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# PROGRAM OF STUDY

## Horticulture and Garden Centre Operation (DVS 5890)

TRAINING SECTOR: AGRICULTURE AND FISHERIES

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# Introduction to the Program

In vocational training, a program of study presents the competencies required to practise a given trade or occupation at entry level on the job market. The training provided allows students to acquire a degree of versatility that will be useful in their career and personal development.

A program is a coherent set of competencies to be developed. It outlines the knowledge and broad orientations to be favoured during training. The competencies correspond to the tasks of the trade or occupation or to activities related to work, vocational or personal life, depending on the case. Learning is acquired in a specific achievement context and targets the ability to act, succeed and evolve.

According to the *Education Act*,<sup>1</sup> every program “shall include compulsory objectives and contents and may include optional objectives and contents that shall be enriched or adapted according to the needs of students who receive the services.” For behavioural competencies, the compulsory components include the statement of the competency, the elements of the competency, the achievement context and the performance criteria; for situational competencies, they include the corresponding components.

For information purposes, programs also provide a grid of competencies, educational aims, a summary of competency-related knowledge and know-how, and guidelines. They also specify the suggested duration of each competency. All optional components of a program may be enriched or adapted according to the needs of the students, the environment and the workplace.

## Program Components

### Program Goals

Program goals consist of the expected outcome at the end of training as well as a general description of a given trade or occupation. They also include the four general goals of vocational training.

### Educational Aims

Educational aims are broad orientations to be favoured during training in order to help students acquire intellectual or motor skills, work habits or attitudes. Educational aims usually address important aspects of career and personal development that have not been explicitly included in the program goals or competencies. They serve to orient appropriate teaching strategies to contextualize students' learning, in keeping with the dimensions underlying the practice of a trade or occupation. They help guide educational institutions in implementing the program.

### Competency

A competency is the ability to act, succeed and evolve in order to adequately perform tasks or activities related to one's working or personal life, based on an organized body of knowledge and skills from a variety of fields, perceptions, attitudes, etc.

A competency in vocational training can be defined in terms of a behaviour or a situation, and includes specific practical guidelines and requirements for learning.

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<sup>1</sup> *Education Act*, CQLR, c. I-13.3, s. 461

## 1. Behavioural Competency

A behavioural competency describes the actions and the results expected of the student. It consists of the following features:

- The *statement of the competency* is the result of the job analysis, the orientations and general goals of vocational training and other *determinants*.
- The *elements of the competency* correspond to essential details that are necessary in order to understand the competency *and* are expressed in terms of specific behaviours. They refer to the major steps involved in performing a task or to the main components of the competency.
- The *achievement context* corresponds to the situation in which the competency is exercised at entry-level in the job market. The achievement context attempts to recreate an actual work situation but does not describe a learning or evaluation situation.
- The *performance criteria* define the requirements to be respected. They may refer to elements of the competency or to the competency as a whole. When associated with a specific element, performance criteria are used to judge whether a competency has been acquired. When associated with the competency as a whole, the criteria describe the requirements for performing a task or activity and provide information on the expected level of performance or the overall quality of a product or service.

## 2. Situational Competency

A situational competency describes the situation in which students are placed to acquire learning, and allows for actions and results to vary from one student to another. It consists of the following features:

- The *statement of the competency* is the result of the job analysis, the orientations and general goals of vocational training and other determinants.
- The *elements of the competency* outline the essential aspects of the competency and ensure a better understanding of the competency with respect to the expected outcome. The elements of the competency are fundamental to the implementation of the learning situation.
- The *learning context* provides a broad outline of the learning situation designed to help the students develop the required competency. It is normally divided into three key phases of learning: information, participation and synthesis.
- The *instructional guidelines* provide reference points and means for teachers to ensure that learning takes place and that the context in which it occurs is always the same. These guidelines may include general principles or specific procedures.
- The *participation criteria* describe requirements that the students must meet when participating in learning activities. They focus on how the students take part in the activities rather than on the results obtained. Participation criteria are normally provided for each phase of the learning situation.

### Competency-Related Knowledge and Know-How

*Competency-related knowledge* and *know-how* together with related guidelines, are provided for information purposes. Competency-related knowledge and know-how define the essential and meaningful learning that students must acquire in order to apply and continue to develop the competency. They are in keeping with the job market and are accompanied by guidelines that provide information about the field of application, level of complexity and learning content. They generally encompass learning associated with knowledge, skills, strategies, attitudes, perceptions, etc.



## **Duration**

The total duration of the program is compulsory and must be observed. It consists of teaching time, which includes time for the evaluation of learning and for enrichment or remedial activities, depending on the students' needs. The duration indicated for a given competency refers to the amount of time needed to develop the competency.

The amount of teaching time corresponds to the amount of time allotted to training, which is established during program development as the average amount of time needed to acquire a competency and evaluate learning. This duration is helpful in organizing training.

## **Credit**

A credit is a unit used for expressing the quantitative value of each competency. One credit corresponds to 15 hours of training.

