



# FARM TECHNICIAN

2022

Based on the Nova Scotia Occupational Standard





# **Nova Scotia Apprenticeship Curriculum Standard**

## **Farm Technician**

## Preface

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This Nova Scotia Curriculum Standard (NSCS) is intended to assist instructional staff in the design and delivery of technical, in-class training in support of the apprenticeship program.

This NSCS contains all the technical training elements required to complete the apprenticeship program and has been developed based on the 2022 Nova Scotia Occupational Standard (NSOS) for the trade.

Implementation of the NSCS for Apprenticeship training is outlined in the following table.

Level	Implementation Effective
Level 1	2023-2024
Level 2	2024-2025

The above implementation schedule was current at time of publication.

Granting of credit or permission to challenge level examinations (if applicable) for pre-apprenticeship training for this trade will be based on the content outlined in this standard. Training providers must contact the Nova Scotia Apprenticeship Agency for more information on the process and requirements for determining eligibility for credit towards an apprenticeship program.

## Acknowledgements

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The Nova Scotia Apprenticeship Agency (Agency) wishes to acknowledge the contributions of trade advisory committee members, tradespersons, industry establishments, professional associations, labour organizations, training providers, government departments and agencies, and all others who contributed to this publication.

Special thanks are offered to the following representatives who contributed greatly to the original draft of the standard and provided expert advice throughout its development.

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## User Guide

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Nova Scotia Curriculum Standards (NSCS) are developed based on Red Seal Occupational Standards (RSOS) or Nova Scotia Occupational Standards (NSOS) and industry consultation. This document represents the minimum content to be delivered as part of the apprenticeship program for this trade.

The NSCS documents are purposefully constructed for ease of use and flexibility of structure in order to adapt to all delivery requirements. They detail units of training, unit outcomes and objectives. They do not impose a delivery model or teaching format.

Training providers will select and develop delivery materials and techniques that accommodate a variety of learning styles and delivery patterns. The NSCS does not dictate study materials, textbooks or learning activities to be used in delivery.

This document includes a Level Structure to facilitate mobility for apprentices moving from one jurisdiction to another.

### **Structure**

The content of the NSCS is divided into units. Unit codes are used as a means of identification and are not intended to convey the order of delivery. It is at the discretion of the training provider to deliver the content in the required logical sequence of delivery within the level. Units may be delivered one at a time or concurrently within a level, provided all outcomes are met.

The Learning Outcomes describe what the apprentice should know or be able to do at the end of training. Wording of the Learning Outcomes, “Demonstrate knowledge of...” acknowledges the broad spectrum of ways in which knowledge can be assessed (i.e. practical projects, multiple choice testing, presentations, etc.) by instructional staff within the training.

## User Guide (continued)

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The Occupational Standard (OS) to Curriculum Comparison chart maps the OS trade skills/sub-tasks to the curriculum standard.

Each unit of training in the curriculum standard lists both theoretical and practical objectives, which represent the minimum content that must be covered during technical training. Detailed content/bulleted lists for each objective have not been developed. Where detail is required for clarity, content has been provided.

The practical objectives represent the tasks/skills that apprentices must be exposed to during technical training. An individual or group performance of the task/skill is recommended; if not possible, an instructor demonstration is acceptable. Training Providers should use practical, hands-on learning whenever possible, whether identified in the curriculum standard as a practical objective or not.

Each unit also provides suggested hours (a guide only), which can be adjusted for apprentice learning, delivery methods, practical/hands-on learning, examinations, registration, holidays, storm days, etc.

## Glossary of Terms

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These definitions are intended as a guide to how language is used in the document.

<b>ADJUST</b>	To put in good working order; regulate; bring to a proper state or position.
<b>APPLICATION</b>	The use to which something is put and/or the circumstance in which an individual would use it.
<b>CHARACTERISTIC</b>	A feature that helps to identify, tell apart or describe recognizably; a distinguishing mark or trait.
<b>COMPONENT</b>	A part that can be separated from or attached to a system; a segment or unit.
<b>DEFINE</b>	To state the meaning of (a word, phrase, etc.).
<b>DESCRIBE</b>	To give a verbal account of; tell about in detail.
<b>EXPLAIN</b>	To make plain or clear; illustrate; rationalize.
<b>IDENTIFY</b>	To point out or name objectives or types.
<b>INTERPRET</b>	To translate information from observation, charts, tables, graphs and written material.
<b>MAINTAIN</b>	To keep in a condition of good repair or efficiency.
<b>METHOD</b>	A means or manner of doing something that has procedures attached to it.
<b>OPERATE</b>	How an object works; to control or direct the functioning of.
<b>PROCEDURE</b>	A prescribed series of steps taken to accomplish an end.
<b>PURPOSE</b>	The reason for which something exists or is done, made or used.

## Glossary of Terms (continued)

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<b>SERVICE</b>	<p>Routine inspection and replacement of worn or deteriorating parts.</p> <p>An act or business function provided to a customer in the course of an individual's profession (e.g., haircut).</p>
<b>TECHNIQUE</b>	<p>Within a procedure, the manner in which technical skills are applied.</p>
<b>TEST</b>	<p>v. To subject to a procedure that ascertains effectiveness, value, proper function or other quality.</p> <p>n. A way of examining something to determine its characteristics or properties, or to determine whether or not it is working correctly.</p>
<b>TROUBLESHOOT</b>	<p>To follow a systematic procedure to identify and locate a problem or malfunction and its cause.</p>

## Essential Skills Profiles

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Through extensive research, the Government of Canada and other national and international agencies have identified and validated key essential skills for the workplace. These skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Essential Skills Profiles describe how workers in various occupations use each of the key essential skills. They include:

- a brief description of the occupation;
- examples of tasks that illustrate how each essential skill is applied; and,
- complexity ratings that indicate the level of difficulty of the example tasks.

Essential Skills profiles can be found on the Employment and Social Development Canada (ESDC) website at <https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/tools.html>

The development and improvement of these Essential Skills is inherent throughout the apprenticeship training program as apprentices work towards achieving journeyperson status.

## Profile Chart

<b>WORKPLACE SAFETY</b>			
FRM-100 Safety			
<b>TOOLS AND SHOP SKILLS</b>			
FRM-105 Tools and Equipment	FRM-110 Testing and Measurement Devices	FRM-115 Shop Equipment	FRM-120 Access Equipment
FRM-125 Lifting and Moving Equipment			
<b>COMMUNICATION AND MENTORING</b>			
FRM-130 Communication	FRM-135 Mentoring I	FRM-200 Mentoring II	
<b>EQUIPMENT</b>			
FRM-140 Farm Equipment	FRM-205 Materials and Handling Equipment	FRM-210 Automated Equipment	FRM-215 Seeding and Application Equipment
<b>FACILITIES, GROUNDS AND INFRASTRUCTURE</b>			
FRM-145 Grounds and Access Points	FRM-150 Farm Infrastructure	FRM-220 Water Management	
<b>FARM MANAGEMENT</b>			
FRM-155 Record Keeping	FRM-160 Food Safety	FRM-165 Animal Care	FRM-225 Job Planning
FRM-230 Human Resources			
<b>CROP PRODUCTION</b>			
FRM-170 Production Site Preparation	FRM-235 Input Inventory and Production Planning	FRM-175 Production Monitoring	FRM-180 Crop Health
FRM-185 Livestock Health	FRM-190 Pest Management	FRM-195 Environmental Stewardship	

<b>SALE AND DISTRIBUTION PREPARATION</b>			
FRM-240 Harvest and Collection	FRM-245 Waste Management	FRM-250 Post-Harvest Management	FRM-255 Market Preparation
FRM-260 Program Review			

## Level Structure

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### Level 1, 5 Weeks (150 hrs)

