National Vocational Certificate Level 4 in Seed Processing & Biotechnology (Seed Processing Plant Supervisor)



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Introduction

Definition/Description of training program (Seed Processing Plant Supervisor)

Increasing demand in food supply due to increase in population putting pressure on agriculture sector day by day. Many factors like poor cultivation methods, lack of advanced machineries and non-availability of quality inputs also a big challenge for agriculture sector to feed this growing population. Therefore, governing bodies are now focusing for boosting production of better quality with high yield of agriculture commodities. Among the various challenges, availability of quality seeds to the farming community also a big challenge for authorities. Seed as a key for successful farming have prime importance in agriculture sector. Fortunately, industry is creating space for new businesses where Seed Processing & Biotechnology have potential for becoming focal point for investors.

Seed processing is a vital part of the technology to produce quality seeds for farming community, which includes operation involved in harvesting, cleaning, drying, seed treatments, seed quality testing, packaging and storage. Properly processed seed is a guaranty for high production rate of crops. Currently working seed processing units are also not producing satisfactory results. Limitation for their success includes various factors, among these factors availability of skilled labor is a major concern.

Keeping in view of the above, NAVTTC developed a qualification which is based on seed processing operations carried out in advanced processing industry. techniques. This competency based national vocational qualifications have been developed to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increasing their livelihood income which ultimately help agriculture sector of country.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the site/workshop, some writing, some not even in the classroom or site/workshop but in another part of the



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building using special equipment. As trainees learn at different pace they might be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed

Purpose of the training program:

The purpose of this training is to set highly professional standards for seed processing and biotechnology in agriculture sector. The basic goals of establishing these credentials are as follows:

1. Equip with the latest Seed processing techniques
2. Improve crop production through availability of processed seed
3. Improve trainees' professional competence
4. Provide in-depth knowledge in seed processing operations
5. Enable the existing workforce to learn new technologies and methods
6. Provide flexible pathways and progressions in agriculture sectors
7. Enabling the youth with greater employment opportunities

Overall objectives of training program:

The main objectives of the National Vocational Certificate Level 4 in Seed Processing & Biotechnology (Seed Processing Plant Supervisor) are as follows:

- Improve the professional competence of Seed processing & Biotechnology
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the Seed Processing & Biotechnology
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for Seed processing & Biotechnology across the globe



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Competencies to be gained after completion of course:

At the end of the course, the trainee has attained the following core competencies:

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Module 1: Establish and Maintain the Occupational Health and Safety System

Module 2: Perform advance Communication

Module 3: Perform Collection of Procured Seed at Processing Plant

Module 4: Operate basic Seed Processing Machines

Module 5: Perform Drying and Cleaning of Seed at Processing Plant

Module 6: Perform Seed Treatments

Module 7: Perform Seed Grading

Module 8: Perform Seed Sorting

Module 9: Perform Seed Extraction

Module 10: Perform Basic Green Skills

Possible available job opportunities, available immediately and later in the future:

- Seed Processing Plant Supervisor
- Seed Processing Plant Operator



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Trainee entry level:

The entry level for National Vocational Certificate Level 4 in Construction Sector (**Seed Processing Supervisor**) is given below:

Title	Entry requirements
National Vocational Certificate Level 4 in Seed Processing and Biotechnology (Seed Processing Supervisor)	The entry requirement for this qualification would be National Vocational Certificate Level 3 in Seed Processing and Biotechnology (Seed Procurement Assistant)

Minimum qualification of trainer:

B.Sc. (Hons) Agriculture with preferably major Biotechnology/Plant Breeding and Genetics with at least four-year experience in relevant field

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

Medium of instruction i.e., language of instruction:

Instructions will be in Urdu/ English/ Local language.



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Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total	-	1200 hours
Theory	-	240hours (20%)
Practical	-	960 hours (80%)

Proposed Course Duration-1 Year



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Sequence of Modules:

Module 1: Establish and Maintain the Occupational Health and Safety System 30 hours	Module 4: Operate basic Seed Processing Machines 180 hours	Module 7: Perform Seed Sorting 150 hours
Module 2: Perform advance Communication 60 hours	Module 5: Perform Drying and Cleaning of Seed at Processing Plant 90 hours	Module 8: Perform Seed Grading 150 hours
Module 3: Perform Collection of Procured Seed at Processing Plant 60 hours	Module 6: Perform Seed Treatments 210 hours	Module 9: Perform Seed Extraction 210 hours
Module 10: Perform Basic Green Skills 60 hours		



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Summary template-overview of the curriculum:

Following is the structure of the course:

Sr No	Code	Competency Standards	Occupation	NVQF Level	Category	Estimated Contact Hours			Cr Hr.
						Th	Pr	Total	
Level 2									
1.	0811SP&B03-A	Establish and Maintain the Occupational Health and Safety System	Seed Processing Plant Supervisor	4	Generic	6	24	30	3
2.	0811SP&B03-B	Perform Advance Communication		4	Generic	12	48	60	6
3.	0811SP&B03-C	Perform Collection of Procured Seed at Processing Plant		4	Technical	12	48	60	6



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4.	0811SP&B03-D	Operate Basic Seed Processing Machines		4	Technica I	36	144	180	18
5.	0811SP&B03-E	Perform Drying and Cleaning of Seed at Processing Plant		4	Technica I	18	72	90	9
6.	0811SP&B03-F	Perform Seed Treatments		4	Technica I	42	168	210	21
7.	0811SP&B03-G	Perform Seed Sorting		4	Technica I	30	120	150	15
8.	0811SP&B03-H	Perform Seed Grading		4	Technica I	30	120	150	15
9.	0811SP&B03-I	Perform Seed Extraction		4	Technica I	42	168	210	21
10.	0811SP&B03-J	Perform Basic Green Skills		4	Generic	12	48	60	6
		Total				240	960	1200	120



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		Percentage				20	80		
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Module 1: Establish and Maintain the Occupational Health and Safety System

Objective: The aim of this module to get knowledge, skills and understanding to establish and maintain the occupational health and safety system.

Duration: 30Hours

Theory: 6Hours

Practice: 24 Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Carryout Risk assessment at workplace	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify potential hazards at workplace 2. Evaluate the risk 3. Take corrective/preventive action to mitigate the risk 4. Record your findings 5. Review the risk assessment 	<ul style="list-style-type: none"> • Recognize different types of hazards causing harm to workers. • Knowledge about health and safety precautions • Describe the methods to identify the risks and/or hazards at workplace • Knowledge about methods of dealing with hazard to avoid any accident or injury <p>Activity: Perform risk assessment at work place</p>	<p>Total:4hrs Theory: 1hrs Practical: 3hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • PPES • Multimedia • Computer 	<ul style="list-style-type: none"> • Class Room • Simulated environment
LU2: Follow emergency response	<p>The trainee will be able to:</p>	<ul style="list-style-type: none"> • Explain different types of emergencies at work 	<p>Total: 11hrs Theory:</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
protocol/procedure	<ol style="list-style-type: none"> 1. Identify emergency exits at workplace 2. Select suitable positions for the relevant equipment 3. Identify assembly area at workplace 4. Follow procedure and instructions to evacuate the building 5. Report immediately at designated assembly area in case of emergency 	<p>place</p> <ul style="list-style-type: none"> • Knowledge about emergency protocol/procedures for fire, hazardous chemical spillage, major power failure, terrorism activities and natural disasters • Understanding of current safety /emergency principles and practices at workplace <p>Activity: Perform mock drill for emergency response plan</p>	<p>2hrs Practical: 9hrs</p>	<ul style="list-style-type: none"> • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.) • Computer 	
LU3: Perform safe storage and disposal of waste	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify different types of waste material 	<ul style="list-style-type: none"> • Explain different types of waste materials • Knowledge about 	<p>Total 11hrs Theory: 2hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<ol style="list-style-type: none"> 2. Identify types of containers to store the different types of waste material 3. Use required labels on storage containers 4. Store the waste materials according to standards 5. Identify types of waste bins 6. Dispose- off waste material according to the safety procedure 	<p>methods of collecting and storing waste material</p> <ul style="list-style-type: none"> • Describe types of waste bins • Knowledge about methods of safe disposal of waste material <p>Activity:</p> <ul style="list-style-type: none"> • Perform mock drill for collection and safe storage of waste material • Perform mock drill for safe disposal of waste material 	<p>Practical: 9hrs</p>	<ul style="list-style-type: none"> • Sharpeners • White board marker • Duster • Non Consumable • White board • PPES • Multimedia • Safety manuals/MS DS • Computer 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Maintain ergonomics condition at workplace	The trainee will be able to: <ol style="list-style-type: none"> 1. Follow standard working posture/position at workplace 2. Follow standard procedure to provide sufficient light at workplace 3. Use ergonomic workstations to avoid muscle fatigue 	<ul style="list-style-type: none"> • Explain standard working posture/position at workplace • Explain standard procedure for sufficient light at workplace • Describe types of noises at workplace • Knowledge about types of hazardous waste • standard procedure for ventilation at workplace <p>Activity: Practice of preparing ergonomic workstation</p>	Total: 4hrs Theory: 1hrs Practical: 3hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker Non Consumable <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPES 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Module2: Perform Advance Communication

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform advance communication.

