

MODULE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION E: INTERMEDIATE LEVEL

The following pages define the curriculum and assessment standards for the intermediate level of Agriculture.

Intermediate level modules help students build on the competencies developed at the introductory level and focus on developing more complex competencies. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

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MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE

Level: Intermediate

Theme: Social and Cultural Perspectives

Prerequisite: None

Module Description: Students apply the principles of animal science and health technology in providing care for a domestic animal.

Module Parameters: Access to a domestic animal and an appropriate animal housing/fencing structure.

Off-campus learning can support the development of practical skills in animal care; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to animal care. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • identify and describe indicators of health in a domestic animal and factors that contribute to a healthy animal environment • demonstrate practical skills in providing care for a domestic animal 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • completing a research project on factors that contribute to the health and well-being of a domestic animal. Research to focus attention on indicators of health in the animal species, and normal/abnormal vital signs, behaviours and environmental conditions. <p><i>Assessment Tool</i> <i>Research Process: Animal Health and Well-Being, AGR2020–1</i></p> <p><i>Standard</i> <i>Conduct research to a standard of 2 on the rating scale</i></p>	30
	<ul style="list-style-type: none"> • demonstrating practical skills within each of the following areas of animal care: <ul style="list-style-type: none"> – feeding – housing – handling and restraint – health and well-being. <p><i>Assessment Tool</i> <i>Task Checklist: Animal Husbandry and Health Care, AGR2020–2</i> <i>Lab Assessment: Animal Care, AGRLAB–ANM</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 2 in each area of task and lab assessment</i></p> <ul style="list-style-type: none"> • maintaining an anecdotal record of tasks performed in providing care for a domestic animal. <p><i>Assessment Tool</i> <i>Log/Record of Animal Care, AGRLOG–ANM</i></p> <p><i>Standard</i> <i>Completing all sections of the log/record for animal care tasks performed over a negotiated/contracted period of time</i></p>	50

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Concept	Specific Learner Expectations	Notes
Health Factors (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify agents and sources of stress for the animal, and their implications for health • describe characteristics of a healthful animal environment, and conditions that can place an animal's health or safety at risk; e.g.: <ul style="list-style-type: none"> – sanitation – housing – methods of restraint. 	<p>Obtain <i>Recommended Code of Practice for the Care and Handling of Farm Animals</i> (a series of booklets available from Agriculture Canada).</p> <p>Invite a local veterinarian as a resource person.</p>
Safe Handling and Care	<ul style="list-style-type: none"> • demonstrate ethical behaviours in providing care for an animal • describe contributions of technology in current animal husbandry and health care practices; e.g.: <ul style="list-style-type: none"> – nutrition – disease prevention and treatment – reproduction – kennel and cage management • explain basic food requirements in specific situations; e.g.: <ul style="list-style-type: none"> – newborn – maintenance – growth or finishing – pregnant or lactating mothers – aging • identify shelter needs, and provide/maintain desirable handling, housing and fencing structures • monitor vital signs and examine for disease, parasites and other common ailments through: <ul style="list-style-type: none"> – head-to-toe examination – regular brushing/bathing – care of feet/nails – care of mouth 	<p>Plan and provide an appropriate environment for a domestic animal.</p> <p>Conduct research. Plan a visit to the local veterinarian.</p> <p>Arrange/facilitate field trips and job shadowing for first-hand observation of safe handling and care techniques.</p> <p>Visit a feed mill.</p> <p>Consider needs with respect to animal exercise and training.</p> <p>Invite a local veterinarian and/or industry worker as a resource person.</p> <p>Possible parasites include heart worms, round worms, hood worms, tape worms, fleas, ticks, earmites, mange and ringworm.</p> <p>Identify common ailments of the digestive, urinary, cardiovascular and respiratory systems.</p>

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Concept	Specific Learner Expectations	Notes
Safe Handling and Care (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe abnormal behaviour, and practise intervention strategies for a sick animal; e.g.: <ul style="list-style-type: none"> – reduce stress – administer emergency first aid – treat/control disease and other ailments – administer medication • provide appropriate care for young and/or newly born animals • describe veterinary services that are available, and the protocol for accessing these services; e.g.: <ul style="list-style-type: none"> – when to call – how to prepare. 	<p>Recognize symptoms of rabies, seizure, diabetes, arthritis.</p> <p>Discuss intervention strategies for shock, cardiac arrest, bleeding and wounds, poisoning, eye/ear injury, bone/joint injuries, injuries from hot/cold and foreign objects.</p> <p>Research how antibiotics and vaccines work.</p> <p>Given an emergency animal situation, describe appropriate methods of dealing with the emergency.</p>
Animal Welfare	<ul style="list-style-type: none"> • distinguish between animal welfare and animal rights • explain the importance of maintaining safe domestic and market-driven environments for animals • describe different perspectives regarding an issue in animal welfare; e.g.: <ul style="list-style-type: none"> – ethical – economic – social • identify and explain the advantages and disadvantages of owning a specific animal • identify criteria to be considered when choosing an animal; e.g.: <ul style="list-style-type: none"> – type of animal – breed – gender 	<p>Gather relevant news articles.</p> <p>Organize student debates on animal welfare issues.</p> <p>Research the life and work of Dr. Temple Grandin, an animal behaviour expert.</p> <p>Identify human attitudes/skills to which animals respond in a positive manner.</p> <p>Consider factors such as:</p> <ul style="list-style-type: none"> • personal lifestyle • cost • needs of animal • function of animal • therapeutic value • life expectancy of animal. <p>Discuss reproductive choices, and the pros/cons of breeding or sterilization.</p>

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Concept	Specific Learner Expectations	Notes
Animal Welfare (continued)	<i>The student should:</i> <ul style="list-style-type: none">• identify and describe legislation intended to address animal welfare• identify and describe organizations in the community that address animal welfare• outline a protocol for responding to an animal welfare issue.	Complete a research paper. Contact resource persons from: <ul style="list-style-type: none">• Alberta Agriculture, Food and Rural Development• the SPCA• Alberta Foundation for Animal Care.

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in growing a field crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment and practical production tasks; and they identify related career opportunities. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

Module Parameters: Access to a land laboratory.

Facilities and equipment should permit students to perform practical skills in **two** or more areas of crop production; e.g., soil preparation, seeding/propagation, cultivation, irrigation, fertilizing, pest and disease control, harvesting.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Plant Anatomy and Identification</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> identify field crops grown in western Canada according to: <ul style="list-style-type: none"> common name general characteristics/growth habits basic structural parts describe the structure, function and growth habits of field crop species, and their significance to the producer; e.g.: <ul style="list-style-type: none"> cells and tissues roots stems leaves flowers and fruits explain basic plant processes and related terminology; e.g.: <ul style="list-style-type: none"> water and nutrient intake respiration photosynthesis transpiration identify field crops that are suited to specific applications in Alberta; e.g.: <ul style="list-style-type: none"> vegetable and fruit crops pulse crops oil seeds specialty crops. 	<p>Draw, label and list functions of specific plant structures.</p> <p>Prepare a seed display of different field crop species.</p> <p>Assembled displays of seed varieties can be obtained from:</p> <ul style="list-style-type: none"> Canadian Wheat Board Canadian Grains Institute. <p>Prepare/examine microscope slides of plant parts/cross-sections.</p> <p>Plant collections and displays.</p> <p>Prepare models and/or mounts.</p>

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Equipment	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify types of equipment that are used at each stage of production; e.g.: <ul style="list-style-type: none"> – hand and/or power equipment used in seeding/planting, tillage, water/fertilizer application and harvest – handling equipment, such as trucks, tractors, conveyors and augers • identify and describe criteria relevant to the selection and/or design of production equipment; e.g.: <ul style="list-style-type: none"> – function, operation and maintenance – safety efficiency – ethical, legal and environmental factors – economics and cost • identify policy, legislation and safe practices relevant to the use of equipment and crop inputs. 	
Production Skills	<ul style="list-style-type: none"> • identify basic physical requirements for producing field crops; e.g.: <ul style="list-style-type: none"> – water – light (quantity, quality, duration) – temperature – air – space variables – nutrients • describe how weather and climate may affect production activities • relate principles of nutrition to production practices; e.g.: <ul style="list-style-type: none"> – function and sources of essential nutrients – identifying excesses and deficiencies – fertilizer formulation • describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g.: <ul style="list-style-type: none"> – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control 	<p>Design/conduct experiments that monitor the effect of environmental factors on growth.</p> <p>Calculate germination rates.</p> <p>Recognize nutrient deficiencies.</p> <p>Use <u>nontoxic and safe</u> materials for controlling plant pests and diseases.</p>

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • perform basic field crop production activities; e.g.: <ul style="list-style-type: none"> – soil preparation – seeding/propagation – crop cultivation – irrigation/fertilization – pest/weed/disease control – harvesting. 	Compare “common” and “certified” seed systems.
Career Opportunities	<ul style="list-style-type: none"> • research careers and the range of occupational opportunities related to producing field crops; e.g.: <ul style="list-style-type: none"> – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in field crop production and future career opportunities. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in raising livestock, poultry or other animal commodities, focusing attention on anatomy and identification, rations and feeding, housing, animal handling and restraint, animal health and welfare, and care for the young; and they identify related career opportunities. Potential areas of specialization include the production of beef, dairy, poultry, swine, sheep, game, exotics and bees and/or the study of aquaculture.

