Saskatchewan
Learning

# Dairy Production 10, 20, 30
# Agriculture Technician Program

## Curriculum Guide

## A Practical and Applied Art

**Saskatchewan Learning**
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These Dairy Production curriculum guidelines have been adapted from Alberta Agriculture's Green Certificate Program.

# Overview

The Agriculture Technician (ATEC) Program develops students' knowledge, skills and abilities in six major areas of agricultural production. These six areas of production are:

- field dairy and irrigated field dairy
- cow/calf
- feedlot
- dairy
- sheep
- pork.*

* Initially, pork will be developed as an ATEC program but may eventually be elevated to a designated trade.

The courses within each area of production are organized into three levels of knowledge, skills and abilities: introductory, intermediate, and advanced.

**Introductory level modules (Level 10)** help students gain knowledge and build the skills and abilities that are used in the day-to-day operation of the particular production sector. These modules form the basis of further learning. The range of experience and knowledge of students at the introductory level will range from very little or none to considerable. Those students with prior knowledge and experience should be assessed and given credit for the core modules as quickly as possible. Then use the optional modules to enhance students' knowledge, skills and abilities.

**Intermediate level modules (Level 20)** build on the competencies developed at the introductory level. These modules broaden or refine the knowledge, skills and abilities used in the particular production sector. Optional modules are used to enhance learning and address individual interests and learning needs. These modules also help students direct their learning toward related careers, job opportunities, and post-secondary education.

**Advanced level modules (Level 30)** demand that students acquire a higher level of knowledge, skills and abilities in the particular production sector. These modules encourage development of employability skills which help students gain entry into the workplace or related post-secondary program.

If articulation agreements are established, these courses could provide the desirable background and skills for farm employment or entry into related programs at public and vocational colleges, technical institutes, apprenticeship programs, and universities in Saskatchewan.

All of the courses have been prepared with the guidance of Saskatchewan Learning and follow the outline, format and required dimensions of the Saskatchewan Learning Practical and Applied Arts curricula.

# Philosophy and Rationale

Saskatchewan is a world leader in traditional primary production agriculture. Today, there is ever increasing and intense global competition for primary agriculture products. This means that Saskatchewan agricultural producers and employees need to have knowledge, skills and abilities in a variety of areas in order to maximize production and remain viable.

Providing students with practical knowledge, skills and abilities in dairy production will help them provide meaningful contributions to their family farming operations or pursue related career and educational opportunities.

# Aim and Goals

### Aim

The aim of Dairy Production is to provide students with knowledge, skills and abilities in dairy production including farm safety procedures, communication skills, and basic knowledge of machinery and milking equipment as well as the care and handling of dairy cattle.

### Goals

**Awareness:** To provide students with an awareness of the nature of dairy production including the knowledge, skills and abilities required for dairy production.

**Connections between School and Work:** To create a connection for students between the world of school and the world of work.

**Business and Entrepreneurship Attitudes:** To develop the skills and abilities which encourage students to understand the business of dairy production and markets.

**Community Environment:** To use relevant community examples which will help develop students' skills and abilities as well as encourage a sense of pride and community.

**Communication:** To develop social and communication skills as potential employees or employers in dairy production.

**Employability Skills:** To encourage the development of employability skills in dairy production.

**Personal Management Skills:** To promote self-esteem, confidence and a proactive attitude toward time management, communication skills, and technical skills.

# Course Components and Considerations

### Course Description

Dairy Production 10, 20, 30 requires 100 hours of instruction per credit. The guidelines have been developed to provide a balance among:

- *knowledge* of all facets of dairy production including farm safety
- *skills and abilities* provided by information and practical application of concepts
- *exposure* to farms involved in dairy production
- *opportunities* for mentoring, job shadowing, or work study using resources in the community.

The ATEC Program guidelines are organized into two sets of modules.

**Dairy Production 10 Core Modules** represent 50-65 hours of in-class or practical instruction which will develop student knowledge, skills and abilities at the introductory level of dairy production.

**Dairy Production 10 Optional Modules** are used to meet the particular interests of individual students. Students should be encouraged to develop learning contracts indicating their particular area of interest.

To successfully complete Dairy Production 10, 20, 30, a student must spend in the range of 25-50 hours of every 100 hours receiving practical instruction at a work site.

### Training Plans

The Appendices contain training plans in the form of checklists. These training plans can be used by teachers or farmer-trainers for organizing, planning and monitoring work study or instruction at a work site. Student expectations include observation, assistance or demonstration of a skill or set of skills.

# Adjusting for Prior Learning and Experience

Many students, particularly those coming from farm backgrounds, may have already acquired some of the basic knowledge and/or competencies in dairy production prior to taking this course. Teachers should assess individual students and evaluate his or her level of competency. Teachers should apply the Adaptive Dimension to all modules to support students in achieving curriculum objectives (by adapting their instruction, materials and environment). Teachers should also encourage students to select optional modules that will enhance their knowledge, skills and abilities in dairy production.

Students should develop their own learning contracts according to their own needs. Each module has a suggested range of instructional hours allowing for flexibility in designing individual learning plans.

# Course Overview

In the Dairy Production 10, 20, 30 series, there are no prerequisites for any of the courses. While it is recommended that students complete all three courses in the series, a teacher may choose to teach 20 or 30 without the others. In order to accommodate this option, few modules have prerequisite modules identified. When not providing the 10, 20, and 30 courses in order, however, teachers must review and may need to incorporate learning objectives from earlier comparable modules to ensure that students gain all the necessary knowledge and skills.

| Module Code | Module | Suggested Time |
|---|---|---|
| **Core and Optional Modules for Dairy Production 10** | | |
| DAIR01 | Module 1: Farm Safety (Core) | 7-9 hours |
| DAIR02 | Module 2: Communications (Core) | 3-4 hours |
| DAIR03 | Module 3: Career Exploration (Core) | 3-4 hours |
| DAIR04 | Module 4: Planning for Dairy Production (Core) | 4-6 hours |
| DAIR05 | Module 5: Farm Equipment Maintenance and Repair (Core) | 12-14 hours |
| DAIR06 | Module 6: Marketing (Core) | 4-5 hours |
| DAIR07 | Module 7: Dairy Animal Behaviour (Core) | 3-4 hours |
| DAIR08 | Module 8: Maintaining Dairy Facilities and Equipment (Core) | 4-5 hours |
| DAIR09 | Module 9: Dairy Farm Equipment (Core) | 5-6 hours |
| DAIR10 | Module 10: Milking Equipment (Core) | 3-4 hours |
| DAIR11 | Module 11: Milking Process (Core) | 2-4 hours |
| DAIR12 | Module 12: Calf Care (Optional) | 2-3 hours |
| DAIR13 | Module 13: Dairy Cattle Health (Optional) | 4-5 hours |
| DAIR14 | Module 14: Prevention and Care of Mastitis in Dairy Cows (Optional) | 2-3 hours |
| DAIR15 | Module 15: Feeding Plans (Optional) | 2-3 hours |
| DAIR16 | Module 16: Milk Production (Optional) | 2-3 hours |
| DAIR17A | Module 17A: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| DAIR18A | Module 18A: Work Study (Core) | 25-50 hours |
| **Core and Optional Modules for Dairy Production 20** | | |
| DAIR19 | Module 19: Farm Safety (Core) | 7-9 hours |
| DAIR20 | Module 20: Communications (Core) | 3-4 hours |
| DAIR21 | Module 21: Career Exploration (Core) | 3-4 hours |
| DAIR22 | Module 22: Planning for Dairy Cattle Production (Core) | 4-6 hours |
| DAIR23 | Module 23: Farm Equipment Maintenance and Repair (Core) | 7-9 hours |
| DAIR24 | Module 24: Marketing (Core) | 6-7 hours |
| DAIR25 | Module 25: Breeding and Reproduction (Core) | 3-4 hours |
| DAIR26 | Module 26: Calf Care (Core) | 3-4 hours |
| DAIR27 | Module 27: Milking Equipment (Core) | 3-4 hours |
| DAIR28 | Module 28: Preparation of the Dairy Cow for Milking (Core) | 3-4 hours |
| DAIR29 | Module 29: Sanitation Practices for Dairy Equipment and Facilities (Core) | 5-6 hours |
| DAIR30 | Module 30: Monitoring the Health of Dairy Cattle (Core) | 5-6 hours |

| | | |
|---|---|---|
| DAIR31 | Module 31: Calving Assistance (Optional) | 5-6 hours |
| DAIR32 | Module 32: Waste Removal (Optional) | 3-5 hours |
| DAIR33 | Module 33: Feeding Systems (Optional) | 3-5 hours |
| DAIR17B | Module 17B: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| DAIR18B | Module 18B: Work Study (Core) | 25-50 hours |
| **Core and Optional Modules for Dairy Production 30** | | |
| DAIR34 | Module 34: Causes and Prevention of Farm Accidents (Core) | 4-5 hours |
| DAIR35 | Module 35: First Response for Farm Accidents (Core) | 3-4 hours |
| DAIR36 | Module 36: Communications (Core) | 2-3 hours |
| DAIR37 | Module 37: Career Exploration (Core) | 3-4 hours |
| DAIR38 | Module 38: Farm Planning (Core) | 3-4 hours |
| DAIR39 | Module 39: Farm Equipment Maintenance and Repair (Core) | 5-7 hours |
| DAIR40 | Module 40: Milking Equipment (Core) | 5-6 hours |
| DAIR41 | Module 41: The Milking Process (Core) | 5-6 hours |
| DAIR42 | Module 42: Maintaining and Repairing Dairy Facilities and Equipment (Core) | 8-10 hours |
| DAIR43 | Module 43: Maintaining Herd Health (Core) | 8-10 hours |
| DAIR44 | Module 44: Specialized Livestock Equipment (Core) | 5-7 hours |
| DAIR45 | Module 45: Animal Identification (Core) | 4-6 hours |
| DAIR46 | Module 46: Artificial Insemination and Herd Analysis (Optional) | 10-15 hours |
| DAIR47 | Module 47: Detection of Heat for the Purposes of Breeding (Optional) | 5-10 hours |
| DAIR17C | Module 17C: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| DAIR18C | Module 18C: Work Study (Core) | 25-50 hours |

# Considerations for Program Delivery

### Community Partnerships Involve Using Local Farms and Farmers to Learn

Throughout this program, dairy producers and dairy production experts are recommended as resource persons to enhance student learning and to provide practical experience. Students should also use related dairy production businesses and services such as:

- feed mills
- milk boards
- producer organizations
- farm building contractors
- veterinarians
- short-line equipment manufacturers or machinery dealers.

Teachers will need to seek assistance from dairy producers in the community in order to provide opportunities for practical experience and to act as resources. Adjustments should be made to accommodate the particular circumstances of the community as well as the related experiences of the students.

Work study opportunities are a requirement of the course (i.e., 25 to 50 hours per credit).

### Instructional Resources

There are a wide variety of resources for the instruction of dairy production. Students should develop skills in finding and using the most current information on topics related to dairy production.

Saskatchewan Agriculture, Food and Rural Revitalization is the most important source of current resources. Resources can be ordered from the Publication Distribution Centre Order Desk by telephone at (306) 721-4330; by fax at (306) 721-4626 or by e-mail at Valb.pad@sk.sympatico.ca. Saskatchewan Agriculture, Food and Rural Revitalization's web site is http://www.agr.gov.sk.ca.

### Instructional Strategies and Methods

The ATEC Program Dairy Production 10, 20, 30 encourages the use of the following instructional strategies and methods. Consult Saskatchewan Learning's foundation document *Instructional Approaches: A Framework for Practice* (1991), for additional information. Many methods are recommended for use with the ATEC program.

**experiential**

- field trips
- field observations
- job shadowing.

**interactive**

- presentations including on-site demonstrations or symposiums
- discussions
- mentoring with co-operating farmers-trainers.

**independent learning**

- learning contracts
- student reference manuals.

Learning contracts and the creation of Student Reference Manuals are of particular importance in the ATEC Program.

**Learning Contracts**

Dairy Production 10, 20, 30 is designed for more individualized exploration and application of skills and abilities through on-site practice with working farmers or on-site trainers. Learning contracts should be used to organize the on-site practice with the foundational and specific learning objectives required by the modules throughout the course. Examples of learning contracts can be found in Saskatchewan Learning's foundation document, *Student Evaluation: A Teacher Handbook* (1991).

**Student Reference Manual**

The purpose of the Student Reference Manual is to be a repository of useful, work site reference material collected throughout the course and throughout the various levels.

The Student Reference Manual will provide an exhibit of a student's effort, progress, and achievement over a period of time. The manual should be organized so that it is clearly useful to the individual student.

Throughout each level students will be requested to prepare material to insert and maintain in the manual. The material in the manual should be evaluated on usefulness, completeness, accuracy, and organization of the material.

# Preparing for Dairy Production

The courses in the ATEC Program focus on the skills and abilities required at the technician level of dairy production. Students are expected to achieve the basic competencies outlined throughout the course by:

- engaging in hands-on, practical experiences with knowledgeable experts in dairy production
- monitoring progress using checklists at key points throughout the course. These checklists should be self-assessed and verified by the farmers-trainers as well as the teacher.

The key factor to successful achievement of the basic competencies is the contribution made by the co-operating farmer-trainer. In order to establish a successful relationship, expectations should be discussed, defined and mutually agreed upon by the co-operating farmers-trainers and the teacher. Teachers should refer to the "Guidelines for Work Study", a section of *The Practical and Applied Arts Handbook* (2003), for specific direction.

Teachers should also prepare an inventory of other community resources, work study opportunities and field trip or demonstration sites prior to implementing Dairy Production 10, 20, 30.

# Planning Schedule for Teachers

| Time Period | To Do |
|---|---|
| Prior to course | Identify possible co-operating farmers-trainers*<br><br>Review guidelines for Work Study<br><br>Identify and select possible field trip or demonstration sites<br><br>Identify possible work study |
| Early in course | Work with students to:<br>• prepare individual learning contracts<br>• identify and arrange field trip sites<br>• identify and arrange work study opportunities |
| Mid-way through course | Have students review individual learning contracts<br><br>Discuss progress with co-operating farmers-trainers |
| End of course | Remind students of deadlines<br><br>Prepare for final assessment |

* Working with Saskatchewan Agriculture, Food and Rural Revitalization's (SAFRR) Green Certificate Program is considered optional but recommended in order for students to receive Secondary Level credit as well as certification through the SAFRR Green Certificate program. By having students enrol in the SAFRR Green Certificate Program, SAFRR can assist teachers with the identification of co-operating farmers-trainers as well as possible symposiums, field trips or demonstration sites.

# Student Evaluation

There are three areas in which teachers will collect data on student progress. Teachers should clearly outline their expectations of students and make students aware of the expectations for content (concept attainment), application (knowledge of processes), and experiential knowledge.

| **Areas of importance** | **Range of emphasis %** | **Suggested assessment techniques** |
|---|---|---|
| Content<br>(concept attainment) | 20-30 % | Ongoing student activities including written assignments, presentations, homework, attendance at workshops, symposiums |
| Application<br>(knowledge and application of basic competencies and processes) | 30-40% | Checklists indicating achievement of basic competencies in dairy production |
| Experiential<br>(application of knowledge, developing skills and abilities, processes and attitudes using actual situations, site visitations, and work study) | 30-50% | Learning contracts (personal development and application of skills, abilities and attitudes)<br><br>Student Reference Manual including appropriate ongoing documentation indicative of independent learning<br><br>Work study component assessment |

Refer to Saskatchewan Learning's *Student Evaluation: A Teacher Handbook* (1991) for examples of a variety of evaluation and assessment techniques.

# Program Evaluation

Program evaluation is the systematic process of gathering and analyzing information about some aspect of school program in order to make a decision, or to communicate to others what is happening in a program.

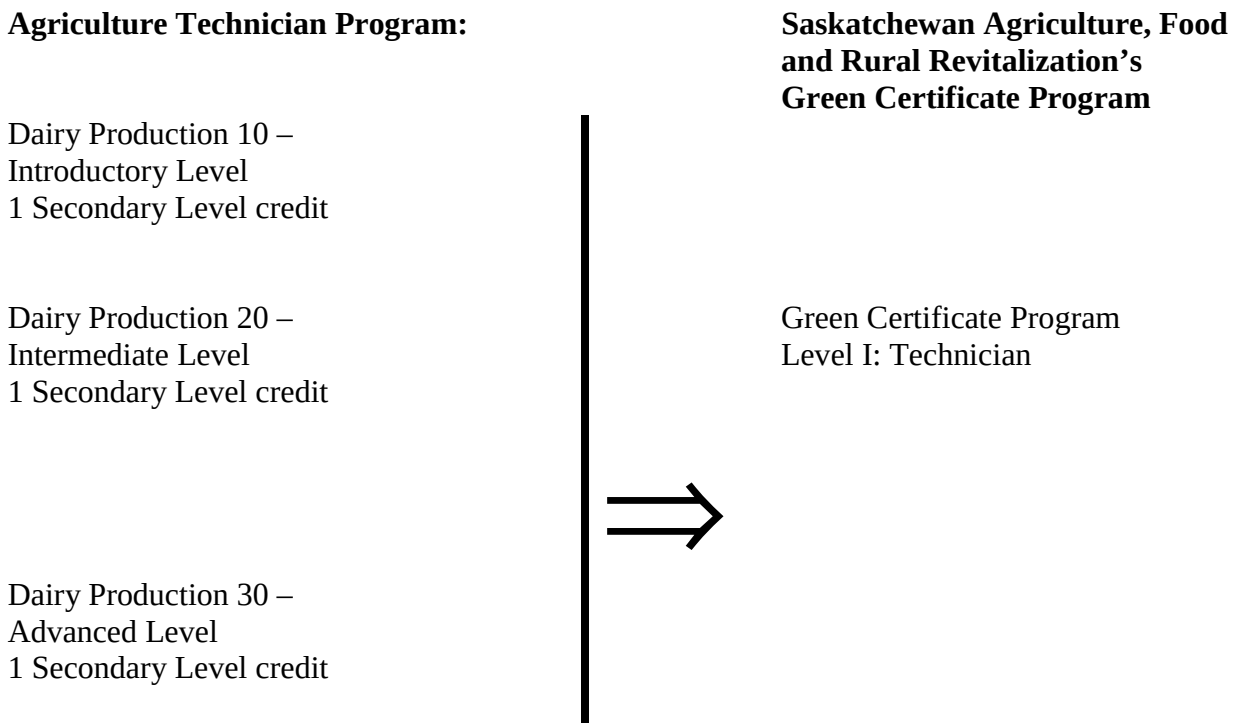
By its nature, Dairy Production 10, 20, 30 can accommodate the interests and needs of each individual student. The course also depends on the co-operation of farmers-trainers. Although assessment is time-consuming, the course should be assessed regularly to ensure that:

- the program is meeting the needs of the individual student
- the co-operating farmer-trainer/student relationship is successfully operating
- the program provides meaningful awareness, adequate exploration opportunities, and relevant experiences.

Techniques for gathering and analyzing information include anecdotal records, observation checklists and interviews as well as surveys at various times of the year. The information that is gathered can be used to make decisions about the program in future years.

## Relationship to Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program

Dairy Production 10, 20, 30 is based upon Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program - Technician Level. The visual below indicates the relationship with SAFRR's Green Certificate Program. Students or teachers should contact Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program at (306) 787-8191 for more information.




Students completing all three levels of the Dairy Production will be eligible for certification as a Level I Technician: Dairy Production through Saskatchewan Agriculture, Food and Rural Revitalization. This applies for all production sectors with the exception of pork. Students completing the pork production sector may be eligible to receive credit in SIAST's pork management program when articulation processes have been completed.

The ATEC Program relies on a partnership of students, teachers, and co-operating farmers-trainers. Teachers may also wish to involve Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Coordinator to assist in the program.