# **Aspects of Program Implementation**

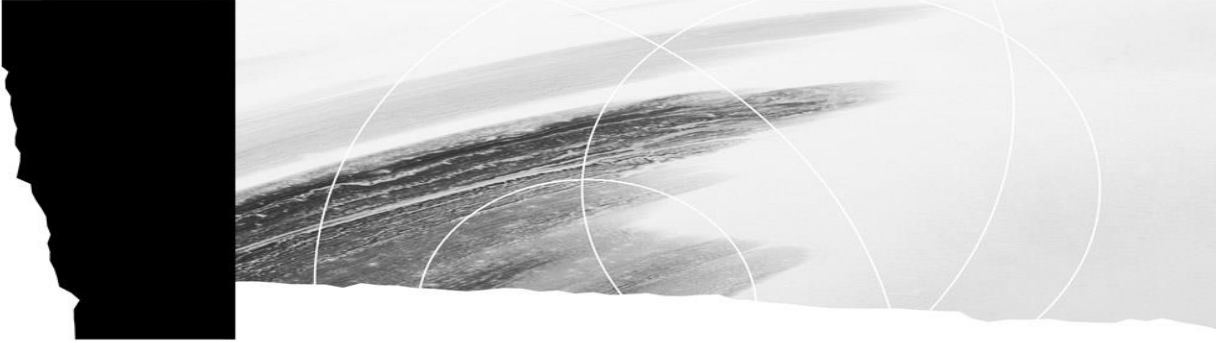
## **Program-Based Approach**

The program-based approach is founded on a comprehensive view of a program of study and its components (e.g. goals, educational aims, competencies). It requires concerted action among all players involved from the initial stages of program design and development to program implementation and evaluation. It consists in ensuring that all of the actions and activities proposed are based on the same aims and take into account the same orientations. For students, the program-based approach makes training more meaningful as it presents learning as a coherent whole.

## **Competency-Based Approach**

In vocational training, the competency-based approach is based on a teaching philosophy that is designed to help students mobilize their own individual sets of resources in order to act, succeed and evolve in different contexts, according to established performance levels with all the required knowledge and know-how (e.g. skills, strategies, attitudes, perceptions). The competency-based approach is carried out in situations that are relevant to the students' working life and personal life.





5890

## Horticulture and Garden Centre Operations

Year of approval: 2023

|                                |                               |
|--------------------------------|-------------------------------|
| <b>Certification:</b>          | Diploma of Vocational Studies |
| <b>Number of credits:</b>      | 89                            |
| <b>Number of competencies:</b> | 23                            |
| <b>Total duration:</b>         | 1335 hours                    |

To be eligible for admission to the *Horticulture and Garden Centre Operations* program, candidates must meet one of the following requirements:

- Persons must hold a Secondary School Diploma or its recognized equivalent.

OR

- Persons who are at least 16 years of age on September 30 of the school year in which they begin their training must have obtained Secondary IV credits in language of instruction, second language and mathematics in programs established by the Minister, or have been granted recognition of equivalent learning.

OR

- Persons who are at least 18 years of age upon entry into the program must have the following functional prerequisites: successful completion of the general development test and the language of instruction courses ENG 3101-1 and ENG 3102-2 and mathematical course MTH 2101-3, or recognition of equivalent learning.

OR

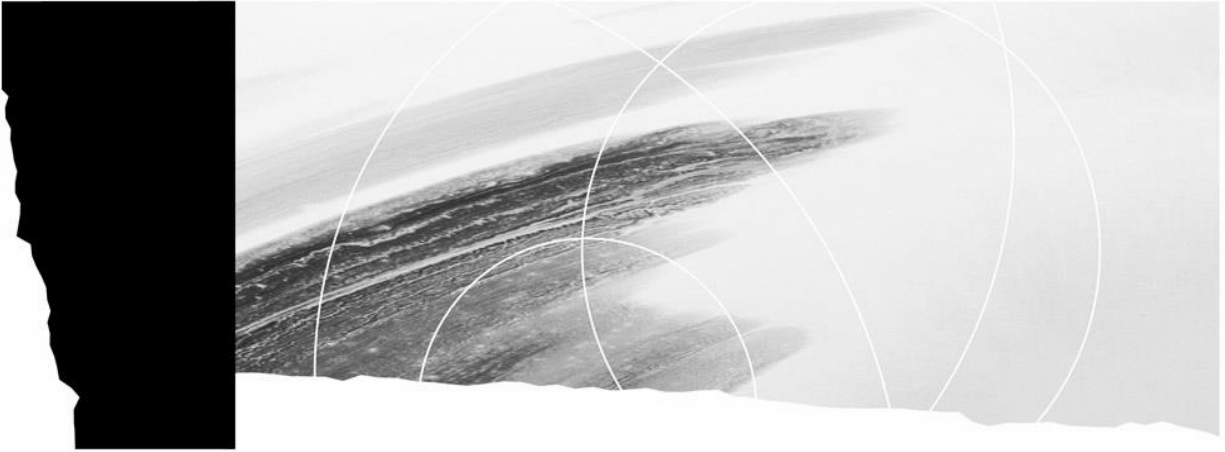
- Persons who have obtained Secondary III credits in language of instruction, second language and mathematics in programs established by the Minister are required to pursue general education courses, concurrently with their vocational training, in Secondary Cycle Two school programs established by the Minister that are required for admission to this program of vocational studies.

The duration of the program is 1335 hours, which includes 600 hours spent on the specific competencies required to practise the occupation and 735 hours on general, work-related competencies. The program of study is divided into 23 competencies which vary in length from 15 to 105 hours. The total hours allocated to the program include time devoted to teaching, evaluation of learning and enrichment or remedial activities.