Module Parameters: Access to livestock, poultry or specialty animals and to appropriate animal housing and fencing structures.

Off-campus learning can support the development of practical skills in animal production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to animal production. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe the basic anatomy, physiology and breeds of cattle (beef or dairy), sheep, swine, poultry or specialty animals 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> identifying by name and function the basic structural parts of a beef, dairy, sheep, swine, poultry or specialty animal. Identification to include, where possible, structural parts of the head, body and limbs. <p><i>Assessment Tool</i> <i>Identification Guide: Basic Anatomy and Physiology, AGR2040–1</i></p> <p><i>Standard</i> <i>Identify by name and function 15 basic structural parts located in the head, body and limb areas of particular importance in the production system</i></p> <ul style="list-style-type: none"> explain vital life processes of respiration, digestion, excretion, growth and reproduction for a livestock species, and the significance of each in the production system. <p><i>Assessment Tool</i> <i>Knowledge/Application Assessment: Vital Life Processes, AGR2040–2</i></p> <p><i>Standard</i> <i>Respond to a standard of 2 on the rating scale</i></p> <ul style="list-style-type: none"> compare the unique characteristics of two or more breeds of a beef, dairy, sheep, swine, poultry or specialty animal, and describe their significance to the producer. <p><i>Assessment Tool</i> <i>Research Process: Animal Breeds, AGR2040–3</i></p> <p><i>Standard</i> <i>Conduct research to a standard of 2 on the rating scale.</i></p>	<p>30</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate practical skills in raising, growing and finishing cattle (beef or dairy), sheep, swine, poultry or specialty animals 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> demonstrating practical skills within <u>three</u> of the following areas of animal production: <ul style="list-style-type: none"> – feeding – housing – handling and restraint – health and welfare – breeding operations – care for young. Production tasks will involve the application of appropriate safety guidelines for animal husbandry. <p><i>Assessment Tool</i> <i>Task Checklist: Livestock/Poultry 1, AGR2040–4</i> <i>Lab Assessment: Animal Care, AGRLAB–ANM</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 2 in applicable areas of task and lab assessment</i></p> <ul style="list-style-type: none"> maintaining an anecdotal record of production tasks performed. <p><i>Assessment Tool</i> <i>Log/Record of Animal Care, AGRLOG–ANM</i></p> <p><i>Standard</i> <i>Completing all sections of the log/record for animal care tasks performed over a negotiated/contracted period of time</i></p>	<p>50</p>
<ul style="list-style-type: none"> demonstrate appropriate use of basic structures and equipment in animal production 	<ul style="list-style-type: none"> demonstrating knowledge and safe use of basic structures and equipment pertinent to each area of animal production. <p><i>Assessment Tool</i> <i>Task Checklist: Livestock/Poultry 1, AGR2040–4</i> <i>Lab Assessment: Animal Care, AGRLAB–ANM</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 2 in applicable areas of task and lab assessment</i></p>	<p>10</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe career opportunities relevant to beef, dairy, sheep, swine, poultry or specialty animal production demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> given career information relevant to livestock, poultry or specialty animal production, completing a research project on one or more career opportunities within the industry. <p><i>Assessment Tool</i> <i>Career Search: Intermediate Level, AGRCAR-2</i></p> <p><i>Standard</i> <i>Complete research to a standard of 2 on the rating scale.</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
Anatomy and Physiology	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe the characteristics and function of major anatomical structures in livestock, poultry or an animal specialty explain vital life processes and related terminology; e.g.: <ul style="list-style-type: none"> – respiration – digestion – waste excretion – growth – reproduction 	<p>Draw, label and list the functions of specific anatomical structures.</p> <p>Prepare models.</p> <p>Prepare diagrams of an animal's digestive system.</p> <p>Cattle and sheep have rumens (4-compartment stomachs), which enable them to digest grass and crop wastes.</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
<p>Anatomy and Physiology (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify major classes and breeds of commercial species • describe the desirable characteristics of major classes and breeds • identify animal breeds that are suited to specific production and market applications. 	<p>Dairy cattle producers place emphasis on a cow's udder and milk production records.</p> <p>Beef, hog and meat poultry producers place emphasis on muscling for meat production.</p> <p>Identify specific breeds of animals from pictures/slides.</p> <p>Invite a rural development specialist/veterinarian as a resource person.</p>
<p>Production Skills</p>	<ul style="list-style-type: none"> • identify basic physical requirements for producing livestock, poultry or specialty animals; e.g.: <ul style="list-style-type: none"> – water and food – light – temperature – air – space variables • describe how weather and climate may affect production activities • describe normal/abnormal feed sources, and the impact of nutrient deficiencies on animal health • provide basic feed requirements in specific situations; e.g.: <ul style="list-style-type: none"> – maintenance – growth or finishing – pregnant or lactating mothers • demonstrate accepted methods of handling and restraining animals 	<p>List the tasks required to provide proper care for an animal.</p> <p>Potential linkages exist with the Alberta Agriculture Green Certificate Farm Training Program:</p> <ul style="list-style-type: none"> • beef • dairy • sheep • swine. <p>For further information, see Section H: Linkages/Transitions.</p> <p>Prepare a flow chart that illustrates techniques for ration formulation.</p> <p>Develop a chart depicting the nutritional requirements of a specific animal.</p> <p>Compare different feeding systems.</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe common pests, diseases and ailments that affect the health of animals within the industry; e.g.: <ul style="list-style-type: none"> – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control • administer basic treatments for common pests, diseases and/or ailments; e.g.: <ul style="list-style-type: none"> – injections – dusting • identify policy, legislation and safe practices relevant to raising livestock, poultry or specialty animals. 	<p>Consider the use of:</p> <ul style="list-style-type: none"> • drug administration • vaccination • feed additives. <p>Examine the role of veterinary services.</p> <p>Research herd health factors and considerations.</p>
Structures and Equipment	<ul style="list-style-type: none"> • describe housing and fencing structures used in producing livestock, poultry or specialty animals; e.g.: <ul style="list-style-type: none"> – fences and shelters – totally confined rearing structures • clean and disinfect trailers, pens and other animal holding structures • safely operate and maintain equipment used at each stage of production within the industry; e.g.: <ul style="list-style-type: none"> – hand and/or power equipment used in maintaining health and nutrition – handling equipment, such as trucks, conveyors and augers • evaluate the design and/or construction of structures and equipment in respect to: <ul style="list-style-type: none"> – function, operation and maintenance – safety and efficiency – ethical, legal and environmental factors – economics and cost • identify policy, legislation and safe practices relevant to the use of structures and equipment within the industry. 	<p>Research an appropriate facility for one type of livestock.</p> <p>Construct models of fences, gates, corrals, etc., suited to a specific animal.</p> <p>Design/construct models of structures and equipment.</p> <p>Collect/label pictures of various types of animal shelters.</p> <p>Potential linkages exist with the Construction Technologies strand (see CON2100, a module on agri-structures).</p>

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Career Opportunities	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • research careers and the range of occupational opportunities related to producing livestock, poultry or animal specialties; e.g.: <ul style="list-style-type: none"> – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in livestock, poultry or specialty production, and future career opportunities. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate knowledge of materials and processes used in producing an agrifood product or in providing a related service, focusing attention on industry inputs, and processing technologies and practices; and they identify related career opportunities. Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables and honey.