The following charts outline the roles and responsibilities of each person involved in the ATEC Program. Teachers should review this information prior to making arrangements for delivery of the program.

## Roles, Responsibilities and Accountability

The following charts indicate the role of each person involved in the ATEC Program.

**Note:** Working with the Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program is considered optional but is recommended in order for students to receive high school credit as well as receive certification through the Saskatchewan Agriculture, Food and Rural Revitalization Green Certificate Program. SAFRR's Green Certificate Program can also provide students with various learning opportunities through workshops, symposiums, and demonstrations.

| **Teacher** |
|---|
| Read, interpret and comply with policy regarding Work Study. |
| Identify course needs of students and ensure the registration process. |
| Determine if the work site is acceptable. Facilitate the location and approval of a suitable training site. The co-operating farmers-trainers should:<br>• be qualified in the occupation<br>• be able and willing to give direction to the student<br>• have time to supervise and give direction. |
| Ensure that the work place is safe, complying with Occupational Health and Safety Standards. |
| Supervise the student's on-site work experience in accordance with school and Saskatchewan Learning policies. |
| Monitor student and co-operating farmer-trainer on a regular basis for progress and results on training. |
| Provide for sound education program for students. |
| Evaluate students. |
| **Optional:** Communicate with Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Coordinator. Look for opportunities which would be of mutual benefit, (i.e., symposiums, testing days for training periods, locating co-operating farmers-trainers, tour sites). |

| **Student** |
|---|
| Show initiative in taking the course and understanding the course requirements. |
| Establish an individual learning contract. |
| Participate in training sessions, symposiums, and meetings. |
| Learn the skills outlined in the course to the level required. |
| Work with the co-operating farmers-trainers to learn and acquire basic competencies. |
| Maintain records in the Student Reference Manual. |
| Keep records, prepare reports, and complete other evaluation procedures required by the teacher to receive high school credit in the course. |
| **Optional:** Attend a test day for a training period as required by Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program. |

| **Co-operating Farmer-Trainer** |
|---|
| Participate in orientation for the ATEC Program. |
| Spend time and energy to help in the training of the student. |
| Provide a safe, learning environment for students. |
| Ensure that students have achieved competence in the skills according to the various standards outlined in the course. |
| Communicate with the teacher on the student's program. |

| **Optional: SAFRR Green Certificate Coordinator** |
|---|
| Work with the teacher to establish the program. |
| Recognize the difference between the roles of the teacher, the co-operating farmer-trainer, the student and the SAFRR Green Certificate Coordinator. |
| Provide information and outline the process to students who wish to enroll in the ATEC Program for high school credit as well as receive certification through Agriculture and Food's Green Certificate Program – Technician Level. |
| Help supply materials, manuals, and other resources which support the delivery of the program. |
| If requested by the teacher, help identify suitable co-operating farmers-trainers for various production sectors. |
| Invite students to participate in test days for training periods, workshops or symposiums. |
| Arrange testers and organize test days. |

*These tables have been modified from Battle River Regional Division #31 (1997), *Green Certificate Program: Handbook for Administrators and School Coordinators,* Camrose, AB.

# Core and Optional Modules for Dairy Production 10

## Module 1: Farm Safety (Core)

**Suggested Time:** 7-9 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to establish the critical importance of farm safety. Students are alerted to become aware of a variety of potential farm hazards. Students are also introduced to safety precautions and procedures associated with operating and maintaining farm vehicles.

Teachers, students and farmers-trainers should be well familiar with farm safety including taking a farm safety audit and requiring continuing compliance with farm safety precautions. Further information can be obtained from the Farm Safety Division, Occupational Health and Safety, Saskatchewan Labour.

The significance of farm safety should be reinforced by stipulating to students that failure to demonstrate farm safety procedures would result in non-completion of the program.

**Foundational Objectives**
- To understand and use farm safety procedures at all times.
- To be able to recognize potential hazards on farms.
- To observe, assist with or demonstrate skills and abilities related to farm safety.

**Common Essential Learnings Foundational Objective**
- To understand how technology influences occupational roles related to dairy production and affects the work site (e.g., occupational health, safety, etc.). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 1.1 | To identify potential farm hazards. | Have a farm safety specialist talk to the students about general farm safety. Use site visitations and have students identify potential hazards and precautionary measures. Explain why these areas need cautionary attention.<br><br>Contact Saskatchewan Labour, Prevention Services Branch, (306-787-8399 or 1-800-567-7233) for more information. |
| 1.2 | To describe the use of safety guards, shields, and other safety devices used on farm equipment. | Demonstrate a safety walk around all machinery and other devices to check for the placement and installment of safety devices. Point out the use of safety guards, shields and other safety devices used on farm equipment. Have students demonstrate the ability to locate, read, and comprehend the warning messages on the farm equipment.<br><br>Involve students in a discussion on farm safety around livestock. |

| | Learning Objectives | Notes |
|---|---|---|
| | | **Student Reference Manual:** Have students prepare a safety checklist and inspection to be used on a routine basis. |
| 1.3 | To describe the kind of proper clothing and protective gear necessary to observe farm safety. | Discuss the kind of clothing, footwear, gloves, glasses, and breathing, and ear devices necessary to work on farms and operate farm machinery. Identify the farm jobs or situations that warrant these precautionary measures. |
| 1.4 | To distinguish between a safe practice and an unsafe practice when using a number of manual and power tools as well as lifting equipment such as jacks and winches. | Manual and power tools as well as lifting equipment (jacks and winches) are used by all production sectors. Often, students do not recognize that these power tools and lifting equipment can be potentially dangerous. Have students examine the safety hazards associated with these kinds of small tools, jacks or winches. |
| 1.5 | To identify potential fire hazards and prevention procedures on farms. | Fires on farms can be caused by a variety of sources. Have students list the various fire hazards on farms. Have students described fire prevention on farms and investigate various types of fire equipment.<br><br>**Student Reference Manual:** Have students prepare a list and description of the various types of fire extinguishers. |
| 1.6 | To know when and how to use basic First Aid. | Basic First Aid is an essential skill on farms. Students would benefit from taking First Aid courses. Invite a practical nurse or St. John's Ambulance personnel to instruct students in basic First Aid such as, cuts, burns, sprains, and breaks. Students should be familiarized with emergency procedures for contacting the police, ambulance and fire department.<br><br>**Student Reference Manual:** Have students prepare a list of basic First Aid procedures. |

## Module 2: Communications (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Effective oral and written communication skills are important skills in all areas of dairy production. Throughout the course, students should be encouraged to develop and use effective verbal and written communication skills. An important component of effective communication is the use of appropriate industry language including accurate technical terms. Teachers may wish to have students establish vocabulary lists.

**Foundational Objectives**
- To develop effective oral and written communication skills.
- To observe, assist with or demonstrate skills and abilities relating to effective communication.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary of dairy production into their talk and writing. (COM)
- To understand and use organizational structures (e.g., to order ideas sequentially or chronologically, to compare and contrast, to discern cause and effect). (COM)

| Learning Objectives | Notes |
|---|---|
| 2.1 To understand the need for reliable information throughout all activities associated with dairy production. | Providing and understanding current and reliable information involves a number of effective oral and written communication skills. Discuss with students the various kinds of communication required in dairy production including reading and forwarding messages, reading and interpreting animal health products, calculating feed rations or rates of gain, and interpreting manuals and other types of information.<br><br>Often, non-verbal communication can interfere with messages. Role play various situations with students, emphasizing employee/employer interactions. |
| 2.2 To identify the characteristics of effective verbal and written communication. | Effective use of words is very important in making sure that the message is clearly understood. Effective communication depends on:<br>• choice of words<br>• simple instructions and answers<br>• concise, specific language.<br><br>In farming, communication is critical not only to the operation of a farm but to follow safety procedures. Have students identify the information and communication needs on a farm. |

| Learning Objectives | Notes |
|---|---|
| 2.3 To develop skills in receiving and passing on messages and important information. | Farmers are continually receiving and passing on information on everything from machinery repairs to livestock market reports. There are specific skills that a student should use when receiving a message that needs to be passed on as well as giving messages. Often, these messages are verbal (i.e., telephone, face to face) or through electronic communication such as faxes and e-mail.<br><br>Have students compose and pass on messages and information that might be used on a farm through a variety of ways. Examples include:<br>• telephone messages with written notes<br>• messages left and retrieved through voice mail or answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information. |
| 2.4 To locate and use specific information contained in a variety of publications. | Dairy production makes use of many sources of information. Finding and sorting information is an important skill particularly for technical information including farm equipment maintenance, calving information, and animal health products. Provide students with a number of manuals and other technical information. Have students practice locating, sorting and discussing when to use specific information.<br><br>**Student Reference Manual:** Have students prepare a list of useful manuals and publications related to dairy production. |

## Module 3: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Students should explore the career options available to them throughout the course on dairy production. This module can be used as a guideline for future career and educational plans. It also introduces students to the concept of employability skills.

**Foundational Objectives**
- To create an awareness of the post-secondary programs, careers, and employment opportunities in dairy production.
- To develop a career plan.
- To understand the concept of employability skills.
- To observe, assist with or demonstrate career knowledge and employability skills.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| Learning Objectives | Notes |
|---|---|
| 3.1 To develop individual career profiles. | This learning objective is used to help students identify specifically their areas of interest and abilities in production or field dairies. This will enable students over the long term to maintain their enthusiasm as well as act as a positive reinforcement. Ask students to create an inventory of activities and interests.<br><br>Assist students in identifying their academic and non-academic strengths including their present knowledge base. Encourage students to value their life experiences and their abilities outside of school. Emphasize the importance of relevant experience and expertise.<br><br>Have students prepare a list of the many kinds of career opportunities in dairy production.<br><br>Have students research career clusters and the range of occupational opportunities related to dairy production. Encourage students to investigate various factors before making career choices including:<br>• description of the work duties<br>• personal qualities an individual must possess to succeed in the career |

| Learning Objectives | | Notes |
|---|---|---|
| | | • processes required to become certified within the career or trade<br>• length of education and training<br>• school locations<br>• cost of education and up-grading<br>• trends within the business or career<br>• worst and best aspects of the job<br>• starting salary<br>• opportunities for advancement.<br><br>Have students use this information to develop individual career profiles and a statement of educational and career goals particularly related to production of field dairies. |
| 3.2 | To identify the basic personal and employability skills. | This learning objective is used to reinforce the notion of employability skills in students including:<br>• teamwork<br>• punctuality<br>• personal responsibility<br>• positive attitude<br>• co-operation.<br><br>Have students provide a description of each of these employability skills. Have students role play situations demonstrating situations where these skills would come into play. |
| 3.3 | To understand and practice time management. | Time management is an important lifelong skill. Have students list the jobs on a particular farm that need to be done on a weekly, monthly, seasonal or yearly basis. Prioritize the jobs and ask students to prepare a time management system.<br><br>Have students list their own jobs including schoolwork and extra curricular activities. Prioritize and prepare a personal time management system.<br><br>**Student Reference Manual:** Have students prepare a personal time management system. |

## Module 4: Planning for Dairy Production (Core)

**Suggested Time:** 4-6 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to outline the basic types of planning required for dairy production.

**Foundational Objectives**
- To understand the basic types of planning used in the production of dairy cattle.
- To collect and use information related to farm planning.
- To observe, assist with or demonstrate planning skills.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)

| Learning Objectives | Notes |
|---|---|
| 4.1 To describe the kinds of plans that are used in dairy production. | There are a number of plans used daily, monthly and yearly on a farm. Some of these include:<br>• land management plans<br>• financial plans<br>• dairy plans<br>• cash projections<br>• equipment usage plans<br>• fertilizer and chemical plans.<br><br>Discuss with students the basics of a plan, what plans are used for and how they are developed. Plans are used to assist in the daily, monthly and yearly operation of a farm. They are developed using a review of past performance, identifying future goals, suggesting strategies to help achieve the goals and checking to see how well the plan worked.<br><br>Describe the basic elements of planning. Ask students to apply these basics and provide a brief description using these elements in a land management plan, financial plan, and equipment usage plans. Have students list the kinds of information they would need to complete each of these plans. |

| Learning Objectives | Notes |
|---|---|
| 4.2 To develop a land management or farm plan. | At this basic level, students are introduced to planning through a land management (or farm) plan. Inform students of the purpose of a land management or farm plan. Have them discuss why it is important.<br><br>In preparing a land management or farm plan, it is important to identify all of the resources that are available or required to operate the farm. To prepare a land management plan, students need to study and describe:<br>• land features including soil types and water sources/ availability<br>• cultivated/non-cultivated land<br>• uses of various land types<br>• most suitable types of farming/ranching<br>• other environmental considerations.<br><br>To prepare a farm management plan, students need to study and describe:<br>• natural, human and equipment resources<br>• financial resources<br>• geographical area<br>• natural resources such as soil type, land formations, and cultivated acres<br>• most suitable type of farm/ranching for the area.<br><br>Have students select a location and develop a farm and/or land management plan. Use Saskatchewan Agriculture, Food and Rural Revitalization's web site to assist in finding information.<br><br>**Student Reference Manual:** Have students prepare a number of plans for buildings, fences, corrals, livestock handling equipment, and feed storage. |

## Module 5: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 12-14 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to provide students with an introduction into general maintenance and repair of farm machinery. Farm safety is stressed throughout the module.

**Note:** In dealing with all modules on farm equipment, teachers should inform students of the dangers and legalities of under-aged drivers operating farm machinery.

**Foundational Objectives**
- To develop basic skills and abilities in the repair and maintenance of farm machinery.
- To develop skills and abilities in the use of hand and power tools which are used to service farm machinery.
- To observe, assist with or demonstrate skills and abilities related to farm equipment maintenance and repair.

**Common Essential Learnings Foundational Objectives**
- To determine own learning needs. (IL)
- To analyze information to create hypotheses, predictions, and estimates and to determine appropriate solutions. (CCT)

| Learning Objectives | Notes |
|---|---|
| 5.1 To develop skills in the processes associated with regular machinery maintenance. | The first step in maintenance of farm machinery is preventive maintenance process (i.e., checking oil and fuel levels, cleaning radiators, preventing chaff build-up, and monitoring gauges).<br><br>Explain regular maintenance processes to students. Have students use the manuals of several different kinds of farm equipment to describe preventive practices related to the particular machine.<br><br>**Student Reference Manual:** Have student develop a checklist of preventive maintenance procedures for each piece of dairy production equipment. |

| Learning Objectives | | Notes |
|---|---|---|
| 5.2 | To identify and describe a variety of different types of tools (power and manual). | On a farm operation, there are a number of screwdrivers, wrenches, and tools used in the daily maintenance and operation of farm machinery such as, the daily maintenance of the machinery, daily routine checkups of pulleys, or adapting the machinery to different uses.<br><br>Each tool has a distinct operational procedure. Have students describe how to use a variety of common farm tools. Students should examine and demonstrate the standards illustrated in the operator's manual of each specific tool.<br><br>Have students determine the different types and sizes of wrenches (manual and power) that best suit the job that the wrench is designed to achieve.<br><br>Demonstrate that the correct selection and use of the specific tool to fit the correct screw or bolt is very important to prevent damage to the tool, bolt or screw.<br><br>Distinguish between a safe practice and an unsafe practice when using specific manual and power tools. |
| 5.3 | To identify and describe the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches. | In order to maintain machinery, it is often necessary to hoist or elevate machinery, parts of machinery, or other objects while working around the farm. There are a number of different ways to hoist an object depending on the structure of the article. It is important for students to be aware of the weight range, strength, and capacity of the jack and the weight of the item being lifted.<br><br>Have students compare and contrast the uses and efficiencies of the direct vertical, automotive, floor type, and any other lift. Identify the type of lift that is best suited for each job.<br><br>**Student Reference Manual:** Have students prepare a summary of the type of common farm mechanical, hydraulic and hand jacks and winches. |
| 5.4 | To identify the dangers and hazards associated with common lifting equipment. | Overloading, tipping of the jack, and damaged or worn equipment can be just a few of the hazards when using lifting equipment. Select and illustrate the dangers and hazards that are associated with common lifting equipment.<br><br>Demonstrate the correct operating procedures in using the jack or hoisting equipment in a safe and efficient manner. |

| Learning Objectives | Notes |
|---|---|
| 5.5 To identify the transportation regulations for farm equipment and livestock on public roads. | Transporting livestock and large farm equipment requires skills and caution. The province and rural municipalities have a number of regulations regarding to agriculture. It is the responsibility of the farmer or rancher to know and abide by these regulations. Legal settlements for negligence can be very costly to a farming operation.<br><br>Identify and explain licensing, insurance, operator's qualifications and *Dangerous Goods Transportation Act* for handling all types of farm equipment on public roads. Consideration should be given to liability insurance, license class, and types of roads.<br><br>Examine and describe the width/height/length requirements, the lighting requirements, slow moving signs, clear visibility rules and seasonal restrictions on all farm equipment.<br><br>Livestock transportation regulations also specify the types of trailers that can be used as well as restrictions to the amount of time livestock can be hauled.<br><br>**Student Reference Manual:** Have students prepare a number of descriptions/situations of transportation of livestock or farm equipment. Include outside sources of information for specific rules and regulations (e.g., Highway Traffic Board for over-width, over-height vehicles). |
| 5.6 To understand the need for having emergency equipment. | Outline and give examples of the tools and emergency equipment which are required if the farm machinery has a crisis while in transport on a public road. Test student's knowledge using a short answer test or other assessment technique. |

## Module 6: Marketing (Core)

**Suggested Time:** 4-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Marketing is one of the most important activities in livestock production. This module provides students with basic awareness and knowledge of agricultural marketing.

**Foundational Objectives**
- To develop an understanding of how agricultural commodities are marketed.
- To develop an awareness of the market information available to producers.
- To observe, assist with or demonstrate marketing skills.

**Common Essential Learnings Foundational Objectives**
- To read and interpret quantitative information found in newspapers, magazines and government, political and business publications and evaluate the validity of arguments based on such information. (NUM)
- To propose generalizations that explain relationships. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 6.1 | To gain first hand knowledge of how marketing information is used in producing an agricultural commodity. | Students would benefit from a field trip to an auction barn, inland terminal or grain elevator as a practical introduction to marketing. Prepare hosts ahead of time about the level of students' understanding and the kind of information that would be helpful to students.<br><br>Students could use a case history or interview approach to gather and sort information about livestock marketing. |
| 6.2 | To describe the basic steps involved in livestock marketing. | At this level students will develop only a basic understanding of livestock marketing. Marketing involves gathering and making decisions about when to buy or sell calves or cows or finished cattle. Have students locate and sort current market current information.<br><br>Have students provide a description of the various kinds of markets used in dairy production. |

## Module 7: Dairy Animal Behaviour (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students become familiar with the basic nature of cow behaviour. As well, students will develop knowledge about cattle vision and hearing and how these senses can affect behaviour.

**Foundational Objectives**
- To demonstrate knowledge of cattle behaviour and ways to handle the livestock that are cautious and safe for both handler and animal.
- To observe, assist with or demonstrate knowledge about the behaviour of dairy cattle.