Duration: 60 Hours

Theory: 12Hours

Practice:48 Hours

Credit Hours:6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Demonstrate Professional skills	The trainee will be able to: <ol style="list-style-type: none"> Demonstrate different modes of communication: <ul style="list-style-type: none"> Speaking Reading Writing Listening Demonstrate presentation skills through multimedia etc Develop CV according requirements Develop interview skills according to job requirement 	<ul style="list-style-type: none"> Explain modes of communication Describe different types of communication skills Explain advanced language skills Understanding of direct and indirect communication methods Describe different templates of CVs Knowledge about interview techniques <p>Activity:</p> <ul style="list-style-type: none"> Develop CV for the post of crushing plant technician/supervisor. Role-play, interview 	Total: 30hrs Theory: 6hrs Practical: 24hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pen White Bord Marker Duster <p>Non Consumable</p> <ul style="list-style-type: none"> White board PPE Multimedia Internet Computer 	<ul style="list-style-type: none"> Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>for the post of crushing plant operator and technician</p> <ul style="list-style-type: none"> Present assigned job through multimedia followed by question answers session 		system	
<p>LU2:</p> <p>Plan and Organize work</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Identify task requirements. Plan steps to complete tasks Review planning and organizing process Organize work as per task requirement 	<ul style="list-style-type: none"> Knowledge about training skills Understanding of Professionals skills Describe the assessment and trainees feedback methods Analyze the need of the training type at the work place <p>Activity: Prepare report to plan and organize work as per job assigned</p>	<p>Total:15hrs</p> <p>Theory:3hrs</p> <p>Practical:12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pen White board marker Duster <p>Non Consumable</p> <ul style="list-style-type: none"> White board PPES Multimedia Internet Computer system 	<ul style="list-style-type: none"> Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU3: Conduct Professional Activities Ethically	The trainee will be able to: 1. Identify the ethical problems 2. Identify affected parties and their interests 3. Evaluate each solution using the interest those involves	<ul style="list-style-type: none"> • Knowledge about professional ethics • Understanding about code of conduct • Explain the principles of professional ethics • Describe the importance of professional ethics • Explain different kind of ethical problems at workplace • Knowledge about ethical problem-solving techniques 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pen • White board marker • Duster Non-Consumable <ul style="list-style-type: none"> • White board • PPES • Multimedia • Internet • Computer system 	<ul style="list-style-type: none"> • Class Room



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Module3: Perform Collection of Procured Seed at Processing Plant

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform collection of procured seed at processing plant

Duration: 60 Hours

Theory: 12Hours

Practice: 48Hours

Credit Hours: 6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Prepare for collection of procured seed	The trainee will be able to: <ol style="list-style-type: none"> 1. Collect procurement details 2. Arrange tools and equipment according to requirement 3. Maintain collection sites according to procurement details 4. Follow safety standards according to SOPs 	<ul style="list-style-type: none"> • Knowledge of procured seed • Knowledge of safety standards • Understanding of tools and equipment for collection of procured seed <p>Activity</p> <ul style="list-style-type: none"> • Practice to collect procurement details • Practice to maintain collection sites 	<p>Total:15hrs</p> <p>Theory:3hrs</p> <p>Practical: 12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Pencils • PPEs • Raw seed <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Internet Computer system Processing plant 	
LU2. Receive procured seed	The trainee will be able to: <ol style="list-style-type: none"> 1. Arrange collection material according to procured seed 2. Receive procured seed according to SOPs 3. Maintain record 	<ul style="list-style-type: none"> • Explain process of procured seed receiving • Knowledge of maintenance of record • Understanding of unloading of collected material as per SOPs <p>Activity:</p> <ul style="list-style-type: none"> • Practice to arrange and receive procured seed as per SOPs. 	Total: 15hrs Theory: 3hrs Practical: 12hrs	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • PPEs • Seed <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> system Processing plant 	
LU3. Maintain collection site	The trainee will be able to: <ol style="list-style-type: none"> Follow sanitation of collection site Maintain required environmental conditions Follow health and safety guidelines 	<ul style="list-style-type: none"> Explain sanitation procedure at site Understanding of health and safety guidelines Describe environmental conditions required for different seed <p>Activity:</p> <ul style="list-style-type: none"> Practice to maintain condition for collection site 	Total: 24hrs Theory: 6hrs Practical: 30hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster PPEs Seed <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Hygrometer 	<ul style="list-style-type: none"> Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none">• Weather station• Seed processing plant	



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Module4: Operate Basic Seed Processing Machineries

Objective of the module: The aim of this module to get knowledge, skills and understanding to operate basic processing machineries.