Module Parameters: Access to an agrifood industry.

Supporting Module: AGR1060 Consumer Products & Services

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • describe the range of input materials, food products and/or related services characteristic of an agrifood industry • explain technologies and practices used in processing an agriculture food product or in providing a related service 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • given access to information concerning an agrifood industry, a presentation or report (written, oral or visual) on: <ul style="list-style-type: none"> – inputs to processing within the industry, including commodity inputs, human and natural resources and technology – products and/or related services provided by the industry. <p><i>Assessment Tool</i> <i>Presentations/Reports: Intermediate Level, AGRPRE-2</i></p> <p><i>Standard</i> <i>Complete the presentation or report to a standard of 2 on the rating scale</i></p> <ul style="list-style-type: none"> • a portfolio that describes technologies and practices used to produce a food product or provide a related service within an agrifood industry. <p><i>Assessment Tool</i> <i>Portfolio: Profile of an Agrifood Industry, AGR2050-1</i></p> <p><i>Standard</i> <i>Prepare and present the portfolio to a standard of 2 on the rating scale</i></p>	<p style="text-align: center;">20</p> <p style="text-align: center;">60</p>

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe career opportunities relevant to the agrifood industry demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> given information concerning careers within the agrifood industry, completing a research project on one or more related career opportunities. <p><i>Assessment Tool</i> <i>Career Search: Intermediate Level, AGRCAR–2</i></p> <p><i>Standard</i> <i>Complete research to a standard of 2 on the rating scale</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>20</p> <p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
Nature of the Industry	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe the products and/or services produced by an agrifood industry describe inputs to processing within the industry; e.g.: <ul style="list-style-type: none"> commodity inputs/raw materials financial resources human and natural resources technology explain supply management systems that may affect supply of raw materials to the industry; e.g.: <ul style="list-style-type: none"> government regulations board management systems identify environmental factors that affect the viability of the processing industry; e.g.: <ul style="list-style-type: none"> water land and soil weather and climate. 	<p>Plan for individual/group research and presentations.</p> <p>Prepare a glossary of industry terms.</p> <p>Processing systems are driven by the “value chain” that includes researcher, producer, processor, distributor and vendor. Each agent adds value to meet the needs of the consumer.</p> <p>Contact the Alberta Food Processors’ Association.</p>

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
<p>Processing Techniques</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain the stages and steps in processing the commodity and providing the value-added product and/or service • explain applications of technology in processing the commodity and providing the value-added product and/or service • explain the need for quality control within the processing industry; e.g.: <ul style="list-style-type: none"> – testing/inspection of raw materials – product quality and uniformity • explain systems used to grade products within the industry • describe methods of preserving perishable products within the industry; e.g.: <ul style="list-style-type: none"> – blanching and canning – dehydration and freeze-drying – fermentation – refrigeration and freezing – atmosphere control – food additives • describe packaging and labelling practices within the industry • describe transportation and storage practices within the industry, and their impact on industry location and product costs • describe buildings/structures and equipment used in processing, transportation and storage; e.g.: <ul style="list-style-type: none"> – design features – operation and maintenance – safety standards – economics/cost • identify safety concerns, regulations and standards within the industry. 	<p>Construct flow charts/ diagrams.</p> <p>For a look at quality control in cheese production, obtain the video entitled <i>On the Line</i> (see Section I: Learning Resource Guide).</p> <p>Examine the effects of temperature and packaging on product quality and shelf life.</p> <p>Draw a map that illustrates how transportation and storage may influence industry location.</p> <p>Design/construct models of structures and equipment.</p>

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Career Opportunities	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • research careers and the range of occupational opportunities related to processing an agricultural commodity or providing a value-added product/service; e.g.: <ul style="list-style-type: none"> – processing – business/sales – communications – research and development – quality assurance – transportation – education • describe current employment opportunities based on employment statistics • outline trends in the agrifood industry and future career opportunities. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: AGR1070 Basic Landscape/Turf Care

Module Description: Students demonstrate the techniques used to provide landscape and turf maintenance services, focusing attention on plant identification, equipment maintenance, effective landscape practices, cost analysis and pricing. Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds and roadside landscapes.

Module Parameters: Access to residential, recreational, institutional/industrial and/or roadside landscapes.

Facilities and hand and power equipment should permit students to perform practical tasks in landscape management; e.g., watering, cultivation/mulching, corrective pruning, mowing/trimming/edging of turfgrass, weed control, installation/removal of plant material.

Instructor training in first aid and in the use of pesticides is recommended; e.g., Standard First Aid, Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in landscape/turf management; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to landscape/turf management. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • identify plants suitable for use in Alberta landscapes 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • given access to on-site (or photographed) tree, shrub, ground cover, flower and turfgrass species/varieties used in Alberta landscapes, identifying selected specimens according to: <ul style="list-style-type: none"> – common and botanical names – general characteristics/growth habits – functional use in Alberta landscapes. <p><i>Assessment Tool</i> <i>Identification Guide: Landscape Plants, AGRIDE–LDS</i> <i>Information Sheet: Landscape Plants, AGRINF–LDS</i></p> <p><i>Standard</i> <i>Identify 10 landscape plant (including tree, shrub, ground cover, flower and turf grass specimens) in addition to those identified in AGR1070</i></p> <ul style="list-style-type: none"> • given access to on-site (or photographed) weed species found in Alberta landscapes and turfgrasses, identifying selected specimens according to: <ul style="list-style-type: none"> – common name – growth habit – management technique. <p><i>Assessment Tool</i> <i>Identification Guide: Landscape/Turfgrass Weeds, AGRIDE–WED</i> <i>Information Sheet: Landscape/Turfgrass Weeds, AGRINF–WED</i></p> <p><i>Standard</i> <i>Identify 5 common weeds (found in Alberta landscapes and/or turfgrasses) in addition to those identified in AGR1070</i></p>	<p>20</p>

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • perform routine maintenance and safety checks on equipment used in landscape practices 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • performing routine maintenance tasks on hand and power landscape/turfgrass equipment, including when applicable: <ul style="list-style-type: none"> – cleaning/sharpening of hand tools and mower blades – lubrication of hand and power tools – checking of oil, filters, battery, spark plugs and radiator on small engines – cleaning of air filters on small engines – checking tires and tire pressure – preparation of equipment for off-season storage. <p><i>Assessment Tool</i> <i>Task Checklist: Landscape/Turf Management 1, AGR2060-1</i> <i>Lab Assessment: Landscape and Turf Care, AGRLAB-LDS</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 2 on <u>three</u> pieces of equipment used in landscape/turfgrass maintenance, <u>one</u> of which is power driven</i></p>	<p>20</p>

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate practical skills in installing and maintaining landscape plants and turfgrass 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> performing landscape/turfgrass installation and maintenance services within <u>four</u> of the following areas: <ul style="list-style-type: none"> planting and transplanting preparing turfgrasses in the spring season corrective pruning trees and heading/thinning back fertilizer calculation and application to landscaped/turfed areas winterizing of trees, shrubs, perennials and turfgrasses. <p>Installation and maintenance services will involve the application of appropriate safety guidelines for using hand and power equipment.</p> <p><i>Assessment Tool</i> <i>Task Checklist: Landscape/Turf Management 1, AGR2060-1</i> <i>Lab Assessment: Landscape and Turf Care, AGRLAB-LDS</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of:</i> <ul style="list-style-type: none"> – 2 in installation and maintenance services – 3 in the use of hand and power equipment </p> <ul style="list-style-type: none"> maintaining an anecdotal record of all landscape/turfgrass services performed. <p><i>Assessment Tool</i> <i>Log/Record of Landscape/Turfgrass Services, AGRLOG-LDS</i></p> <p><i>Standard</i> <i>Completing all sections of the log/record for each service performed.</i></p>	<p>50</p>
<ul style="list-style-type: none"> explain techniques used to cost landscape and turfgrass services 	<ul style="list-style-type: none"> preparing a simple cost analysis for <u>one</u> landscape/turfgrass service. <p><i>Assessment Tool</i> <i>Landscaping Principles and Practices (Unit 25: Pricing Landscape Maintenance)</i></p> <p><i>Standard</i> <i>Accurately complete a cost analysis for one service performed</i></p>	<p>10</p>