**Common Essential Learnings Foundational Objectives**
- To ask relevant questions in order to further their own understanding. (COM)
- To make observations and derive inferences from those observations. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 7.1 | To understand dairy cattle behaviour. (COM, CCT) | Types, ages, and breed of dairy cattle and background affect how operators manage and handle various operations in a dairy operation. It is important for the operators and workers to understand the concept of flight distance and handler techniques to minimize accidents and health hazards.<br><br>The ways in which the operator of a dairy operation handles cattle require knowledge of the basic physiology and structure of the animal. Herding, handling, and providing health treatment are just a few of the daily routine duties that are involved in a dairy operation. The operator must be familiar with the behaviours of cattle in order to handle the cattle. It is necessary for the operator to have a working knowledge of the vision, foot structure, and hearing of animals and how these structures affect the cattle's behaviour.<br><br>Describe the following behaviours of dairy cattle:<br>• herd instinct<br>• flight distance.<br><br>Have students discuss how the natural instincts of dairy cattle affect handling, facilities, feeding, and other operations of a dairy. |

| | Learning Objectives | Notes |
|---|---|---|
| 7.2 | To understand cattle's vision, hearing and footing structures. | Invite a dairy specialist or veterinarian to discuss characteristics of cattle's vision, hearing and footing. Include herd behaviour in the discussion. Have veterinarians, dairy producers or dairy specialists discuss noise and handling situations which can hurt, cause stress, or excite the animal.<br><br>Students should be able to:<br>• describe the handling practices that are used around cattle to reduce noise stress<br>• distinguish structural features of the cattle's foot<br>• describe the best conditions for footing to reduce injury.<br><br>**Student Reference Manual:** Have students summarize key points in relation to cattle's vision, hearing, and footing structures. (COM) |
| 7.3 | To identify the proper ways to restrain and handle a dairy animal. | Demonstrate the proper ways to restrain a dairy animal using the following:<br>• a halter<br>• a particular size and length of rope<br>• knot tying techniques appropriate for use with dairy cattle in the milking parlour<br>• knot tying techniques appropriate for use with dairy cattle in other locations.<br><br>Make sure that students are able to recognize the animal's response to invasion of flight distance and the appropriate handling response. Students should recall and demonstrate the risk to animal health associated with common handling techniques. |

## Module 8: Maintaining Dairy Facilities and Equipment (Core)

**Suggested Time:** 4-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Routine maintenance and repair of dairy equipment is necessary to a well-managed dairy operation. This module is used to introduce students to basic maintenance.

**Foundational Objectives**
- To develop basic skills in checking and maintaining pens, pastures, barns and milking parlours.
- To observe, assist with or demonstrate skills and abilities required to maintain dairy barns, pastures and milking parlours.

**Common Essential Learnings Foundational Objectives**
- To learn through synthesizing understandings, experiences, interests and needs. (IL)
- To recognize the importance of taking the responsibility for maintaining routines. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 8.1 | To demonstrate the maintenance and repair skills related to squeezes and gates. (IL, TL) | Inform students of the proper visual and operational check and identify the areas for repair and maintenance. Demonstrate the actual service and lubrication of parts on the squeeze. Explain the proper setting for the squeeze according to the size of the animal. Never allow students to use this type of equipment without supervision until competency with the equipment has been developed and demonstrated.<br><br>**Student Reference Manual:** Have students develop a checklist for the inspection of squeeze chutes and gates. |
| 8.2 | To describe the critical points in checking and maintaining barns and milking parlours. (COM) | Indicate to students the key inspection points of barns and milking parlours. It is very important to maintain the facilities that house the dairy operation so that a safe and healthy environment is achieved. The inspection of feed bunks, waterers, fences, gates, and milking parlour is crucial to daily operation.<br><br>Have students discuss examples of potential areas which might injure a dairy animal or interfere with the day-to-day operation of a dairy barn. Demonstrate the proper ways for students to notify operators and/or maintain the facilities. |

| | Learning Objectives | Notes |
|---|---|---|
| 8.3 | To demonstrate skills necessary in maintaining pens, barn, and milking parlour facilities. (IL, TL, CCT) | The operator must be able to use the equipment to repair the pens and milking parlour facilities. The operator should learn how to minimize dangerous situations when operating the equipment associated with repairing the facilities.<br><br>**Student Reference Manual:** Have students develop a checklist of critical points in checking and maintaining barns and milking parlours. |
| 8.4 | To demonstrate skills necessary in checking and maintaining pastures. (IL, TL, CCT) | The condition of the pasture is important for the growth and development of the animals. The operator must be able to analyze the state of the pasture. Compare picture or situations of proper grazing and management techniques. Investigate stocking rates for the area. Invite a dairy producer to visit the class to talk about pasture management.<br><br>Make sure that the students are aware of the importance of a clean and abundant water supply. Discuss management practices such as fencing dugouts, protecting riparian areas, and preventing algae growth.<br><br>**Student Reference Manual:** Have students develop a checklist of pasture maintenance. |
| 8.5 | To demonstrate the ability to use corral and fence mending tools when repairing corrals and fences. (IL, TL, CCT) | Make sure to identify the hazards associated with fencing jobs and power post pounders, and demonstrate procedures to minimize dangers. |

## Module 9: Dairy Farm Equipment (Core)

**Suggested Time:** 5-6 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to introduce students to the range of equipment involved in the dairy industry. Module 10 covers the operation of milking equipment in more detail.

**Foundational Objectives**
- To become knowledgeable about various types of dairy farm equipment.
- To observe, assist with or demonstrate skills associated with operating different types of dairy farm equipment.

**Common Essential Learnings Foundational Objective**
- To measure, estimate, calculate and interpret numerical data, and know when to apply these skills and techniques, and why these processes apply in relation to forage equipment, milking equipment, and waste removal equipment. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 9.1 | To become familiar with the operation of small and large equipment necessary for dairy production. (TL) | A variety of small and large equipment is required to operate and maintain a dairy farm. Students should be able to recognize the kinds of equipment and know when the equipment must be used. A field trip to a dairy operation is an effective way to introduce equipment and its use.<br><br>With the guidance of the farmer-trainer, demonstrate the operation of milking equipment and waste removal equipment. Discuss forage equipment, milking equipment, and waste removal equipment in relation to the tasks for which each type is used. Identify specific tasks for which various pieces of equipment may be used and discuss why using the equipment increases the efficiency of the operation. Students should be able to demonstrate their ability to identify when to use a particular piece of equipment.<br><br>**Student Reference Manual:** Have students develop notes about the operation of various types of dairy farm equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| 9.2 | To develop the ability to read and interpret controls, gauges and indicators. (NUM) | Make use of manuals, illustrations, and various pieces of equipment used in a dairy operation. Students should be able to identify the purpose and operation of all controls, gauges and indicators before operating equipment independently. Demonstrate safe operating conditions, safety procedures and accident prevention practices. (PSVS)<br><br>**Student Reference Manual:** Have students develop a list of gauges, controls and range of operating limits for dairy equipment. |
| 9.3 | To develop the ability to operate waste management systems associated with a dairy operation. | Students will need to know and practice daily and weekly procedures for effective waste management, and be able to operate the equipment associated with these procedures in a safe and effective manner. In addition, students should be able to perform periodic inspections of equipment and perform lubrication and minor servicing operations required. |

## Module 10: Milking Equipment (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to provide students with a basic understanding of milking equipment including its operation, cleaning and maintenance.

**Foundational Objectives**
- To understand the operation of milking using a milking machine, vacuum system, and milk handling system.
- To demonstrate the key components and operations to be checked or inspected before start-up.
- To observe, assist with or demonstrate skills and abilities associated with using milking equipment.

**Common Essential Learnings Foundational Objectives**
- To explore how human needs shape the direction and development of technological developments. (TL)
- To understand how technology influences dairy production (e.g., safety, standardization, health).

| | Learning Objectives | Notes |
|---|---|---|
| 10.1 | To understand the methods and practices associated with sanitizing milking equipment. | It is necessary that individuals involved in a dairy operation become familiar with sanitation and health practices utilized to maintain optimum quality of the milk produced and to ensure health and safety to the dairy animals and to the consumers of the various milk products. As a result, workers must be familiar with the equipment, materials, and chemicals utilized in milking and milk handling as well as with the clothing worn by workers. Regular inspection of milking and milk handling equipment and facilities occurs. Workers in the industry must have the necessary knowledge to ensure that quality standards are maintained.<br><br>Discuss the methods and practices associated with sanitizing milking equipment. |
| 10.2 | To identify proper cleaning of milking equipment. | Proper cleaning of milking equipment is one of the most important operations of a dairy operation. Work with a farmer-trainer who demonstrates the use of cleaning agents and procedures used daily in the operation of milking and milk handling equipment.<br><br>Students should be able to demonstrate proper procedures in the handling, use, and storage of cleaning agents and other chemicals. Understanding and recognizing Workplace Hazardous Materials Information System (WHMIS) symbols and procedures would be beneficial. |

| | Learning Objectives | Notes |
|---|---|---|
| 10.3 | To understand the operation of milking and milk handling equipment. | Begin by identifying the components of milking and milk handling equipment (COM). Examples of components to be identified include but are not limited to: pulsator filters, vacuum pump, inflation, tubes, hoses, and valves, fittings, holding tanks, and cleaning systems.<br><br>Demonstrate to students the basic inspection of this equipment.<br><br>Explain the cleaning and maintenance of each of the components. Remind students to utilize or refer to manuals on a continual basis. Components requiring monthly inspection and/or service may include inflation, vacuum pump, pulsates, filters, fittings, holding tanks, cleaning systems and cattle handling systems. Service records will assist in the optimum maintenance of equipment.<br><br>**Student Reference Manual:** Have students develop a log to record service and maintenance procedures used with milk and milk handling equipment that identifies the type of service or maintenance employed and the frequency with which it is carried out (e.g., daily, weekly, monthly, semi-annually, or annually). |

## Module 11: Milking Process (Core)

**Suggested Time:** 2-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students learn the proper ways of handling and preparing dairy cattle for the milking process. As well, students identify the areas where personal hygiene of the operator can affect overall cleanliness and demonstrate practices that will minimize problems. Students should be encouraged to learn and describe the various terms used in the milking process. (COM)

**Foundational Objectives**
- To become knowledgeable about the proper handling and preparation of dairy cattle for the milking process.
- To demonstrate appropriate personal hygiene.
- To observe, assist with or demonstrate skills associated with the handling and preparation of dairy cattle for the milking process.

**Common Essential Learnings Foundational Objectives**
- To demonstrate humane treatment of animals. (PSVS)
- To discover relationships and patterns (e.g., stress and milk production). (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 11.1 | To identify hazards associated with milking and cow handling operations. (COM) | Workers should become aware of the danger of injury when handling cows and milking equipment and when working in milking and milk handling facilities. Have students identify possible situations that might injure workers and animals in milking and milk handling facilities. (COM) |
| 11.2 | To become knowledgeable about the appropriate handling of cattle during the milking process. (CCT) | Improper handling of cattle can result in animal stress which causes difficulty in handling cows as well as in achieving optimum milk letdown. With the assistance of the farmer-trainer, indicate to students the characteristics of milking cows.<br><br>Discuss the ways in which the handlers can help reduce stress. Gentle handling, routine processes, properly set equipment, quiet behaviours and environment, and an ability to effectively handle the number of milking machines being utilized results in optimum production, safety, and animal health.<br><br>Hard to handle animals may require handling aids and appropriate operator behaviours to minimize animal health problems, milk withholding, and operator injury. |

| | Learning Objectives | Notes |
|---|---|---|
| 11.3 | To develop skills in the proper preparation of the cow's udder for the milking process. | Proper preparation of the cow's udder prior to and following the milking process assists in the maintenance of sanitation, prevents contamination and disease, and promotes optimum production. One of the processes that should be carried out on a daily basis is the monitoring of udder health. |
| 11.4 | To demonstrate personal hygiene. (CCT) | Personal hygiene and sanitation are required to minimize contamination problems during the milking process. (CCT)<br><br>Improper sanitation results in the contamination of the operator's hands and clothing, and can result in the transfer of micro-organisms and disease. Proper care in washing hands, clothing and footwear reduces the incidence of contamination problems.<br><br>Maintaining the cleanliness of the cow's udder is necessary and requires monitoring of the cleaning materials, clothing and equipment. |
| 11.5 | To understand the physiological processes that occur during the milking process. (COM) | Work with a veterinarian, farmer-trainer or dairy specialist to describe to students the physiological processes that happen to a dairy cow during milking. These processes include:<br>• milk letdown cycle<br>• role of oxytocin and adrenaline during the milking process<br>• approximate times and duration of the stages in milk letdown<br>• milk withholding resulting from pain or fear.<br><br>Have a farmer-trainer explain the following terms:<br>• forestripping<br>• teat dipping<br>• single towel washing<br>• optional udder cleaning and washing styles<br>• milker application<br>• milk out<br>• milker removal. |

| Learning Objectives | | Notes |
|---|---|---|
| 11.6 | To describe the steps in the milking process. (COM) | The steps in the milking process should include:<br>• pre-milking sanitation<br>• udder inspection<br>• milker preparation<br>• milker application and adjustment<br>• monitoring of equipment and cows<br>• milker removal<br>• post-milking sanitation.<br><br>Have a farmer-trainer demonstrate the milking process to students.<br><br>**Student Reference Manual:** Have students prepare a checklist of processes and procedures to be used before, during and after milking. |

## Module 12: Calf Care (Optional)

**Suggested Time:** 2-3 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students become familiar with factors such as housing, cleanliness, and care and their effects on the health and development of dairy calves. As well, students will develop and utilize a protocol for ensuring clean and sanitary pens.

**Foundational Objectives**
- To consider housing, cleanliness and care as environmental factors affecting health and development of dairy calves.
- To observe, assist with or demonstrate the ability to care for dairy calves.

**Common Essential Learnings Foundational Objectives**
- To demonstrate humane care of animals. (PSVS)
- To synthesize ideas gleaned from current reading/discussion/viewing/oral presentations with prior knowledge and understanding. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 12.1 | To identify environmental factors that affect calf health and development. (CCT) | Describe or demonstrate a cleaning and bedding management protocol needed to maintain cleanliness and sanitation of a calf pen. Developing an awareness of the following factors and their effects on calf health and development, and the financial implications of each will expand the students' understanding of what dairy producers need to consider in calf housing. Such factors include:<br>• air quality<br>• sanitation<br>• space requirements<br>• disease<br>• feeds and feeding practices.<br><br>Have students discuss and describe the environmental factors that affect calf health and development. Have students demonstrate skills in checking and maintaining calf pens. |
| 12.2 | To describe proper maintenance and bedding procedures designed to ensure optimum cleanliness and sanitation. (CCT) | Discuss the limitations of the style of calf housing utilized and the seasonal quality of bedding standards.<br><br>Demonstrate proper bedding procedures designed to ensure optimum cleanliness and sanitation. Explore daily, weekly, and monthly procedures for:<br>• manure management |

- pen repair and maintenance
- maintenance including cleaning and sanitation of feed and water containers.

Review of the sanitation practices utilized with adult cows should be expanded to include the consideration of sanitation of calf pens.

**Student Reference Manual:** Have students develop a checklist of proper care and feeding of dairy calves.

## Module 13: Dairy Cattle Health (Optional)

**Suggested Time:** 4-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students develop a basic understanding of common dairy cattle diseases and disorders.

**Foundational Objectives**
- To develop a basic knowledge of common dairy cattle diseases and disorders.
- To observe, assist with or demonstrate knowledge about dairy cattle diseases and disorders.

**Common Essential Learnings Foundational Objectives**
- To identify and appropriately use a variety of available resources. (IL)
- To arrange for guest speakers. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 13.1 | To describe methods to inspect and monitor physical facilities for maintenance.<br><br>To describe methods to inspect and monitor physical facilities for proper sanitary conditions.<br><br>To develop an awareness of common diseases and disorders of dairy cattle. | Have a veterinarian, dairy specialist or farmer-trainer list and describe examples of diseases and disorders (bacterial, viral, fungal, parasitic, protozoan) which affect dairy cattle. (COM)<br><br>Have students research the various disease types, the effects of the disease on the dairy operation, and, methods of prevention, treatment, control and management of the various diseases.<br><br>**Student Reference Manual:** Develop a collection of print materials that describe common diseases, their symptoms, the effects of disease, prevention, treatment, control and management and include the materials in the manual. |
| 13.2 | To describe common injuries to dairy cattle. | Discuss with a farmer-trainer the common injuries to dairy cattle and the accepted treatment. Describe the effects of common injuries on the animals. Have students describe methods of prevention, treatment control and management. |
| 13.3 | To describe common nutritional disorders in dairy cattle. | Have students research the affects of common nutritional disorders on the dairy operation and methods of prevention, treatment, control, and management. Invite a herdsman or a veterinarian in to talk about nutrition and nutritional disorders.<br><br>**Student Reference Manual:** Have students develop a chart that describes common nutritional disorders, their effects, and accepted treatment methods for dairy cattle. |

## Module 14: Prevention and Care of Mastitis in Dairy Cows (Optional)

**Suggested Time:** 2-3 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students develop a basic understanding of mastitis, procedures and activities that contribute to the incidence of mastitis, and the farm protocol utilized to control mastitis infection.

**Foundational Objectives**
- To develop the ability to recognize the signs and symptoms of mastitis.
- To develop an understanding of the prevention and care of mastitis.
- To observe, assist with or demonstrate the ability to recognize, prevent or care for mastitis.

**Common Essential Learnings Foundational Objective**
- To use a wide range of language experiences for developing students' knowledge of the dairy industry. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 14.1 | To recognize the signs, symptoms and causes of mastitis. | Invite a veterinarian or farmer-trainer to speak to students and describe the signs and cow d symptoms of mastitis infection in a dairy cow. Include in the discussion the causes of dairy cow mastitis. List practices that can contribute to the incidence of mastitis. Describe the processes and practices utilized by the producer to detect, treat, control and prevent mastitis. Have students practise these behaviours and demonstrate the ability to perform these practices.<br><br>Work with a veterinarian or dairy producer to familiarize students with a farm's treatment protocol. Have students observe, assist or demonstrate the needed treatment performing all testing treating and follow-up procedures. |
| 14.2 | To understand the impact of mastitis on milk production. | With the help of a dairy producer discuss the impact of mastitis to milk production.<br><br>**Student Reference Manual:** Have students collect information on the detection, treatment, control and prevention of mastitis and include it in the portfolio of materials on diseases and infections of dairy cattle included in the reference manual. |

## Module 15: Feeding Plans (Optional)

**Suggested Time:** 2-3 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to reinforce the importance of following feeding plans. Students should always follow the directions of the dairy producer when operating equipment or mixing rations.

**Foundational Objective**
- To understand the basic elements of feeding plans.

**Common Essential Learnings Foundational Objectives**
- To recognize situations where measurement is necessary and select the appropriate measuring tools. (NUM)
- To use a variety of resources to expand the breadth and depth of knowledge about feeding plans. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 15.1 | To become familiar with feeding plans. | Arrange a field trip to a dairy operation to observe/job shadow the feeding program. Indicate the proper use of equipment and the performance of safety procedures. Have students identify the hazards associated with operating feeding equipment. (COM)<br><br>List precautionary measures to be undertaken when operating feeding equipment (COM). The operator's manual is a useful resource for students and instructors when describing operation, maintenance, service and hazards associated with operating this equipment. In particular, operators should utilize the manual to locate and review the precautionary measures. |
| 15.2 | To become familiar with feeding plans. | Explain the feeding plan including all components included in the feed ration. |

## Module 16: Milk Production (Optional)

**Suggested Time:** 2-3 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module introduces students to factors that influence milk production. Students develop an awareness of the various recordkeeping materials particular to milk production and begin to develop proficiency in reading and interpreting reports.

**Foundational Objectives**
- To become knowledgeable about milk production.
- To observe, assist with or demonstrate skills relating to milk production.