## Specific Aspects of the Program of Study

According to current laws and regulations, certain competencies in this program of study can lead to certification issued by a recognized institution or organization.

| Competency  | Code   | Number | Hours | Credits |
|---|--------|--------|-------|---------|
| The occupation and the training process                                       | 705401 | 1      | 15    | 1       |
| Botanical and environmental aspects   | 705416 | 2      | 90    | 6       |
| Herbaceous plants   | 705426 | 3      | 90    | 6       |
| Health and safety on construction sites                                       | 754992 | 4      | 30    | 2       |
| Basic tasks   | 705433 | 5      | 45    | 3       |
| Woody plants  | 705444 | 6      | 60    | 4       |
| Pruning plants  | 705453 | 7      | 45    | 3       |
| Soils, substrates and fertilization   | 705465 | 8      | 75    | 5       |
| Plant health  | 705475 | 9      | 75    | 5       |
| Pesticide use   | 705483 | 10     | 45    | 3       |
| Horticultural equipment   | 705493 | 11     | 45    | 3       |
| Production of ornamental and edible plants                                    | 705506 | 12     | 90    | 6       |
| Reception and presentation of plants and complementary horticultural products | 705513 | 13     | 45    | 3       |
| Communication in the workplace  | 705522 | 14     | 30    | 2       |
| Spring maintenance of an in-ground garden                                     | 705533 | 15     | 45    | 3       |
| Summer and fall maintenance of an in-ground garden                            | 705544 | 16     | 60    | 4       |
| Harvesting of edible and ornamental plants                                    | 705553 | 17     | 45    | 3       |
| Drawing a planting plan   | 705566 | 18     | 90    | 6       |
| Layout and maintenance of a raised-bed garden                                 | 705573 | 19     | 45    | 3       |
| Layout of in-ground gardens   | 705584 | 20     | 60    | 4       |
| Layout and maintenance of an indoor living wall or a mosaiculture             | 705594 | 21     | 60    | 4       |
| Customer service and sale of plants and complementary horticultural products  | 705603 | 22     | 45    | 3       |
| Entering the workforce  | 705617 | 23     | 105   | 7       |



## **Part I**

---

**Program Goals**

**Educational Aims**

**Statements of the Competencies**

**Grid of Competencies**

**Harmonization**



## Program Goals

The *Horticulture and Garden Centre Operations* program prepares students to practise the occupation of horticultural worker.

Horticultural workers are employed in a variety of settings: for private garden maintenance and landscaping companies, for municipal services, for garden centres and nurseries, for non-profit organizations and public gardens, and so on.

Landscaping and maintenance work involves receiving plants and inputs, preparing soils and substrates, planting and maintaining plants, preparing and applying solutions of plant health products, drawing up planting plans, and opening and closing gardens. It also involves different types of landscaping elements, including landscaped gardens, vegetable gardens, flower beds, edible landscaping, pollinator gardens, permaculture gardens, medicinal gardens, indoor gardens, living walls and mosaiculture. These gardens can be in-ground, raised bed or container gardens.

In the garden centre sector, the work usually consists in receiving goods, creating displays of plants and horticultural products, maintaining plants, overseeing and maintaining the sales area, providing customer service and selling plants and horticultural products. Workers may sometimes be assigned to plant production duties.

To perform their tasks, horticultural workers use a variety of electric and gas-powered tools (rototiller, cultivator, hedge clipper, mechanical sweeper, leaf blower, etc.) as well as hand tools (shovel, spreader, wheelbarrow, rake, trowel, pruning shears, hoe, etc.).

Horticultural workers must be able to work as part of a team, and must also have the skills needed to communicate with customers and members of the general public.

The program goals of the *Horticulture and Garden Centre Operations* program are based on the general goals of vocational training. These goals are as follows:

- To help students develop effectiveness in the practice of a trade or occupation, that is:
  - to teach students to perform roles, functions, tasks and activities associated with the trade or occupation upon entry into the job market
  - to prepare students to progress satisfactorily on the job (which implies having the technical and technological knowledge and skills in such areas as communication, problem solving, decision making, ethics, health and safety)
- To help students integrate into the work force, that is:
  - to familiarize students with the job market in general, and with the specific context of their chosen trade or occupation
  - to familiarize students with their rights and responsibilities as workers
- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
  - to help students develop their autonomy and ability to learn, and acquire effective work methods
  - to help students understand the principles underlying the techniques and the technology used in the trade or occupation
  - to help students develop self-expression, creativity, initiative and entrepreneurial spirit
  - to help students adopt the attitudes required to successfully practise the trade or occupation, and instill in them a sense of responsibility and a concern for excellence

- To promote job mobility, that is:
  - to help students develop positive attitudes toward change
  - to help students develop the means to manage their careers by familiarizing them with entrepreneurship

## **Educational Aims**

The aim of the *Horticulture and Garden Centre Operations* program is to help students develop attitudes and behaviours that representatives from education and the field deem essential to the practice of the trade or occupation:

- Develop autonomy, initiative and a sense of responsibility
- Promote sustainable development
- Develop a sense of esthetics
- Appreciate the landscape heritage
- Become involved in communities