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
Plant Identification	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe methods of identifying landscape plants; e.g.: <ul style="list-style-type: none"> using common names using botanical nomenclature identify and select appropriate trees, shrubs and ground covers for given applications in Alberta landscapes; e.g.: <ul style="list-style-type: none"> herbaceous and woody evergreen and deciduous identify and select appropriate flowers for given applications in Alberta landscapes; e.g.: <ul style="list-style-type: none"> annual, biennial and perennial bulbs, tubers and rhizomes identify and select appropriate turfgrasses for given applications in Alberta landscapes; e.g.: <ul style="list-style-type: none"> rhizome producing, stolon producing and bunch type fine, medium and course leaf texture. 	<p>Identify 10 or more landscape plants on site. Collect/mount a weed display.</p> <p>Identify specialty plants, including bulbs, corms, tubers and fleshy roots.</p> <p>Choose and plant bare root, ball and burlap, and container grown stock.</p> <p>Relate anatomy of turfgrass to appropriate management practices.</p> <p>Distinguish between single species turf plantings and grasses that are mixtures or blends.</p>
Equipment Maintenance	<ul style="list-style-type: none"> perform daily maintenance on hand and power equipment used in landscape practices; e.g.: <ul style="list-style-type: none"> clean/sharpen hand tools and mower blades lubricate hand and power tools check oil, oil filter, battery and radiator on small engines clean air filters on small engines check tires and tire pressure 	<p>CAUTION: Review safety knowledge and skills from AGR1070 prior to practical activities.</p>

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Concept	Specific Learner Expectations	Notes
Equipment Maintenance (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • perform safety checks on equipment and report malfunctions • diagnose and troubleshoot equipment failure • show appropriate records regarding the use of power equipment; e.g.: <ul style="list-style-type: none"> – hours of operation – periodic servicing • prepare equipment for off-season storage; e.g.: <ul style="list-style-type: none"> – cleaning – draining – oil change – repair. 	<p>Potential linkages exist with the “Landscape Gardener Apprenticeship Training Program” (see Section H: Linkages/Transitions).</p>
Installation/ Maintenance Tasks	<ul style="list-style-type: none"> • demonstrate proper planting and/or transplanting techniques for landscape plants; e.g.: <ul style="list-style-type: none"> – handling of plant materials – preparing the growing media and seed bed – installing plants and turf – staking and guying the plants • demonstrate proper techniques for preparing turfgrasses in the spring season; e.g.: <ul style="list-style-type: none"> – clean-up – dethatching – first cutting – patching the lawn – aeration and top dressing – fertilizing • explain the reasons for pruning trees, shrubs and other landscape plants • demonstrate proper techniques for pruning trees, shrubs and other landscape plants; e.g.: <ul style="list-style-type: none"> – corrective – heading back – thinning – jump cuts 	<p>Perform general landscape and turf installation / maintenance services.</p> <p>Keep a daily log that details maintenance services performed.</p> <p>Demonstrate correct use of core aerator and power rake.</p> <p>Calculate fertilizer requirements for turfed areas.</p> <p>Demonstrate corrective pruning on trees and shrubs:</p> <ul style="list-style-type: none"> • thinning, heading back, jump cuts • hedge shearing • pruning of conifers.

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Concept	Specific Learner Expectations	Notes
Installation/ Maintenance Tasks (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain types of winter damage to landscape plants and ways to protect against winter injury; e.g.: <ul style="list-style-type: none"> – windburn and sunscald – temperature extremes – ground heaving – damage owing to ice, snow and salt – snowplow and vehicle damage • demonstrate proper techniques for winterizing trees, shrubs, perennials and turfgrasses. 	<p>Explain winterizing techniques for trees, shrubs and turf.</p> <p>Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/Transitions).</p>
Cost Analysis	<ul style="list-style-type: none"> • identify factors that determine the cost of a landscape/turfgrass service; e.g.: <ul style="list-style-type: none"> – material costs – labour costs – equipment usage costs – overhead costs • prepare simple cost analyses for basic landscape/turfgrass services. 	<p>Consider daily work ethic in assessing landscape services performed:</p> <ul style="list-style-type: none"> • attendance • punctuality • use of time • group skills/attitudes • respect for property • clean-up.

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate practical skills and approved practices in providing for the daily care of a horse, focusing attention on the origin and history of horses, anatomy and conformation, types and breeds, handling and feeding practices, and basic health care; and they identify related career opportunities.

Module Parameters: Access to a horse and appropriate equine housing/fencing structures.

Off-campus learning is required to support the development of practical skills in the care of equine; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

It is recommended that students have a minimum of 50 hours of previous experience in horse handling and horse care prior to commencing the study of this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: Learner expectations in AGR2070 Equine 1 and AGR3070 Equine 2 are introductory to competencies developed in the two-year Equine Science Diploma Program at Olds College, Alberta. Opportunities for recognition of prior learning may be considered upon admission to this post-secondary program.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to the care of equine. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • describe the significance, origin and conformational features of the horse • identify the types, breeds and characteristics of horses 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • completing a research project that examines the significance, origin and conformational features of the horse. Research to address: <ul style="list-style-type: none"> – social and economic significance – origin and history – conformational features of the head, neck, fore limb and hind limb – factors determining balance. <p><i>Assessment Tool</i> <i>Research Process: Origin, History and Conformation of the Horse, AGR2070–1</i></p> <p><i>Standard</i> <i>Complete all components of research to a standard of 2 on the rating scale</i></p> <ul style="list-style-type: none"> • given access to information concerning the types and breeds of horses, a presentation or report (oral, written or visual) that describes: <ul style="list-style-type: none"> – distinguishing characteristics of draft horses and light horses – dominant/recessive traits and selection criteria relevant to specific breeds of draft horses and light horses – commonly used systems of breeding, including inbreeding, linebreeding and crossbreeding. <p><i>Assessment Tool</i> <i>Presentations/Reports: Intermediate Level, AGRPRE–2</i></p> <p><i>Standard</i> <i>Complete the presentation or report to a standard of 2 on the rating scale</i></p>	<p>15</p> <p>10</p>

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Significance, Origin and Conformation	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify different types of benefits associated with horses; e.g.: <ul style="list-style-type: none"> – pleasure – companionship – performance – breeding • describe the origin and history of horses, and factors that lead to domestication • identify and describe the characteristics and functions of basic external parts of a horse • analyze and explain conformational features of major body parts; e.g.: <ul style="list-style-type: none"> – head and neck – fore limb and hind limb • identify factors determining a horse’s balance. 	<p>Invite guest speakers from horse breeding associations.</p> <p>Individual/group research and presentation.</p> <p>Draw, label and list functions of specific external parts.</p> <p>Construct models; relate conformational features to specific applications.</p>
Types and Breeds	<ul style="list-style-type: none"> • identify and describe the distinguishing characteristics of draft horses and light horses • identify breeds of draft and light horses that are suited to specific applications • explain how characteristics of the horse are passed from generation to generation, and commonly used breeding systems; e.g.: <ul style="list-style-type: none"> – inbreeding – linebreeding – crossbreeding • explain heredity principles relevant to a specific breed of horse; e.g.: <ul style="list-style-type: none"> – dominant and recessive traits – selection criteria and procedures. 	<p>Contact breed associations for breed promotion material and guest speakers.</p>