Duration: 180 Hours

Theory: 36Hours

Practice: 144Hours

Credit Hours: 18

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Prepare for Seed processing operations	The trainee will be able to: <ol style="list-style-type: none"> 1. Perform pre-checks 2. Report malfunctioning of machines to supervisor. 3. Plan equipment utilization for seed processing 4. Follow safety standards. 	<ul style="list-style-type: none"> • Understanding of pre checks • Understanding of machine manuals • Understanding of tools and equipment <p>Activity</p> <ul style="list-style-type: none"> • Practice to perform pre checks of machines 	<p>Total:30hrs</p> <p>Theory:6hrs</p> <p>Practical: 24hrs</p>	<p style="background-color: #d9ead3; padding: 2px;">Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • PPEs • Pencils <p style="background-color: #d9ead3; padding: 2px;">Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> system Tools /equipment/ machineries 	
LU2. Operate seed processing machines	The trainee will be able to: <ol style="list-style-type: none"> 1. Perform operations through seed cleaning machines according to SOPs 2. Perform operations through seed drying machines according to SOPs 3. Perform operations through seed graders according to SOPs 4. Follow health and 	<ul style="list-style-type: none"> • Knowledge of seed cleaning • Knowledge of seed drying • Knowledge of seed graders <p>Activity:</p> <ul style="list-style-type: none"> • Practice to perform seed cleaning practices. • Practice to perform seed drying practices. • Practice to perform seed grading practices. 	<p>Total:120hrs</p> <p>Theory:24hrs</p> <p>Practical:96hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Sampling bags • PPEs • Seed <p>Non-Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	safety guidelines 5. Maintain records			system <ul style="list-style-type: none"> Seed graders Seed dryers 	
LU3. Perform maintenance of basic processing machineries	The trainee will be able to: <ol style="list-style-type: none"> Arrange tools and material Check performance of all tools and equipment Perform sanitization of tools and equipment as per standard. Calibrate the tools and equipment properly Perform trouble shooting Follow standard safety checks before and after use of machinery. 	<ul style="list-style-type: none"> Explain sanitation procedure for processing machineries Explain troubleshooting Knowledge of equipment calibration <p>Activity:</p> <ul style="list-style-type: none"> Practice to perform machinery post checks Practice to perform sanitization of tools/equipment/machineries 	Total: 30hrs Theory: 6hrs Practical: 24hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster Pencil PPEs Cleaning material Sanitization chemical <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Tools/equipment/ machinery 	<ul style="list-style-type: none"> Class Room/site



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Module5: Perform Drying and Cleaning of Seed at Processing Plant

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform drying and cleaning of seed at processing plant.

Duration: 90Hours

Theory: 18Hours

Practice: 72Hours

Credit Hours: 9

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform cleaning of raw seed	The trainee will be able to: <ol style="list-style-type: none"> 1. Arrange tools and equipment 2. Perform pre cleaning of seed as work instructions 3. Perform fine cleaning of seed 4. Maintain record 	<ul style="list-style-type: none"> • Knowledge of seed cleaning techniques at processing plant • Explain method for seed cleaning <p><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to perform cleaning of raw seed at processing plant 	Total:30hrs Theory:6hrs Practical: 24hrs	<div style="background-color: #d9ead3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • PPEs • Raw seed <div style="background-color: #d9ead3; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> system Processing plant 	
LU2. Prepare for drying	The trainee will be able to: <ol style="list-style-type: none"> Collect and submit seed sample for moisture test Prepare seed for drying according to lab report Maintain record 	<ul style="list-style-type: none"> Explain process of seed drying at processing plant Define moisture test Understanding of moisture test lab report <p>Activity:</p> <ul style="list-style-type: none"> Practice to prepare seed for drying 	Total: 15hrs Theory: 3hrs Practical: 12hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster Sampling bags PPEs Seed <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer 	<ul style="list-style-type: none"> Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> system Processing plant 	
LU3. Perform Drying with Air distribution system	The trainee will be able to: <ol style="list-style-type: none"> 1. Arrange tools and equipment 2. Dry seed according to air distribution system 3. Follow standard safety checks before and after drying. 	<ul style="list-style-type: none"> • Explain air distribution system of seed drying • Explain types of air distribution system for seed drying • Understanding of pre and post checks of seed air drying unit <p>Activity:</p> <ul style="list-style-type: none"> • Practice to perform seed drying at processing plant by using different types of air distribution system 	Total: 15hrs Theory: 3hrs Practical: 12hrs	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Sampling bags • PPEs • Seed <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> system Processing plant Air Seed distribution system 	
LU4. Perform Drying with heated Air system	The trainee will be able to: <ol style="list-style-type: none"> 1. Arrange tools and equipment 2. Dry seed according to heated air system 3. Follow standard safety checks before and after use of machinery 	<ul style="list-style-type: none"> • Explain heated air system of seed drying • Explain types of heated air system for seed drying • Understanding of pre and post checks of heated air seed drying unit <p>Activity:</p> <ul style="list-style-type: none"> • Practice to perform seed drying at processing plant by using different types of heated air distribution system 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Sampling bags • PPEs • Seed Non Consumable <ul style="list-style-type: none"> • White board 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Multimedia Internet Computer system Processing plant Heated Air Seed distribution system 	
LU5. Perform drying in countinuous flow dryer	The trainee will be able to: <ol style="list-style-type: none"> 1. Arrange tools and equipment 2. Dry seed according to countinuous flow dryer 3. Follow standard safety checks before and after use of machinery 	<ul style="list-style-type: none"> Define the countinuous flow dryer Explain the process of continuous flow dryer Understanding of pre and post checks of countinuous flow dryer <p>Activity:</p> <ul style="list-style-type: none"> Practice to perform seed drying by using countinuous flow dryer 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster Sampling bags PPEs 	<ul style="list-style-type: none"> Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none">SeedNon ConsumableWhite boardMultimediaInternetComputer systemProcessing plantContinuous flow dryers	



