



8719

APPLIED HORTICULTURE (11A)

30S/30E/30M

A Horticulture Course

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Course Description

This course is intended for students considering specialization in the horticulture program. The curriculum focuses on plant physiology, morphology, and anatomy. Students synthesize their knowledge and skills to solve problems related to the care and maintenance of plants.

Goal 1: Describe and apply appropriate **safety** and **health** practices as they relate to horticulture.

GLO 1.1: Create and maintain a **safe work** environment in horticulture.

- SLO 11A.1.1.1: Describe workplace safety and health procedures (e.g., S.A.F.E., right to refuse). (A3.1)
- SLO 11A.1.1.2: Identify and report hazards (e.g., electrical safety, ergonomics, material handling, chemicals) related to processes, materials, tools, and equipment used in horticulture and landscaping. (A3.7) (D1.2)
- SLO 11A.1.1.3: Outline the safety principles for working on and around electrical equipment. (A3.8) (TSA 18)
- SLO 11A.1.1.4: Follow the directions of the teacher/supervisor in regard to safe work practices.
- SLO 11A.1.1.5: Follow safe practices and procedures for facilities, processes, materials, tools, and equipment used in horticulture and landscaping (e.g., keep work area clean and organized). (A3.3)
- SLO 11A.1.1.6: Describe and use appropriate personal protective equipment (PPE) (e.g., gloves, safety glasses or goggles, hearing protection, respirator mask) and identify PPE and procedures related to PPE. (A3.2) (TSA 16)
- SLO 11A.1.1.7: Locate the first aid and eyewash stations.
- SLO 11A.1.1.8: Identify the process for reporting injuries.
- SLO 11A.1.1.9: Identify ergonomically correct procedures to avoid injury (e.g., stress, strain, lifting).
- SLO 11A.1.1.10: Identify and outline workplace fire safety principles. (A3.10) (TSA 19)
- SLO 11A.1.1.11: Identify emergency evacuation and response procedures.
- SLO 11A.1.1.12: Identify potential hazards with regard to personal apparel and grooming.

- SLO 11A.1.1.13: Demonstrate awareness of the principles of the Workplace Hazardous Materials Information Systems (WHMIS) as they apply to the horticulture industry and identify safety requirements as they apply to WHMIS. (A3.11) (TSA 13)
- SLO 11A.1.1.14: Describe the purpose of Material Safety Data Sheets (MSDS).
- SLO 11A.1.1.15: Demonstrate knowledge of the need and purpose of safe handling and application of chemical controls according to the label. (A3.4, A3.14)
- SLO 11A.1.1.16: Identify the hazards associated with working in a confined space and the preparation required to work safely in a confined space. (A3.9) (TSA 20)
- SLO 11A.1.1.17: Identify the hazards and precautions related to working with and around horticulture and landscaping equipment, including ladders and scaffolding. (A3.5, A3.6)
- SLO 11A.1.1.18: Identify the need for a safety checklist in the landscaping and horticulture industries (e.g., chainsaw, power lawnmower, garden tractor).
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GLO 1.2: Demonstrate knowledge of the **Trade Safety Awareness Manual** (<www.gov.mb.ca/tce/apprent/apprentice/trade_safety/>).

No applicable SLOs.

Goal 2: Demonstrate the safe and appropriate **maintenance, management, and operation of equipment, tools, consumables, and materials.** (GHCP B3)

GLO 2.1: Demonstrate the safe and appropriate **maintenance and management of equipment, tools, consumables, and materials.**

- SLO 11A.2.1.1: Demonstrate the safe and appropriate maintenance and management of equipment, tools, consumables, and materials.
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GLO 2.2: Demonstrate the safe **operation of horticultural tools and equipment.**

- SLO 11A.2.1.1: Demonstrate the safe operation of horticultural tools and equipment.
- SLO 11A.2.2.2: Select and use correct measuring and hand tools, and power equipment for a task. (A4.3, A4.5, A4.7)
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Goal 3: Demonstrate an understanding of the **fundamentals of horticulture.**

GLO 3.1: Demonstrate a basic understanding of **plant anatomy, morphology, and physiology.**

- SLO 11A.3.1.1: Describe the characteristics of plant categories. (A6.3)
 - SLO 11A.3.1.2: Describe plant anatomy and morphology.
 - SLO 11A.3.1.3: Describe the factors that impact plant growth and development. (GHCP A5)
 - SLO 11A.3.1.4: Explain the functions of a plant as an organism. (B2.4) (GHCP A6)
 - SLO 11A.3.1.5: Demonstrate and utilize plant science terminology.
 - SLO 11A.3.1.6: Demonstrate and utilize terminology associated with fertilizers.
 - SLO 11A.3.1.7: Identify plant nutrients and describe the impact of nutrient deficiencies/excesses on plants and plant growth. (B2.5)
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GLO 3.2: Identify and select plants.