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
<p>Handling, Feeding and Health Care</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify environmental factors that need to be considered in providing care for a horse; e.g.: <ul style="list-style-type: none"> – weather and climate – land, soil and water characteristics • demonstrate appropriate techniques for handling a horse; e.g.: <ul style="list-style-type: none"> – approaching a horse – leading a horse – cleaning a horse’s feet – grooming a horse – tying a horse – restraining a horse • perform approved horse feeding practices by providing: <ul style="list-style-type: none"> – water requirements – roughage needs – concentrate needs • describe the importance of a regular feeding schedule 	<p>Invite a local veterinarian to discuss accepted handling and care techniques.</p> <p>List the tasks required to provide daily equine care; emphasize approved safety practices for working with horses.</p> <p>Discuss the importance of, and challenges related to equine foot care.</p> <p>Examine techniques for trimming bridle path, muzzle and possibly ears. Discuss the process of desensitization.</p> <p>Discuss the functional and nutritional value of water; identify water requirements for varying equine activities and conditions.</p> <p>Explain the role of grains, high protein concentrates and other additives in a horse’s diet; identify forages used in equine nutrition.</p> <p>Discuss advantages/disadvantages of commercially prepared horse feeds.</p> <p>Calculate and recognize weights/volumes of feeds.</p> <p>Design and calculate balanced rations; establish and implement a regular feeding schedule.</p>

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
<p>Handling, Feeding and Health Care (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and compare characteristics/symptoms of a healthy horse and an ill horse • monitor and assess vital signs of a horse, recognizing abnormalities • demonstrate appropriate care for leg wounds on a horse • describe appropriate care of a horse with: <ul style="list-style-type: none"> – colic – respiratory disease • identify health factors that indicate the need for veterinarian services • describe policy, legislation and safe practices relevant to providing horse care. 	<p>Consider:</p> <ul style="list-style-type: none"> • visual signs • vital signs • habits/behaviours. <p>Utilize the expertise of a local veterinarian.</p> <p>Research topical leg preparations and their correct use; discuss the healing process and complications of wound healing.</p> <p>Discuss symptoms of infectious disease and treatment of infected horses; identify equine vaccines available and vaccination protocols.</p> <p>Establish protocols for equine medical emergencies.</p> <p>Identify contents of an equine first aid kit.</p>
<p>Career Opportunities</p>	<ul style="list-style-type: none"> • research careers and the range of occupational opportunities that involve the care, breeding and/or training of horses; e.g.: <ul style="list-style-type: none"> – breeding and production – health sciences/veterinary medicine – stable management – professional training/coaching – race track management • describe current employment opportunities based on employment statistics • outline trends in equine science, and future career opportunities. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: AGR1080 Basic Floral Design

Module Description: Students demonstrate knowledge of the practices involved in providing floral design and interior plantscape services, focusing attention on plant and flower identification, elements and principles of design, floral projects for all occasions, interior plant care and marketing practices.

Module Parameters: Access to a flower arrangement room with refrigeration, a source of water, adequate storage facilities and workbenches/table surfaces for flower arranging.

Instructor training in floral design; e.g., Flowers Canada Accreditation Program, and/or relevant industry experience would be an asset.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">identify and explain the cultural requirements of cut flowers, foliage and interior plants	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">given access to on-site (or photographed) cut flowers, foliage and interior plants used in the floral industry, identifying selected specimens by:<ul style="list-style-type: none">– common and botanical names– basic characteristics and general use. <p><i>Assessment Tool</i> <i>Identification Guide: Cut Flowers and Interior Plants, AGRIDE–FLO</i> <i>Information Sheet: Cut Flowers and Interior Plants, AGRINF–FLO</i></p> <p><i>Standard</i> <i>Identify 10 cut flowers and/or foliage specimens and 5 interior plants; species identified must be in addition to those identified in AGR1080</i></p>	20

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS) (continued)

Concept	Specific Learner Expectations	Notes
<p>Plant and Flower Identification (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify dried and artificial materials commonly used in floral design; e.g.: <ul style="list-style-type: none"> – dried flowers and foliage – silk and other fabric materials • relate different growth styles of flowers to their use in floral arrangements • explain the advantages and disadvantages of using different types of floral materials. 	<p>Identify:</p> <ul style="list-style-type: none"> • 10 or more different cut flowers and/or foliage specimens • five or more interior plants and/or gift plants. <p>Species identified should be in addition to those identified in AGR1080.</p>
<p>Design and Construction</p>	<ul style="list-style-type: none"> • explain and apply elements and principles of design; e.g.: <ul style="list-style-type: none"> – line, form, pattern and texture – colour, balance and rhythm – scale and proportion – harmony, contrast and repetition • apply the colour wheel and basic colour theory • demonstrate advanced design techniques; e.g.: <ul style="list-style-type: none"> – crescent – hogarth curve – T-shape – L-shape 	<p>CAUTION: Review safety practices prior to practical activities.</p> <p>Industry resources produced by Redbook Floral Services and available through the Olds College Bookstore include:</p> <ul style="list-style-type: none"> • Basic Floral Design • Advanced Floral Design • Care and Handling of Fresh Flowers and Foliages. <p>Apply principles of:</p> <ul style="list-style-type: none"> • rhythm and harmony • depth and line • texture • focal emphasis. <p>Discuss terms/techniques of design:</p> <ul style="list-style-type: none"> • pave • binding • grouping • clustering • layering.

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS) (continued)

Concept	Specific Learner Expectations	Notes
Design and Construction (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • design and construct fresh, dried and/or artificial floral arrangements for special purposes and occasions; e.g.: <ul style="list-style-type: none"> – calendar events – weddings – funerals – hospitals. 	<p>Arrange for students to gain job/productivity skills through work experience. Students need to experience their perceived skills in a work setting.</p> <p>Contact your local Flowers Canada Accreditation Council regional liaison member for information on instructor workshops (see Section H: Linkages/Transitions).</p>
Plantscape Maintenance	<ul style="list-style-type: none"> • identify indoor plants and gift plants, explaining the cultural requirements of each; e.g.: <ul style="list-style-type: none"> – light intensity and duration – water and soil conditions – temperature and humidity • assess the placement of indoor plants by applying knowledge of their cultural requirements • identify and explain sources of environmental stress for indoor plants; e.g.: <ul style="list-style-type: none"> – central heating systems – air conditioning • explain legislation and safe practices regarding the handling, mixing and application of plant pesticides 	<p>Identify on-site five or more different indoor plants and/or gift plants (in addition to those identified in AGR1080).</p> <p>Perform general care of flowering plants and tropical foliage plants in home, school or office for at least three weeks.</p> <p>Keep a daily log of maintenance services performed.</p>

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS) (continued)

Concept	Specific Learner Expectations	Notes
<p>Plantscape Maintenance (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • plan and implement a maintenance routine for an indoor plantscape; e.g.: <ul style="list-style-type: none"> – adjust/regulate light – monitor growth media – water and fertilize – control pests – prune and remove waste material – rotate plants • demonstrate diagnostic skills regarding common plant problems; e.g.: <ul style="list-style-type: none"> – soil/growing medium – water and drainage – fertilizers/growth stimulants – pests, diseases and other disorders. 	<p>Suggested resources:</p> <ul style="list-style-type: none"> • <i>Landscaping Principles and Practices</i> • <i>The Commercial Greenhouse</i> • <i>The Houseplant Expert.</i> <p>Consider daily work ethic in assessing plantscape services performed:</p> <ul style="list-style-type: none"> • attendance • punctuality • use of time • group skills/ attitudes • respect for property • clean-up.
<p>Floral Marketing</p>	<ul style="list-style-type: none"> • identify fixed and variable costs associated with floral services • explain and apply pricing formulas used in the floral industry • calculate the cost price and selling price of a floral arrangement • explain the importance of accountability for pricing practices used within the industry. 	<p>Distinguish between the concepts of wholesale and retail.</p> <p>Calculate the cost and selling price for a variety of floral products and services.</p>

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES)**Level:** Intermediate**Theme:** Technology and Applications**Prerequisite:** None**Module Description:** Students apply knowledge of general marketing principles within the context of an agriculture or horticulture industry, focusing attention on materials and services offered to the consumer through open (free enterprise) marketing structures and marketing techniques; and they identify related career opportunities.**Module Parameters:** Access to an agriculture or horticulture industry.**Supporting Module:** AGR1090 Market Fundamentals**Curriculum and Assessment Standards**

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> develop and present a plan for marketing an agriculture/horticulture commodity, product or service through an open (free enterprise) marketing structure 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> developing and presenting a plan for marketing an agriculture/horticulture commodity, product or service through an open (free enterprise) marketing structure. Marketing plan to address: <ul style="list-style-type: none"> current and potential markets product supply and/or development marketing principles and strategies pricing packaging and labelling advertising and promotion sales and distribution networks. <p><i>Assessment Tool</i> <i>Assessment Criteria: A Marketing Plan, AGR2090-1</i></p> <p><i>Standard</i> <i>Develop and present the marketing plan to a standard of 2 on the rating scale</i></p>	80