**Common Essential Learnings Foundational Objectives**
- To seek out information from people who may be knowledgeable. (IL)
- To interview persons with prearranged questions to acquire information. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 16.1 | To understand the basic factors influencing milk production. | Discuss and describe milk production. With the help of a dairy producer identify ways in which producers maintain or increase milk production. Some factors to consider include the milking schedule, type of feed, weather, or stress. Encourage students to develop questions to ask the producer regarding milk production. |
| 16.2 | To describe recordkeeping of milk production. | Dairy producers provide the raw materials for the manufacture of dairy products for the food supply of the general public. Consumers and public health officials are concerned with maintaining optimum standards for a safe food supply. As a result, dairy producers must maintain their herds and facilities in a manner that reduces the incidence of contamination by micro-organisms and diseases that affect the milk produced. Various inspection practices are utilized on the farm and off to ensure that the milk produced is of high quality and free from contamination.<br><br>Discuss the reasons for maintaining useful and accurate records of milk production. Describe the following terms:<br>• standard plate count<br>• freezing point test results<br>• inhibitors test<br>• somatic cells test. |

| Learning Objectives | Notes |
| --- | --- |
| | Provide students with different copies of milk quality reports. Have students analyze the data and interpret the information provided. Encourage students to make recommendations as to how to improve the quality of the milk based on the information provided by the milk quality reports.<br><br>**Student Reference Manual**: Have students include sample milk quality reports along with anecdotal comments interpreting the report and describing the quality of the milk described in the reports. |

## Module 17A, B, C: Work Study Preparation and Follow-up Activities (Core)

**Suggested Time:** 5-10 hours **Level:** Introductory, Intermediate, Advanced
**Prerequisite:** None

**Module Overview**
This module is used to prepare students for work study placement. Learning objectives include pre-placement information, preparation for interviews, and expectations for the work site experience.

**Foundational Objective**
- To develop workplace skills in the dairy production sector.

**Common Essential Learnings Foundational Objective**
- To increase awareness of a variety of employability skills at the work site. (CCT, COM, PSVS, TL)

| | Learning Objectives | Notes |
|---|---|---|
| 17.1 | To create an awareness of the expectations of each of the partners in the work study component. | In order to establish a successful working relationship with all of the partners involved at the work site, it is important to define the expectations of each partner.<br><br>Refer to Guidelines for Work Study, a section of the *Practical and Applied Arts Handbook* (2003), for expectations of business, student, teacher monitor, and school. |
| 17.2 | To determine factors that would affect the student contribution at the work site. (CCT) | The students may formulate a list of what they bring to the work site and how each may impact on their jobs. Their lists may include topics such as:<br>• school subjects<br>• past experiences<br>• self-concept and personality<br>• needs, values and interests<br>• knowledge skills and attributes<br>• career goals and plans.<br><br>Ask students to do a self-assessment of skills using the influences in the above list as a guide. Have students explain how these skills are valuable to the dairy industry. Try to incorporate the value of communication and teamwork in the discussion. |

| | Learning Objectives | Notes |
|---|---|---|
| 17.3 | To foster an awareness of building good communication at the work site. | Discuss verbal and non-verbal communication. List some ways in which negative non-verbal communication may be addressed. Encourage students to role play ways of demonstrating effective techniques of verbal communication on the job when giving or receiving instructions, and when resolving conflict. With the use of case studies, divide the students into groups and have them role play to show how effective use of communication can be used to resolve conflict on the job. |
| 17.4 | To develop a résumé and cover letter that can be forwarded to a potential employer. | The student will develop a résumé and cover letter using the correct format. ATEC teachers can work with other staff members to ensure résumé and cover letter preparation is taught. The résumé and cover letter is currently addressed in English Language Arts, Information Processing, and Career and Work Exploration.<br><br>Students should develop the résumé on a computer disk and update the résumé during the progression of the course as references are accumulated.<br><br>If students have already completed the résumé and cover letter in another course, the teacher may do a review and encourage students to update their résumés. Students shall submit a résumé for teacher approval prior to going to the work site.<br><br>The résumé and cover letter may be used as an introduction for the employer of a work site prior to an interview with the student. |
| 17.5 | To determine student guidelines in preparation for an interview. | Through a classroom discussion or in groups, have students generate a list of guidelines for an interview. After the students formulate their list, the instructor may add missing items to the list.<br><br>Outline and describe the three stages of an interview. Point out to the students in what stage each of their previously discussed guidelines will be used. A brief description of the three stages of an interview follows.<br><br>The **greeting** involves an introduction between the student and employer. Discuss or demonstrate how this should be done. |

| | Learning Objectives | Notes |
|---|---|---|
| | | The **exchange** is where the employer asks a series of questions and engages in a conversation with the student about information on the résumé and other matters relating to the job placement.<br><br>The **parting** brings the interview to a close. It can be just as important as the greeting. Explain how this can be done.<br><br>Provide students with a list of questions, frequently asked by employers, or ask students to formulate a list in a group and role play the stages of the interview. |
| 17.6 | To discuss the interview. | After the student has completed the interview with the employer, do a follow-up activity. Review the interview with the student using the three stages as a point for discussion. |
| 17.7 | To develop procedural guidelines for the work site. | Discuss work site guidelines, related to the following factors, with students:<br>• transportation<br>• hours of work<br>• absence and tardiness<br>• procedures for conflict resolution<br>• role of the student, teacher and work place supervisor<br>• dress code<br>• job description<br>• school and employer expectations<br><br>Ensure that students understand the importance of these factors by asking students to describe each of these guidelines. |
| 17.8 | To relate feedback from the work placement. | Students should be encouraged to provide feedback about work placement including: where they were placed, type of business, duties, most rewarding experience, most difficult situation, and how they handled difficulties.<br><br>It is recommended that each student send a thank-you note or card to the employer upon the completion of each work placement. If more than one placement has been made in the course, follow-up activities must be completed after each placement. |

## Module 18A, B, C: Work Study (Core)

**Suggested Time:** 25-50 hours **Level:** Introductory, Intermediate, Advanced
**Prerequisite:** 17A, B, C respectively

**Module Overview**
Refer to the Work Study Guidelines included in the *Practical and Applied Arts Handbook* (2003) for direction on implementing work study.

**Foundational Objectives**
- To be aware of the careers and opportunities in the field of agriculture that exist in Saskatchewan and other provinces.
- To integrate classroom learning with work-related learning.
- To increase awareness of employability skills as they relate to the work environment.

**Common Essential Learnings Foundational Objectives**
- To engage in a work study experience and develop entry level workplace skills that may lead to sustainable employment. (PSVS)
- To expand career research beyond the classroom setting. (IL)

Teachers need to use or design appropriate learning objectives for this module (e.g., to demonstrate ability to follow a "Training Plan").

**Note:** Consult the Career and Work Exploration Curriculum Guidelines and the Department of Labour for content about Labour Standards, Occupational Health and Safety, and Workplace Hazardous Materials Information System (WHMIS). Add more depth of information regarding labour standards if you offer several work studies during grade 11 or 12 in a course series.

# Core and Optional Modules for Dairy Production 20

## Module 19: Farm Safety (Core)

**Suggested Time:** 7-9 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Given the importance of farm safety, each level of ATEC courses begins with a core module on farm safety. This module provides students with knowledge, skills and abilities used when operating or maintaining farm equipment in all areas of production. Remind students of farm safety precautions at all times including the rules and regulations associated with operating farm vehicles.

Farm safety precautions are also required when working around dairy cattle. Knowledge of, and respect for, the particular characteristics of dairy cattle are of great value in the prevention of accidents to both the handler and the animal.

Students should develop comprehensive and useful notes on each of these subjects and place the information in the Student Reference Manuals.

**Foundational Objectives**
- To understand and use farm safety procedures at all times.
- To observe, assist with or demonstrate farm safety procedures with farm machinery and when working with dairy cattle.

**Common Essential Learnings Foundational Objectives**
- To understand how technology influences occupational roles related to dairy production and affects the work site (e.g., occupational health, safety, etc.). (TL)
- To explore the consequences which individual actions have for others in concrete situations. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 19.1 | To identify existing or potential hazards on the farm. | Have a farm safety specialist talk to the students about general farm safety. Identify hazardous equipment or chemicals around the farm. Use site visitations and have students identify potential hazards and precautions. Explain why these areas need cautionary attention.<br><br>Have students consider the existing or potential hazards that are unique to dairy cattle operations. Consider these hazards from the perspective of the beef producers as well as in relation to the cattle.<br><br>**Student Reference Manual:** Have students develop and/or use a farm safety audit. Students should include safety for animals as well as for operators, handlers and visitors. |

| | Learning Objectives | Notes |
|---|---|---|
| 19.2 | To describe the use of safety guards, shields, and other safety devices used on farm equipment. | Demonstrate a safety walk-around check on all the devices used for safety and make sure everything is in proper working order. Ask students with prior knowledge to point out the use of safety guards, shields and other safety devices used on farm equipment.<br><br>Have students demonstrate their knowledge and ability to locate, read, and comprehend the warning messages on the farm equipment.<br><br>**Student Reference Manual:** Have students develop a safety checklist and inspection to be used on a routine basis. |
| 19.3 | To describe the proper clothing and protective gear used on farms. | Engage students in a discussion about the proper clothing, footwear, gloves, glasses, and breathing and ear devices to use when working around and operating farm machinery, and when applying chemicals and other hazardous materials.<br><br>Have students identify when and where protective gear should be used. |
| 19.4 | To distinguish between a safe practice and an unsafe practice when using specific manual and power tools as well as lifting equipment such as jacks and winches. | Examine the safety hazards associated with the use of power or manual tools. Identify the hazards associated with jacks and winches. |
| 19.5 | To identify fire hazards and precautions on farms. | Examine and list the fire hazards on farms. Students should know how and when to use various types of fire equipment.<br><br>Have students consider the fire hazards to feed supplies such as, hay, straw and grain. Indicate or have students suggest precautionary measures. |
| 19.6 | To know when and how to use basic First Aid. | Have students prepare a list of basic First Aid procedures. If possible, encourage students to take the First Aid Course through St. John's Ambulance. |

## Module 20: Communications (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Students will enhance their verbal and written communication skills including the use of forms and recordkeeping. Recordkeeping is extremely important in dairy cattle production particularly for purebred herds and in feedlot situations.

An important marketing and management tool for dairy cattle production is the ability to access and use the most current information and human resources available. This module is intended to support students in developing the practice of seeking information on a regular basis.

The module is also used to remind students of the how and where to find information including reading manuals and finding industry-related information.

**Foundational Objectives**
- To enhance verbal and written communication skills used on farms.
- To develop skills in using forms and keeping records on farms.
- To develop skills in finding and using information.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary related to dairy projection into their talk and writing. (COM)
- To develop skills in using manuals to use and find information. (COM, IL)

| | Learning Objectives | Notes |
|---|---|---|
| 20.1 | To encourage effective verbal and written communication skills. (COM) | Ask students to list a number of examples of verbal and written communication that are used on a daily basis on a farm. Review the characteristics of effective communication and ask students to prepare examples.<br><br>Role play employee/employer situations using verbal and written communication. Emphasize the importance of communication skills on the farm. (COM) |
| 20.2 | To develop skills in using and filling out a variety of forms used on a farm. | There are a variety of forms that are used on farms. Some of these include:<br>• employee time logs<br>• tax forms<br>• compensation reports<br>• market forms<br>• feed and consumption records<br>• cattle inventories<br>• production records |

| Learning Objectives | Notes |
|---|---|
| | • budget forms and other types of banking information.<br><br>Using a variety of forms such as, weigh dockets, time sheets, tax forms, production records, and inventory sheets, have students develop skills in completing forms. Indicate when they should be used as well as those which are legal requirements. |
| 20.3 To develop skills in finding, analyzing and using a variety of information. (IL) | Beef producers need current information in order to make profitable decisions about marketing and production. This information can be found in manuals, weekly or monthly publications, trade magazines, and government and industry publications.<br><br>Have students find, analyze and describe the use of a variety of kinds of information on dairy cattle production. Remind students of the importance of using the table of contents, index, order forms, toll free numbers, or on-line assistance.<br><br>Saskatchewan Agriculture, Food and Rural Revitalization is a good source of information on dairy cattle production.<br><br>Students may also want a chance to access the Internet for a variety of product and equipment information. The *Western Producer Farm Directory* has a wide variety of web sites listed.<br><br>**Student Reference Manual:** Have students list the most important publications and web sites for personal use. |

## Module 21: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Students will explore the career options available in dairy production and develop long term plans. Students will also review the concept of employability skills. Students who have previously taken Career Exploration at Level 10 of the ATEC courses should re-examine and update their career plans.

**Foundational Objectives**
- To develop a career or educational plan.
- To understand and appreciate the importance of employability skills.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 21.1 | To examine the importance of employability skills. (CCT) | Have students examine the following list of employability skills and describe how they would apply to their careers in agriculture:<br>• ability to communicate effectively<br>• problem-solving skills<br>• technological ability<br>• positive attitude<br>• punctuality<br>• responsibility<br>• adaptability<br>• independence and self-reliance.<br><br>Have students interview cattle producers or farmers/trainers to determine the kinds of employability skills that are important to them. |
| 21.2 | To examine different career choices in the production of dairy cattle. | Have students look at a number of career choices that fit their personality and learning styles.<br><br>Have students prioritize their choices by interest and job requirements and state the reasons for these decisions. |

| | Learning Objectives | Notes |
|---|---|---|
| 21.3 | To identify the sources of career counseling and organizations that can assist in planning a career. | A number of services can assist students in planning a career. Assist students with the preparation of a list of these services including post-secondary institutions, employment agencies, and courses at regional colleges. |
| 21.4 | To develop a career plan and appropriate educational strategy. | Have students prepare a career plan including both short term (1-2 years) and long term (2-6 years) objectives. Have students describe the objectives in writing and how they might be achieved. Review the plans with students making sure that they are realistic. |

## Module 22: Planning for Dairy Cattle Production

**Suggested Time:** 4-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module helps students enhance their knowledge and use of farm planning techniques, or review and evaluate existing plans.

**Foundational Objectives**
- To enhance skills associated with dairy cattle production plans.
- To understand the basics of financial planning.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 22.1 | To review and/or develop farm and land management plans specifically related to dairy production. | Core modules in Level 10 develop the basic elements of farm planning. Review the strategies presented at that level. Have students review and/or develop the farm and land management plans specifically relating them to dairy cattle production.<br><br>Have students share their plans with students in other ATEC courses. Have students discuss, share and critique plans. If possible, have students present their plans to an extension agrologist or financial person for review. |
| 22.2 | To review the process of effective time management (personal and farm). | Have students review or prepare a personal time management schedule as well as a farm time management schedule. Make sure students develop their time management schedules to balance school, work and recreation. In dairy production, managing personal time is often beyond the control of the individual producer. Remind students that, in spite of the seasonal pressures of calving, balance in life is important.<br><br>Students should also be reminded that lack of sleep is a leading cause of farm injuries.<br><br>**Student Reference Manual:** Have students prepare, review and update time management plans. |

| Learning Objectives | | Notes |
|---|---|---|
| 22.3 | To develop a basic understanding of financial planning. | Financial planning and maintaining business records are some of the most important components of operating a farm or ranch. Have students research the different ways that a financial plan can be prepared. Contact various financial institutions for plans and/or resource people that can provide useful information or assistance to students. Refer to Saskatchewan Learning's Accounting 10, 20, 30 Curriculum Guide (Farm Accounting Module), for more information and practice activities.<br><br>**Student Reference Manual:** Have students prepare a financial plan for a particular farming operation. |
| 22.4 | To develop a farm recordkeeping system. | Preparing a financial plan for a farm is as easy as the quality and accessibility of the records that provide the information.<br><br>Have students develop a filing system for a farming operation. Discuss the categories that need to be included, and how to file and retrieve information when it is required.<br><br>Farmers need to know what they have in inventory. Developing and using an inventory system is required for effective operation of a farm. This inventory should include cost, ownership, current value and date, and replacement value.<br><br>Have students gather or prepare inventory records for agricultural commodities. |

## Module 23: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 7-9 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module is designed to reinforce the basic skills of general maintenance and repair of farm machinery that were introduced in Level 10. Rather than observe, students will be expected to assist and demonstrate skills listed in the training plans.

Farm safety is stressed throughout the module.

**Note:** In dealing with all modules on farm equipment, teachers should inform students of the dangers and legalities of under-aged drivers operating farm machinery.

**Foundational Objectives**
- To develop basic skills and abilities in the repair and maintenance of farm machinery.
- To develop skills and abilities in the use of hand and power tools that are used to service farm machinery.
- To assist with and demonstrate skills associated with general farm maintenance and repair.

**Common Essential Learnings Foundational Objectives**
- To develop an understanding of the precautionary and preventive processes and procedures that students should use in everyday situations. (TL, CCT)
- To analyze information to create hypotheses, predictions, and estimates and to determine appropriate solutions. (CCT)

| Learning Objectives | Notes |
|---|---|
| 23.1 To assist or demonstrate skills in the processes associated with regular machinery maintenance. | The first step in maintenance of farm machinery is a preventive maintenance process (i.e., checking oil and fuel levels, cleaning radiators, preventing chaff build-up, and monitoring gauges).<br><br>Have students describe the regular maintenance of the farm equipment used on a regular basis.<br><br>Students should be able to use the manuals of several different kinds of farm equipment to describe preventive maintenance practices of the particular machine.<br><br>**Student Reference Manual:** Have students prepare or update checklists of preventive maintenance procedures for each piece of dairy production equipment. |

| Learning Objectives | | Notes |
|---|---|---|
| 23.2 | To identify and describe a variety of different types of tools (power and manual). | On a farm operation, there are a number of screwdrivers, wrenches, and tools used in the daily maintenance and operation of farm machinery such as, the daily maintenance of the machinery, daily routine checkups of pulleys, or adapting the machinery to different uses.<br><br>Each tool has a distinct operational procedure. Have students describe how to use a variety of common farm tools. Students should examine and demonstrate the standards illustrated in the operator's manual of each specific tool.<br><br>Have students determine the different types and sizes of wrenches (manual and power) that best suit the job that the wrench is designed to achieve.<br><br>Demonstrate that the correct selection and use of the specific tool to fit the correct screw or bolt is very important to prevent damage to the tool, bolt or screw.<br><br>Distinguish between a safe practice and an unsafe practice when using specific manual and power tools. |
| 23.3 | To identify and describe the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches. | In order to maintain machinery, it is often necessary to hoist or elevate machinery, parts of machinery, or other objects while working around the farm. There are a number of different ways to hoist an object depending on its structure. It is important for students to be aware of the weight range, strength, and capacity of the jack in relation to the item being lifted.<br><br>Have students compare and contrast the uses and efficiencies of the direct vertical, automotive, floor type, and any other lift. Identify the type of lift that is best suited for each job.<br><br>**Student Reference Manual:** Have students prepare a summary of the type of common farm mechanical, hydraulic and hand jacks and winches. |

| Learning Objectives | | Notes |
|---|---|---|
| 23.4 | To identify the dangers and hazards associated with common lifting equipment. | Overloading, tipping of the jack, and damaged or worn equipment can be just a few of the hazards when using lifting equipment. Select and illustrate the dangers and hazards that are associated with common lifting equipment.<br><br>Demonstrate the correct operating procedures in using the jack or hoisting equipment in a safe and efficient manner. |
| 23.5 | To identify the transportation regulations for farm equipment and livestock on public roads. | Transporting livestock and large farm equipment requires skills and caution. The province and rural municipalities have a number of regulations relating to agriculture. It is the responsibility of the farmer or rancher to know and abide by these regulations. Legal settlements for negligence can be very costly to a farming operation.<br><br>Identify and explain licensing, insurance, operator's qualifications and *Dangerous Goods Transportation Act* for handling all types of farm equipment on public roads. Consideration should be given to liability insurance, license class, and types of roads.<br><br>Examine and describe the width/height/length requirements, the lighting requirements, slow moving signs, clear visibility rules and seasonal restrictions on all farm equipment.<br><br>Livestock transportation regulations also specify the types of trailers that can be used as well as restrictions to the amount of time that livestock can be hauled.<br><br>**Student Reference Manual:** Have students prepare a number of descriptions/situations of transportation of livestock or farm equipment. Include outside sources of information for specific rules and regulations (e.g., Highway Traffic Board for over-width, over-height vehicles). |
| 23.6 | To understand the need for having emergency equipment. | Outline and give examples of the tools and emergency equipment that are required if the farm machinery has a crisis while in transport on a public road. |

## Module 24: Marketing (Core)

**Suggested Time:** 6-7 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Marketing is one of the most important activities in the production of dairy cattle. This module is intended to enhance students' basic understanding of marketing by exposing them to the variety of options available to livestock producers.