Code	Unit Title	Hrs*	Pg	Practical Objectives*
FRM-100	Safety	12	19	1. Identify workplace hazards.
FRM-105	Tools and Equipment	9	22	N/A
FRM-110	Testing and Measurement Devices	6	24	N/A
FRM-115	Shop Equipment	3	26	N/A
FRM-120	Access Equipment	6	27	N/A
FRM-125	Lifting and Moving Equipment	9	29	N/A
FRM-130	Communication	3	32	N/A
FRM-135	Mentoring I	3	35	N/A
FRM-140	Farm Equipment	18	37	N/A
FRM-145	Grounds and Access Points	3	39	N/A
FRM-150	Farm Infrastructure	6	41	1. Calculate materials needed for maintenance.
FRM-155	Record Keeping	15	43	1. Use spreadsheets to perform record keeping and basic functions.
FRM-160	Food Safety	6	45	N/A
FRM-165	Animal Care	6	47	1. Calculate stocking densities.
FRM-170	Production Site Preparation	3	49	N/A
FRM-175	Production Monitoring	6	51	N/A
FRM-180	Crop Health	6	53	N/A
FRM-185	Livestock Health	12	55	N/A
FRM-190	Pest Management	12	57	N/A
FRM-195	Environmental Stewardship	6	60	N/A

## Level Structure (continued)

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### Level 2, 4 Weeks (120 hrs)

Code	Unit Title	Hrs*	Pg	Practical Objectives*
FRM-200	Mentoring II	6	63	N/A
FRM-205	Material Handling Equipment	9	64	1. Calculate volume and density of material.
FRM-210	Automated Equipment	9	66	N/A
FRM-215	Seeding and Application Equipment	9	68	1. Calculate seeding and application rates.
FRM-220	Water Management	6	70	1. Read a water analysis and interpret recommendations.
FRM-225	Job Planning	6	72	N/A
FRM-230	Human Resources	9	74	N/A
FRM-235	Input Inventory and Production Planning	9	76	N/A
FRM-240	Harvest and Collection	9	78	1. Perform calculations to determine harvest yield.
FRM-245	Waste Management	6	81	N/A
FRM-250	Post-Harvest Management	6	83	N/A
FRM-255	Market Preparation	6	85	N/A
FRM-260	Program Review	30	87	N/A

**\*Hours:** The time it should take to cover the unit (a guide only).

**\*Practical Objectives:** The tasks/skills apprentices must be exposed to during technical training. An individual or group performance of the task/skill is recommended; if not possible, an instructor demonstration is acceptable. Training Providers should use practical, hands-on learning whenever possible, whether identified in the curriculum as a practical objective or not.

## 2021 Occupational Standard Sub-task to Curriculum Unit Comparison

RSOS or NSOS Sub-task		Unit of Training	
<b>Task A-1 – Performs safety-related functions.</b>			
A-1.01	Uses personal protective equipment (PPE) and safety equipment.	FRM-100	Safety
A-1.02	Maintains safe worksite.	FRM-100	Safety
A-1.03	Protects the environment.	FRM-195	Environmental Stewardship
<b>Task A-2 – Uses tools and equipment.</b>			
A-2.01	Uses hand and power tools.	FRM-105	Tools and Equipment
A-2.02	Uses testing and measurement devices.	FRM-110	Testing and Measurement Devices
A-2.03	Uses shop equipment.	FRM-115	Shop Equipment
A-2.04	Uses access equipment.	FRM-120	Access Equipment
A-2.05	Uses jacking/lifting, loading and moving equipment.	FRM-125	Lifting and Moving Equipment
Task A-3 Uses communication and mentoring techniques			
A-3.01	Uses communication techniques.	FRM-130	Communication
A-3.02	Uses mentoring techniques.	FRM-135	Mentoring I
		FRM-200	Mentoring II
Task B-4 Operates and maintains farm equipment			
B-4.01	Uses farm equipment.	FRM-140	Farm Equipment
B-4.02	Maintains farm equipment.	FRM-140	Farm Equipment
B-4.03	Operates material handling equipment.	FRM-205	Material Handling Equipment
B-4.04	Operates automated equipment.	FRM-210	Automated Equipment
B-4.05	Operates seeding and application equipment.	FRM-215	Seeding and Application Equipment
Task B-5 Maintains facilities, grounds and infrastructure			
B-5.01	Maintains farm grounds and access points.	FRM-145	Grounds and Access Points

RSOS or NSOS Sub-task		Unit of Training	
B-5.02	Performs routine maintenance to farm infrastructure.	FRM-150	Farm Infrastructure
B-5.03	Manages farm water.	FRM-220	Water Management
<b>Task B-6 Performs farm management practices</b>			
B-6.01	Performs record keeping.	FRM-155	Record Keeping
B-6.02	Practices on-farm food safety and animal care programs.	FRM-160	Food Safety
		FRM-165	Animal Care
B-6.03	Plans projects and tasks.	FRM-225	Job Planning
B-6.04	Performs human resource leadership.	FRM-230	Human Resources
B-6.05	Performs human resource tasks.	FRM-230	Human Resources
<b>Task C-7 Performs production tasks</b>			
C-7.01	Prepares production site.	FRM-170	Production Site Preparation
C-7.02	Maintains input inventory.	FRM-235	Input Inventory and Production Planning
C-7.03	Implements production plan.	FRM-235	Input Inventory and Production Planning
C-7.04	Monitors production.	FRM-175	Production Monitoring
C-7.05	Maintains crop health.	FRM-180	Crop Health
C-7.06	Maintains livestock health.	FRM-185	Livestock Health
C-7.07	Controls pests.	FRM-190	Pest Management
<b>Task C-8 Prepares products for sale or distribution</b>			
C-8.01	Prepares for harvest and collection.	FRM-240	Harvest and Collection
C-8.02	Performs harvest and collection.	FRM-240	Harvest and Collection
C-8.03	Manages production waste.	FRM-245	Waste Management
C-8.04	Stores product.	FRM-250	Post-Harvest Management
C-8.05	Prepares product for market.	FRM-255	Market Preparation

**Level 1**  
**5 Weeks (150 hours)**

## FRM-100 Safety (12 hrs)

### Learning Outcomes:

- Demonstrate knowledge of personal protection equipment (PPE) and safety equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of standards and regulations pertaining to PPE and safety equipment.
- Demonstrate knowledge of maintaining a safe work environment.
- Demonstrate knowledge of regulatory requirements pertaining to a safe work environment.

### Nova Scotia Occupational Standard Reference:

- 1.01 Uses personal protective equipment (PPE) and safety equipment.
- 1.02 Maintains safe worksite.

### Suggested Hours:

12 hours

### *Theoretical Objectives*

1. Define terminology associated with PPE and safety equipment.
2. Identify workplace hazards and describe safe work practices.
  - i) personal
  - ii) environmental
  - iii) shop/facility
  - iv) high voltage systems
  - v) production sites
  - vi) biological
  - vii) controlled atmosphere storage
  - viii) confined spaces
    - grain tanks
    - silos
    - manure pit
  - ix) chemical
  - x) heights
  - xi) livestock
  - xii) motorized equipment
  - xiii) spills
  - xiv) defective equipment

- xv) livestock waste storage
- xvi) hydraulics
- xvii) high-pressure systems

3. Interpret codes and regulations pertaining to workplace hazards and safe work practices.
  - i) Occupational Health and Safety (OH&S)
  - ii) Workplace Hazardous Materials Information System (WHMIS)
  - iii) Globally Harmonized System
  - iv) Motor Vehicle Act
  - v) Pesticide Regulations
  - vi) Environmental Regulations
  - vii) Transportation and Dangerous Goods
  
4. Identify types of PPE and safety equipment and describe their applications and procedures for use.
  - i) PPE
    - safety boots
    - safety glasses
    - respirator
    - single-use disposable suit
    - gloves
    - dust masks
    - safety vests
    - bee suits
    - harnesses
    - aprons
    - face shields
    - hearing protection
    - sunscreen
    - insect repellent
    - safety sunglasses
    - hard hats
  - ii) safety equipment
    - rollover protection structures
    - seatbelt
    - ventilation
    - first aid kits
    - fire extinguishers
    - eye wash stations
    - lock out devices
    - cages
    - atmospheric monitors
    - fall protection

- guards
  - shields
    - power take-off (PTO)
5. Describe the procedures used to inspect, maintain and store PPE and safety equipment.
    - i) excessively worn PPE
    - ii) damaged PPE
    - iii) expired PPE and safety equipment
  6. Describe the procedures used to handle, store, transport and dispose of hazardous materials.
  7. Describe procedures used to lock-out, tag-out and isolate equipment and confirm zero energy.
  8. Describe the procedures used to conduct a job hazard assessment.
    - i) job tasks
    - ii) identify hazards
    - iii) identify controls
    - iv) identify PPE

### **Practical Objectives**

1. Identify workplace hazards.

## FRM-105 Tools and Equipment (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of hand tools, their applications, maintenance and procedures for use.
- Demonstrate knowledge of power tools, their applications, maintenance and procedures for use.