# Statements of the Competencies

## List of Competencies

- Determine their suitability for the occupation and the training process.
- Analyze information about plants from a botanical and environmental standpoint.
- Characterize herbaceous plants.
- Ensure health, safety and physical well-being on construction sites.
- Perform basic horticultural tasks.
- Characterize woody plants.
- Prune plants.
- Prepare soils and substrates and fertilize plants.
- Assess plant health.
- Use pesticides.
- Ensure that horticultural equipment works properly.
- Produce ornamental and edible plants.
- Receive and present plants and complementary horticultural products.
- Communicate in a variety of work-related situations.
- Perform spring maintenance tasks in an in-ground garden.
- Perform summer and fall maintenance tasks in an in-ground garden.
- Manually harvest edible and ornamental plants.
- Draw a planting plan.
- Lay out and maintain a raised-bed garden.
- Lay out an in-ground garden.
- Layout and maintain an indoor living wall or a mosaiculture.
- Sell plants and complementary horticultural products and provide customer service.
- Enter the workforce.

## Grid of Competencies

The grid of competencies shows the relationship between general competencies, which correspond to work-related activities, and specific competencies, which are required to practise the particular trade or occupation.

The general competencies appear on the horizontal axis and the specific competencies, on the vertical axis. The symbol (○) indicates a correlation between a general and a specific competency. Shaded symbols indicate that these relationships have been taken into account in the acquisition of specific competencies. The logic used in constructing the grid influences the course sequence. Generally speaking, this sequence follows a logical progression in terms of the complexity of the learning involved and the development of the students' autonomy. The vertical axis presents the specific competencies in the order in which they should be acquired and serves as a point of departure for determining how all of the competencies will be taught.

# GRID OF COMPETENCIES

| Specific Competencies   | Competency number | Type of competency | Duration (in hours) | GENERAL COMPETENCIES  |  |                                |   |                                   |                           |              |   |                     |                |  |   | TOTAL                |     |
|---|-------------------|--------------------|---------------------|---|--|--------------------------------|---|-----------------------------------|---------------------------|--------------|---|---------------------|----------------|--|---|----------------------|-----|
|   |                   |                    |                     | Determine their suitability for the occupation and the training process | Analyze information about plants from a botanical and environmental standpoint | Characterize herbaceous plants | Ensure health, safety and physical well-being on construction sites | Perform basic horticultural tasks | Characterize woody plants | Prune plants | Prepare soils and substrates and fertilize plants | Assess plant health | Use pesticides | Ensure that horticultural equipment works properly | Communicate in a variety of work-related situations | Draw a planting plan |     |
|   |                   |                    |                     |   |  |                                |   |                                   |                           |              |   |                     |                |  |   |                      |     |
|   |                   |                    |                     |   |  |                                |   |                                   |                           |              |   |                     |                |  |   |                      |     |
| Competency number   |                   |                    |                     | 1   | 2  | 3                              | 4   | 5                                 | 6                         | 7            | 8   | 9                   | 10             | 11   | 14  | 18                   |     |
| Type of competency  |                   |                    |                     | s   | b  | b                              | s   | b                                 | b                         | b            | b   | b                   | b              | b  | s   | b                    |     |
| Duration (in hours)   |                   |                    |                     | 15  | 90   | 90                             | 30  | 45                                | 60                        | 45           | 75  | 75                  | 45             | 45   | 30  | 90                   | 735 |
| Produce ornamental and edible plants  | 12                | b                  | 90                  | ○   | ●  | ●                              |   | ●                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ○   |                      |     |
| Receive and present plants and complementary horticultural products               | 13                | b                  | 45                  | ○   | ●  | ●                              |   | ○                                 | ●                         | ○            |   | ●                   | ○              | ○  | ○   |                      |     |
| Perform spring maintenance tasks in an in-ground garden                           | 15                | b                  | 45                  | ○   | ●  | ●                              |   | ●                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ○   |                      |     |
| Perform summer and fall maintenance tasks in an in-ground garden                  | 16                | b                  | 60                  | ○   | ●  | ●                              |   | ●                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ○   |                      |     |
| Manually harvest edible and ornamental plants                                     | 17                | b                  | 45                  | ○   | ●  | ●                              |   | ●                                 | ●                         | ●            | ○   | ●                   | ○              | ○  | ●   |                      |     |
| Lay out and maintain a raised-bed garden  | 19                | b                  | 45                  | ○   | ●  | ●                              | ○   | ●                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ○   | ○                    |     |
| Lay out an in-ground garden   | 20                | b                  | 60                  | ○   | ●  | ●                              | ○   | ●                                 | ●                         | ○            | ●   | ○                   | ○              | ○  | ○   | ○                    |     |
| Lay out and maintain an indoor living wall or a mosaiculture                      | 21                | b                  | 60                  | ○   | ●  | ●                              | ○   | ●                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ○   | ○                    |     |
| Sell plants and complementary horticultural products and provide customer service | 22                | b                  | 45                  | ○   | ●  | ●                              |   | ○                                 | ●                         | ●            | ●   | ●                   | ○              | ○  | ●   | ○                    |     |
| Enter the workforce   | 23                | s                  | 105                 | ●   | ○  | ○                              | ○   | ○                                 | ○                         | ○            | ○   | ○                   | ○              | ○  | ○   | ○                    |     |
| Duration of training  |                   |                    | 600                 |   |  |                                |   |                                   |                           |              |   |                     |                |  |   | 1335                 |     |

Links between the general competencies and the specific competencies

- : Existence of a link
- : Application of a link

## Harmonization

The Ministère of Education harmonizes its vocational and technical programs by establishing similarities and continuity between secondary- and college-level programs within a particular sector or between sectors in order to avoid overlap in program offerings, to recognize prior learning and to optimize the students' progress.