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Module6: Perform Seed Treatments

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform seed treatments

Duration: 210Hours

Theory: 42 Hours

Practice: 168 Hours

Credit Hours: 21

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Prepare seed treatment solutions	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools/equipment /chemical 2. Wear PPEs 3. Prepare solutions for applications as per SOPs 4. Follow health and safety guidelines 5. Handle chemicals according to SOPs 	<ul style="list-style-type: none"> • Knowledge of seed treatment solutions • Explain seed treatment methods • Understanding of chemical handling during seed treatment <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to prepare seed treatment solutions 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster • Seeds • Chemicals • Bins/buckets <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Computer system • Multimedia • Internet 	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Apply Solutions Manually	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools/equipment /chemical 2. Treat seed as per SOPs 3. Collect and submit sample of treated seed for quality check 4. Maintain record 	<ul style="list-style-type: none"> • Explain manual seed treatment • Understanding of seed quality check • Knowledge of record keeping <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to apply seed treatment manually 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster • Seed • Chemicals • Bins/buckets <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Computer system • Multimedia • Internet 	<ul style="list-style-type: none"> • Class Room/Site
LU3: Apply Solutions Mechanically	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools/equipment /chemical 2. Treat seed 	<ul style="list-style-type: none"> • Explain mechanically seed treatment • Knowledge of mechanical seed treatment methods • Understanding of seed quality 	<p>Total:60hrs.</p> <p>Theory:12hrs.</p> <p>Practical:48</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board 	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>mechanically as per SOPs</p> <p>3. Collect and submit sample of treated seed for quality check</p> <p>4. Maintain record</p>	<p>check</p> <ul style="list-style-type: none"> Knowledge of record keeping <p>Activity</p> <ul style="list-style-type: none"> Practice to apply seed treatment mechanically 	hrs.	<ul style="list-style-type: none"> marker Duster Seed Chemicals Bins/buckets Non-Consumable White board Computer system Multimedia Internet Vehicles Different type of weighing balance Agitators Shakers 	
<p>LU4: Perform seed coating by different biological and natural products</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Prepare for work Perform beneficial fungal coating 	<ul style="list-style-type: none"> Knowledge of beneficial fungal coating Describe bacterial fungal coating procedure Knowledge of bacterial 	<p>Total:60 hrs.</p> <p>Theory:12hrs.</p> <p>Practical:48</p>	<ul style="list-style-type: none"> Consumable Notebooks Pencils Erasers Sharpener Pen White board 	<ul style="list-style-type: none"> Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	3. Perform bacterial inoculum coating 4. Perform PGPR (Plant growth promoting rhizobacteria) media coating 5. Perform seed coating with nutrients (macro and micronutrients) 6. Perform seed coating with natural products	inoculums coating <ul style="list-style-type: none"> • Understanding of PGPR • Describe seed coating with nutrients • Define seed coating with natural products <p>Activity Practice to perform seed coating by different methods</p>	hrs.	marker <ul style="list-style-type: none"> • Duster • Seed • Bags • Sample bags • Natural products for coating • Maco and micronutrients <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Computer system • Multimedia • Internet 	
LU5: Perform storage of treated seed	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools/equipment 2. Perform storage of treated seed according 	<ul style="list-style-type: none"> • Knowledge of seed storage • Explain quality check parameters • Understanding of record keeping 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker 	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	to SOPs 3. Collect and submit sample of treated seed for quality check 4. Maintain record	Activity <ul style="list-style-type: none">Practice to store treated seed		<ul style="list-style-type: none">DusterSeedBagsSample bagsNon ConsumableWhite boardComputer systemMultimediaInternet	



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Module7: Perform Seed Sorting

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform seed sorting.