### Nova Scotia Occupational Standard Reference:

2.01 Uses hand and power tools.

### Suggested Hours:

6 hours

### *Theoretical Objectives*

1. Define terminology associated with hand and power tools.
2. Identify hazards and describe safe work practices pertaining to working with hand and power tools.
3. Interpret regulations and standards pertaining to hand and power tools.
  - i) Occupational Health and Safety (OH&S)
4. Identify types of hand tools and describe their applications and procedures for use.
  - i) wrenches
  - ii) screwdrivers
  - iii) saws
  - iv) hammers
  - v) tin snips
  - vi) prybars
5. Identify types of power tools and describe their applications and procedures for use.
  - i) electric drills
  - ii) grinders
  - iii) air tools
  - iv) saws
  - v) sanders
  - vi) planers

6. Describe the procedures used to inspect, maintain and store hand and power tools.

***Practical Objectives***

N/A

## FRM-110 Testing and Measurement Devices (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of testing and measurement devices, their applications, maintenance and procedures for use.
- Demonstrate knowledge of testing and measurement device calibration.

### Nova Scotia Occupational Standard Reference:

2.02 Uses testing and measurement devices.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with testing and measurement devices.
2. Identify hazards and describe safe work practices pertaining to working with testing and measurement devices.
3. Identify types of testing and measurement devices and describe their applications and procedures for use.
  - i) scales
  - ii) pH and EC meters
  - iii) injectors
  - iv) refractometers
  - v) flow meters
  - vi) weather stations
  - vii) multimeter
4. Describe the procedures used to calibrate and verify calibration on testing and measurement devices.
5. Identify factors which influence device accuracy and calibration.
6. Describe the procedures used to log test results.
7. Describe the procedures used to inspect, maintain and store testing and measurement devices.

## **Practical Objectives**

N/A

## FRM-115 Shop Equipment (3 hrs)

### Learning Outcomes:

- Demonstrate knowledge of shop equipment, their applications, maintenance and procedures for use.

### Nova Scotia Occupational Standard Reference:

2.03 Uses shop equipment.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Define terminology associated with shop equipment.
2. Identify hazards and describe safe work practices pertaining to shop equipment.
3. Interpret regulations and standards pertaining to shop equipment.
  - i) Occupational Health and Safety (OH&S)
4. Identify types of shop equipment and describe their applications and procedures for use.
  - i) torches
  - ii) welding equipment
  - iii) grinders
  - iv) saws
  - v) presses
  - vi) air compressors
  - vii) ventilation
5. Describe the procedures used to inspect, maintain and store shop equipment.

### Practical Objectives

N/A

## FRM-120 Access Equipment (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of access equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of safety practices pertaining to access equipment.
- Demonstrate knowledge of regulatory requirements pertaining to access and fall protection equipment.

### Nova Scotia Occupational Standard Reference:

2.04 Uses access equipment.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with access equipment.
2. Identify hazards and describe safe work practices pertaining to access equipment.
3. Interpret regulations and standards pertaining to access equipment.
  - i) Occupational Health and Safety (OH&S)
  - ii) Fall Protection
  - iii) Confined Spaces
4. Identify tools and equipment pertaining to access equipment and describe their applications and procedures for use.
  - i) fall arrest system
5. Identify types of access equipment and describe their characteristics and applications for use.
  - i) ladders
  - ii) fixed ladders
  - iii) scaffolding
  - iv) mobile elevated work platforms
  - v) rigid rail
  - vi) greenhouse lift carts

6. Identify factors to consider when selecting access equipment.
  - i) safety
  - ii) load characteristics
  - iii) environment
  - iv) application
7. Describe the procedures used to set up and operate access equipment.
8. Describe the procedures used to inspect, store and maintain access equipment.

**Practical Objectives**

N/A

## FRM-125 Lifting and Moving Equipment (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of lifting and moving equipment, their applications and procedures for use.
- Demonstrate knowledge of calculations required when performing lifting and moving operations.
- Demonstrate knowledge of safety practices pertaining to lifting and moving equipment.
- Demonstrate knowledge of regulatory requirements pertaining to lifting and moving equipment.
- Demonstrate knowledge of communication methods used during lifting and moving operations.

### Nova Scotia Occupational Standard Reference:

2.05 Uses jacking/lifting, loading and moving equipment.

### Suggested Hours:

9 hours

### Theoretical Objectives

1. Define terminology associated with lifting and moving equipment.
2. Identify hazards and describe safe work practices pertaining to lifting and moving equipment.
  - i) overhead lines
  - ii) excavations
  - iii) excessive loads
  - iv) weather
  - v) road conditions
  - vi) load shifts
  - vii) uneven terrain
  - viii) tree branches
3. Interpret codes, regulations and standards pertaining to lifting and moving equipment.
  - i) Occupational Health and Safety (OH&S)
4. Interpret information pertaining to lifting and moving equipment found in owner manuals.

5. Identify types of lifting and moving equipment and describe their characteristics, applications and procedures for use.
  - i) slings
  - ii) come-alongs/chain falls
  - iii) shackles
  - iv) jacks
  - v) hoists
  - vi) belts
  - vii) ropes
  - viii) cables
  - ix) spreader bars
  - x) pry bars
  - xi) tow chains
  - xii) hitch pins
  
6. Identify factors to consider when selecting lifting and moving equipment.
  - i) safety
  - ii) load characteristics
  - iii) equipment and accessories
  - iv) environment
  - v) anchor points/attachment locations
  - vi) sling angles
  - vii) machine capacity/load chart
  - viii) obstacles
  - ix) application
  
7. Identify types of materials to be moved and describe their characteristics and applications.
  - i) pallets
  - ii) totes
  - iii) equipment
  - iv) barrels
  - v) deadstock
  
8. Perform calculations to confirm capacity of equipment and load characteristics.
  - i) load distribution
  - ii) maximum load
  
9. Describe communication methods used during lifting and moving materials.
  - i) standard crane and hoist hand signals
  - ii) two-way radios
  - iii) video
  - iv) radio
  - v) mobile phones

10. Describe the procedures used to perform a basic lift.

11. Describe the procedures used to load, move and unload materials.

12. Describe the procedures used to inspect, store and maintain lifting and moving equipment.

**Practical Objectives**

N/A

## FRM-130 Communication (3 hrs)

### Learning Outcomes:

- Demonstrate knowledge of effective communication practices.