**Foundational Objectives**
- To develop skills in using market information.
- To describe different marketing mechanisms.
- To describe how the Milk Control Board regulates milk production, distribution and pricing and provides the latest updates on milk prices and quotas for sale or swap in Saskatchewan.

**Common Essential Learnings Foundational Objectives**
- To read and interpret quantitative information found in newspapers, magazines, and government, political and business publications and evaluate the validity of arguments based on such information. (NUM)
- To propose generalizations that explain relationships. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 24.1 | To describe how to market an agricultural commodity. | Marketing of any products incorporates a series of activities. These activities include but are not limited to:<br>• locating, sorting and analyzing market information for current and potential markets<br>• identifying and considering the factors which influence marketing such as, product supply and demand, imports and exports, consumer trends and economic conditions<br>• assessing the potential of advertising and promotion in a variety of markets.<br><br>Describe what each of these activities entail in practical terms and have students apply the activities using a particular agricultural commodity. Compare the marketing activities of different commodities. |
| 24.2 | To develop skills in gathering and using market information for a particular agricultural commodity. | Have students locate current sources of market information for a particular agricultural commodity. Review market terminology with students including terms such as, futures market, bull or bear market, FOB pricing, and open market. Have students practice reading commodity markets and discuss the events that might affect the price.<br><br>Have students graph the price of a particular commodity for the duration of the course. |

| Learning Objectives | | Notes |
|---|---|---|
| | | **Student Reference Manual:** Have students list sources of current market information, including web sites, radio or television broadcasts and print information. |
| 24.3 | To identify factors that influence decisions about marketing an agricultural commodity. (CCT) | Commodity prices are based on supply and demand. There are, however, other factors which influence decisions about when to sell a commodity. These factors include:<br>• financial constraints such as, limited cash flow or credit requirements<br>• limits on the amount of time for perishable products<br>• distribution and transportation requirements<br>• international and domestic trade policies and regulations.<br><br>Farmers need to consider these factors and others when making decisions about marketing an agricultural commodity. Discuss with students these factors. Encourage students to think of ways to mitigate the negative influences as well as how to take advantage of favourable influences. |
| 24.4 | To identify different market opportunities. | Many farmers have chosen to market their agricultural products through alternative markets, contracts, or niche markets. Have students investigate the different marketing opportunities for a particular commodity. Encourage students to analyze the advantages and disadvantages.<br><br>Engage students in a discussion about the best time to sell calves, replace cows with younger animals, buy feed, rent pasture, and lease or buy equipment.<br><br>Students may also wish to explore opportunities to buy dairy cattle through feeder associations, through short term business loans or through leasing beef cows.<br><br>Have students describe their ideas for innovative marketing opportunities of dairy cattle. If possible, have students attend the Canadian Western Agribition or other cattle sales to get a first-hand look at marketing. |

| | Learning Objectives | Notes |
|---|---|---|
| 24.5 | To explain the function of the Milk Control Board in Saskatchewan. | Students should research the operation of the Milk Control Board by accessing the web site at: www.saskmilkcontrolboard.ca or by contacting them at:<br>Milk Control Board<br>1210 - 2500 Victoria Avenue<br>Regina SK S4P 3X2<br>(306) 787-5319<br><br>Students should be aware of the key points in *The Milk Control Act, 1992.* |
| 24.6 | To describe the quota system required for operating a dairy in Saskatchewan. | Students should become familiar with the requirements for starting a dairy operation in Saskatchewan or for purchasing an existing dairy.<br><br>Students should be able to describe the powers of the Milk Control Board with regard to:<br>• collecting and purchasing producer milk<br>• transporting and selling milk to distributors and processors<br>• compensating producers using a multiple component pricing system<br>• managing production levels<br>• collecting and administering fees or levies required to operate the provincial milk pool<br>• funding other program activities of benefit to the industry. |
| 24.7 | To explain how milk and milk products are priced in Saskatchewan. | Students should be able to explain the multiple component method of pricing milk in Saskatchewan. Students should be able to describe Class 1a milk and Class 1b milk and explain how many different classifications exist. |

## Module 25: Breeding and Reproduction (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
In this module, students become familiar with dairy cattle breeding and reproduction practices which form the basis of maximizing milk production.

**Foundational Objective**
- To develop an understanding of dairy cattle breeding and reproduction.

**Common Essential Learnings Foundational Objectives**
- To make notes and organize with a system such as, index cards or a database. (COM)
- To generate, classify and explore reasons or rules underlying categories. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 25.1 | To describe the factors that contribute to an effective breeding and reproduction plan. (COM) | Invite a dairy specialist or producer to make a presentation regarding dairy herd development, and effective breeding and reproduction plans and practices.<br><br>Have students determine the key factors that producers use to make decisions about effective breeding and reproduction programs (i.e., the optimum traits to be considered in selecting dairy cattle). Some of these factors include longevity of the animal, production rates, confirmation, and disposition. Discuss why each of these factors is important to dairy production. Enhance students' learning by using appropriate industry terminology throughout the presentation. Clarify any descriptions that students may not know. (COM)<br><br>Students may wish to do a comparison of dairy cattle breeds.<br><br>**Student Reference Manual:** Have students develop a list of key factors that contribute to an effective breeding and reproduction plan. |
| 25.2 | To demonstrate an understanding of cow history records. | Cow history records provide important information to dairy producers. Gather some examples of cow history records and work with students to interpret the information. Explore and explain the kinds of data included in a cow history program.<br><br>Discuss how cow history records are used in conjunction with milk production practices. (CCT) |

| | Learning Objectives | Notes |
|---|---|---|
| | | **Student Reference Manual:** Have students include examples of cow history records and make notes on abbreviations and other types of information contained in the records |
| 25.3 | To explore various recordkeeping systems pertinent to dairy herd analysis and management. (COM) | Explain the importance of the various types of data used in dairy herd analysis and management. Indicate the appropriate amount of information that is pertinent to dairy herd analysis and management. (CCT)<br><br>Exploration of web sites and computer applications available for recordkeeping will increase student awareness of the relationship of technology to the dairy industry. Contacting extension agrologists or dairy specialists to ask for information and assistance may also prove beneficial.<br><br>**Student Reference Manual:** Have students list information sources including computer software or resource people who may provide information in the future. |
| 25.4 | To describe a breeding and reproduction program. | An effective breeding and reproduction plan combines the traits from bulls and cows. Records from breeding bulls as well as the information from the cow history program are used to plan effective breeding and reproduction programs.<br><br>Gather records from breeding bulls and cow histories. Work with a producer, dairy specialist or veterinarian to plan a breeding and reproduction program. |
| 25.5 | To demonstrate the ability to record necessary data for breeding and reproduction records. | Work with a producer to practise recording the necessary data. |

## Module 26: Calf Care (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Well managed care and nurturing of dairy calves greatly enhance the productivity of dairy operations. This module familiarizes students with the care of dairy calves from birth until weaning. Growth and development of calves are important aspects of this module that explores nutritional requirements and digestive changes from birth through weaning.

**Foundational Objectives**
- To develop an understanding of the growth and development of calves from birth until weaning.
- To demonstrate the routine for calf care from newborns to weaning.

**Common Essential Learnings Foundational Objectives**
- To demonstrate humane care of animals. (PSVS)
- To synthesize ideas gleaned from current reading/discussion/viewing/oral presentations with prior knowledge and understanding. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 26.1 | To develop an understanding of the nutritional needs of newborn calves. | Have students research the nutritional and physical needs of newborn calves. Use the expertise of a veterinarian or dairy producer. Include in the discussion the benefits of colostrum as well as how it can be used and stored. Students should demonstrate or have knowledge of the appropriate amount of colostrum to feed new born calves.<br><br>Demonstrate navel dipping to students. Inform students of the risk of infections resulting from improperly disinfecting navels of newborn calves. |
| 26.2 | To understand the nutritional requirements of dairy calves. | The rumen of a calf changes as it grows and develops. Have students research how the rumen changes and identify changes to the feeding program that need to accompany these digestive system changes.<br><br>Have the students make notes on the nutritional requirements of dairy calves as they grow and develop. |

| | Learning Objectives | Notes |
|---|---|---|
| 26.3 | To develop skills in preparing appropriate amounts of feed for dairy calves. | Gather examples of milk replacer, supplements or feed tags and other types of information on the rations fed to dairy calves. Work with students to read and interpret the information on the tags. Compare this information with nutritional requirements of dairy calves.<br><br>Demonstrate to students how to prepare appropriate amounts of feed, appropriate preparation and mixing, feeding techniques, and appropriate behaviours to demonstrate during the feeding of calves. Under supervision, have students prepare feed for calves of different ages and weights.<br><br>Ensure that students are familiar with the care and use of all types of feeding equipment used.<br><br>**Student Reference Manual**: Have students gather examples of labels and feed tags and interpret the information.<br><br>Have students develop a chart that describes feed preparation and feeding techniques employed from birth through weaning of calves. |
| 26.4 | To understand the importance of an abundant supply of quality water for calves. | Often overlooked, water is an important component in meeting the nutritional requirements of dairy calves. Investigate the water requirements for different ages of calves. Have students practise making routine inspections of waterers to ensure that calves have access to clean and abundant supplies of water. |
| 26.5 | To develop the ability to care for the physical needs of dairy calves. | In addition to meeting the nutritional requirements of dairy calves, producers must also care for the physical needs. Students should demonstrate the ability to care for the physical needs by inspecting and maintaining the areas or pens where calves live. (IL)<br><br>**Student Reference Manual:** Have students develop a checklist for the inspection and maintenance of the physical facilities used to house calves. |

## Module 27: Milking Equipment (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Initially introduced at the 10 level, this module is used to enhance students' skills and abilities in operating milking equipment. Understanding how the system works and the steps necessary to ensure that optimum results are obtained from the system will add to the student's awareness of the importance of milk collection and storage in dairy production.

**Foundational Objective**
- To demonstrate skills and abilities in operating milking equipment.

**Common Essential Learnings Foundational Objectives**
- To explore how human needs shape the direction and development of technological innovations. (TL)
- To understand how technology influences dairy production (e.g., safety, standardization, health). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 27.1 | To develop the ability to prepare the milking system for operation. (IL, TL) | Work with students to observe and review the milking system prior to, during and following the milking process. Explain to students what to look for and what types of adjustments or other tasks may be necessary during the milking process.<br><br>With assistance, have students carry out preparation procedures appropriate to the type of milking system utilized in the dairy operation. (TL) |
| 27.2 | To develop the ability to operate a milking system. | Review and/or observe the operation of the milking system. Have the farmer-trainer indicate to the student how to monitor the system during operation. Demonstrate any routine and necessary adjustments required during operation of the equipment.<br><br>When they understand, students should be encouraged to independently monitor the milking system during the milking process. Adjustments should be made only when an appropriate skill level has been reached. |

| Learning Objectives | | Notes |
|---|---|---|
| 27.3 | To demonstrate the ability to shut down the milking system. | Review with students the appropriate shut-down procedures for the type of milking system utilized. Students should understand the mechanical and sanitary considerations associated with appropriate shut-down of the milking system.<br><br>**Student Reference Manual:** Have students prepare a step-by-step account of how to prepare, start up, operate, follow up, and shut down a milking system. It is important to note that, while systems will be similar, not all milking systems will be exactly the same. |

## Module 28: Preparation of the Dairy Cow for Milking (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Special care needs to given to prepare dairy cows for the milking process. This includes cleaning and preparing the cow's udder for attachment to the milking system. Understanding the physiological processes that occur during milking is helpful in understanding the entire milking process.

**Foundational Objectives**
- To develop the ability to prepare dairy cows for the milking process.
- To understand the physiological processes that occur during the successful milking of a cow.

**Common Essential Learnings Foundational Objectives**
- To discover relationships and patterns (e.g., feed, stress and milk production). (CCT)
- To demonstrate humane methods for handling animals. (PSVS, CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 28.1 | To develop an understanding of the physiological processes which occur during milking. | Relate the physiological processes that occur during the milking process. The steps and physiological processes of milking include:<br>• milk let-down cycle<br>• role of oxytocin and adrenaline during the milking process<br>• approximate times and duration of the stages in milk let-down.<br><br>Explain each of the physiological processes and steps of the milking process. (COM, CCT) |
| 28.2 | To understand the effect that stress has on the animal and the milking process. | Dairy cows need to be handled with care in order to reduce stress. The milk let-down process will be impaired if the animal is in pain or afraid. Observe and work with dairy producers to ensure that students take the necessary steps and precautions to reduce stress on the dairy cow. |
| 28.3 | To develop an understanding of the importance of sanitation and proper udder preparation for milking. | Describe and demonstrate the following practices to students:<br>• forestripping<br>• teat dipping<br>• single towel washing<br>• washing styles<br>• other ways to properly prepare the udder for milking.<br><br>**Student Reference Manual:** Have students develop a checklist for the sanitation and proper udder preparation for milking. |

## Module 29: Sanitation Practices for Dairy Equipment and Facilities (Core)

**Suggested Time:** 5-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Sanitary facilities are imperative for the production of high quality milk and other dairy products. This module explores cleaning and servicing routines inside and outside livestock facilities and equipment, including feeding and watering systems.

**Foundational Objective**
- To understand the duties and significance of sanitary dairy facilities and related equipment.

**Common Essential Learnings Foundational Objectives**
- To identify and appropriately use a variety of available resources. (IL)
- To make and use point-form notes. (COM)
- To recognize the importance of taking the responsibility for maintaining routines. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 29.1 | To describe the areas included in the farm's cleaning and servicing routine. | Familiarize students with inside and outside livestock facilities and related equipment. Indicate the cleaning and servicing requirements for each. Explore routines for visual inspection and cleaning inside and outside livestock facilities including:<br>• pens<br>• milking parlour<br>• feeding system<br>• watering systems<br>• waterers.<br><br>**Student Reference Manual:** Have students list and describe inside and outside livestock facilities requiring cleaning and servicing. |
| 29.2 | To demonstrate knowledge about the sequence of regular daily, weekly, or monthly routines. | Cleaning and servicing activities on a dairy farm occur on a daily, weekly, monthly, seasonal or annual basis. Have students work with the farmer-trainer to list, observe and perform these activities. |

| Learning Objectives | | Notes |
|---|---|---|
| 29.3 | To use farm safety practices in the cleaning and servicing of facilities and equipment. | Emphasize the need for students to use farm safety practices at all times in order to prevent injury to workers and to dairy cattle. Students should demonstrate their ability to consider and use appropriate practices when cleaning and servicing facilities and equipment.<br><br>**Student Reference Manual:** Have students develop a checklist of cleaning routines for inside and outside livestock facilities and equipment. Remind students to indicate whether daily, weekly, or monthly cleaning routines are required. Students should also include a list of the cleaning and servicing equipment used.<br><br>Develop a list of safety procedures that prevent injury to workers and dairy cattle during cleaning operations inside and outside. |

## Module 30: Monitoring the Health of Dairy Cattle (Core)

**Suggested Time:** 5-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module is used to develop students' abilities in monitoring the general health of dairy cattle and to determine signs of significant ill health.

**Foundational Objectives**
- To develop the ability to monitor the general health of dairy cattle.
- To develop skills in general health care of dairy cattle.

**Common Essential Learnings Foundational Objectives**
- To recognize the importance of taking the responsibility for maintaining routines. (PSVS)
- To use a wide range of language experiences for developing students' knowledge of the dairy industry. (COM)
- To collect and organize quantitative information into a list, table, graph or chart and analyze this information to determine a conclusion. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 30.1 | To describe the signs of normal health. | Ask a veterinarian or producer to thoroughly describe the visual characteristics of cattle indicating good health. This will be used as a base line for students to compare with cattle demonstrating abnormal behaviour or poor health.<br><br>Encourage students to discuss and recognize visual characteristics of cattle indicating good health. List normal ranges for temperature and respiratory rates. |
| 30.2 | To describe the significant signs of abnormal behaviour or poor health. (COM) | Indicate to students signs of abnormal behaviour or poor health using the following as a guide:<br>• ears, nose, mouth and eyes<br>• head position and body stance<br>• gaits and movement<br>• cud chewing and gut fill<br>• condition of hair coat<br>• relationship to other animals in the group or pen.<br><br>Discuss with students the appropriate handling and care procedures if any abnormal signs or indications of poor health appear. Emphasize the importance of communicating immediately any findings to the employer or producer. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Students should always be mindful of following the directions of the farmer when these situations arise.<br><br>Discuss with students a variety of situations and how they might handle them. |
| 30.3 | To develop the ability to check respiratory rates and take temperatures. | The respiratory rate and temperature of a dairy animal can be a key indicator of ill health. Demonstrate to students how to check the respiratory rate of a dairy animal. Indicate the area of the rib cage to check breathing. Indicate to students that they should also observe the amount of effort required to breath and the breath vapour.<br><br>Demonstrate to students how to take the temperature of an animal. Remind students to work quietly and with a minimal amount of noise in order not to unduly stress the animal.<br><br>**Student Reference Manual:** Have students list normal temperature and respiratory rates of dairy animals. |

## Module 31: Calving Assistance (Optional)

**Suggested Time:** 5-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
In this module, students learn how to monitor calving and to provide assistance when necessary.

**Foundational Objective**
- To become knowledgeable about calving.

**Common Essential Learnings Foundational Objectives**
- To ask relevant questions in order to further their own understanding. (COM)
- To make observations and derive inferences from those observations. (COM)
- To demonstrate humane care of animals. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 31.1 | To describe a normal delivery process. (COM) | *Calving* is a term used to describe the process of a cow giving birth to a calf.<br><br>Indicate to students the typical behaviour of a cow prior to calving. If possible, observe cows demonstrating this behaviour such as, restlessness, distancing from the herd, swelling of the udder and enlarged vulva.<br><br>Describe a normal delivery of a calf including:<br>• normal calf position<br>• approximate duration of each stage in the delivery process<br>• relationship of age or type of animal to ease of calving<br>• appearance of waterbag and placenta. |
| 31.2 | To develop the ability to monitor the delivery process. | Checking cows prior to calving is critical to the safe delivery of a calf. In addition to describing the normal delivery process, describe to students the obvious signs of distress. Indicate when to provide assistance and describe the type of assistance required to assist the calving process.<br><br>Students should be able to list what to look for when deciding whether or not minor assistance would be of value. Also, they should be able to choose the type of assistance required and evaluate whether or not additional attention is required.<br><br>Encourage students that, when in doubt, they should consult a supervisor with more experience in making the decision. |

| Learning Objectives | Notes |
| --- | --- |
| | Awareness of how to contact a veterinarian or other professional when additional assistance is required is an important part of the training.<br><br>Students should practise behaviours to be followed when providing assistance several times under supervision and participate in collaborative observation of cows during calving prior to attempting to provide assistance independently.<br><br>Students should develop the ability to communicate effectively to the employer.<br><br>**Student Reference Manual:** Have students develop a description of a normal delivery of a calf. Encourage students to use pictures to clarify their descriptions. Have students list signs of distress as well as emergency numbers and contacts. |

## Module 32: Waste Removal (Optional)

**Suggested Time:** 3-5 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module develops knowledge and skills in waste removal inside and outside livestock facilities and explores environmentally sound practices. As in all situations on the farm, students should be thoroughly aware of the dangers associated with waste disposal. Students must demonstrate safe practices and procedures at all times.