Duration: 180 Hours

Theory: 36 Hours

Practice: 144 Hours

Credit Hours: 18

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for seed sorting	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools and equipment for sorting 2. Perform pre and post-checks for required machinery 3. Calculate production requirement according to demand 4. Schedule activities according to production demand 5. Collect seed for sorting 6. Maintain Records 7. Follow safety measures 	<ul style="list-style-type: none"> • Explain seed sorting • Knowledge of seed sorting unit • Knowledge of supply and demand for seed production • Understanding of pre and post checks of seed sorting units • Knowledge of record keeping <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to perform pre and post checks for sorting machine • Practice to collect seed for sorting 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pencils • White board marker • Duster • Different types of bag • Seed <p>Non</p>	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	according to workplace safety guidelines			<p>Consumable</p> <ul style="list-style-type: none"> • White board • Computer system • Multimedia • Internet • Seed Sorter 	
<p>LU2.Execute seed sorting operations</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange machines/tools/equipment according to sorting requirement 2. Wear PPEs 3. Perform sorting operation according to work instructions 4. Segregate sorted seed according to work instructions 	<ul style="list-style-type: none"> • Knowledge of seed Segregation • Understanding of seed sorting operations <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to perform seed sorting by using seed sorter 	<p>Total:150hrs</p> <p>Theory:30hrs</p> <p>Practical:120hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Seed <p>Non Consumable</p>	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> White board Multimedia Internet Computer system Printer Seed sorter 	
LU3.Maintain Record	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Maintain record of seed sorting (Type of seeds, supplier details, quality parameters) Maintain records for wasted seed Maintain stock register according to standard work instructions 	<ul style="list-style-type: none"> Knowledge of seed quality parameters Understanding of damage seed record Explain stock register Knowledge of stock register maintenance <p>Activity</p> <ul style="list-style-type: none"> Practice to prepare stock register 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster <p>Non Consumable</p> <ul style="list-style-type: none"> White board 	Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none">• Multimedia• Internet• Computer system• Stock register	



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Module8: Perform Seed Grading

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform seed grading.

Duration: 180 Hours

Theory: 36 Hours

Practice: 144 Hours

Credit Hours: 18

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for seed grading	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools and equipment for sorting 2. Perform pre-checks for required machinery 3. Follow safety measures according to workplace safety guidelines 4. Calculate production requirement according to demand 5. Schedule activities according to production demand 6. Collect sorted seed for 	<ul style="list-style-type: none"> • Explain seed grading • Knowledge of seed grading unit • Understanding of pre and post checks of seed grading units • Knowledge of seed grading • Knowledge of supply and demand for seed production • Understanding of seed grading operations • Knowledge of record keeping <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to collect seed for 	<p>Total:30hrs.</p> <p>Theory:6hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster • Different types of bags • Seed <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Computer system 	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	grading 7. Maintain Records	grading <ul style="list-style-type: none"> Practice to perform seed grading by using seed grading machine 		<ul style="list-style-type: none"> Multimedia Internet Seed grading machine 	
LU2.Execute seed garding operations	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Arrange machines/tools/equipme nt according to grading requirement Perform grading operation according to work instructions Segregate graded seed according to work instructions Maintain records 	<ul style="list-style-type: none"> Knowledge of seed quality parameters Understanding of graded seed record Knowledge of record maintenance <p>Activity</p> <ul style="list-style-type: none"> Practice to prepare record register 	<p>Total:150hrs</p> <p>Theory:30hrs</p> <p>Practical:120 hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster <p>Non-Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Record register 	Class Room/site



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Module9: Perform Seed Extraction

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform seed extraction.