- SLO 11A.3.2.1: Demonstrate the ability to use a dichotomous key. (A6.2)
 - SLO 11A.3.2.2: Demonstrate the ability to use morphological characteristics to identify plant families. (A6.4)
 - SLO 11A.3.2.3: Demonstrate the ability to use morphological characteristics to identify plants by genus and species. (A6.5) (GHCP A2)
 - SLO 11A.3.2.4: Identify plants by common and botanical names, and family names. (GHCP A3)
 - SLO 11A.3.2.5: Demonstrate proper usage of the International System of Plant Nomenclature (taxonomy). (GHCP A1)
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GLO 3.3: Demonstrate an understanding of **plant care.** (GHCP B2)

- SLO 11A.3.2.1: Describe and demonstrate the cultural requirements of the plants on the Landscape Horticulturist Plant List by Family as found in Landscape Horticulturist Level 1 from Apprenticeship Manitoba. (A6.6)
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Goal 4: Demonstrate an understanding of soils and growing media.**GLO 4.1: Demonstrate an understanding of soils and growing media.**

- SLO 11A.4.1.1: Describe the physical characteristics that must be considered when determining the suitability for plant growth. (A9.1) (GHCP A7)
 - SLO 11A.4.1.2: Describe types of media, as well as their characteristics and applications. (A9.3)
 - SLO 11A.4.1.3: Describe and utilize soil science terminology.
 - SLO 11A.4.1.4: Describe the chemical and biological properties of soils and growing media. (A9.4) (GHCP A7)
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GLO 4.2: Demonstrate knowledge of the effects of soils and growing media on plants. (GHCP A7)

- SLO 11A.4.2.1: Identify the purpose of soil samples.
 - SLO 11A.4.2.2: Identify the effects of water and nutrient uptake by roots.
 - SLO 11A.4.2.3: Identify atmospheric conditions that influence water availability.
 - SLO 11A.4.2.4: Identify types of soil amendments, as well as their characteristics and applications.
 - SLO 11A.4.2.5: Identify the considerations when selecting soil amendments for plants.
 - SLO 11A.4.2.6: Identify the procedures to select and incorporate soil amendments for plants.
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Goal 5: Understand pest management.**GLO 5.1: Understand the principles of integrated pest management.**

- SLO 11A.5.1.1: Identify common pests.
 - SLO 11A.5.1.2: Identify damage caused by pests.
 - SLO 11A.5.1.3: Describe pest control techniques.
 - SLO 11A.5.1.4: Describe the difference between IPM and conventional pest management.
 - SLO 11A.5.1.5: Describe pest biology in terms of IPM.
 - SLO 11A.5.1.6: Describe the ecological concepts related to IPM.
 - SLO 11A.5.1.7: Describe the significance of pests.
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Goal 6: Demonstrate an understanding of the principles of **plant installation and propagation.**

GLO 6.1: Demonstrate an understanding of the principles of **plant installation and propagation.**

SLO 11A.6.1.1: Install plant material. (GHCP B1)

SLO 11A.6.1.2: Describe different methods of plant propagation.

SLO 11A.6.1.3: Describe the difference between asexual and sexual propagation.

Goal 7: Demonstrate an understanding of the principles of **crop production and management.**

GLO 7.1: Demonstrate an understanding of **crop production.**

SLO 11A.7.1.1: Describe pre-harvest and post-harvest factors that affect quality.

SLO 11A.7.1.2: Describe the factors involved in planning a greenhouse crop.

SLO 11A.7.1.3: Describe crops suitable for greenhouse production.

GLO 7.2: Demonstrate an understanding of **crop management.**

SLO 11A.7.2.1: Describe practices to improve crop quality.