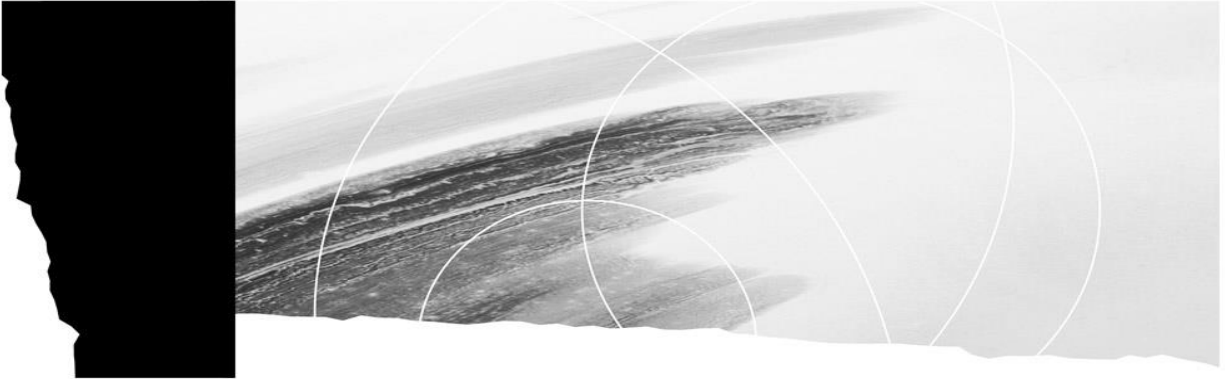
Harmonization establishes consistency between training programs and is especially important in ensuring that the tasks of a trade or occupation are clearly identified and described. Harmonization makes it possible to identify tasks requiring competencies that are common to more than one program. Even if there are no common competencies, training programs are still harmonized.

Harmonization is said to be “inter-level” when it focuses on training programs at different levels, “intra-level” when it focuses on programs within the same educational level, and “inter-sector” when carried out between programs in various sectors.

An important aspect of harmonization is that it allows the common features of competencies to be identified and updated as needed. Common competencies are those that are shared by more than one program; once acquired in one program, they can be recognized as having been acquired in another. Competencies with exactly the same statement and elements are said to be identical. Common competencies that are not identical but have enough similarities to be of equal value are said to be equivalent.

Harmonization of the *Horticulture and Garden Centre Operations* program has resulted in identifying competencies that are shared with other programs. Detailed information on the harmonization of this program and its results is presented in the document entitled *Horticulture et jardinerie, Tableaux d'harmonisation* (2023 version).





## Part II

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### Program Competencies



Competency 1                      Duration 15 hours                      Credits 1

### ***Situational Competency***

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#### **Statement of the Competency**

Determine their suitability for the occupation and the training process.

#### **Elements of the Competency**

- Understand the reality of the occupation.
- Understand the program of study.
- Confirm their career choice.

#### **Learning Context**

---

##### **Information Phase**

- Learning about the job market in horticulture and garden centres.
- Learning about the nature and requirements of the occupation.
- Learning about the different people involved in the field of horticultural production.
- Learning about the training.

##### **Participation Phase**

- Meeting with specialists from the field.
- Discussing the knowledge and skills required to be a horticultural worker.
- Discussing the relationship between the program of studies and the occupation of horticultural worker.

##### **Synthesis Phase**

- Producing a report in which they:
  - describe their fields of interest
  - assess their career choice by comparing aspects and requirements of the occupation with their own interests.

#### **Instructional Guidelines**

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- Encourage the students to engage in discussions and to express themselves.
- Provide relevant documentation.
- Organize meetings with specialists from the field.
- Encourage the students to take part in the suggested activities.
- Provide the students with the means to assess their career choice objectively.

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**Participation Criteria**

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**Information Phase**

- Gather information on most of the topics to be covered.

**Participation Phase**

- Participate actively in the suggested activities.
- Express their views on the program.
- Give their opinions of some of the requirements they will have to meet in order to be a horticultural worker.

**Synthesis Phase**

- Produce a report in which they:
  - briefly describe their interests
  - explain their career choice, clearly making the required connections.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each phase of the learning context, along with their attendant guidelines.

**Information Phase**

- Characteristics of the job market: main employers (private landscaping and maintenance companies, municipal services, garden centres, non-profit organizations, public gardens, etc.), employment prospects, conditions of employment, hiring criteria and remuneration, opportunities for promotion, etc.
- Nature of the occupation: tasks, physical requirements, responsibilities, professional ethics, standards, regulations, certifications, etc.
- Means of achieving a level of physical fitness appropriate to the occupation: diet, stretching, warm-up exercises, etc.
- Reference organizations in horticulture: Québec Vert, Institut québécois du développement de l'horticulture ornementale, Ministère de l'Agriculture, des Pêcheries et de l'Alimentation (Centre de référence en agriculture et agroalimentaire du Québec, Laboratoire d'expertise et de diagnostic en phytoprotection, etc.), educational institutions, etc.
- Characteristics and requirements of the training: program of studies, evaluation, certification of studies, amount of personal work, rules, student services, schedule, etc.