**Foundational Objective**
- To demonstrate safe practices when cleaning dairy facilities.

**Common Essential Learnings Foundational Objective**
- To reflect critically on safe and proper methods of waste removal from dairies that demonstrate awareness of environmental issues as well as care for livestock and facilities. (CCT, IL, TL)

| | Learning Objectives | Notes |
|---|---|---|
| 32.1 | To become familiar with the areas requiring waste removal. | Demonstrate, list and/or describe to students areas of inside and outside facilities that require regular daily, weekly, and monthly cleaning. Relate the cleaning procedures involved in regular daily, weekly, and monthly cleaning.<br><br>**Student Reference Manual:** Have students develop a checklist of areas and cleaning procedures to be performed on a regular basis. |
| 32.2 | To demonstrate the safe operation of cleaning equipment. (CCT, TL) | Demonstrate to students the safe operation of cleaning equipment. After observing, have students describe or demonstrate the safe operation of cleaning equipment. Students should be able to identify and be knowledgeable about the dangerous components and hazards of operating these types of equipment.<br><br>Have students describe and outline the components of the equipment that require specialized training before an operator is allowed to work with the equipment. Ensure that students demonstrate precautionary steps to be taken to eliminate the possibility of dangerous situations occurring.<br><br>Demonstrate to students the routine service maintenance on cleaning equipment. |
| 32.3 | To develop an awareness of the environmental issues that are associated with waste disposal. (CCT, COM) | Discuss and demonstrate the ways in which to properly dispose of waste. Indicate the problems that can occur in the environment when waste is handled improperly. |

## Module 33: Feeding Systems (Optional)

**Suggested Time:** 3-5 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module enables students to develop skills in the routine operation of feeding systems used for dairy cattle.

**Foundational Objective**
- To demonstrate the ability to operate a feeding system.

**Common Essential Learnings Foundational Objectives**
- To recognize situations where measurement is necessary and select the appropriate measuring tools. (NUM)
- To use a variety of resources to expand the breadth and depth of knowledge about feeding systems. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 33.1 | To develop the ability to operate feeding equipment. | Show students the types of feeding equipment used on the farm including the various components of the system and points/places that require monitoring.<br><br>Have students describe and outline the components of the equipment. Ensure that students are thoroughly knowledgeable about the operation of any piece of equipment. Students should always demonstrate safe practices and procedures.<br><br>**Student Reference Manual:** Have students develop a list of safety precautions and appropriate behaviours to practise to prevent injury to workers or animals when using feeding system equipment and facilities. |

# Core and Optional Modules for Dairy Production 30

## Module 34: Causes and Prevention of Farm Accidents (Core)

**Suggested Time:** 4-5 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
At the advanced level of ATEC courses, students should be thoroughly familiarized with the importance of farm safety. This module serves as a review of farm safety and emphasizes the causes of accidents as well as procedures and practices that can prevent farm accidents.

Students should refer to their Student Reference Manuals for checklists and examples of farm safety audits.

**Foundational Objectives**
- To demonstrate operating and maintenance procedures related to various pieces of farm equipment.
- To observe, assist with or demonstrate skills associated with farm safety.

**Common Essential Learnings Foundational Objectives**
- To understand how technology influences occupational roles within society and affects the work site (e.g., occupational health, safety, etc.). (TL)
- To explore the consequences which individual actions have for others in concrete situations. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 34.1 | To identify farm hazards. | Have a farm safety specialist speak to students about farm safety. Students should be able to identify a number of hazardous situations which should be monitored on a farm. Students should also be familiar with various farm safety groups, organizations and regulations such as Workers' Compensation. |
| 34.2 | To describe the use of safety guards, shields, and other safety devices used on farm equipment. | Students should demonstrate a safety walk-around check on all the devices used for safety and make sure everything is in proper order pointing out the use of safety guards, shields and other safety devices used on farm equipment.<br><br>Students should also be knowledgeable about the proper clothing, footwear, gloves, glasses, and breathing and ear devices necessary for personal safety when working around and operating farm machinery, and when applying chemicals and other hazardous materials.<br><br>**Student Reference Manual:** Have students revise and/or develop and use safety checklists for specific equipment on the farm.<br><br>Students should also develop a personal safety audit of a farm. |

| Learning Objectives | | Notes |
|---|---|---|
| 34.3 | To demonstrate safe practices when using lifting equipment. | Students should be able to demonstrate safe practices when using specific manual and power tools as well as lifting equipment such as, jacks and winches. Have students examine the safety hazards associated with the use of power or manual tools. Identify the hazards associated with jacks and winches.<br><br>Have students describe the kinds and sizes of jacks and winches which should be used for various farm equipment repair and maintenance. |
| 34.4 | To identify potential fire hazards and recommend precautions and fire fighting techniques. | Students should be able to identify fire hazards and demonstrate various types of fire fighting techniques. Examine and list the fire hazards on farms. Students should know how and when to use various types of fire equipment.<br><br>**Student Reference Manual:** Have students prepare a checklist of potential fire hazards, types of fire extinguishers and fire safety precautions. |

## Module 35: First Response for Farm Accidents (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Students have been encouraged throughout this course series to take advantage of a First Aid Course. This module is used to develop students' practices of "first response" in the event of farm accidents.

**Foundational Objectives**
- To develop skills in dealing with emergency situations on a farm.
- To observe, assist with or demonstrate skills in responding to emergency situations on the farm.

**Common Essential Learnings Foundational Objective**
- To generate and evaluate alternative solutions to problems. (CCT)

| Learning Objectives | Notes |
|---|---|
| 35.1 To develop skills in handling emergency situations. | A course in First Aid is highly recommended but not always possible. With the help of an ambulance driver, RCMP or local police officer, St. John's Ambulance, nurse or doctor, help prepare students to deal with emergency situations by identifying the steps involved in seeking assistance, caring for injured people, and first aid supplies.<br><br>**Student Reference Manual:** Have students prepare a checklist of the components of a well-equipped First Aid kit.<br><br>Also have students make a chart of emergency phone numbers, police and fire departments, and ambulance services. |

## Module 36: Communications (Core)

**Suggested Time:** 2-3 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Producers rely on acurate information and effective communication on their farms. Effective communication skills are critical to maintaining good employee-employer relationships.

Throughout this module, students develop and use skills required to gather and sort useful information and communicate effectively. Students may choose to focus on specific production information include finding and using specific information.

**Foundational Objectives**
- To locate, gather and use information about a production sector.
- To be able to differentiate between fact and opinion in gathered information.
- To develop a range of skills used for effective communication.
- To observe, assist with or demonstrate effective communication skills in dairy production.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary related to dairy production into their talk and writing. (COM)
- To develop skills in using manuals to use and find information. (COM, IL)
- To read, comprehend and use written materials, including graphs, charts and displays. (NUM, IL)

| | Learning Objectives | Notes |
|---|---|---|
| 36.1 | To understand the need for reliable information in all production sectors. | Using flow charts or concept webs, identify where producers need reliable information. Have students consider the kind of information each requires. For example, producers need information on:<br>• commodity prices, markets and growing conditions<br>• transportation and input costs<br>• health problems, and weed or insect infestations<br>• financial and banking information.<br><br>After identifying these information needs, have students consider where to gather information regarding each need and the kind of communication about this information that is the most effective.<br><br>Have students consider the role of reliable information and effective communication on farms. |
| 36.2 | To locate and sort useful information required on a farm. | Finding, sorting and using information are important skills needed on a farm. |

| Learning Objectives | Notes |
|---|---|
| | In groups or as individuals, have students gather, sort and critique information about dairy production.<br><br>Have students prepare a resource listing of information including the source and availability of the information and where and how it might be used. Encourage students to try to make the listings as comprehensive as possible including transportation, storage, related services and so on. Reinforce the value of reliable information and effective communication.<br><br>**Student Reference Manual:** Have students prepare a list of valuable resources. |
| 36.3 To recognize the importance of effective communication. | All sectors in agriculture require effective communication skills in order to understand or be understood by employees, employers, suppliers, or customers. Some examples follow:<br><br>Producers need effective communication skills to:<br>• obtain and effectively use related goods and services<br>• market their products effectively.<br><br>Employees need effective communication skills to:<br>• analyze, organize and clarify information<br>• establish good will for their organizations<br>• communicate their ideas to both technical and non-technical colleagues<br>• better workplace and interpersonal relationships<br>• create positive first impressions.<br><br>Have students describe the communication needs for their particular farming operation. Have students describe and demonstrate the skills that are required as well as when and how they would be used. Some examples are:<br><br>Writing and publications packages such as:<br>• word processing systems<br>• desktop publishing packages (e.g., PowerPoint, PageMaker, Claris Works).<br><br>Information management systems such as:<br>• spreadsheets<br>• database management<br>• teleconferencing. |

Office tools such as:

- facsimile
- electronic mail
- voice mail.

## Module 37: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module provides students with a more extensive career exploration. Having worked and participated in a particular production sector by this stage of the program, students should be able to describe a variety of career opportunities and post-secondary educational programs which are of interest.

**Foundational Objectives**
- To be able to describe and access careers and job opportunities in the production agriculture or other field.
- To observe, assist with or demonstrate ability in determining career paths.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 37.1 | To identify career clusters and the range of occupational opportunities in dairy production. | List and research careers or occupations relating to dairy production and cluster them according to:<br>• primary production - professional science, management, operation<br>• marketing, distribution and retail services<br>• support services - production and processing inputs, financial, governmental<br>• resource management.<br><br>Consider job descriptions, employment market, educational requirements, and wage expectations. If possible, assess current employment opportunities based on employment statistics. There are a number of web sites on agricultural careers for students to review.<br><br>If possible, work with other ATEC students and hold a career fair or make oral presentations on other sectors. |

## Module 38: Farm Planning (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
In this module, students will apply farm planning techniques to a particular production sector. This module is used to enhance students' skills in farm planning with particular attention to financial planning. As an alternative, students may wish to complete Farm Accounting contained in the Accounting 10, 20, 30 curriculum.

**Foundational Objectives**
- To develop farm planning skills particularly financial planning skills.
- To observe, assist with or demonstrate farm planning skills.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)
- To write up a proposal for an individual project. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 38.1 | To prepare a projected budget. | Have students prepare a projected budget of income and expenses for a year in a farming operation. Reinforce the usefulness of a recordkeeping system to verify and modify the budget.<br><br>**Student Reference Manual:** Have students develop a budget. |
| 38.2 | To select and use an accounting system. | Have students select and/or use an accounting system for farm business transactions. Be sure to reinforce the importance of keeping of records to support the system. |
| 38.3 | To prepare a net worth statement. | Describe to students the concept of a net worth statement or have a representative from a financial institution talk to students about a net worth statement.<br><br>**Student Reference Manual:** Have students prepare a net worth statement. |
| 38.4 | To study the sources of credit and the credit rating system. | Invite a representative from a financial institution or Farm Credit Canada to talk to students about farm credit and the credit rating system. |

## Module 39: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 5-7 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Farm equipment maintenance and repair have been introduced in Level 10 and reinforced in Level 20. At Level 30 students are expected to demonstrate the skills and procedures described at the 10 and 20 level.

Using the training plans from farm equipment maintenance and repair, Level 10 have students demonstrate all of the skills and procedures identified.

**Foundational Objective**
- To observe, assist with or demonstrate skills and procedures of farm equipment maintenance and repair.

**Common Essential Learnings Foundational Objective**
- To demonstrate skills in the precautionary and preventive processes and procedures that students should use in everyday situations. (TL, CCT)

| Learning Objectives | Notes |
|---|---|
| | Refer to Levels 10 and 20 as well as training plans (see Appendix C). |

## Module 40: Milking Equipment (Core)

**Suggested Time:** 5-6 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
In the 10 and 20 courses, students have observed or assisted with the operation and maintenance of milking equipment. In this module, students should have a thorough knowledge of the components of milking equipment and demonstrate their ability to inspect, maintain, service, clean, and operate milking equipment.

**Foundational Objective**
- To demonstrate the ability to inspect, maintain, service, clean, and operate milking equipment.

**Common Essential Learnings Foundational Objectives**
- To explore how human needs shape the direction and development of technological innovations. (TL)
- To understand how technology influences dairy production (e.g., safety, standardization, health). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 40.1 | To describe the various components of milking equipment. (COM) | At this level, students should be able to identify the various components of milking equipment. |
| 40.2 | To demonstrate the ability to perform maintenance and servicing of milking equipment. | Appropriate maintenance of milking and milk handling equipment not only ensures that there is more efficient use of time and equipment, it assists in herd management in that it reduces stress to the operators and workers as well as to the cows during the milking process.<br><br>**Student Reference Manual:** Have students develop and use records for maintaining and servicing milking equipment. |
| 40.3 | To identify and describe safe practices when using cleaning agents and when cleaning milking equipment. | Students should be able to identify the hazards associated with cleaning agents and demonstrate safe practices.<br><br>Cleaning agents are chemicals. Because hazards exist if certain chemicals are mixed, it is appropriate for students to be aware of the hazards and to be able to indicate the danger to eyes, skin and lungs. Safe practices and appropriate protective clothing will reduce the risks associated with chemical use. As well, students must be aware of the risk of damage to equipment from inappropriate use of chemicals and the strategies to employ to reduce the hazards. |

| Learning Objectives | Notes |
|---|---|
| | Knowing cleaning chemicals by name, determining which should be used externally and internally with washing systems, and the sequence of appropriate use reduces the danger of hazardous results.<br><br>Students should be able to select proper cleaning agents for the various steps in the cleaning and sanitizing process. Demonstrating the knowledge, skills and abilities required to clean and sanitize milking equipment according to the established routines and protocols independently is appropriate at this level.<br><br>Students should be able to relate and demonstrate routines and protocols to be followed prior to, during and following the milking process as related to the cleaning and sanitizing of milking equipment, as well as the proper shut own and storage procedures. |
| 40.4 To describe the significance of sanitized equipment. | Appropriate demonstration of cleaning and sanitizing procedures keeps the sanitary conditions at an acceptable level for inspection and meets the supervisor's quality standards. This is part of the on-farm maintenance of a safe food supply and optimum herd health.<br><br>**Student Reference Manual:** Have students prepare a checklist of routine and maintenance procedures.<br><br>Students should have on hand diagrams of milking equipment parts and components for quick and easy reference.<br><br>In addition, have students develop a list of cleaning agents along with a checklist of cleaning procedures. |

## Module 41: The Milking Process (Core)

**Suggested Time:** 5-6 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
In this module, students demonstrate their ability to complete the milking process including handling cattle during the process in a manner that ensures optimum results.

**Foundational Objective**
- To demonstrate the ability o complete the milking process.

**Common Essential Learnings Foundational Objectives**
- To read dials, meters and scales and understand how to interpret these readings. (NUM)
- To read and interpret graphs, charts, tables and other common visual representations of quantitative information. (NUM)
- To demonstrate humane methods for handling animals. (PSVS, CCT)

| Learning Objectives | Notes |
|---|---|
| 41.1 To demonstrate the ability to apply a milking unit and milk out a dairy cow. (CCT, TL) | At this level, students should have observed the application of a milking unit and milking out a dairy cow. Have students assist, then demonstrate, the ability to apply the milking unit and milk out the cow. Students should demonstrate handling aids and appropriate operator behaviour to handle cows in ways which ensure maximum milk production.<br><br>Capable performance of the appropriate sanitation procedures prior to milking, application and adjustment of the milking system on the animal, monitoring of the operation of the milking system and the dairy animal during milking, and, timely removal of the milker are expected.<br><br>It is important to ensure that the cow is comfortable during the milking process in order to reduce the risks of injury to the cow or to the handler resulting from the behaviour of the animal.<br><br>Students need to consistently demonstrate procedures and behaviours during the animal handling process that minimize stress, prevent injury to the animal or operator, are low in noise level, and that provide opportunities to observe animal behaviour, milk production, and health conditions. |

| Learning Objectives | | Notes |
|---|---|---|
| 41.2 | To understand the importance of maintaining accurate milk production records. | Have students discuss the value of maintaining accurate and consistent records of milking and milk production. Provide students with sample milk recording data and have students critique the information recorded.<br><br>Monitoring milk production involves not only the recording of the volume of milk produced, it also ensures that the operator is monitoring for heat/oestrus detection and for health problems that may affect milk yield.<br><br>Students need to become familiar with the particular recordkeeping that the operator has selected for maintaining records. |
| 41.3 | To develop the ability to use equipment to measure and monitor milk production and keep accurate records. (COM, NUM) | Milk recording equipment may include weigh jars or volume measures, metering devices (convert weight to volume), or, electronic flow measuring devices. Demonstrate to students how to operate the milk measuring system during the milking process and set-up. (TL, NUM)<br><br>In addition, demonstrate to students how to set up equipment properly prior to milking and to disassemble and clean after use.<br><br>Have students demonstrate their ability to operate the equipment correctly and accurately record the results.<br><br>Have students work with the producer to record milk production for a period of time. Have students analyze the data recorded and discuss how to increase milk production based on the information provided.<br><br>**Student Reference Manual:** Have students obtain samples of milk production records. |

## Module 42: Maintaining and Repairing Dairy Facilities and Equipment (Core)

**Suggested Time:** 8-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module is used to encourage students to use initiative and skills in maintaining and repairing dairy facilities.

**Foundational Objective**
- To demonstrate the ability to inspect and repair dairy facilities and equipment.

**Common Essential Learnings Foundational Objectives**
- To identify and appropriately use a variety of available resources. (IL)
- To make and use point-form notes. (COM)
- To recognize the importance of taking the responsibility for maintaining routines. (PSVS)

| Learning Objectives | Notes |
|---|---|
| 42.1 To identify each major facility area, the areas requiring periodic inspection, how often the facility is to be inspected and what is to be looked for. | Ensure that students understand the consequences (liability, production loss, damage to equipment, economic cost, environmental damage) that can result from failure to inspect or detect problems.<br><br>When inspection of facilities is considered part of the regular work routine, workers can avoid major breakdown of facilities and equipment, and monitoring of facilities equipment needing regular service and maintenance requires less time than when carried out as a separate duty. Animal behaviours can be monitored at the same time.<br><br>Discuss with students the facilities and equipment used in housing, feeding, and handling cattle and feeding and milking equipment as well as manure removal systems that should be inspected regularly.<br><br>Identify what should be looked for during the inspection including:<br>• ventilating systems<br>• feeding equipment<br>• electrical systems<br>• heating systems<br>• water supply system including pressure system and water heater<br>• pens. |

| Learning Objectives | | Notes |
|---|---|---|
| 42.2 | To develop the ability to repair dairy equipment and facilities. | Farm equipment maintenance and repair are core modules throughout the ATEC program. Teachers or farmer-trainers may wish to refer to this module to review students' knowledge and abilities. Work with students to help develop their ability to repair and maintain dairy facilities and equipment.<br><br>**Student Reference Manual:** Have students develop a checklist of inspection points. |

## Module 43: Maintaining Herd Health (Core)

**Suggested Time:** 8-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module describes the use of medications to assist in maintaining herd health and optimum milk production. Students will study the various medications, methods of handling, administration, and storage.

**Foundational Objectives**
- To understand the advantages of maintaining herd health.
- To develop the ability to carry out routine herd health procedures.