### Nova Scotia Occupational Standard Reference:

3.01 Uses communication techniques.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Define terminology associated with communication and e-communications.
2. Describe the importance of using effective verbal and non-verbal communication with people in the workplace.
  - i) active listening
    - hearing
    - interpreting
    - reflecting
    - responding
    - paraphrasing
  - ii) non-verbal communication
    - body language
    - signals
    - written
  - iii) people in the workplace
    - customers
    - supervisors
    - apprentices
    - colleagues/co-workers
    - AHJ (authorities having jurisdiction)
    - suppliers
    - manufacturers
    - other tradespeople
    - temporary foreign workers

3. Identify types of electronic communication devices and describe their applications and procedures.
  - i) computers
    - software
    - email
    - internet
  - ii) smart phones
    - apps
4. Explain the importance of appropriate and effective use of electronic communication devices and sources of information.
5. Describe the coaching and mentoring relationship between journeyperson and apprentice.
6. Describe the importance of communicating with others to organize materials and supplies on site and effectively plan work tasks.
7. Identify communication and learning styles.
  - i) visual
  - ii) auditory
  - iii) reading/writing
  - iv) kinesthetic
8. Describe effective listening and speaking skills.
9. Identify personal responsibilities and attitudes that contribute to on-the-job success.
  - i) working safely
  - ii) asking questions
  - iii) accepting constructive feedback
  - iv) time management and punctuality
  - v) respect for authority
  - vi) good stewardship of materials
  - vii) tools and property
  - ix) efficient work practice
10. Identify the value of equity, diversity and inclusion in the workplace.
  - i) practice cross cultural communication skills
11. Identify communication that constitutes harassment and discrimination.
  - i) harassment
    - objectionable conduct
    - comments or actions made either on a one time or continuous basis that threatens, demeans, belittles or causes humiliation or embarrassment to the recipient

ii) discrimination

- race
- national or ethnic origin
- colour
- religion
- age
- sex
- sexual orientation
- gender identity
- marital status
- family status
- disability
- conviction for which a pardon has been granted

**Practical Objectives**

N/A

## FRM-135 Mentoring I (3 hrs)

### Learning Outcomes:

- Demonstrate knowledge of strategies to assist in learning skills in the workplace.

### Nova Scotia Occupational Standard Reference:

3.02 Uses mentoring techniques.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Describe the importance of personal experiences.
2. Identify partners involved in apprenticeship.
3. Describe the shared responsibilities for workplace learning.
4. Determine individual learning preferences and explain how these relate to learning new skills.
5. Determine the skill outcome and how to accommodate different physical abilities
6. Determine cultural considerations and explain how these relate to learning new skills.
7. Describe the importance of different types of skills in the workplace.
8. Describe the importance of skills for success in the workplace.
  - i) reading
  - ii) writing
  - iii) collaboration
  - iv) communication
  - v) numeracy
  - vi) adaptability
  - vii) creativity & innovation
  - viii) digital
  - ix) problem solving
9. Identify different learning needs and strategies to meet learning goals.

10. Identify techniques for effective communication.

11. Identify strategies to assist in learning a skill.

**Practical Objectives**

N/A

## FRM-140 Farm Equipment (18 hrs)

### Learning Outcomes:

- Demonstrate knowledge of farm equipment, their applications and procedures for use.
- Demonstrate knowledge of attachments and implements, their applications and procedures for use.
- Demonstrate knowledge of procedures to inspect, maintain and store farm equipment.

### Nova Scotia Occupational Standard Reference:

4.01 Uses farm equipment.

4.02 Maintains farm equipment.

### Suggested Hours:

18 hours

### Theoretical Objectives

1. Define terminology associated with farm equipment.
2. Identify hazards and describe safe work practices pertaining to farm equipment.
3. Interpret codes, regulations and standards pertaining to farm equipment.
  - i) OH&S Act
  - ii) Motor Vehicle Act – Transportation Legislation
    - Weight over 4500 kg (Condition 15)
    - Weight over 14000 kg (Condition 23)
  - iii) Transportation Guideline for Nova Scotia Farmers
4. Interpret information pertaining to farm equipment found in owner's manuals.
5. Identify types of farm equipment and describe their characteristics, applications and procedures for use.
  - i) powered farm equipment
    - tractors
    - forklifts
    - skid steers
    - pallet jacks
    - lifting devices
    - irrigation equipment
    - milking parlour
    - greenhouse seeders

- ii) hand-held farm equipment
  - pruners
  - knives
  - hoes
  - rakes
  - shovels
- 6. Identify types of attachments and implements and describe their characteristics, applications and procedures for use.
  - i) tillers
  - ii) planters
  - iii) harvesters
  - iv) sprayers
- 7. Describe procedures used to inspect, maintain and store farm equipment, attachments and implements.
  - i) inspect
    - worn, damaged or defective
    - pre operation
    - post operation
  - ii) wash
  - iii) sterilize
  - iv) repair
    - completed by farm technician
    - requiring certified service technician
  - v) document

### **Practical Objectives**

N/A

## FRM-145 Grounds and Access Points (3 hrs)

### Learning Outcomes:

- Demonstrate knowledge of farm grounds and access points.
- Demonstrate knowledge of the procedures to maintain farm grounds and access points.

### Nova Scotia Occupational Standard Reference:

5.01 Maintains farm grounds and access points.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Define terminology associated with farm grounds and access points.
2. Identify hazards and describe safe work practices pertaining to farm grounds and access points.
3. Interpret regulations and standards pertaining to grounds and access points.
4. Identify tools and equipment pertaining to farm grounds and access points and describe their applications and procedures for use.
  - i) landscape
  - ii) snow removal
  - iii) fencing
5. Identify types of farm grounds and access points and describe their characteristics and applications.
  - i) building perimeters
  - ii) landscape
  - iii) roadways
  - iv) laneways
  - v) entrances
  - vi) parking areas
  - vii) drains
  - viii) fencing
  - ix) signage

6. Describe the procedures used to maintain farm grounds and access points.
  - i) mowing
  - ii) pruning
  - iii) snow and ice removal
  - iv) cleaning and clutter removal

**Practical Objectives**

N/A

## FRM-150 Farm Infrastructure (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of farm infrastructure.
- Demonstrate knowledge of the procedures to maintain farm infrastructure.

### Nova Scotia Occupational Standard Reference:

5.02 Performs routine maintenance to farm infrastructure.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with farm infrastructure.
2. Identify hazards and describe safe work practices pertaining to farm infrastructure.
3. Interpret codes, regulations and standards pertaining to farm infrastructure
  - i) Occupational Health and Safety (OH&S)
  - ii) Environmental Farm Plan
4. Identify tools and equipment pertaining to farm infrastructure and describe their applications and procedures for use.
  - i) hand
  - ii) power
  - iii) air
  - iv) pneumatic
  - v) ladders
  - vi) fall protection
  - vii) confined space
  - viii) pest control
5. Identify types of farm infrastructure and describe their characteristics and applications.
  - i) buildings
    - employee residences
    - washrooms and welfare areas
    - waste storage facilities
  - ii) fences and barriers

- iii) roadways
- iv) storage tanks and pits
  - feed
  - water
  - fuel
  - manure
- v) systems and programs
  - power
    - overhead and underground electrical feeds
    - electrical panels
    - generators
  - heating, ventilation and air conditioning
  - security
  - biosecurity
  - pest and wildlife control
  - water and feed

6. Describe the general maintenance procedures used to maintain farm infrastructure

- i) plumbing
- ii) electrical
- iii) carpentry
- iv) welding
- v) painting
- vi) cleaning
- vii) fencing
- viii) snow and debris removal
- ix) pest control
  - identification
  - damage and risk assessment
  - control measures
- iv) documentation

7. Perform calculations to determine required materials for maintenance on farm infrastructure.

### **Practical Objectives**

1. Calculate materials needed for maintenance.

## FRM-155 Record Keeping (15 hrs)

### Learning Outcomes:

- Demonstrate knowledge of record keeping.
- Demonstrate knowledge of analyzing, interpreting and communicating information and results from records.
- Demonstrate knowledge of software and programs for record keeping and analysis.