**Participation Phase**

- Participation in the discussions, ability to listen, allowing others to speak in turn, staying on topic, attention to others, open-minded attitude to different opinions, etc.
- Connections between the program competencies and the tasks, operations, knowledge and skills associated with the occupation.

**Synthesis Phase**

- Review of their strengths and weaknesses as they relate to the requirements of the occupation.
- Justification of their career choice.



Competency 2      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Analyze information about plants from a botanical and environmental standpoint.

**Achievement Context**

- Using reference documents: identification key, plant classification system, plant catalogues, websites, herbariums, publications on the environment, etc.

**Elements of the Competency****Performance Criteria**

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- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Identify the role of the external and internal structures of plants.</li> </ol> | <ul style="list-style-type: none"> <li>• Accurate identification of the types of organs and their parts.</li> <li>• Accurate identification of different organ shapes and textures.</li> <li>• Accurate interpretation of information on different tissues.</li> <li>• Accurate description of the main physiological functions of plants.</li> </ul> |
| <ol style="list-style-type: none"> <li>2. Use classification systems.</li> </ol>  | <ul style="list-style-type: none"> <li>• Appropriate recognition of the kingdoms of living organisms.</li> <li>• Accurate identification of the main taxonomic rankings of plants.</li> <li>• Accurate use of scientific nomenclature.</li> </ul>   |
| <ol style="list-style-type: none"> <li>3. Estimate plant growth stages.</li> </ol>  | <ul style="list-style-type: none"> <li>• Adequate recognition of plant life cycles.</li> <li>• Adequate identification of developmental stages.</li> </ul>  |
| <ol style="list-style-type: none"> <li>4. Determine the importance of plants for the environment.</li> </ol>              | <ul style="list-style-type: none"> <li>• Accurate interpretation of information on the main issues of sustainable development.</li> <li>• Accurate description of the roles played by plants in the environment.</li> </ul>   |

*For the competency as a whole:*

- Appropriate use of reference documents.

### Suggestions for Competency-Related Knowledge and Know-How

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Identify the role played by the external and internal structures of plants.

- Types of organs and parts:
  - roots: parts (root cap, lateral roots, root hair, etc.) and types (taproots, fibrous, creeping, tuberous, etc.)
  - stems: parts (node, internode, lenticel, bud, crown, etc.), types of aerial stems (ascending, creeping, climbing, etc.), types of underground stems (rhizome, bulb, corm, etc.)
  - leaves: parts (margin, midrib, lamina, petiole, etc.), types of simple leaves (perfoliate, peltate, deltoid, etc.), types of compound leaves (palmate, trifoliate, paripinnate, etc.), types of modified leaves (e.g. cotyledon, thorn, tendril), etc.
  - flowers: sexual reproductive parts (stigma, style, ovary, stamen, filament, etc.) and non-reproductive (peduncle, sepal, petal, receptacle, bract, etc.), types of inflorescences (capitulum, cluster, cyme, spike, etc.)
  - fruits: parts (epicarp, mesocarp, endocarp, etc.), types of fruits (berry, drupe, pome, hesperidium, pod, etc.)
  - grains: parts (seedcoat, endosperm, embryo, etc.) and types of germination (hypogean and epigeal)
- Organ shapes: linear or elongated, lanceolate, orbicular or rounded, axis, cremate, square, triangular or deltoid, etc.
- Organ textures: smooth, spiny, fibrous, glabrous, tomentose, rough, waxy, rugose, sticky, etc.
- Types of tissues: meristem, parenchyma, epidermis, collenchyma, etc.
- Roles of tissues: elongation, thickening, reserve, protection, support, etc.
- Plant cells.
- Physiological functions of plants: photosynthesis, respiration, transpiration, guttation, growth, nutrition, compartmentalization, reproduction, hardening off, dormancy, etc.

2. Use classification systems.

- Kingdoms of living organisms:
  - Plant kingdoms: nonvascular plants and vascular plants
  - Other kingdoms: terrestrial, aerial and aquatic animals, fungi (mycetes), bacteria (moneras) and algae (protists)
- Main taxonomic rankings of plants: division, class, order, family, genus and species.
- Genetically modified organisms (GMOs).
- Scientific nomenclature:
  - main horticultural families: *Pinaceae*, *Asteraceae*, *Poaceae*, *Fabaceae*, *Rosaceae*, etc.
- Writing rules for genus, species, variety, etc.

3. Estimate plant growth stages.

- Plant life cycles: annuals, biennials and perennials.
- Developmental stages: germination, vegetative growth, reproductive growth (flowering and fructification) and senescence.

4. Determine the importance of plants for the environment.

- Main issues of sustainable development: protection of biodiversity, reduction of greenhouse gas emissions, control of air pollutants, public health, etc.
- Roles played by plants in the environment:
  - production of oxygen and improvement of air quality
  - food for humans and animals
  - stimulation of organic activity in soils
  - preservation of wildlife habitats
  - urban horticulture: parks, green spaces, urban forests, urban farming, etc.
  - phytotechnologies: phytoremediation, filtration marsh, green roof, living wall, windbreak hedges, green sound barrier, bioretention, rain garden, riparian buffer, sustainable slope stabilization, etc.
  - economic and social impacts (property values, environmental revitalization, leisure activities, etc.)
  - others

Competency 3      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Characterize herbaceous plants.