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • describe career opportunities and the range of employment opportunities relevant to marketing an agriculture/horticulture commodity, product or service • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • given access to current information on career opportunities in marketing an agriculture/horticulture commodity, product or service, completing a research project on one or more careers in agriculture marketing. <p><i>Assessment Tool</i> <i>Career Search: Intermediate Level, AGRCAR–2</i></p> <p><i>Standard</i> <i>Complete research to a standard of 2 on the rating scale</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p style="text-align: center;">20</p> <p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
Marketing Principles	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain the goals of marketing an agriculture/horticulture commodity, product or service; e.g.: <ul style="list-style-type: none"> – market position and profit margin – image creation and industry strength – price discovery – product exposure • compare potential strategies that might be used to distribute the product or service in the marketplace; e.g.: <ul style="list-style-type: none"> – extensive (open) – selective (niche) – exclusive (franchise) 	<p>Consider linkages with the Management and Marketing strand. Access basic marketing textbooks used in this strand; e.g.:</p> <ul style="list-style-type: none"> • <i>Marketing: A Canadian Perspective</i> • <i>Marketing: A Global Perspective</i> • <i>Marketing Dynamics</i> • <i>Marketing Today.</i>

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Concept	Specific Learner Expectations	Notes
Marketing Principles (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • illustrate the laws of supply and demand, and factors that cause changes in supply, demand and pricing of the commodity, product or service; e.g.: <ul style="list-style-type: none"> – imports and exports – environmental factors – consumer choices – economic conditions – technology • examine competition in both domestic and international markets, and barriers/restrictions on free trade; e.g.: <ul style="list-style-type: none"> – cultural, ethical, political, legal – economic systems – international organizations – trade agreements • identify sources of market information relevant to the commodity, product or service; e.g.: <ul style="list-style-type: none"> – data base – private consultation • describe the stages through which the agriculture/horticulture product moves en route to the consumer; e.g.: <ul style="list-style-type: none"> – inputs assembly – processing – brokering of product – transport. 	<p>Invite marketing specialists to discuss marketing systems.</p> <p>Marketing systems are driven by the “value chain” that includes researcher, producer, processor, distributor and vendor. Each agent adds value to meet the needs of the consumer.</p> <p>Identify impacts of recent changes in technology on marketing practices; e.g.:</p> <ul style="list-style-type: none"> • production • transportation • processing • preserving. <p>Example:</p> <ul style="list-style-type: none"> • CanFax, a data base of timely cattle market information. <p>Use weekly marketing reports to develop a graph of price trends.</p> <p>Prepare flow charts/ diagrams of product stages en route to the consumer.</p> <p>Visit an auction, grain elevator, packing house or cannery.</p>
Market Development	<ul style="list-style-type: none"> • describe one or more strategies that may be used to promote an agriculture/horticulture commodity, product or service: e.g.: <ul style="list-style-type: none"> – advertising – personal sales – telemarketing – display – in-store samples – trade shows 	

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Concept	Specific Learner Expectations	Notes
Market Development (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • assess opportunities for the global marketing of the commodity, product or service; e.g.: <ul style="list-style-type: none"> – the United States and Mexico – nations of the Pacific Rim – other developing nations • explain the role of market research and product development in adapting the commodity, product or service to meet present and future market needs; e.g.: <ul style="list-style-type: none"> – consumer polls – surveys – focus groups • describe factors that influence consumer preferences and the development of new products and markets within the industry; e.g.: <ul style="list-style-type: none"> – ethical, cultural, religious – demographic – environmental – economic • outline market conditions leading to, and steps in altering the product or service, or developing a related product or service. 	<p>Design/conduct a consumer survey regarding preferences for agricultural products.</p> <p>Create a new product, design a package and market the product within school/ community.</p> <p>A possible extension activity might be to research the process followed to “patent” a new product or service.</p>

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Concept	Specific Learner Expectations	Notes
Career Opportunities	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • research careers and the range of occupational opportunities related to marketing an agriculture/horticulture commodity, product or service; e.g.: <ul style="list-style-type: none"> – farm gate market services – wholesale/retail services – distribution and transportation – market research and analysis – product development – advertising and promotion – government services • infer career opportunities and trends from employment statistics • outline agriculture/horticulture industries in the future, and resulting career opportunities in marketing. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>

MODULE AGR2100: PROTECTED STRUCTURES

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students identify essential components of a controlled growing/living environment and demonstrate the techniques used to manage the growing/living environment within a protected enclosure.

Module Parameters: Access to a greenhouse structure or livestock/poultry enclosure.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• identify and explain essential components of controlled growing/living environments	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• identifying six or more environmental components commonly controlled in protected enclosures for crop and/or livestock production, and specific technologies/materials used to control each environmental component. <p><i>Assessment Tool</i> Agriscience and Technology, Chapter 16: <i>Controlled Living Environments</i></p> <p><i>Standard</i> Complete all components of the “Chapter Review” for Chapter 16: <i>Controlled Living Environments</i></p>	10

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> maintaining an anecdotal record of tasks performed in operating a protected enclosure for production purposes. <p><i>Assessment Tool</i> <i>Log/Record of Production Tasks, AGRLOG–PLT or AGRLOG–ANM</i></p> <p><i>Standard</i> <i>Complete all sections of the log/record for tasks performed over a negotiated/contracted period of time</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated Throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Essential Components</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> define and give examples of controlled growing environments describe environmental components that are commonly controlled in protected enclosures; e.g.: <ul style="list-style-type: none"> temperature humidity light intensity atmosphere explain how specific problems in agriculture production are solved through environmental control describe control systems and technologies used to maintain temperature, humidity, light and atmospheric gases at specific levels 	<p>Consider “minimum altering” (e.g., fence or cold frame) and “maximum altering” (e.g., greenhouse or totally confined rearing structure).</p> <p>Consider:</p> <ul style="list-style-type: none"> light quality light intensity light exposure time. <p>Plan for individual/small group research and presentations.</p>

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Concept	Specific Learner Expectations	Notes
Essential Components (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe methods of maintaining sanitation and reducing/minimizing contaminants • identify utility/service requirements and energy conservation methods for a controlled growing environment. 	
Agricultural Applications	<ul style="list-style-type: none"> • explain applications of controlled growing environments in crop or livestock production; e.g.: <ul style="list-style-type: none"> – temperature, light, humidity and atmosphere control systems – feed and watering systems – sanitation and health practices • prepare a design for environmental control that addresses one or more problems in a crop or livestock production venture; e.g.: <ul style="list-style-type: none"> – identify production problems caused by environmental factors – design structures and equipment that address production problems through partial or complete control of the growing environment – prepare accurate working drawings and/or models of the production facility • identify benefits and problems resulting from the use of protected enclosures in crop or livestock production. 	<p>Applications should be specific to one area of production.</p> <p>Keep design briefs simple.</p> <p>Consider the use of simulations in:</p> <ul style="list-style-type: none"> • planning • layout • construction.

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Concept	Specific Learner Expectations	Notes
<p>Management Practices</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify safety hazards and demonstrate safe practices while performing production tasks within a protected enclosure • regulate and manage the growing environment for a designated crop or livestock species; e.g.: <ul style="list-style-type: none"> – operate control systems to maintain temperature, humidity and ventilation at proper levels – operate artificial lighting and shade-control mechanisms to maintain proper light intensity – regulate watering and feeding systems to ensure nutritional requirements are met • maintain a daily log that details activities regarding production and/or facility management • demonstrate appropriate sanitation and health practices within a protected enclosure; e.g.: <ul style="list-style-type: none"> – manage/control disease and pests – dispose of waste material • perform routine maintenance services and repairs to protected enclosures. 	<p>List the necessary steps taken in managing/maintaining a controlled growing environment.</p> <p>Consider:</p> <ul style="list-style-type: none"> • heating • lighting • humidity • ventilation • nutrition/watering systems • sanitation.