**Common Essential Learnings Foundational Objectives**
- To read and interpret graphs, charts, tables and other common visual representations of quantitative information. (NUM)
- To look for associations among items of knowledge and extend these relationships through additional inquiries. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 43.1 | To understand the concept of herd health. | Herd health is a collective term used to describe the preventive, rehabilitative or treatment regimes associated with maintaining the health and well-being of dairy cattle.<br><br>Elements of herd health include knowledge of:<br>• common medications and other treatments used to maintain animal and herd health<br>• economic considerations<br>• health history records.<br><br>Discuss the concept and elements of a herd health program with a veterinarian or dairy producer.<br><br>Relate to students the importance of utilizing various medications for the treatment of infection and disease and in maintaining animal and herd health. |
| 43.2 | To become knowledgeable about common veterinary drugs and medications used to maintain herd health. | Have a veterinarian or producer describe the most common veterinary drugs and medications used to maintain herd health. Some of these include:<br>• antibiotics<br>• vaccines<br>• disinfectants<br>• insecticides<br>• feed additives and nutrient supplements. |

| Learning Objectives | Notes |
|---|---|
| | **Student Reference Manual:** Have students develop a listing of the most common types of veterinary drugs or medications with description that include:<br>• common names<br>• uses<br>• calculation of dosage<br>• administration. |
| 43.3 To develop the ability to read drug labels and calculate the appropriate dosage. (COM, NUM) | Have students read and interpret a number of different veterinary drug labels. Have students look for information on:<br>• procedures for safe use and storage<br>• dosage and administration<br>• appropriate storage techniques<br>• contamination hazards<br>• practices for monitoring animals following administration of medications. |
| 43.4 To develop the ability to administer common veterinary drugs and medication. | Medication must be placed correctly to work effectively. Various aids or tools may assist placement. Needle sizes vary for particular jobs. Proper preparation of an area (e.g., disinfecting the area with alcohol or clipping the hair) is necessary. Describe the techniques associated with the administration of veterinary drugs and medications.<br><br>Dirty equipment can introduce contamination into sealed drug containers, spread disease between animals, and result in abscesses at injection points. When drugs are improperly administered, adverse reactions can occur.<br><br>Demonstrate the proper way to administer:<br>• intramuscular injections<br>• intravenous injections<br>• subcutaneous injections<br>• intradermal and intrammary injections<br>• eye treatments<br>• treatments for parasites. |

| Learning Objectives | Notes |
|---|---|
| | Students should be able to describe:<br>• proper administration techniques and range of administration period<br>• hazards to the animal resulting from improper administration<br>• hazards to the operator resulting from improper administration<br>• when it is appropriate to seek additional professional assistance. |
| 43.5 To describe the concept of drug withdrawal. (COM, CCT) | Discuss the concept of drug residue and where such residues may show up in the body of the animal being treated. Discuss potential hazards of residues in milk for consumers. Discuss the penalties for dairies found violating drug residues standards. Identify issues related to drug withdrawl particular to milk production. |
| 43.6 To identify proper handling and storage techniques utilized with medications to ensure optimum effectiveness. (CCT) | Veterinary drugs and medications need to handled and stored correctly to maintain efficacy. Directions for storage, shelf life and handling are listed on drug labels.<br><br>Describe hazards to animals and humans associated with the handling, storage, and administration of medications. Risks include personal injury from handling animals, hazard of self-injection while handling loaded syringe, and animal injury.<br><br>Good practices include maintaining cleanliness; having equipment ready; effective and efficient job performance; and, using protective clothing and equipment for hand and skin protection.<br><br>**Student Reference Manual:** Have students prepare information on common veterinary drugs and medications including:<br>• trade name<br>• shelf life<br>• contents of the container<br>• method of administration<br>• dosage<br>• storage requirements<br>• withdrawal times or limitations.<br><br>Students should make a chart to be posted in a conspicuous place for quick reference while treating animals with medications. |

## Module 44: Specialized Livestock Equipment (Optional)

**Suggested Time:** 5-7 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module provides specific information and requires the demonstration of abilities in specialized livestock handling equipment.

**Foundational Objectives**
- To know and be able to operate various kinds of specialized livestock equipment.
- To observe, assist with or demonstrate the use of specialized livestock equipment.

**Common Essential Learnings Foundational Objective**
- To explore the evolution of technological innovations with the dairy industry. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 44.1 | To identify and demonstrate the operation of specialized livestock equipment. | There is a variety of specialized livestock equipment that may be used in the operation of a cow/calf operation. This includes weigh scales, feed mills, front end loaders, bale shredders, tub grinders, forage harvesters, and feed wagons.<br><br>Have students prepare a list of specialized livestock equipment, describe the major components, identify safety procedures and demonstrate proper operation and maintenance. |

## Module 45: Animal Identification (Core)

**Suggested Time:** 4-6 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Every dairy has a method of identifying animals. This module provides students with a working knowledge of the methods that producers use to identify animals.

**Foundational Objective**
- To observe, assist with or demonstrate a working knowledge of animal identification.

**Common Essential Learnings Foundational Objectives**
- To understand how public policy shapes technological developments. (TL)
- To explore the evolution of technological developments in the dairy industry with a focus on the political and social forces that spawned the development and the steps involved in it. (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 45.1 | To describe and use various methods to identify animals. | The care of a herd depends largely on the records of each animal and being able to track the animals throughout their life at the dairy operation. Cattle can be identified with ear tags, tattoos, hot iron brands, freeze brands or computer chips. It is important that the operator is able to look at the different choices and apply them to the animals.<br><br>Have students describe the different ways of marking animals. Compare the advantages and disadvantages of the different ways to mark animals. Demonstrate the techniques and procedures to apply each type with minor discomfort to the animal. Identify the hazards of each type and describe the safety precautions to be taken during the process.<br><br>Verify with students that the method that they have chosen is incorporated in livestock records. |

## Module 46: Artificial Insemination and Herd Analysis (Optional)

**Suggested Time:** 10-15 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module develops students' familiarity with the procedure of artificial insemination (AI) including methods and recordkeeping practices associated with AI. The procedures followed should include proper animal restraint, understanding of reproductive processes and anatomy, appropriate techniques for handling semen, and the maintenance of accurate records.

Where possible, and where the appropriate amount of observation is possible, students may be encouraged to perform AI techniques under guided practice. It is unlikely that sufficient training will take place to allow independent demonstration of AI techniques. Students may wish to participate in additional training with qualified individuals to develop the skills to carry out the procedure independently.

**Foundational Objectives**
- To develop an understanding of the process and procedures relating to artificial insemination.
- To observe, assist with or demonstrate skills and processes associated with artificial insemination.

**Common Essential Learnings Foundational Objectives**
- To understand and use specific vocabulary related to artificial insemination. (COM)
- To develop students' appreciation of the value and limitations of technology used in dairy production. (TL, IL, CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 46.1 | To develop an understanding of the reasons for using artificial insemination (AI) in dairy breeding. (CCT) | Effective breeding programs result in quality herd management practices and optimum milk production in dairy operations. Utilizing an AI system for the insemination of cows and the enhancement of breeding programs may be cost effective as well as a more reliable method of animal breeding.<br><br>Discuss the reasons why artificial insemination can be helpful to dairy production. Outline some of the disadvantages of using AI as well including time and management aspects.<br><br>Gather bull catalogues from various AI breeders and have students interpret the information presented to them. (COM) |
| 46.2 | To develop an understanding of a cow's reproductive system. | Use a diagram to identify the parts of a cow's reproductive anatomy and to locate the portions used in the AI process. (COM)<br><br>**Student Reference Manual:** Have students collect diagrams of a cow's reproductive anatomy. |

| Learning Objectives | Notes |
|---|---|
| 46.3 To describe the process of AI. | Invite a producer, a breed specialist or an AI technician to visit the class to make a presentation on breeding practices and AI techniques and processes. Ask the guest speaker to bring samples of the equipment utilized in the process.<br><br>If possible, arrange a field trip to a farm at a time when AI techniques and processes are being utilized and allow students to observe the process.<br><br>During the discussion, have the presenter or tour guide indicate the following:<br><br>• the tools, equipment and facilities necessary for insemination practices. Examine the contents of an AI kit. Identify inseminating tools, semen handling equipment and animal restraining facilities. Observe the semen storage tank. Discuss proper preparation of equipment for use.<br><br>• the proper palpitation of the diaphragm prior to placement of the insemination pipette.<br><br>• the proper placement of the insemination pipette.<br><br>Describe proper storage procedures for semen. Identify the features of storage tanks. Describe the importance of factors such as temperature and the use of liquid nitrogen to maintain the quality of the semen. List risks associated with the use of liquid nitrogen. Define proper procedures for handling liquid nitrogen.<br><br>**Student Reference Manual:** Have students develop a sequential list of the behaviours to be employed in preparing an animal for artificial insemination. Remind students to include a list of the tools, equipment and facilities that must be utilized. As well, have students describe the physical preparation of the cow necessary prior to the placement of the semen. Students should also include a checklist for the proper on farm storage of semen. |

| | Learning Objectives | Notes |
|---|---|---|
| 46.4 | To describe farm safety practices used during the AI process. (COM) | There are a number of hazards that can occur during the AI process and that can be harmful to both the handler and the animal. Some of these are:<br>• burns from the liquid nitrogen<br>• injuries caused while handling animals.<br><br>List and describe behaviours that will reduce risks including ways to handle the animal properly to avoid injury to the operator or the animal. |
| 46.5 | To become knowledgeable about the processes and procedures used to inseminate cows artificially. | Have students observe a technician performing AI techniques and processes. Encourage students to note proper animal restraining techniques. These techniques reduce danger of injury to the animal or the handler. Semen must be placed correctly, palpitation must be correctly carried out, semen must be thawed properly, and the inseminator must be prepared to maintain semen quality. Using these techniques, the insemination process is carried out efficiently and effectively. When finished, tools and equipment should be properly cleaned and stored.<br><br>Describe the processes used to inseminate cows:<br><br>1. Using a storage tank of semen pipettes, locate the semen required. Ensure that proper and safe handling techniques are employed so that correct semen is identified and removed without damage to other semen pipettes. Practice reading identification coding used on semen samples.<br><br>2. Prepare the semen sample for insemination. Ensure that proper thawing techniques are utilized. Practice loading semen into insemination tubes ready for insertion. |
| 46.6 | To keep accurate records of animals that have been inseminated. (COM) | Recordkeeping must be consistent and accurate. Information included is important to the maintenance of appropriate herd records. This allows the operator to ensure that breeding conception rates are appropriate to the farm plan.<br><br>**Student Reference Manual:** Have students prepare records. |

## Module 47: Detection of Heat for the Purposes of Breeding (Optional)

**Suggested Time:** 5-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
The detection of heat/oestrous is explored in this module. Students will identify characteristic behaviours for detection during routine handling and will explore alternative aids used to detect heat/oestrus in dairy cattle.

Understanding the oestrous cycle is imperative in maintaining optimum milk production, establishing an effective breeding program, and in maintaining quality herd management processes. Cattle housing and handling methods will influence the processes utilized to identify the oestrous cycle.

**Foundational Objectives**
- To demonstrate an understanding of a cow's reproductive processes.
- To detect dairy cows in heat.

**Common Essential Learnings Foundational Objective**
- To make careful observations and draw conclusions from those observations. (CCT, COM)

| | Learning Objectives | Notes |
|---|---|---|
| 47.1 | To develop an understanding of a cow's reproductive system. | Describe a cow's reproductive processes. Begin with diagrams of the reproductive organs of cattle. Also allow students to observe cattle under the supervision of an experienced herdsman. |
| 47.2 | To identify the characteristic behaviour exhibited by cows when they are in heat. | There are three stages of the heat cycle. Discuss the characteristics, sequence and duration of each stage. Where possible, observe cattle in the different stages of oestrous and note the characteristic behaviours of each stage.<br><br>Describe cattle behaviours during milking, eating, socializing, and other physiological signs of oestrous in dairy cattle. (COM, CCT) |
| 47.3 | To describe the common aids for heat detection and how they work. | Equipment includes:<br>• mount detectors<br>• special markers<br>• paints.<br><br>Recordkeeping systems include:<br>• wheels<br>• charts<br>• computer systems. |

Invite a veterinarian or dairy producer to describe the various aids and how they are utilized in a dairy operation to detect oestrous and to maintain optimum breeding opportunities.

**Student Reference Manual:** Have students indicate the following:

- stages of the heat cycle
- cow behaviour during heat
- handling aids
- mount detectors
- markers
- heat synchronization systems.

## Resources

Author unknown. (1980). *Dairy Farm Management*, Albany NY: Delmar Publishers.

Alberta Agriculture, Food and Rural Development. (1996). *Dairy technician: Training curriculum, skill profile and performance standards.* Edmonton AB: Author.

Alberta Agriculture, Food and Rural Development. (1996). *Alberta Cattle Nutrition Course, Level 2* Edmonton AB: Author.

Alberta Agriculture, Food and Rural Development. (1996*). Alberta Animal Health Course – Level 2* Edmonton AB: Author.

Canadian Rural Information Service. E-mail: cris@em.agr.ca. Web site: www.agr.ca/policy/cris Telephone: 1-888-757-8725. Mailing address: 930 Carling Avenue, Ottawa ON K1A 0C5

Farm Animal Council of Saskatchewan (FACS) Bulletin.

Newspapers: *Western Producer* and *Grainews.*

Rural Service Centres. Videos and other publications.

Saskatchewan Agriculture, Food and Rural Revitalization. Web site: www.agr.gov.sk.ca. Miscellaneous publications available from the Publication Distribution Centre Order Desk, by phone (306)-721-4330, by fax: (306) 721-4626 or by e-mail: Valb.pad@sk.sympatico.ca.

Saskatchewan Labour, Prevention Services Branch (787-8399 or 1-800-567-7233). Information and publications on farm safety.

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Alberta Agriculture, Food and Rural Development. (1996). *Dairy: Training curriculum, skill profile and performance standards.* Edmonton AB: Author.

Battle River Regional Division #31. (1997). *Green certificate program: Handbook for administrators and school coordinators*. Camrose AB: Author.

Saskatchewan Education. (1991). *Instructional approaches: A framework for professional practice.* Regina SK: Author.

Saskatchewan Education. (1991). *Student evaluation: A teacher handbook.* Regina SK: Author.

# Appendix A: Training Plans for Dairy Production 10

**Module 1: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the major types of potential farm hazards:<br>• moving vehicles<br>• speed and power of machines and moving parts<br>• center of gravity (roll over)<br>• working with groups of people around machinery<br>• clothing, gloves, and footwear<br>• rotation parts (PTO, belts, chains, etc.)<br>• hot surfaces and fluids<br>• high pressure hydraulics<br>• other _____ | | | | | |
| Demonstrates personal safety habits when working around and operating farm machinery | | | | | |
| Identifies and describes situations which warrant:<br>• use of ear plugs<br>• eye protection<br>• dust protection for breathing<br>• location and accessibility of fire and First Aid equipment | | | | | |
| Maintains the tools and shop in a clean and safe condition | | | | | |
| Identifies safety guards, shields, and other safety devices and warning signs used on farm equipment | | | | | |

**Module 1: Farm Safety (Core)**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes proper clothing and protective gear | | | | | |
| Demonstrates the safety hazards associated with small tools, jacks, winches, and other lifting equipment | | | | | |
| Describes three basic components of a fire<br><br>Describes the three classes or types of fire<br><br>Lists the classes of fire possible in:<br>• a truck or tractor<br>• a farm shop<br>• other potential areas | | | | | |
| Reads and interprets the labels on a fire extinguisher | | | | | |
| Selects the proper extinguisher for the type of fire | | | | | |
| Performs basic emergency first aid procedures to:<br>• restore breathing<br>• choking victims<br>• bleeding cases<br>• victims of shock<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 2: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the following communication skills:<br>• reading and forwarding messages<br>• reading and interpreting charts<br>• interpreting manuals<br>• other _____ | | | | | |
| Demonstrates effective communication through:<br>• choice of words<br>• simple instructions and answers<br>• concise, specific language | | | | | |
| Composes and passes on messages and information through:<br>• telephone messages on written notes<br>• messages left and retrieved through voice mail and answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information | | | | | |
| Locates, sorts, and summarizes specific information for manuals and a variety of publications | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 3: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Develops an individual career profile | | | | | |
| Identifies basic personal and employability skills | | | | | |
| Prepares a personal time management system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 4: Planning for Dairy Production (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the kinds of plans used in dairy production | | | | | |
| Develops a land management plan | | | | | |
| Develops a farm plan | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 5: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates preventative maintenance:<br>• checking oil<br>• checking fuel levels<br>• cleaning radiators<br>• monitoring gauges<br>• removing dust build-up | | | | | |
| Interprets manuals of farm equipment | | | | | |
| Identifies and describes the operational procedure and safety hazards for:<br>• screwdrivers<br>• wrenches<br>• pliers and cutters<br>• hammers, mauls, chisels and punches<br>• other _____ | | | | | |
| Identifies and describes the characteristics of and the safety hazards associated with:<br>• mechanical jacks and winches<br>• hand jacks and winches<br>• hydraulic lifting equipment<br>• other lifting devices | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 5: Farm Equipment Maintenance and Repair (Core)**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the transportation regulations for moving farm equipment on public roads in terms of:<br>• licensing<br>• insurance<br>• operator's qualifications<br>• types of roads<br>• other _____ | | | | | |
| Describes the transportation regulations for the equipment in terms of:<br>• width, height and length requirements<br>• lighting<br>• slow moving signs<br>• clear visibility<br>• seasonal restrictions<br>• other _____ | | | | | |
| Understands the need for emergency equipment | | | | | |
| Describes examples of tools and emergency equipment for farm equipment in transport | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 6: Marketing (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and understands how the marketing system works for:<br>• feed grain<br>• dairy cattle | | | | | |
| Locates and interprets current market information | | | | | |
| Identifies and describes the various kinds of markets used in dairy production<br><br>Lists the advantages and disadvantages of each | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 7: Dairy Animal Behaviour (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes dairy cattle behaviour in terms of basic physiology and structure of the animal<br><br>Describes the concept of flight distance, herd instinct and techniques to minimize accidents and health hazards when handling dairy cattle<br><br>Describes vision, foot structure, and hearing of animals and how these structures affect the cattle's behaviour | | | | | |
| Describes how the natural instincts of dairy cattle affect handling, facilities, feeding and operations around a dairy<br><br>Demonstrates handling practices that:<br>• reduce noise stress<br>• do not excite the animals<br>• provide the best conditions for footing to reduce injury | | | | | |
| Identifies proper ways to restrain and handle a dairy animal using:<br>• a halter<br>• a rope<br>• knot typing techniques<br>• other _____<br><br>Demonstrate the animal's health associated with common handling techniques | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 8: Maintaining Dairy Facilities and Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the maintenance and repair of squeezes and gates | | | | | |
| Describes the critical points in checking and maintaining barns and milking parlours so that health requirements are observed<br><br>Describes examples of potential areas which may injure an animal | | | | | |
| Demonstrates skills in maintaining:<br>• pens<br>• pastures<br>• corral and fences | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 9: Dairy Farm Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the operation of:<br>• tractors<br>• trucks<br>• forage equipment<br>• milking equipment (sanitation, health standards, other _____)<br>• waste removal equipment | | | | | |
| Demonstrates the safe operation of all equipment<br><br>Demonstrates accident prevention practices around a dairy operation | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 10: Milking Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates how to operate milking and milk handling equipment<br><br>Interprets and uses manuals and order forms for equipment<br><br>Completes minor repair on the milking equipment | | | | | |
| Identifies each component, describes its function and how it operates for the following:<br>• milking machine<br>• vacuum system<br>• milk handling system | | | | | |
| Develops methods and practices associated with cleaning and sanitizing equipment | | | | | |
| Identifies the components of the milking equipment that require inspection:<br>• daily<br>• weekly<br>• monthly | | | | | |
| Identifies cleaning agents or chemicals<br><br>Demonstrates proper procedures in handling, use and storage of cleaning agents and other chemicals | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 11: Milking Process (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates appropriate behaviours associated with milking and handling cows<br><br>Uses proper handling techniques to reduce animal stress | | | | | |
| Demonstrates proper preparation of the cow's udder prior to and following the milking process<br><br>Identifies the processes required for udder health<br><br>Demonstrates appropriate personal hygiene to minimize contamination | | | | | |
| Describes and lists the advantages and disadvantages of:<br>• forestripping<br>• teat dipping<br>• single towel washing<br>• optional udder cleaning and washing styles<br>• milker application<br>• milk out<br>• milk removal | | | | | |
| Identifies the physiological processes of milking:<br>• milk let-down cycle<br>• role of oxytocin and adrenaline during milking<br>• approximate times and duration of the stages in milk let-down<br>• milk withholding resulting from pain or fear | | | | | |