### Nova Scotia Occupational Standard Reference:

6.01 Performs record keeping.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with record keeping.
2. Interpret regulations and standards pertaining to record keeping.
  - i) Safe Food for Canadian Act and Regulations
  - ii) On Farm Food Safety Standards for specific commodity groups
  - iii) Animal Care Programs
3. Identify types of documentation and describe their characteristics and applications.
  - i) receiving and shipping
  - ii) input tracking
  - iii) production
  - iv) calibrations
  - v) treatments
    - pesticides
    - fertilizers
    - soil amendments
    - animal medications
  - vi) quality control and assurance
    - traceability
    - animal care programs
    - food safety
  - vii) water
  - viii) OH&S
  - ix) maintenance and service

- x) certificates
  - training
  - qualifications
  - 3<sup>rd</sup> party accreditation
  
- 4. Identify types of record keeping software and programs and describe their applications and procedures for use.
  - i) accounting
  - ii) herd and flock management
  - iii) crop management
  - iv) inventory
  - v) office suites
  - vi) point of sale (POS)
  - vii) document control
  - viii) electronic and hard copy
  
- 5. Describe the procedures used to analyze and interpret results to make operational decisions.
  
- 6. Identify methods for communicating results with farm managers and team.

### **Practical Objectives**

1. Use spreadsheets to perform record keeping and basic functions.

## FRM-160 Food Safety (6 hrs)

### Learning Outcomes

- Demonstrate knowledge of on-farm food safety programs.
- Demonstrate knowledge of food safety documentation and record keeping.
- Demonstrate knowledge of food safety, management practices and continuous improvement.

### Nova Scotia Occupational Standard Reference:

6.02 Practices on-farm food safety and animal care programs.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with food safety.
2. Identify hazards and describe safe work practices pertaining to food safety.
  - i) biological
  - ii) chemical
  - iii) physical
3. Interpret regulations and standards pertaining to food safety.
  - i) Safe Food for Canadians Act and Regulations
  - ii) On Farm Food Safety Standards for specific commodity groups:
4. Describe the procedures used to record food safety data and maintain the required supporting documentation.
5. Describe the procedures used to maintain on-farm food safety.
6. Identify food safety deviations, corrective action and preventative measures.
7. Describe the necessity of food safety and identify the benefits of internal and external audits.
8. Describe the culture of food safety, traceability and continuous improvement.

## **Practical Objectives**

N/A

## FRM-165 Animal Care (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of on-farm animal care programs.
- Demonstrate knowledge of animal traceability and documentation.
- Demonstrate knowledge of animal health, welfare, management practices and continuous improvement.

### Nova Scotia Occupational Standard Reference:

6.02 Practices on-farm food safety and animal care practices.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with animal care.
2. Identify hazards and describe safe work practices pertaining to animal care.
  - i) biological
  - ii) chemical
  - iii) physical
3. Interpret regulations and standards pertaining to animal care.
  - i) Health of Animals Act
  - ii) Safe Food for Canadians Act (Division 7 Meat Products and Food Animals; Subdivision C – Humane Treatment)
  - iii) Canadian Food Inspection Agency Act (Administration and enforcement of Health of Animals Act, Safe Food for Canadians Act)
  - iv) National Farm Animal Care Council (NFACC) Codes of Practice for the care and handling of farmed animals (for specific commodity groups)
  - v) On Farm Animal Care Standards for specific commodity groups
4. Describe the necessity of animal care programs and the benefits of regular inspection and audits from regulatory boards.
5. Describe the procedures and industry protocols used to maintain animal care to meet and surpass animal care and welfare standards.

6. Describe the procedures used to record animal care data and the required documentation for animal care programs.
7. Describe the procedures used to maintain traceability with animal care programs.
8. Perform calculations on stocking density pertaining to animal care.
9. Describe livestock health and welfare indicators pertaining to animal care programs.
10. Describe the procedures used to interpret air quality and environmental conditions measurements pertaining to animal care program requirements.
11. Describe the culture of animal care and continuous improvement.

### **Practical Objectives**

1. Calculate stocking densities.

## FRM-170 Production Site Preparation (3 hrs)

### Learning Outcomes:

- Demonstrate knowledge of production sites and their characteristics.
- Demonstrate knowledge of procedures to prepare sites for production.
- Demonstrate knowledge of organizing and scheduling production to meet market demands.

### Nova Scotia Occupational Standard Reference:

7.01 Prepares production site.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Define terminology associated with production site preparation.
2. Identify hazards and describe safe work practices pertaining to production site preparation.
3. Identify tools and equipment pertaining to production site preparation and describe their applications and procedures for use.
4. Identify types of production sites and describe their characteristics and applications.
  - i) barn
  - ii) field
  - iii) greenhouse
  - iv) lot
  - v) yard
  - vi) grove
  - vii) orchard
  - viii) pasture
  - ix) bog
5. Describe the procedures used to prepare a site for production.
  - i) cleaning and sanitizing
  - ii) clearing site of materials, debris and garbage
  - iii) tillage, mowing and land clearing
6. Identify market demands and regulations pertaining to products.

7. Describe production systems and tasks to be performed.
8. Identify production schedules based on supply and demand targets.

**Practical Objectives**

N/A

## FRM-175 Production Monitoring (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of procedures to monitor production.
- Demonstrate knowledge of procedures to sample and analyze data.

### Nova Scotia Occupational Standard Reference:

7.04 Monitors production.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with production monitoring.
2. Identify hazards and describe safe work practices pertaining to production monitoring.
  - i) personal safety
  - ii) livestock safety
  - iii) food safety
3. Identify tools and equipment pertaining to production monitoring and describe their applications and procedures for use.
4. Identify reasons and conditions for taking crop samples.
5. Describe the procedures used to monitor production.
  - i) test inputs, production site and products
  - ii) sample techniques
  - iii) sample timing
  - iv) sample size
  - v) handling and storage of samples
  - vi) collection of ongoing production data
  - vii) interpreting results and production decisions
6. Identify types of samples and describe their characteristics and applications.
  - i) feed and supplements
  - ii) soil
  - iii) organic amendments

- animal manure
- compost
- other waste or byproducts (wood ash, shellfish waste)
- iv) water
  - livestock water
  - irrigation water
- v) tissue
  - plant
  - animal

7. Describe the procedures used to interpret sample results and make production decisions.

**Practical Objectives**

N/A

## FRM-180 Crop Health (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of managing crop health.
- Demonstrate knowledge of environmental conditions that affect crop health.

### Nova Scotia Occupational Standard Reference:

7.05 Maintains crop health.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with crop health.
2. Identify hazards and describe safe work practices pertaining to crop health.
3. Identify tools and equipment pertaining to crop health and describe their applications and procedures for use.
4. Identify methods used to monitor crop health.
  - i) integrated pest management (IPM)
  - ii) soil nutrient management
  - iii) fertigation plan
  - iv) scouting
  - v) tissue and sap samples
5. Identify crop health indicators and describe their purpose and implications.
  - i) moisture levels
  - ii) crop appearance
    - nutrient deficiency symptoms
    - moisture stress
    - insect damage
    - disease symptoms
6. Identify types of environmental conditions and describe their characteristics and implications on crop health.
  - i) temperature

- ii) humidity
- iii) rainfall
- iv) sunlight
- v) weather
- vi) carbon dioxide (CO<sub>2</sub>) levels
- vii) heat units
- viii) pH
- ix) electrical conductivity (EC)

**Practical Objectives**

N/A

## FRM-185 Livestock Health (12 hrs)

### Learning Outcomes:

- Demonstrate knowledge of livestock health programs.
- Demonstrate knowledge of livestock health, welfare, management practices and continuous improvement.