SLO 11A.7.2.2: Describe cultural requirements that affect crop production.

Goal 8: Demonstrate an understanding of the **construction techniques** relevant to the horticulture industry.

GLO 8.1: Identify and demonstrate different **construction techniques.**

No applicable SLOs.

Goal 9: Understand **career opportunities** in horticulture and related environmental fields. (GHCP D1)

GLO 9.1: Describe **education and career opportunities, and professional organizations** in horticulture and related environmental fields.

SLO 11A.9.1.1: Describe the Manitoba Landscape Horticulturist Technician Apprenticeship Program. (A1.2)

Goal 10: Describe and demonstrate the transferable, **cross-curricular** knowledge and skills as they pertain to horticulture.

GLO 10.1: Read, interpret, and communicate information relevant to horticulture.

SLO 11A.10.1.1: Communicate effectively using verbal and non-verbal techniques. (A10.5) (GHCP D4)

SLO 11A.10.1.2: Read and understand written information in different types of workplace documents (e.g., work instructions, emails and memos, health and safety manuals, policies, and reports). (A10.3)

GLO 10.2: Apply **mathematics** knowledge and skills relevant to horticulture.

SLO 11A.10.2.1: Solve problems using ratios and proportions. (B1.3)

SLO 11A.10.2.2: Solve problems using basic algebra. (B1.4)

GLO 10.3: Apply **other subject areas** (art, physical education/health education) knowledge and skills relevant to horticulture.

No applicable SLOs.

Goal 11: Demonstrate an awareness of **sustainability** as it pertains to horticulture.

GLO 11.1: Describe the impact of **sustainability** on the health and well-being of horticulture workers and their clients, as well as the role of horticulture in society.

SLO 11A.11.1.1: Identify the dynamic interrelationship between human health and well-being, and horticulture.

GLO 11.2: Describe the horticulture industry's **sustainability practices and environmental impacts**.

SLO 11A.11.2.1: Describe the environmental impact of various horticultural practices.

SLO 11A.11.2.2: Describe the implications of hand and power tool selection and use on the practice of environmental stewardship. (A4.2)

GLO 11.3: Describe **sustainable business practices** within the horticulture industry.

SLO 11A.11.3.1: Describe how the needs of the present world can be met without compromising the ability of future generations to meet their own needs.

Goal 12: Demonstrate an awareness of the **ethical and legal standards** as they pertain to horticulture.

GLO 12.1: Apply the **ethical and legal standards** as they pertain to horticulture.

SLO 11A.12.1.1: Describe the ethical and legal expectations related to the horticulture industry.

SLO 11A.12.1.2: Describe pertinent legislation pertaining to the horticulture industry. (A3.14, A3.4)

Goal 13: Demonstrate **employability skills** related to horticulture. (GHCP D1) (GHCP D4)

GLO 13.1: Demonstrate **fundamental employability skills**.

SLO 11A.13.1.1: Arrive on time and be prepared for work.

SLO 11A.13.1.2: Meet deadlines.

SLO 11A.13.1.3: Use time effectively.

SLO 11A.13.1.4: Follow written and oral directions.

SLO 11A.13.1.5: Ask questions for clarification.

SLO 11A.13.1.6: Initiate work independently.

SLO 11A.13.1.7: Work effectively without supervision.

SLO 11A.13.1.8: Complete tasks without supervision.

SLO 11A.13.1.9: Fulfill commitments to self and others.

SLO 11A.13.1.10: Perform tasks to a high standard.

SLO 11A.13.10.11: Cooperate with others.

SLO 11A.13.10.12: Act respectfully towards oneself and others.

SLO 11A.13.10.13: Participate in group activities.

SLO 11A.13.10.14: Dress appropriately for the workplace.

SLO 11A.13.10.15: Demonstrate appropriate site etiquette. (GHCP D3)

SLO 11A.13.10.16: Maintain a clean and organized work area. (A3.3)

Goal 14: Demonstrate an understanding of the **evolution and technological progression of, and the emerging trends in** horticulture.

GLO 14.1: Demonstrate an understanding of the **evolution and technological progression of, and the emerging trends in** horticulture.

SLO 11A.14.1.1: Describe the evolution and technological progression of, and the emerging trends in the horticulture industry.