**Achievement Context**

- For hardy and non-hardy annual, biennial and perennial herbaceous plants.
- Using reference documents: identification key, plant catalogues, websites, herbariums, etc.

**Elements of the Competency****Performance Criteria**

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1. Observe herbaceous plants.

- Accurate identification of the main morphological and size-related characteristics of herbaceous plants.
- Review of the significant elements relating to colour, texture and scent.

2. Identify herbaceous plants.

- Accurate identification of the main genera and species.
- Accurate identification of the main varieties and the main cultivars and hybrids.
- Accurate use of scientific nomenclature.
- Careful use of English and vernacular terminology.

3. Indicate different horticultural uses for herbaceous plants.

- Accurate matching of herbaceous plants with their hardiness zones or climate factors.
- Accurate interpretation of information on the main cultivation needs of herbaceous plants.
- Accurate description of the main uses, benefits and disadvantages of herbaceous plants.

*For the competency as a whole:*

- Appropriate use of reference documents.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Observe herbaceous plants.
  - Habit: upright, rounded, vase, etc.
  - Stems and branches: pubescence, dimension, size, etc.
  - Leaves: arrangement, shape, contour, size, etc.
  - Flowering and fructification periods.
  - Leave colour: green, red, grey, variegated, etc.
  - Common and less common colours of flowers and fruits.
  - Texture of leaves, stems and branches: hairy, rough, bumpy, crenate, smooth, etc.
  - Scent: peppery, vanilla, fruity, etc.
2. Identify herbaceous plants.
  - Main genera and main species of outdoor and indoor herbaceous plants used in horticulture in Québec.
  - Main cultivars and hybrids of outdoor and indoor herbaceous plants used in horticulture in Québec.
  - Use of scientific nomenclature for identification purposes.
  - Use of certain English or vernacular terms when communicating with others.
3. Indicate different horticultural uses for herbaceous plants.
  - Hardiness zones: 0, 1, 2a, 2b, 3, 3a, etc.
  - Climate factors: types of climates, precipitation, wind, sunlight, temperature, humidity, etc.
  - Cultivation needs: exposure, irrigation, fertilization, soil type, etc.
  - Main uses and desirable qualities: ornamental, edible, melliferous, etc.
  - Main disadvantages of certain herbaceous plants: growth too fast or too slow, fragile structure, toxicity, allergenicity, sensitivity to disease, sensitivity to urban environmental conditions, etc.

Competency 4      Duration 30 hours      Credits 2

## ***Situational Competency***

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### **Statement of the Competency**

Ensure health, safety and physical well-being on construction sites.

### **Elements of the Competency**

- Adopt a responsible attitude regarding dangers to health and safety.
- Be aware of the importance of complying with occupational health and safety standards and regulations.
- Recognize dangerous situations or unsafe behaviour and applicable preventive measures.

### **Learning Context**

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#### **Information Phase**

- Learning about the risks inherent in construction sites.
- Learning about health and safety standards and regulations on construction sites.
- Learning about emergency measures.
- Reflecting on the importance of developing occupational health and safety skills.

#### **Participation Phase**

- Experiencing situations in which it is necessary to prevent risks and eliminate hazards associated with the environment, facilities, equipment, machinery, materials, tools, energy sources, etc.
- Participating in activities that allow students to recognize risks associated with transporting loads and working in constricted postures.
- Participating in activities that allow students to recognize safety signs and symbols (e.g. hazardous products, roadwork, transportation of hazardous materials).
- Comparing different high-risk behaviours on a construction site and identifying the basic principles underlying safe behaviour.

#### **Synthesis Phase**

- Producing a report containing:
  - a summary of their newly acquired knowledge and skills
  - an evaluation of their attitude toward occupational health and safety
  - objectives and means of improving their behaviour.

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**Instructional Guidelines**

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- Provide the required sources of information.
- Invite, as needed, resource people specialized in certain areas of occupational health and safety to speak to the class.
- Make effective use of audiovisual materials.
- Make extensive use of learning situations that are representative of conditions on construction sites.
- Ensure that students avoid dangerous behaviours during simulation exercises.
- Encourage all students to participate in discussions.
- Guide the students' evaluation process by providing them with appropriate tools (e.g. questionnaire) to help them analyze their experience and set objectives.

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**Participation Criteria**

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**Information Phase**

- Consult available sources of information.
- Describe the advantages of complying with health and safety standards and regulations.

**Participation Phase**

- Participate responsibly in the suggested activities.
- State the principles underlying safe behaviour.
- List the risks inherent in construction sites and the applicable preventive measures.

**Synthesis Phase**

- Produce a report containing:
  - a summary of their newly acquired knowledge and skills
  - an evaluation of their attitude toward occupational health and safety
  - objectives and means of protecting their health, safety and physical well-being, as well as that of others, on a construction site.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each phase of the learning context, along with their attendant guidelines.