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION)**Level:** Intermediate**Theme:** Management and Conservation**Prerequisite:** None**Module Description:** Students examine soil formation and classification, conduct tests to determine the physical and chemical properties of soils, and they explain the impact of soil properties on productivity.**Module Parameters:** Access to a science laboratory and land laboratory.**Note:** Specific learner expectations in AGR2120 Soils Management 1 and AGR3120 Soils Management 2 are consistent with Soils Investigations (SOIL100–35) at Olds College, Alberta. Teachers should contact the Registrar’s Office, Olds College, regarding transfer of credit for competencies developed in this module and in AGR3120 Soils Management 2.**Supporting Module:** AGR1110 Resource Management and Conservation**Curriculum and Assessment Standards**

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe the origin and composition of soils in Western Canada 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> a theory test in which the student demonstrates knowledge of the origin and composition of soils in western Canada. <p><i>Assessment Tool</i> <i>Sample Test Items: Origin and Composition of Soils, Soils Investigations Facilitator’s Manual</i></p> <p><i>Standard</i> <i>Response indicating 75% mastery</i></p>	15

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify physical properties of soils, and describe their relationship to soil productivity 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> given an Alberta grassland or forest soil profile, <ul style="list-style-type: none"> identifying characteristics of each master horizon determining the parent material and soil forming factors. <p><i>Assessment Tool</i> Soils Investigations I Assignment Book <i>Lab Investigations: Soil Profile Analysis, AGR2120-1</i></p> <p><i>Standard</i> <i>Complete all related exercises in the assignment book; conduct lab investigations to a standard of 2 on the rating scale</i></p>	15
	<ul style="list-style-type: none"> a theory test in which the student demonstrates knowledge of the physical properties of soil. <p><i>Assessment Tool</i> <i>Sample Test Items: Physical Properties, Soils Investigations Facilitator's Manual</i></p> <p><i>Standard</i> <i>Response indicating 75% mastery</i></p>	20
	<ul style="list-style-type: none"> given four soil samples, a soil texture triangle and Munsell colour chart: <ul style="list-style-type: none"> manually estimating the relative percentages of sand, clay and silt for each sample determining the textural class of each soil sample identifying the colour name and Munsell notation for each soil sample. <p><i>Assessment Tool</i> <i>Lab Investigations: Soil Texturing, AGR2120-2</i> <i>Soils Investigations Materials Kit</i></p> <p><i>Standard</i> <i>Conduct lab investigations using equipment/ supplies provided in the materials kit to a standard of 2 on the rating scale</i></p>	20

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION)
(continued)

Concept	Specific Learner Expectations	Notes
Soil Development (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe the major components of soil and their relationship to soil productivity; e.g.: <ul style="list-style-type: none"> – minerals – organic matter – air – water • identify master horizons of a soil profile, and relate common horizon suffixes to soil forming factors • interpret and compare the soil profiles of forest and grassland environments • list and describe the soil orders of the Canadian System of Soil Classification; e.g.: <ul style="list-style-type: none"> – distinguishing characteristics – typical horizon sequences. 	<p>Assess a local piece of land regarding soil formation factors that have helped to shape soil to its present condition.</p> <p>Demonstrate the water-holding capacity of different soils.</p> <p>Construct soil profile diagrams.</p>
Physical Properties	<ul style="list-style-type: none"> • define soil texture and describe textural classes of soil • apply hand-texturing techniques to estimate the texture of a soil sample; e.g.: <ul style="list-style-type: none"> – dry consistence test – moist cast test – ribbon test • define soil structure and describe factors that influence the formation of soil structure • identify different types of soil structures, and relate soil structure to common soil horizons • explain the significance of colour as an indicator of soil conditions, and descriptors used to indicate soil colour • measure soil colour using the Munsell Soil Colour Chart • interpret relationships between physical properties of soil and plant growth. 	<p>Plan laboratory activities in hand texturing.</p> <p>Map soil zones of the prairie provinces.</p> <p>Plan for laboratory activities in measuring soil colour.</p>

MODULE AGR2130: INTEGRATED PEST MANAGEMENT

Level: Intermediate

Theme: Management and Conservation

Prerequisite: None

Module Description: Students apply knowledge of biological, cultural and chemical pest-control measures within the context of an agriculture, horticulture or forest industry.

Module Parameters: Access to an agriculture production, horticulture or forest industry.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe the life cycle and ecology of common pests in an agriculture, horticulture or forest industry 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> given an agriculture, horticulture or forest industry, identifying and classifying common pests within each of the following categories: <ul style="list-style-type: none"> weed (annual, perennial) insect (order) disease (bacteria, fungus, virus). vertebrate. <p><i>Assessment Tool</i> Backyard Pest Management in Alberta</p> <p><i>Standard</i> <i>Identify and classify three weeds, three insect pests, three diseases and three vertebrate pests</i></p> <ul style="list-style-type: none"> illustrating and describing the anatomy, life cycle <u>and</u> food web for one or more of the pests identified within each category. <p><i>Assessment Tool</i> <i>Assessment Criteria: Diagrams and Technical Drawing, AGRDRA</i></p> <p><i>Standard</i> <i>Complete each illustration/description to a standard of 2 on the rating scale</i></p>	<p>20</p>

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • describe biological, cultural and chemical pest-control strategies and basic principles of integrated pest management • explain legislation and policies regarding the safe handling, storage and use of chemical and biological control agents • develop and implement an integrated pest management program • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • a presentation or report that describes basic principles and practices, examples and the benefits/costs of: <ul style="list-style-type: none"> – biological, cultural and chemical pest control – integrated pest management. <p><i>Assessment Tool</i> <i>Presentations/Reports: Intermediate Level, AGRPRE-2</i></p> <p><i>Standard</i> <i>Complete the presentation or report to a standard of 2 on the rating scale</i></p>	20
	<ul style="list-style-type: none"> • reading and interpreting label information regarding the safe handling, storage and intended application/use of: <ul style="list-style-type: none"> – chemical control agents, including emulsifiable concentrates, liquids, wettable powders, dusts, granules and fumigation materials – biological control agents, including predatory insects, infectious organisms and resistant plants. <p><i>Assessment Tool</i> <i>Task Checklist: Integrated Pest Management, AGR2130-1</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 3 in applicable areas of task assessment</i></p>	20
	<ul style="list-style-type: none"> • developing and implementing a basic integrated pest management program for two or more pests within an agriculture, horticulture or forest industry. <p><i>Assessment Tool</i> <i>Task Checklist: Integrated Pest Management, AGR2130-1</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of 2 in applicable areas of task assessment</i></p>	40
	<ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
<p>Life Cycles and Ecology</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • define a pest and describe specific pest problems in agriculture, horticulture or forestry • explain the benefits of pest management to agriculture, horticulture and forestry • describe the biology and life cycles of major groups of pests; e.g.: <ul style="list-style-type: none"> – weeds – insects – diseases – vertebrates • identify and classify a range of common pests; e.g.: <ul style="list-style-type: none"> – mites, ticks – birds – fungi – weeds – insects – rodents • explain the interrelatedness of common pests with ecosystems and environments; e.g.: <ul style="list-style-type: none"> – relationship of soil, water and air characteristics to plant/animal health – food webs and energy chains – environmental factors that limit populations. 	<p>A pest is generally considered to be an organism that adversely affects human activities. Therefore, determination of pests will depend upon context.</p> <p>Diagram and explain ecosystem structures.</p> <p>Consider limiting factors on populations in ecosystems.</p> <p>Collect, identify and mount insect and weed pests.</p> <p>Draw/construct food webs and energy chains involving common pests.</p>
<p>Methods of Pest Control</p>	<ul style="list-style-type: none"> • explain basic principles of biological pest control and give examples of beneficial organisms used to control pest populations; e.g.: <ul style="list-style-type: none"> – predators – parasites – pathogens • explain basic principles of cultural pest control and give examples of cultural practices used to control pest populations; e.g.: <ul style="list-style-type: none"> – soil tillage – crop rotation – clean culture 	<p>Conduct case studies on different techniques of control.</p>

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
<p>Methods of Pest Control (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain basic principles of chemical pest control and give examples of chemical families and pesticide formulations used to control pest populations • describe and give examples of physical and mechanical pest-control strategies • identify regulatory bodies and legislation established to assist pest-control programs • explain the role of breeding programs in developing organisms that have genetic resistance to pests • describe and compare the advantages and disadvantages of biological, cultural, chemical, physical, mechanical and regulatory pest-control programs. 	<p>Discuss the importance of rotating chemical groups being used to avoid pest tolerance.</p> <p>Explain genetic resistance.</p>
<p>Integrated Management</p>	<ul style="list-style-type: none"> • describe the history of pest management • define and give reasons for the development of integrated pest management; e.g.: <ul style="list-style-type: none"> – management versus control perspective – environmental and human health concerns • explain the basic principles and strategies of integrated pest management; e.g.: <ul style="list-style-type: none"> – identification of key parts – biology of crop/host and its ecosystem – ecosystem manipulation – economic threshold levels – pest sampling and monitoring • cite benefits and problems related to the use of integrated pest management as a pest-control strategy. 	<p>Compare and contrast the concepts of “pest control” with “pest management.”</p> <p>Explain the significance of:</p> <ul style="list-style-type: none"> • economic thresholds • scouting procedures • record keeping.