### Nova Scotia Occupational Standard Reference:

7.06 Maintains livestock health.

### Suggested Hours:

12 hours

### Theoretical Objectives

1. Define terminology associated with livestock health.
2. Identify hazards and describe safe work practices pertaining to livestock health.
3. Interpret regulations and standards pertaining to livestock health.
  - i) Livestock Health Services Act
  - ii) Animal Health and Protection Act
4. Identify tools and equipment pertaining to livestock health and describe their applications and procedures for use.
5. Identify methods used to monitor livestock health and describe their characteristics and applications.
  - i) herd health and vet checks
  - ii) vaccinations
  - iii) pest control
  - iv) animal safety
  - v) tissue sample analysis
6. Identify livestock health and welfare indicators and describe their characteristics and implications.
  - i) lameness
  - ii) feathering
  - iii) temperature
  - iv) deadstock

- v) respiration rate
- vi) rumination
- vii) injury
- viii) abnormal behaviour
- ix) off feed
- x) reproduction issues

7. Describe the procedures and best practices to monitor animal health and welfare.

8. Describe the procedures used to monitor air quality and environmental conditions.

**Practical Objectives**

N/A

## FRM-190 Pest Management (12 hrs)

### Learning Outcomes:

- Demonstrate knowledge of pests, their characteristics and damaging effects.
- Demonstrate knowledge of procedures to manage pests.
- Demonstrate knowledge of an integrated pest management program.

### Nova Scotia Occupational Standard Reference:

7.07 Controls pests.

### Suggested Hours:

12 hours

### Theoretical Objectives

1. Define terminology associated with pest management.
2. Identify hazards and describe safe work practices pertaining to pest management.
  - i) personal safety
  - ii) livestock safety
  - iii) food safety
  - iv) environmental protection
3. Interpret regulations and standards pertaining to pest management.
  - i) Acts & Regulations
    - Pest Control Products Act
    - Transportation of Dangerous Goods Act
    - Canada Labour Code
    - Food and Drugs Act
    - Migratory Birds Convention Act
    - Fisheries Act
    - Fertilizers Act
    - Environment Act
  - ii) Training and Certification
    - Pesticide Applicator Certification
4. Identify tools and equipment pertaining to pest management and describe their applications and procedures for use.
5. Identify types of pests and describe their characteristics and damaging effects.

- i) insects and mites
  - ii) weeds
  - iii) diseases
  - iv) nuisance wildlife
6. Identify scouting aids and accessories and describe their purpose and operation.
- i) traps
  - ii) weather stations
  - iii) combs
7. Explain the principles and components of an integrated pest management program.
- i) prevention
  - ii) identification
  - iii) monitoring/scouting
  - iv) action threshold
  - v) management options/control methods
  - vi) evaluation
8. Identify methods used to manage pests and describe their characteristics and applications.
- i) cultural/preventative
    - resistant varieties
    - crop rotation
    - pruning
    - plant nutrition
    - sanitation
  - ii) physical
    - barriers
    - screens/nets
    - traps
    - mulches
    - hot-water weeders
  - iii) mechanical
    - vacuum
    - flame
    - cut
    - tillage
  - iv) biological
    - predatory and parasitic insects
    - beneficial nematodes
    - microbial controls
  - v) chemical/pesticides
    - field/outdoor
      - equipment mounted and hand-held sprayers
      - furrow liquid and granular planting equipment

- greenhouse
- livestock
- structural
- nuisance wildlife

9. Describe the procedures used to manage pests.

- i) implement scouting aids
- ii) identify pest
- iii) action threshold
- iv) determine control method
- v) implement control
- vi) monitor and adjust effectiveness
- vii) resistance management
- viii) clean up and store products

### **Practical Objectives**

N/A

## FRM-195 Environmental Stewardship (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of environmental stewardship and best practices in agriculture production.
- Demonstrate knowledge of procedures used to mitigate risks of environmental contamination.

### Nova Scotia Occupational Standard Reference:

1.03 Protects the environment.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with environmental stewardship.
2. Identify hazards and describe safe work practices pertaining to environmental stewardship.
3. Interpret regulations, standards and programs pertaining to environmental stewardship.
  - i) Environment Act
  - ii) Transportation of Dangerous Goods Act
  - iii) Environmental Farm Plan Program
  - iv) Manure Management Guidelines
4. Identify the principles and elements of environmental stewardship and describe their characteristics and applications.
  - i) soil
    - soil health
    - soil conservation practices
    - soil testing analysis
  - ii) water
    - water conservation
    - protection of water sources and courses
      - riparian zones
      - runoff
  - iii) air
    - quality
    - drift

- nuisance odours
5. Identify resources that need to be managed and describe procedures used to mitigate environmental risks.
- i) water sources
  - ii) nutrients
  - iii) manure
  - iv) pesticides
  - v) waste disposal
  - vi) fuel
  - vii) feed
  - viii) equipment and materials
  - ix) soils and tillage practices
  - x) energy use
  - xi) wildlife
  - xii) agriculture practices adjacent to residential or public sites

**Practical Objectives**

N/A

**Level 2**  
**4 Weeks (120 hours)**

## FRM-200 Mentoring II (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of strategies for teaching workplace skills.

### Nova Scotia Occupational Standard Reference:

3.02 Uses mentoring techniques.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Identify different roles played by a workplace mentor.
2. Explain the importance of identifying the point of a lesson.
3. Identify how to choose a good time to present a lesson.
4. Explain the importance of linking the lesson.
5. Identify the component of the skill (the context).
6. Describe considerations in setting up opportunities for skill practice.
7. Explain the importance of giving feedback.
8. Identify techniques for giving effective feedback.
9. Describe a skills assessment.
10. Identify methods of assessing progress.
11. Explain how to adjust a lesson to different situations.
12. Explain how to adjust lessons to diverse learners.

### Practical Objectives

N/A

## FRM-205 Material Handling Equipment (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of material handling equipment, their applications, maintenance and procedures for use.

### Nova Scotia Occupational Standard Reference:

4.03 Operates material handling equipment.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with material handling equipment.
2. Identify hazards and describe safe work practices pertaining to material handling equipment.
3. Interpret, regulations and standards pertaining to material handling equipment.
  - i) Occupational Health & Safety (OH&S)
4. Interpret information pertaining to material handling equipment found in owner's manuals.
5. Identify types of material handling equipment and describe their characteristics, applications and procedures for use.
  - i) augers
  - ii) conveyors
  - iii) gravity boxes
  - iv) pumps
  - v) blowers
  - vi) vacuums
6. Perform calculations on volume and density of material.
7. Describe the procedures used to operate and adjust material handling equipment.
8. Describe the procedures used to maintain and store material handling equipment.

## **Practical Objectives**

1. Calculate volume and density of material.

## FRM-210 Automated Equipment (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of automated equipment, their applications maintenance and procedures for use.

### Nova Scotia Occupational Standard Reference:

4.04 Operates automated equipment.

### Suggested Hours:

3 hours

### Theoretical Objectives

1. Define terminology associated with automated equipment.
2. Identify hazards and describe safe work practices pertaining to automated equipment.
3. Interpret regulations and standards pertaining to automated equipment.
  - i) Occupational Health and Safety (OH&S)
4. Interpret information pertaining to automated equipment found in owner's manuals.
5. Identify tools and equipment pertaining to automated equipment and describe their applications and procedures for use.
6. Identify types of automated equipment and describe their characteristics, applications and procedures for use.
  - i) processing and packaging line
  - ii) environmental control systems
  - iii) automatic feeders
  - iv) robotics
  - v) palletizer
  - vi) stacker
  - vii) HVAC systems
  - viii) alarm systems
7. Identify automated equipment components and describe their purpose and operation.
  - i) programmable logic controllers

8. Describe the procedures used to read and interpret data from automated equipment.
9. Describe the procedures used to operate, troubleshoot and adjust automated farm equipment.
10. Describe the procedures used to inspect, maintain and store automated farm equipment.

**Practical Objectives**

N/A

## FRM-215 Seeding and Application Equipment (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of seeding and application equipment, their applications, maintenance and procedures for use.