Duration: 150Hours

Theory:30 Hours

Practice: 120 Hours

Credit Hours: 15

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1.Prepare for seed extraction	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Arrange tools/equipment and material for required extraction 2. Perform pre-checks for required machinery 3. Follow safety measures according to workplace safety guidelines 	<ul style="list-style-type: none"> • Explain importance of seed extraction • Describe methods of seed extraction • Understanding of pre and post checks for seed extraction machinery • Knowledge of record keeping <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to arrange tools/equipment and material for seed extraction. 	<p>Total:30hrs.</p> <p>Theory:6 hrs.</p> <p>Practical:24hrs.</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster • Seed • Chemicals for seed extraction <p>Non</p>	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				Consumable <ul style="list-style-type: none"> • White board • Computer system • Multimedia • Internet • Seed extraction machine 	
LU2. Execute Seed Extraction Methods	The trainee will be able to: <ol style="list-style-type: none"> 1. Perform manual extraction 2. Perform fermentation 3. Perform mechanical extraction 4. Perform chemical method 	<ul style="list-style-type: none"> • Describe procedure for manual extraction of seed • Describe procedure for seed fermentation • Describe procedure for mechanical extraction • Describe procedure for seed extraction through chemicals 	Total: 90hrs Theory: 18hrs Practical: 72hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Seed 	<ul style="list-style-type: none"> • Class Room/Site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>Activity</p> <ul style="list-style-type: none">• Practice to perform manual extraction• Practice to perform fermentation• Practice to perform mechanical extraction• Practice to perform chemical method		<p>Non Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• Internet• Computer system• Printer• Seed grading machine	



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Module 10: Perform Basic Green Skills

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform basic green skills.

Duration: 60 Hours

Theory:12 Hours

Practice: 48Hours

Credit Hours: 6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Manage sustainability of materials used at site	The trainee will be able to: <ol style="list-style-type: none"> Select sustainable raw materials as per requirement Follow standard procedure to manage systems (waste, energy, water) Perform impact quantification of used material at site 	<ul style="list-style-type: none"> Environmental degradation Types of raw materials at site Types of waste Waste reduction techniques Concept of 6 R approach (Reduce, Reuse, Recycle, Repair, Renew, and Rethink) Reusable materials 	Total: 30hrs Theory: 06hrs Practical: 24hrs	<div style="background-color: #d9d9d9; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> Notebooks Pen White board marker Duster PPE <div style="background-color: #d9d9d9; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> White board PPE Multimedia 	Classroom/ working site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<ul style="list-style-type: none">• Recyclable materials• Methods for disposal of unusable materials• Just-in-time (JIT) approach• Basic knowledge of green energy resources (solar, biogas, natural light, rainwater, wind energy etc.)		<ul style="list-style-type: none">• Internet• Computer system	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Manage site waste	The trainee will be able to: <ol style="list-style-type: none"> 1. Identify various types of waste at site 2. Sort and categorize reusable waste 3. Dispose unusable waste as per set standards 4. Place reusable material at designated storage area 5. Transport waste material to designated place 	<ul style="list-style-type: none"> • Environmental degradation • Types of raw materials at crushing plant • Types of waste • Waste reduction techniques • Concept of 6 R approach (Reduce, Reuse, Recycle, Repair, Renew, and Rethink) • Reusable materials • Recyclable materials • Methods for disposal of unusable materials • Just-in-time (JIT) approach • Basic knowledge of green energy resources (solar, biogas, natural light, rainwater, wind energy etc.) 	Total: 30hrs Theory: 06hrs Practical: 24hrs	<div style="background-color: #cccccc; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pen • White board marker • Duster • PPE <div style="background-color: #cccccc; padding: 2px;">Non-Consumable</div> <ul style="list-style-type: none"> • White board • PPE • Multimedia • Internet • Computer system 	Classroom/ working site



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General assessment guidance for “Seed Processing Plant Supervisor”

Good practice in Pakistan makes use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or module, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student's performance.

Examples for direct assessment of a Seed Processing Plant Technician include:

- Work performances, for example Drying and Cleaning of Seed at Processing Plant
- Demonstrations, for example Perform Seed Grading, Sorting and Extraction



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- Direct questioning, where the assessor would ask the student how to Collect Procured Seed at Processing Plant and Operate Basic Seed Processing Machines
- Paper-based tests, such as multiple choice or short answer questions on Occupational Health and Safety System, Seed Treatment etc.
- Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a Seed Processing Plant Supervisor include:

- Work products, such as performing basic green skills etc

Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Principles of assessment

All assessments should be valid, reliable, fair and flexible:

Fairness means that there should be no advantages or disadvantages for any assessed person. For example, it should not happen that one student gets prior information about the type of work performance that will be assessed, while another candidate does not get any prior information.

Validity means that a valid assessment assesses what it claims to assess. For example, if seed treatments are to be assessed and certificated, the assessment should involve performance criteria that are directly related to that documentation activity. An interview about the seed treatments would not meet the performance criteria.

Reliability means that the assessment is consistent and reproducible. For example, if the work performance of preparing documents in words has been assessed, another assessor (e.g. the future employer) should be able to see the same work performance and witness the same level of achievement.