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
Practical Procedures	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify specific pest problems within an agriculture, horticulture or forest industry • perform pest sampling and monitoring procedures in order to determine the presence of pests, their stage of development and the nature/ extent of damage caused • identify threshold levels that determine when pest control measures should be implemented • identify and apply pest management procedures that are based upon relevant aspects of pest/host biology and the ecosystem • explain safe techniques in pesticide application; e.g.: <ul style="list-style-type: none"> – use of equipment and supplies – mixing and application techniques – clean-up and disposal • describe the impact of pest-control practices on human and environmental health. 	<p>Invite an agricultural specialist to explain the advantages/ disadvantages of different pest control measures.</p> <p>For additional information, see Section 4 in <i>Agriscience Fundamentals and Applications</i>.</p> <p>Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/ Transitions).</p>

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in growing a nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and practical production tasks; and they identify related career opportunities.

Module Parameters: Access to a land laboratory and/or controlled growing environment.

Facilities and equipment should permit students to perform practical skills in **three** or more areas of nursery or greenhouse crop production; e.g., soil preparation, propagation, transplanting, cultivation, watering and fertilizing, pest and disease control.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-Campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • identify and describe nursery or greenhouse plants suited to Alberta climates 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • given access to on-site (or photographed) tree, shrub, perennial, annual and/or tropical plant species/ varieties used in the nursery and greenhouse industry, identifying selected specimens according to: <ul style="list-style-type: none"> – common and botanical names – growth habit and taxonomy – specific applications in Alberta. <p><i>Assessment Tool</i> <i>Identification Guide: Nursery and Greenhouse Plants, AGRIDE–NUR</i> <i>Information Sheet: Nursery and Greenhouse Plants, AGRINF–NUR</i></p> <p><i>Standard</i> <i>Identify 10 tree, shrub, perennial, annual and/or tropical plant species/varieties</i></p> <ul style="list-style-type: none"> • a concept test in which the student demonstrates knowledge of: <ul style="list-style-type: none"> – basic plant structures (including cell, tissue, stem, leaf, root, flower and fruit) and their function in plant growth and development – the life cycles (including growth stages and duration) of annuals, biennials and perennials. <p><i>Assessment Tool</i> <i>The Commercial Greenhouse</i></p> <p><i>Standard</i> <i>60% of the questions answered correctly</i></p>	<p>20</p>
<ul style="list-style-type: none"> • describe hand and power equipment and related supplies used in nursery or greenhouse crop production 	<ul style="list-style-type: none"> • explaining the types, function and safe use of hand and power equipment and supplies relevant to each stage of plant production. <p><i>Assessment Tool</i> <i>Information Sheet: Hand/Power Equipment and Supplies, AGRINF–EQU</i></p> <p><i>Standard</i> <i>Completing all sections of the information sheet for hand/power equipment and supplies relevant to <u>three</u> areas of plant production</i></p>	<p>10</p>

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate practical skills in growing a nursery or greenhouse crop 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> performing practical skills within <u>three</u> of the following areas of plant production: <ul style="list-style-type: none"> preparation of the growing medium/seed bed propagation transplanting crop cultivation watering and fertilizing control of plant pests and diseases involving the use of nontoxic and safe materials. Plant production tasks will involve the application of appropriate safety guidelines for using hand and power equipment and supplies. <p><i>Assessment Tool</i> <i>Task Checklist: Nursery/Greenhouse Crops 1, AGR2140-1</i> <i>Lab Assessment: Plant Production, AGRLAB-PLT</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of:</i> <i>- 1 in applicable areas of plant production</i> <i>- 3 in the safe use of equipment and supplies</i></p> <ul style="list-style-type: none"> maintaining an anecdotal record of all production tasks completed. <p><i>Assessment Tool</i> <i>Log/Record of Production Tasks: Plants, AGRLOG-PLT</i></p> <p><i>Standard</i> <i>Completing all sections of the log/record for each production task performed</i></p>	<p>60</p>
<ul style="list-style-type: none"> describe career opportunities relevant to nursery or greenhouse crop production 	<ul style="list-style-type: none"> given career information relevant to nursery or greenhouse crop production, completing a research project on one or more career opportunities within the industry. <p><i>Assessment Tool</i> <i>Career Search: Intermediate Level, AGRCAR-2</i></p> <p><i>Standard</i> <i>Research must be conducted to a standard of 2 on the rating scale</i></p>	<p>10</p>

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Plant Anatomy and Identification</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe the structure, function and growth habits of plants; e.g.: <ul style="list-style-type: none"> cells and tissues roots stems leaves flowers and fruits explain basic plant processes and related terminology; e.g.: <ul style="list-style-type: none"> water and nutrient intake respiration photosynthesis transpiration identify nursery or greenhouse plants; e.g.: <ul style="list-style-type: none"> using common names using botanical nomenclature identify plants that are suited to specific applications; e.g.: <ul style="list-style-type: none"> potted and bench-grown greenhouse crops vegetable and fruit crops field and container-grown nursery crops specialty crops. 	<p>Draw, label and list functions of specific plant structures.</p> <p>Prepare models and/or mounts.</p> <p>Research how solar energy is stored in plants.</p> <p>Gather, label and display collections of plants.</p> <p>Prepare/examine microscope slides of plant parts/cross-sections.</p>

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Concept	Specific Learner Expectations	Notes
Structures, Equipment and Supplies	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe criteria relevant to the selection of structures, equipment and supplies; e.g.: <ul style="list-style-type: none"> – ease of operation/maintenance – safety – cost – environmental impact • use appropriate structures in producing nursery or greenhouse crops; e.g.: <ul style="list-style-type: none"> – fences and cold frames – greenhouses • use in a safe manner appropriate hand and power equipment and related supplies at each stage of production • identify policy, legislation and safe practices relevant to the use of structures, equipment and supplies. 	<p>Design/construct models of effective structures.</p> <p>Potential linkages exist with modules on agri-structures in the Construction Technologies strand.</p>
Production Skills	<ul style="list-style-type: none"> • identify basic physical requirements for producing a nursery or greenhouse crop; e.g.: <ul style="list-style-type: none"> – water – light (quantity, quality, duration) – temperature – air – space variables – nutrients • describe how weather and climate may affect production activities • demonstrate methods used to propagate nursery or greenhouse plants; e.g.: <ul style="list-style-type: none"> – sexual methods – asexual methods 	<p>Design/conduct experiments that monitor the effect of environmental factors on growth.</p> <p>Calculate germination rates.</p>

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • apply principles of nutrition to production practices; e.g.: <ul style="list-style-type: none"> – function and sources of essential nutrients – identifying excesses and deficiencies – fertilizer formulation • implement appropriate strategies for the treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g.: <ul style="list-style-type: none"> – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control. 	<p>Recognize nutrient deficiencies.</p> <p>Grow plants suitable for sale.</p> <p>Use <u>nontoxic and safe</u> materials for controlling plant pests and diseases.</p>
Career Opportunities	<ul style="list-style-type: none"> • research careers and the range of occupational opportunities related to producing nursery or greenhouse crops; e.g.: <ul style="list-style-type: none"> – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in nursery or greenhouse crop production, and future career opportunities. 	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> • job description • employment markets • education/training • wage expectations. <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> • information interviews • work study/experience • job shadowing. <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>