MODULE AGR1100: AGRICULTURE TECHNOLOGY

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students describe applications of science and technology within an agriculture or horticulture industry.

Module Parameters: Access to a construction/fabrication/mechanic's workshop, greenhouse and/or science laboratory.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain how science and technology influence the development of agriculture products, methods and services	• preparing a chart/display that identifies and describes: – a range of needs/problems addressed by the agriculture/horticulture industry within the last 20 years – specific products, processes or services developed in response to each need/problem – applications of science and technology in developing each product, process or service. *Assessment Tool* *Sample Chart: Product Development in the Agriculture/Horticulture Industry, AGR1100–1* *Standard* *Complete a chart/display that identifies products and technologies developed in response to each of <u>ten</u> problems/needs*	20
• describe current applications of science and technology in agriculture production, processing and marketing	• completing a research project on one or more applications of science and technology in <u>each</u> of the following areas: – agriculture/horticulture production – agriculture/horticulture processing – agriculture/horticulture marketing. *Assessment Tool* *Research Process: Applications of Science and Technology, AGR1100–2* *Standard* *Complete all components of research to a standard of 1 on the rating scale*	30

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MODULE AGR1100: AGRICULTURE TECHNOLOGY (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • design a simple technological system that addresses a current need in agriculture	*Assessment of student achievement should be based on:* • given a specific need within an agriculture or horticulture industry, constructing a drawing/model of a technological system designed to address that need. Drawing/model to address: – component parts and principles of operation – efficient use of resources – human and environmental safety. *Assessment Tool* *Project Assessment: Technology Design, AGRTEC* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete the design <u>and</u> drawing/model to a standard of 1 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tools* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Influences of Science and Technology	*The student should:* • explain technology as the application of knowledge gained from research to solve practical problems in agriculture • identify and describe different types of science and technology used in agriculture; e.g.: – machines – planning/monitoring/management processes – new plant and animal species • describe issues and/or conflicts resulting from the adoption of one or more technologies in agriculture; e.g.: – economic – political – environmental – health	Cite/discuss improvements in effectiveness, efficiency and quality of life. Invite local industry and resource persons to discuss applications of science and technology. Reference statistical surveys of technology impacts. Consider: • energy use • safety concerns • environmental issues.

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Concept	Specific Learner Expectations	Notes
Influences of Science and Technology (continued)	*The student should:* • predict some future trends in research and technology based on current challenges facing the agriculture industry • relate specific technologies to current and emerging career opportunities in the agriculture industry.	Compare manual and mechanical approaches to addressing a specific challenge in the industry.
Applications of Science and Technology	• describe applications of science and technology in addressing specific plant production needs; e.g.: – seed bed preparation/soil fertility – planting/harvesting – weed and pest control – plant propagation – maintaining soil moisture levels – improved production and yields	Plan for independent/group research and presentations. For example: • zero tillage fertilizers • air seeders and combines • hydroponics and irrigation. Predict future production technologies. Invite a local veterinarian as a resource person.
	• describe applications of science and technology in addressing specific needs within the livestock production industry; e.g.: – animal handling – animal housing – nutrition – health – waste management – breeding management – improved production and yields	For example: • electronic management systems • gene mapping • embryo transfer • artificial insemination. This module provides a good introduction to AGR3100: Biotechnology. Conduct research on the life and work of Dr. Temple Grandin, a professor of animal science.
	• describe specific applications of science and technology in agriculture processing; e.g.: – processing systems – quality control – pollution control – preserving perishable products – packaging and storage	Predict future processing technologies. Discuss quality assurance (QA) programs. Obtain resources from: • Leduc Food Processing Centre • Agriculture, Food and Nutritional Sciences Department, U of A.

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Concept	Specific Learner Expectations	Notes
Applications of Science and Technology (continued)	*The student should:* • describe specific applications of science and technology in agriculture marketing; e.g.: – enterprise budgets – communication – advertising and promotion – commodity sales – product distribution.	Predict future marketing technologies. Research strategic alliances developed among industry partners to increase market share in the global economy (e.g., Canada Beef Export Federation).
Technology Design	• identify a need within an agriculture or horticulture industry • research the need; e.g.: – talk to others in order to clarify ideas – consider similar needs and how they were addressed – make reasoned judgments regarding design potential • generate ideas and alternatives regarding a mechanical system and/or process that will address the need • select the most appropriate alternative and design the technology • construct a drawing/model of the technology by following plans that have been established • assess the design process and technology outcomes in relation to: – original needs and design intentions – efficient use of resources – human and environmental safety • identify possible improvements to the design process and/or technology outcomes.	Discuss technology as problem solving. Plan for activities that involve: • drawing and designing • constructing models. Assess process and outcomes on the basis of: • effectiveness • efficiency • safety in use.

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