**Module 12: Calf Care (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies environmental factors that affect calf health and development such as:<br>• cleaning and bedding management<br>• air quality<br>• sanitation<br>• space<br>• disease<br>• feeding practices | | | | | |
| Demonstrates proper maintenance and bedding procedures to ensure optimum cleanliness and sanitation for:<br>• manure management<br>• pen repair and maintenance<br>• cleaning and sanitation of feed and water containers | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 13: Dairy Cattle Health (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Researches and describes examples of diseases and disorders which affect dairy cattle<br><br>Describes their symptoms, effects of the disease, prevention strategies and treatment control and management | | | | | |
| Describes methods to inspect and monitor physical facilities for:<br>• maintenance<br>• sanitary conditions | | | | | |
| Describes common nutritional disorders in dairy cattle<br><br>Describes methods of prevention, treatment, control and management | | | | | |
| Describes common injuries to dairy cattle | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 14: Prevention and Care of Mastitis in Dairy Cows (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the signs, symptoms and causes of mastitis<br><br>Describes the treatment practice including testing and follow-up activities | | | | | |
| Describes the impact of mastitis on milk production<br><br>Collects information on the detection, treatment, control and prevention of mastitis | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 15: Feeding Plans (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes a feeding plan that includes:<br>• feeding rations<br>• type of cattle<br>• other _____ | | | | | |
| Demonstrates precautionary measures when operating feeding equipment<br><br>Interprets and demonstrates the directions given in each operator's manual | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 16: Milk Production (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the basic factors influencing milk production<br><br>Describes ways to maintain or increase milk production | | | | | |
| Describes recordkeeping of milk production<br><br>Describes ways to reduce the incidence of contamination of milk products<br><br>Describes the various inspection practices utilized on a farm<br><br>Describes reasons for maintaining useful and accurate records including:<br>• standard plate count<br>• freezing point test results<br>• inhibitors test<br>• somatic cells test<br><br>Analyzes milk quality reports and makes recommendations on how to improve milk quality | | | | | |

**ADDITIONAL COMMENTS:**

# Appendix B: Training Plans for Dairy Production 20

**Module 19: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies potential farm hazards<br><br>Explains why these areas need cautionary attention | | | | | |
| Describes the use of safety guards, shields and other safety devices used on farm equipment<br><br>Locates, reads, and comprehends warning messages on farm equipment | | | | | |
| Describes the kind of proper clothing and protective gear (footwear, gloves, glasses, breathing devices, hearing devices) necessary to observe farm safety<br><br>Identifies the farm jobs that require such cautionary equipment | | | | | |
| Demonstrates safe practice when using manual or power tools<br><br>Identifies the safety precautions when using jacks and winches<br><br>Describes the hazards associated with manual or power tool and other lifting equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 19: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies various fire hazards in a farm environment<br><br>Describes fire prevention strategies on farms<br><br>Identifies the different types of fires that can occur on a farm | | | | | |
| Demonstrates basic first aid skills required on a farm<br><br>Identifies the steps in handling emergency procedures that require police, ambulance and fire fighters | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 20: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates effective oral and written communication skills when:<br>• reading and forwarding messages<br>• reading and interpreting farm products<br>• calculating rates and rations<br>• interpreting manuals<br>• interpreting other types of communication | | | | | |
| Demonstrates effective verbal and written communication by using:<br>• accurate choice of words<br>• simple instructions and answers<br>• concise, specific language<br><br>Identifies the information and communication needs on a farm | | | | | |
| Receives and passes on messages accurately in the following ways:<br>• telephone messages with written notes<br>• messages left and retrieved through voice mail or answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information<br>• e-mail or other computer generated messages | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 20: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Locates, sorts, and uses information contained in a variety of publications | | | | | |
| Locates, sorts, and uses information retrieved from the Internet or other electronic sources | | | | | |

**ADDITIONAL COMMENTS:**

**Module 21: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Develops a individual career profile by:<br>• specific areas of interest<br>• life experiences<br>• areas of expertise<br>• relevant experiences<br>• strengths and abilities<br>• activities and interests<br>• dislikes or areas that need improvement<br>• academic and non-academic strengths<br>• other _____ | | | | | |
| Researches career clusters and the range of occupational opportunities related to this area | | | | | |
| Demonstrates use of time management skills<br><br>Prioritizes and prepares a personal time management system | | | | | |
| Identifies basic personal and employability skills | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 22: Planning for Dairy Cattle Production (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the kinds of plans used in a dairy production operation<br><br>Develops the plans necessary to operate this type of farm | | | | | |
| Develops a:<br>• land management plan<br>• farm management plan | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 23: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates skills in machinery maintenance including:<br>• checking oil<br>• checking fuel levels<br>• cleaning radiators<br>• cleaning filters<br>• monitoring gauges<br>• preventing dust build-up on screens or filters<br>• other _____ | | | | | |
| Identifies and describes a variety of different types of tools and their uses<br><br>Demonstrates correct selection and use of each tool<br><br>Distinguishes between a safe practice and an unsafe practice | | | | | |
| Identifies and describes the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches<br><br>Compares and contrasts the uses and efficiencies of the direct vertical, automotive, floor type, and any other type of lifting device | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 23: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the dangers and hazards associated with common lifting equipment | | | | | |
| Describes the need for having emergency equipment (which is required if the farm machinery has a crisis while in transport) | | | | | |
| Describes the transportation regulations for farm equipment and livestock on public roads<br><br>Identifies and explains licensing, insurance, operator's qualifications, and the *Dangerous Goods Transportation Act* for handling all types of farm equipment on public roads | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 24: Marketing (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes how marketing information is used in producing agricultural commodities | | | | | |
| Describes the basic steps involved in dairy marketing<br><br>Describes the various kinds of markets used in dairy production | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 25: Breeding and Reproduction (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the optimum traits to be considered when selecting dairy cattle<br><br>Describe the factors that contribute to an effective breeding and reproduction plan | | | | | |
| Explains the kinds of data included in a cow history program<br><br>Describes how cow history records are used in conjunction with milk production practices | | | | | |
| Describes various recordkeeping systems pertinent to dairy herd analysis | | | | | |
| Records necessary data for breeding and reproduction records<br><br>Records the data for a dairy herd analysis<br><br>Records the data necessary for a cow history program | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 26: Calf Care (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the nutritional and physical need of newborn calves | | | | | |
| Describes how the rumen changes and identifies how the changes affect the feeding program | | | | | |
| Demonstrates how to prepare appropriate amounts of feed for dairy calves<br><br>Demonstrates the use of all types of feeding equipment | | | | | |
| Describes the importance of an abundant supply of quality water for calves<br><br>Demonstrates routine practice of inspecting waterers for clean and abundant water supply | | | | | |
| Demonstrates the ability to inspect and maintain the areas/pens where calves live<br><br>Develops a checklist for the inspection and maintenance of facilities | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 27: Milking Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the milking system prior to, during, and following the milking process<br><br>Demonstrates the preparation procedures for the milking system | | | | | |
| Describes the operation of a milking system<br><br>Monitors the system during operation<br><br>Demonstrates the ability to make adjustments during the operation of the system | | | | | |
| Describes the shut-down procedures for the milking system<br><br>Describes the mechanical and sanitary considerations associated with the shut-down<br><br>Demonstrates the ability to shut-down the milking system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 28: Preparation of the Dairy Cow for Milking (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the physiological processes which occur during milking:<br>• milk let-down cycle<br>• role of oxytocin and adrenaline during the milking process<br>• approximate times and duration of the stages in milk let-down | | | | | |
| Demonstrates the proper handling of dairy cattle in order to reduce stress<br><br>Identifies the precautions necessary to reduce stress on a dairy cow | | | | | |
| Describes and demonstrates:<br>• forestripping<br>• teat dipping<br>• single towel washing<br>• washing styles<br>• other ways to prepare the udder for milking | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 29: Sanitation Practices for Dairy Equipment and Facilities (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and demonstrates the cleaning and servicing requirements for:<br>• pens<br>• milking parlour<br>• feeding system<br>• watering systems<br>• waterers<br>• other _____ | | | | | |
| Demonstrates the cleaning and servicing activities on a dairy farm that occur:<br>• daily<br>• weekly<br>• monthly | | | | | |
| Demonstrates the use of farm safety practices when cleaning and servicing facilities and equipment on a dairy operation | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 30: Monitoring the Health of Dairy Cattle (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the visual characteristics of dairy cattle indicating good health | | | | | |
| Describes signs of abnormal behaviour or poor health in:<br>• ears, nose, mouth and eyes<br>• head position and body stance<br>• gaits and movement<br>• cud chewing and gut fill<br>• condition of hair coat<br>• relationship to other animals in the group or pen<br><br>Demonstrates the appropriate handling and care procedures if any abnormal signs or indicators of poor health appear | | | | | |
| Demonstrates the ability to check dairy cattle for:<br>• respiratory rate<br>• body temperature<br><br>Demonstrates the ability to work quietly and not unduly stress the animals during the process | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 31: Calving Assistance (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes typical behaviour of a cow prior to calving including:<br>• restlessness<br>• distancing from the herd<br>• swelling of the udder<br>• enlarged vulva<br>• other _____<br><br>Describes a normal delivery of a calf including:<br>• normal calf position<br>• approximate duration of each stage in the delivery process<br>• relationship of age or type of animal to ease of calving<br>• appearance of waterbag and placenta<br>• other _____ | | | | | |
| Monitors the delivery process<br><br>Describes signs of distress<br><br>Indicates when to provide assistance<br><br>Describes the type of assistance for the different problems<br><br>Evaluates the birthing process and decides whether additional attention is required<br><br>Demonstrates the ability to contact a veterinarian or other professional for additional assistance | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 32: Waste Removal (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Lists and describes areas of inside and outside facilities that require regular daily, weekly, and monthly cleaning | | | | | |
| Demonstrates the safe operation of cleaning equipment<br><br>Identifies the dangerous components and hazards of operating this equipment<br><br>Describes and outlines the components of the equipment that require specialized training before an operator is allowed to work the equipment<br><br>Demonstrates precautionary steps to eliminate any dangerous situations from occurring | | | | | |
| Describes the environmental issues that are associated with waste disposal<br><br>Demonstrates the ways to properly dispose of waste<br><br>Describes the problems that can occur in the environment when waste is handled improperly | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 33: Feeding Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the types of feeding equipment used on the farm<br><br>Describes the components of the equipment that require monitoring | | | | | |
| Lists the safety precautions that prevent injury to workers or animals when using the feeding system equipment and facilities<br><br>Demonstrates the safe practices required to operate the equipment avoiding all hazardous situations | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

# Appendix C: Training Plans for Dairy Production 30

**Module 34: Causes and Prevention of Farm Accidents (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies and is perceptive of farm hazards<br><br>Identifies farm safety groups, organizations, and regulations set out by Workers' Compensation Board and other groups | | | | | |
| Describes the use of safety guards, shields and other safety devices used on farm equipment<br><br>Demonstrates a safety walk-around check on all the devices used for safety<br><br>Develops a personal safety audit of a farm environment | | | | | |
| Demonstrates safe practices when using lifting equipment<br><br>Identifies the safety hazards associated with use of:<br>• power or manual tools jacks, winches and other lifting equipment | | | | | |
| Identifies potential fire hazards in a farm environment<br><br>Describes all types of fire fighting techniques needed for a farm setting<br><br>Describes the precautions necessary when dealing with different types of fires | | | | | |

**Module 35: First Response for Farm Accidents (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates the required skills to handle emergency situations | | | | | |
| Develops and creates a well-equipped First Aid kit | | | | | |
| Displays charts of emergency phone numbers (police, firehall, ambulance, doctor, hospital) in appropriate places | | | | | |

**ADDITIONAL COMMENTS:**

**Module 36: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies where producers need reliable information such as:<br>• commodity prices, markets and growing conditions<br>• transportation and other input costs<br>• health problems and weed/insect infestations<br>• financial/banking information<br>• other _____ | | | | | |
| Demonstrates the ability to locate and sort useful information<br><br>Demonstrates the ability to critique information<br><br>Demonstrates the ability to communicate effectively reliable information | | | | | |
| Describes and demonstrates the communication needed for:<br>• writing and reading publications<br>• information management<br>• office tools | | | | | |
| Demonstrates effective communication skills required to understand or be understood by employees, employers, suppliers, or customers | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 37: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies career cluster and the range of occupational opportunities in the type of farming that interests the student according to:<br>• primary production (professional science, management, etc.)<br>• marketing, distribution and retail services<br>• support services (production, financial, government) | | | | | |

**ADDITIONAL COMMENTS:**

**Module 38: Farm Planning (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Prepares a projected budget for the particular type of farm | | | | | |
| Selects and demonstrates use of an accounting system | | | | | |
| Describes a net worth statement<br><br>Prepares a net worth statement | | | | | |
| Investigates the sources of credit and a credit rating system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Lists the components and the types of fluids that need to be checked:<br>• fuel, oil (engine, transmission, steering)<br>• water (radiator, battery)<br>• accessories (hydraulics) | | | | | |
| Demonstrates correct procedures to change:<br>• oil and oil filters for various vehicles<br>• hydraulic, fuel, air, and water filters | | | | | |
| Describes the types of greases and oils for high/low speed, seasons and other factors | | | | | |
| Demonstrates the correct procedures to change:<br>• non-engine parts requiring lubrication<br>• air cleaners<br>• grease gun<br>• coolant<br>• battery<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates the correct procedures to service:<br>• drive train and transmission<br>• brake system<br>• tires and rims | | | | | |
| Demonstrates the standards illustrated in the operator's manual, use and operational procedure, and safety precautions required to use:<br>• wrenches<br>• screwdrivers<br>• hammers<br>• chisels<br>• punches<br>• files and rasps<br>• saws for wood and metal<br>• other tools | | | | | |
| Identifies and describes the characteristics of and knows the weight range, strength, and capacity of:<br>• hydraulic jacks and hoists<br>• hand jacks and hoists<br>• direct vertical lift<br>• floor type lift<br>• automotive type lift<br>• other power or manual jacks/ winches | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the dangers and hazards associated with lifting equipment<br><br>Identifies unsafe, worn, or defective parts on any lifting equipment | | | | | |
| Demonstrates the ability to repair any lifting equipment | | | | | |
| Identifies and explains:<br>• licensing<br>• insurance<br>• *Dangerous Goods Transportation Act*<br>• width, height and length requirements<br>• lighting<br>• use of slow moving signs<br>• clear visibility rules<br>• seasonal restrictions<br>• emergency equipment required if crisis occurs while transporting machinery on public roads | | | | | |
| Obtains and knows the government and municipal guidelines for transporting farm equipment, trucks, or other machinery on public roads | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 40: Milking Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the various components of milking equipment | | | | | |
| Performs maintenance of milking and milk handling equipment | | | | | |
| Demonstrates safe practices when using cleaning agents<br><br>Wears protective clothing when using chemicals | | | | | |
| Describes chemicals by name, interprets labels, and cleans equipment according to the established routines and protocols<br><br>Demonstrates the proper shut-down and storage procedures | | | | | |
| Describes the significance of sanitizing equipment<br><br>Demonstrates the sanitizing of the equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 41: The Milking Process (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the ability to apply the milking unit and milk out the cow<br><br>Demonstrates proper operator behaviour to ensure maximum milk production<br><br>Demonstrates capable performance for:<br>• sanitation procedures<br>• application and adjustment of the milking system<br>• monitoring the operation of the milking system<br>• timely removal of the milker<br><br>Demonstrates proper behaviour around the cows. | | | | | |
| Describes the value of maintaining accurate and consistent records of milking and milk production<br><br>Maintains accurate milk production records | | | | | |
| Demonstrates how to operate the milk measuring system during the milking process and set-up | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 41: Milking Process (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates how to set up equipment properly prior to milking<br><br>Demonstrates how to disassemble and clean the equipment | | | | | |
| Properly records the milk production<br><br>Analyzes the data<br><br>Records and discusses how to increase milk production | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 42: Maintaining and Repairing Dairy Facilities and Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the major facility areas that need repair regularly<br><br>Initiates the periodic inspection and completes the maintenance and repair<br><br>Discusses the reasons for keeping the facilities in repair and good condition | | | | | |
| Inspects the facilities and equipment used in:<br>• housing (ventilating systems)<br>• feeding<br>• electrical systems<br>• heating systems<br>• water supply systems<br>• pens | | | | | |
| Develops skills needed to repair dairy equipment and facilities | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 43: Maintaining Herd Health (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the preventive, rehabilitative, and treatment regimes for maintaining the health of dairy cattle<br><br>Describes the use of medications and other treatments to maintain animal and herd health<br><br>Keeps health history records | | | | | |
| Describes the common veterinary drugs and medications used to maintain herd health such as:<br>• antibiotics<br>• vaccines<br>• disinfectants<br>• insecticides<br>• feed additives and nutrient supplements<br><br>Describes the common names, uses, calculation of dosage, and administration of common veterinary drugs or medication | | | | | |
| Demonstrates the ability to read and interpret drug labels for:<br>• procedures for safe use and storage<br>• dosage and administration<br>• appropriate storage techniques<br>• contamination<br>• practices for monitoring animals following administration of medications | | | | | |

**Module 43: Maintaining Herd Health (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Calculates the correct dosage for administering drugs or medications<br><br>Administrates common veterinary drugs and medications properly<br><br>Describes the proper procedures for administrating drugs to avoid contamination or spread of disease between animals<br><br>Demonstrates the proper way to administer:<br>• intramuscular injections<br>• intravenous injections<br>• subcutaneous injections<br>• intradermal and intrammary injections<br>• eye treatments<br>• treatments for parasites<br><br>Identifies and describes:<br>• proper administration techniques and range of administration period<br>• hazards to the animal resulting from improper administration<br>• when it is appropriate to seek additional professional assistance | | | | | |

**Module 43: Maintaining Herd Health (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the concept of drug residue and where such residues may show up in the animal's body<br><br>Describes the potential hazards of residues in products of the dairy cattle | | | | | |
| Describes the proper handling and storage of veterinary drugs to ensure optimum effectiveness<br><br>Describes directions for storage, shelf life, and handling<br><br>Describes the hazards to animals and humans associated with the handling, storage and administration of medications<br><br>Demonstrates good practices for:<br>• maintaining cleanliness<br>• having equipment ready<br>• effective and efficient job performance<br>• using protective clothing and equipment for hand and skin protection<br>• methods of administration<br>• dosage<br>• storage requirements<br>• withdrawal times or limitations | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 44: Specialized Livestock Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies and prepares a list of specialized livestock equipment, and describes the major components<br><br>Identifies safety procedures and demonstrates proper operation and maintenance | | | | | |
| Demonstrates the operation of:<br>• weigh scales<br>• feed mills<br>• front-end loaders<br>• bale shredders<br>• tub grinders<br>• forage harvester<br>• feed wagons<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 45: Animal Identification (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates various methods of identifying animals<br><br>Compares the advantages and disadvantages of each | | | | | |
| Demonstrates the application of various methods in a safe way for the animal | | | | | |
| Designs a system of recording and filing the animal identification for each animal | | | | | |

**ADDITIONAL COMMENTS:**

**Module 46: Artificial Insemination and Herd Analysis (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **✔if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Understands reasons for using AI to improve dairy production | | | | | |
| Understands a cow's reproductive system | | | | | |
| Describe the process of AI including:<br>• tools<br>• semen storage<br>• placement of pipette<br>• palpitation of diaphragm<br>• other _____ | | | | | |
| Describes farm safety practices | | | | | |
| Keeps accurate records | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 47: Detection of Heat for the Purposes of Breeding (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | ✔if Student:<br>A - Assisted<br>O - Observed<br>D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Understands the cow's reproductive system | | | | | |
| Identifies the characteristic behaviour exhibited by cows in heat | | | | | |
| Describes common aids for heat detection including:<br>• mount detectors<br>• special markers<br>• paints | | | | | |

**ADDITIONAL COMMENTS:**