### Nova Scotia Occupational Standard Reference:

4.05 Operates seeding and application equipment.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with seeding and application equipment.
2. Identify hazards and describe safe work practices pertaining to seeding and application equipment.
3. Interpret regulations and standards pertaining to seeding and application equipment.
  - i) Occupational Health and Safety (OH&S)
  - ii) Pesticide Applicators License
  - iii) Transportation and Dangerous Goods
  - iv) Driver License Requirements and Endorsements
4. Interpret information pertaining to seeding and application equipment found in owner's manuals.
5. Identify types of seeding and application equipment and describe their characteristics, applications and procedures for use.
  - i) sprayers
  - ii) seeders
  - iii) spreaders
  - iv) planters
  - v) medicators
  - vi) injectors
  - vii) irrigation systems
  - viii) foggers

6. Identify types of materials applied during production and describe their characteristics and application.
  - i) manures
  - ii) fertilizers
  - iii) pH additives
  - iv) seed
  - v) biological controls
  - vi) pesticide
  - vii) inoculants
  - viii) fumigants
7. Perform calculations to determine seed and application requirements.
8. Describe the procedures used and the variables to consider when calibrating seeding and application equipment.
  1. verify calibration
  2. impacts of over and under application
  3. weather conditions
  4. soil conditions and incorporation
  5. equipment and mixing procedures
9. Describe the procedures used to document and maintain application records.
10. Describe the procedures used to inspect, maintain and store seeding and application equipment

### **Practical Objectives**

1. Calculate seeding and application rates.

## FRM-220 Water Management (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of water sources and quality management.
- Demonstrate knowledge of water systems, their applications and management.
- Demonstrate knowledge of water treatment methods.

### Nova Scotia Occupational Standard Reference:

5.03 Manages farm water.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with water management.
2. Identify hazards and describe safe work practices pertaining to water management.
3. Interpret regulations and standards pertaining to water management.
  - i) Health Canada Guidelines for Canadian Drinking Water Quality
  - ii) Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses
  - iii) Nova Scotia On-Farm Food Safety
4. Identify tools and equipment pertaining to water management and describe their applications and procedures for use.
  - i) water test kit
5. Identify types of water sources and describe their characteristics and applications.
  - i) wells
  - ii) municipal
  - iii) ponds
  - iv) streams
  - v) rivers
  - vi) farmyard water
6. Describe types of water systems and the procedures used to inspect and maintain them.
  - i) input
  - ii) output
  - iii) recirculation

iv) storage

7. Identify farm water requirements and describe their purpose and applications.
  - i) irrigation
  - ii) misting and humidification
  - iii) pesticide applications
  - iv) fluming, washing, cleaning of produce
  - v) livestock
  - vi) building and equipment cleaning
  - vii) drinking water
  - viii) fire
8. Describe the procedures used to obtain a water sample and interpret the results.
9. Identify signs and causes of contaminated water sources and describe methods of remediation.
10. Describe the procedures used to manage wastewater.
11. Identify water treatment methods and describe their associated procedures.
  - i) filtration
  - ii) UV
  - iii) chemical
  - iv) reverse osmosis
  - v) medication

### **Practical Objectives**

1. Read a water analysis and interpret recommendations.

## FRM-225 Job Planning (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of job planning.
- Demonstrate knowledge of organizing supplies and resources to complete jobs.
- Demonstrate knowledge of coordinating production jobs with co-workers.

### Nova Scotia Occupational Standard Reference:

6.03 Plans projects and tasks.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with job planning.
  - i) scheduling
  - ii) project coordination
  - iii) timeline
  - iv) project scope
  - v) project budget
2. Identify hazards and describe safe work practices pertaining to job planning.
3. Identify tools and equipment pertaining to job planning and describe their applications and procedures for use.
4. Describe factors to consider when job planning to determine job requirements.
  - i) consumables
  - ii) parts
  - iii) supplies
  - iv) equipment
  - v) PPE
  - vi) labour
5. Describe the procedures used in job planning.
6. Identify components of job budgets and describe the methods used to manage expenses.

7. Describe the procedures used to determine timelines and required resources for job completion.
8. Identify means of job coordination with co-workers and methods to monitor and follow up progress.
9. Identify methods of job follow up and evaluation and describe their characteristics and applications.

**Practical Objectives**

N/A

## FRM-230 Human Resources (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of human resources.
- Demonstrate knowledge of creating a culture of accountability.
- Demonstrate knowledge of leadership tools and skills.

### Nova Scotia Occupational Standard Reference:

6.04 Performs human resource leadership.

6.05 Performs human resource tasks.

### Suggested Hours:

9 hours

### Theoretical Objectives

1. Define terminology associated with human resources.
2. Identify hazards and describe safe work practices pertaining to human resources.
3. Interpret regulations and standards pertaining to human resources.
  - i) Labour Standards Code
4. Identify types of human resource documentation and records and describe their characteristics and application.
  - i) time sheets
  - ii) incident reports
  - iii) progressive discipline
  - iv) Temporary Foreign Worker program
  - v) orientation records
  - vi) training certificates
5. Describe the elements of an equitable, diverse and inclusive work environment.
  - i) accessible
  - ii) respectful
  - iii) safe
  - iv) culturally sensitive
  - v) non-biased

6. Identify tools and skills pertaining to leadership in the workplace and describe their applications and procedures for use.
7. Describe leadership core competencies and accountability and identify strategies to integrate this into the workplace.
8. Identify ways to demonstrate cultural sensitivity and describe their characteristics and applications.
9. Describe the procedures used to interview a labour candidate.
10. Describe the procedures used to provide inclusive training opportunities and implementation in the workplace.
11. Identify methods of creating open communication opportunities for evaluation and monitoring of employee performance.
12. Describe the procedures used to create and manage employee schedules.

**Practical Objectives**

N/A

## FRM-235 Input Inventory and Production Planning (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of input inventory and production planning.
- Demonstrate knowledge of procedures to maintain input inventory and plan production.
- Demonstrate knowledge of implementing production plans and managing production sites.

### Nova Scotia Occupational Standard Reference:

- 7.02 Maintains input inventory.
- 7.03 Implement production plan.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with input inventory and production planning.
2. Identify hazards and describe safe work practices pertaining to input inventory and production planning.
  - i) personal safety
  - ii) livestock safety
  - iii) food safety
3. Interpret regulations and standards pertaining to input inventory and production planning.
  - i) products registered and labelled for planned use
  - ii) maximum residual limits for pesticides
  - iii) livestock housing standards
  - iv) environmental regulations
4. Identify tools and equipment pertaining to input inventory and production plans and describe their applications and procedures for use.
5. Identify types of production inputs and describe their characteristics, applications and procedures for use.
  - i) semen
  - ii) feed/supplements
  - iii) seeds
  - iv) nutrients and fertilizer
  - v) biological inputs - supplements and pest controls

- vi) pesticides
- vii) chemicals
- viii) medications
- ix) bedding
- x) trellis
- xi) manure
- xii) compost
- xiii) water
- xiv) fencing
- xv) livestock housing

6. Describe the procedures used to manage production inputs and implement production plans.
- i) prepare lists that comply with regulations
  - ii) identify suppliers and lead time for delivery
  - iii) work within a budget
  - iv) perform calculations to determine input needs
  - v) maintain inventory and input supplies
  - vi) ensure proper storage of input supplies to meet regulations and maintain quality
  - vii) rotate supplies and avoid resistance buildup
  - viii) identify obsolete and expired supplies
  - ix) apply and distribute inputs
  - x) manage production site
  - xi) monitor production inputs

### **Practical Objectives**

N/A

## FRM-240 Harvest and Collection (9 hrs)

### Learning Outcomes:

- Demonstrate knowledge of harvest and collection practices.
- Demonstrate knowledge of harvest and collection equipment and preparing them for harvest.
- Demonstrate knowledge of harvest targets, schedule preparation and organizing labour for harvest and collection.
- Demonstrate knowledge of environmental conditions and product readiness for harvest and collection.
- Demonstrate knowledge of collecting, grading and transporting product to secondary facilities.