Flexibility means that the assessor has to be flexible concerning the assessment approach. For example, if there is a power failure during the assessment, the assessor should modify the arrangements to accommodate the students' needs.



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Assessment strategy for Seed Processing Supervisor

This curriculum consists of 10 modules:

Module 1: Establish and Maintain the Occupational Health and Safety System

Module 2: Perform Advance Communication

Module 3: Perform Collection of Procured Seed at Processing Plant

Module 4: Operate Basic Seed Processing Machines

Module 5: Perform Drying and Cleaning of Seed at Processing Plant

Module 6: Perform Seed Treatments

Module 7: Perform Seed Grading

Module 8: Perform Seed Sorting

Module 9: Perform Seed Extraction

Module 10: Perform Basic Green Skills

Sessional assessment

The sessional assessment for all modules shall be in two parts: theoretical assessment and practical assessment. The sessional marks shall contribute to the final qualification.

Theoretical assessment for all learning modules must consist of a written paper lasting at least one hour per module. This can be a combination of multiple choice and short answer questions.



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For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall be in two parts: theoretical assessment and practical assessment. The final assessment marks shall contribute to the final qualification.

The assessment teams

The number of assessors must meet the needs of the students and the training provider. For example, where two assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 25 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 to 15 students, assessments would be carried out over a two-day period only.

Planning for assessment

Sessional assessment: assessors need to plan in advance how they will conduct sessional assessments for each module. The tables on the following pages are for assessors to use to insert how many hours of theoretical and practical assessment will be conducted and what the scheduled dates are.

Final assessment: Training providers need to decide ways to combine modules into a cohesive two-day final assessment programme for each group of five students. Training providers must agree the content for practical assessments in advance.



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List of Tool, Machinery and Equipment:

SR#	Items/Tools & Equipment	Quantity
1.	PPEs: Safety Helmet Safety Shoes Earmuffs Gloves Goggles Face Shields.	30 30 30 30 30 30 05
2.	First Aid Kit	01
3.	Computer	26



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4.	Multimedia	01
5.	Clip Board	30
6.	Seed cleaning machine	05
7.	Screener	02
8.	Seed trier	25
9.	Moisture meter	05
10.	Hot air oven	02
11.	Scalper	02
12.	Seed processing plant	01
13.	Seed dryers	02
14.	Air Seed distribution system	01



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15.	Heated Air Seed distribution system	01
16.	Continuous flow dryers	01
17.	Specific gravity sepraor	01
18.	Spiral sepraotr	01
19.	Seed seprator	02
20.	Seed Huller	01
21.	Seed Scarifier	01
22.	Seed sheller	02
23.	Seed grading machine	02
24.	Seed extraction machine	02
25.	Different type of bags	As per requirement



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26.	Vehicle (HTV/LTV)	01
27.	Store/warehouse	01
28.	Fork Lifter	01
29.	Seed Elevator	01
30.	Conveyer	01
31.	Weighing balance	05
32.	Sprayers	05
33.	Seed boxes	10
34.	Seed treatemnt pump	02
35.	Seed blade mixer	02
36.	Seed treater	02



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37.	Filling machiens	02
38.	Containers	As per requirement
39.	Bins	As per requirement

List of Consumable Supplies

SR#	Consumable Supplies	Quantity
1.	Surgical Face Masks	2 Boxes
2.	Stationary	As per requirement
3.	Sample job order	As per requirement
4.	Safety sign boards	As per requirement
5.	Chemicals/ pesticides	As per requirement



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Members of the Curriculum development Committee

S#	Name	Designation
1	Muhammad Ishaq	Deputy Director (TE) Coordinator/ NAVTTC HQ
2	Ms. Saima Asghar	DACUM Expert, Lahore
3	Mr. Awais Waheed	Research Associate, Agriculture University Rawalpindi
4	Dr. Sumaira Maqsood	Associate Professor/ Institute of Agricultural Sciences, Punjab University, Lahore
5	Mr. Amir Rehman	Assistant Director, KPK Seed Corporation, Peshawar KPK



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6	Mr. Muhammad Seed Ahmad	Agriculture Officer, UVAS, Pattoki
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9	Mr. Tariq Ullah	Lecturer. GCT D.I.Khan, KPK TEVTA
10	Mr. Abid Mahmood	Scientific officer, Agriculture Department, KPK Peshawar, (Representative of KPK TEVTA)
11	Mr. Muzamil Usman	Consultant for Green House/ Off Season vegetables production, Lahore
12	Mr. Khawar Hameed Alvi	Seed research and quality manager, Ventus Agro Ltd Lahore



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