### Nova Scotia Occupational Standard Reference:

8.01 Prepares for harvest and collection.

8.02 Performs harvest and collection.

### Suggested Hours:

9 hours

### Theoretical Objectives

1. Define terminology pertaining to harvest and collection.
2. Identify hazards and describe safe work practices pertaining to harvest and collection.
3. Interpret regulations and standards pertaining to harvest and collection.
  - i) Canadian Food Safety Standards and Guidelines
4. Identify tools and equipment pertaining to harvest and collection and describe their applications and procedures for use.
  - i) belts and conveyors
  - ii) harvesters
  - iii) robots
  - iv) harvesting tools
  - v) packaging materials
  - vi) milking equipment
  - vii) bins and trays
  - viii) pipelines
  - ix) hoses and flumes

- x) storage tanks
5. Describe the procedures used to prepare tools and equipment for harvest and collection.
    - i) inspect
    - ii) adjust
    - iii) clean
    - iv) disinfect
  6. Perform calculations pertaining to harvest and collection.
  7. Identify harvest targets, collection schedules and labour requirements for harvest and collection.
  8. Describe environmental conditions necessary for harvest and collection and apply them to scheduling.
  9. Identify indicators pertaining to product readiness and describe their characteristics and applications.
    - i) moisture tests
    - ii) firmness and texture
    - iii) weight
    - iv) size
    - v) colour
    - vi) chemical analysis
    - vii) appearance
    - viii) health
    - ix) documentation
    - x) maturity
  10. Describe the procedures used to control mechanical damage and maintain quality during harvest and collection.
  11. Describe methods to schedule and supervise labour during harvest and collection.
  12. Describe the characteristics and procedures used to sort and grade product at the production site.
    - i) bruising
    - ii) foreign materials contamination
    - iii) cracks
    - iv) plant damage
    - v) injury
    - vi) defects
    - vii) maturity

13. Describe the procedures used to prepare and transport products to secondary facilities.

**Practical Objectives**

1. Perform calculations to determine harvest yield.

## FRM-245 Waste Management (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of farm waste management.
- Demonstrate knowledge of procedures to manage and recyclable crop and animal waste.
- Demonstrate knowledge of procedures to manage dead stock.

### Nova Scotia Occupational Standard Reference:

- 1.03 Protects the environment.  
8.03 Manages production waste.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with farm waste management.
2. Identify hazards and describe safe work practices pertaining to waste management.
3. Interpret regulations and standards pertaining to waste management.
  - i) Environment Act
  - ii) Manure Management Guidelines
  - iii) Nova Scotia Environmental Farm Plan
4. Identify tools and equipment pertaining to waste management and describe their applications and procedures for use.
5. Identify types of waste and describe their characteristics and applications for management.
  - i) recyclable waste
    - metal
    - paper
    - plastic
    - chemical containers
  - ii) crop waste
    - culls
    - grading line residue
    - expired product
    - spoiled product
    - production materials

- iii) animal waste
  - manure
  - litter
  - feed waste
  - offal
  - bedding
  - animal tissue
  - spoiled product
- iv) landfill waste
- v) dead stock

**Practical Objectives**

N/A

## FRM-250 Post-Harvest Management (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of post-harvest management.
- Demonstrate knowledge of preparing and storing product post-harvest.
- Demonstrate knowledge of monitoring and maintaining storage conditions.
- Demonstrate knowledge of managing product inventory.

### Nova Scotia Occupational Standard Reference:

8.04 Stores product.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology associated with post-harvest management.
2. Identify hazards and describe safe work practices pertaining to post-harvest management.
3. Interpret regulations and standards pertaining to post-harvest management.
  - i) Canadian Food Safety Standards and Guidelines
4. Identify tools and equipment pertaining to post-harvest management and describe their applications and procedures for use.
  - i) bin pilers
  - ii) box fillers
  - iii) conveyors
  - iv) dirt eliminators
5. Identify types of product storage and describe their characteristics and applications.
  - i) bins
  - ii) tanks
  - iii) controlled atmosphere
  - iv) refrigeration
  - v) vacuum coolers
  - vi) hydro coolers
  - vii) warehouses
6. Describe the procedures used to prepare product for post-harvest storage.

- i) wax
- ii) cure
- iii) ethylene inhibitors
- iv) dry
- v) control atmosphere
- vi) pre-cool
- vii) cool
- viii) freeze
- ix) clean

7. Describe the procedures used to load product into storage and manage product inventory.
8. Describe the procedures used to monitor, maintain and adjust storage conditions during post-harvest management.
- i) environment
  - ii) sanitation
  - iii) hazards
  - iv) pests
  - v) diseases
  - vi) indoor storage
  - vii) outdoor storage

**Practical Objectives**

N/A

## FRM-255 Market Preparation (6 hrs)

### Learning Outcomes:

- Demonstrate knowledge of market preparation.

### Nova Scotia Occupational Standard Reference:

8.05 Prepares product for market.

### Suggested Hours:

6 hours

### Theoretical Objectives

1. Define terminology pertaining to market preparation.
2. Identify hazards and describe safe work practices pertaining to market preparation.
3. Interpret regulations and standards pertaining to market preparation.
  - i) Canadian Food Safety Standards and Guidelines
4. Identify tools and equipment pertaining to market preparation and describe their applications and procedures for use.
  - i) sizers
  - ii) inspection lines
  - iii) optical sorters
  - iv) bin dumpers
  - v) vibrating tables
  - vi) ultrasound
  - vii) weighers
  - viii) baggers
  - ix) box fillers
  - x) palletizers
  - xi) box makers
  - xii) cappers
  - xiii) pallet strappers
  - xiv) fill stations
  - xv) egg collection systems
  - xvi) tree balers

5. Identify types of product preparation and describe their characteristics and applications.
  - i) washing
  - ii) grading
  - iii) packaging
  - iv) labelling
  - v) palletizing
  - vi) shipping
  
6. Describe quality indicators used to grade product in preparation for market.
  - i) length and diameter
  - ii) colour
  - iii) weight
  - iv) quality
  - v) size
  - vi) internal defects
  - vii) external defects
  - viii) maturity

**Practical Objectives**

N/A

## FRM-260 Program Review (30 hrs)

### Learning Outcomes:

- Demonstrate knowledge of the Occupational Standard and its relationship to the Certification Examination.
- Demonstrate knowledge of overall comprehension of the trade in preparation for the Certification Examination.

### Occupational Standard Reference:

Entire Occupational Standard

### Suggested Hours:

30 hours

### Theoretical Objectives

1. Define and explain terminology associated with an NSOS.
  - i) major work activities (MWA)
  - ii) tasks
  - iii) sub-tasks
2. Explain how an NSOS is developed and the link it has with the Certification Examination.
  - i) development
  - ii) validation
  - iii) MWA and task weighting
  - iv) examination breakdown (pie-chart)
3. Identify exam preparation resources and products and describe their use for preparing for the Certification Examination.
  - i) Red Seal and Agency websites
  - ii) examination preparation guide
  - iii) self-assessment guides
  - iv) exam breakdowns/counselling sheets
  - v) sample questions
4. Explain the relationship between the NSOS and the Curriculum Standard.
5. Review common occupational skills for the Farm Technician trade as identified in the NSOS.
  - i) safety-related functions
  - ii) tools and equipment

- iii) communication and mentoring
6. Review process to perform routine work practices for the Farm Technician trade as identified in the NSOS.
    - ii) operate and maintain farm equipment
    - iii) maintain facilities, grounds and infrastructure
    - iv) perform farm management practices
  1. Review process to manage production for the Farm Technician trade as identified in the NSOS.
    - i) perform production tasks
    - ii) prepare products for sale or distribution

**Practical Objectives**

N/A

## Feedback and Revisions

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This curriculum standard will be amended periodically; comments or suggestions for improvements should be directed to:

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Any comments or suggestions received will be reviewed and considered to determine the course of action required. If the changes are deemed to be minor, they will be held for implementation during the next review cycle. If immediate change is deemed appropriate, it will result in a revision to this version of the curriculum standard and will be detailed in the following section.

### Version Changes

Revision Date	Revision	Implementation Date