**Information Phase**

- Importance of information concerning health and safety on construction sites.
- Most common dangers to health, safety and physical well-being on construction sites.
- Sources of information on health and safety on construction sites and finding information in those sources.
- Roles and responsibilities in matters relating to health and safety on construction sites.
- Health and safety regulatory framework. Benefits of complying with health and safety standards and rules.
- Prevention of illness and accidents.

**Participation and Synthesis Phases**

- Risks inherent in the construction site itself and in the practice of the occupation.
- Preventive measures to apply according to the risks involved.
- Workplace Hazardous Materials Information Systems.



Competency 5      Duration 45 hours      Credits 3

### ***Behavioural Competency***

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#### **Statement of the Competency**

Perform basic horticultural tasks.

#### **Achievement Context**

- Using hand tools: shovel, rake, wheelbarrow, spreader, trowel, pruning shears, precision knife (exacto), half moon edger, etc.
- Using the required materials: stakes, trellis, pickets, watering equipment, etc.
- Using the required protective equipment.

#### **Elements of the Competency**

#### **Performance Criteria**

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- |   |  |
|---|--|
| 1. Prepare a surface to establish planting. | <ul style="list-style-type: none"><li>• Appropriate sorting of the materials present at the site.</li><li>• Careful levelling of the surface.</li><li>• Creation of adequate edges.</li></ul>  |
| 2. Divide herbaceous plants.                | <ul style="list-style-type: none"><li>• Adequate cutting back of the aerial portions of the plants.</li><li>• Digging up of the plants compliant with requirements.</li><li>• Proper determination of the number of divisions needed.</li><li>• Adequate preparation of roots and underground stems.</li></ul>   |
| 3. Place the plants in the ground.          | <ul style="list-style-type: none"><li>• Adequately sized planting hole.</li><li>• Thorough cleaning of the plants.</li><li>• Adequate, clean cutting of roots and underground stems.</li><li>• Plants placed vertically in the ground, at the proper depth.</li><li>• Adequate compaction of the soil.</li><li>• Compliance with finishing requirements.</li></ul> |
| 4. Sod an area.                             | <ul style="list-style-type: none"><li>• Appropriate positioning of rolls of sod and retainer stakes.</li><li>• Precise cutting of rolls of sod.</li><li>• Adequate sowing of surfaces.</li></ul>   |
| 5. Manage organic waste.                    | <ul style="list-style-type: none"><li>• Appropriate sorting of waste materials.</li><li>• Appropriate use of a composting method.</li><li>• Disposal of waste materials as required.</li></ul>   |

## 6. Finish the work.

- Thorough cleaning of tools.
- Proper storage of tools.

*For the competency as a whole:*

- Appropriate choice and use of tools.
- Appropriate handling of loads.
- Sufficient, uniform watering.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

**Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

## 1. Prepare a surface to establish planting.

- Sorting of the materials present at the site: debris, pebbles, etc.
- Levelling: use of the rake's teeth and back, smoothing of surfaces, spreading of materials, etc.
- Edging: use of the half moon edger, straight lines, corners and curves; depth and angles of trenches, etc.

## 2. Divide herbaceous plants.

- Seasons and temperatures suitable for division.
- Cutting back of the aerial portions of the plants using pruning shears, to control evapotranspiration.
- Digging up of the plants: preservation of adjacent plants, use of a shovel to delimit the root ball, protection of the root ball, etc.
- Number of divisions based on plant size, balance between the aerial portion of the plant and the roots or underground stems, etc.
- Manual separation and cutting of roots and underground stems.

## 3. Place the plants in the ground.

- Size of the planting hole according to the extent of the root system or underground stems.
- Cleaning of the plants:
  - elimination of dead, broken and interferent stems
  - elimination of dead and broken roots and underground stems
- Cutting of spiralling roots and underground stems to foster better growth and spread of the root system.
- Collar height.
- Verticality and importance of esthetics.
- Compaction of the soil in stages.
- Finishing: creation of a watering trough, installation of stakes or trellis where needed, etc.

## 4. Sod an area.

- Positioning of rolls of sod: minimum length, staggered pattern, seams, absence of overlap or gaps between sod strips, etc.
- Positioning of retainer stakes on steep slopes.
- Cutting of sod strips: use of a precision knife (exacto) and correct finishing.
- Seeding: types of seeds (shade, sunlight, etc.), quantity to be used, use of a spreader, density and dispersal, seed retention, etc.

## 5. Manage organic waste.

- Sorting of waste: recyclable and non-recyclable materials.
- Composting methods: in heaps, in piles, in layers, in trenches, using a rotary composting bin, etc.
- Elements to be controlled: inputs of brown and green waste, inputs of dry and wet materials, carbon-nitrogen ratio, humidity levels, aeration, internal temperature, odours, etc.
- Waste disposal and rules governing environmental protection.

## 6. Finish the work.

- Scraping and washing of tools to clean them.

Competency 6      Duration 60 hours      Credits 4

***Behavioural Competency***

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**Statement of the Competency**

Characterize woody plants.

**Achievement Context**

- For hardy and non-hardy plants.
- Using reference documents: identification key, plant catalogues, websites, herbariums, etc.

**Elements of the Competency****Performance Criteria**

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1. Observe woody plants.

- Accurate identification of the main morphological and size-related characteristics of woody plants.
- Review of the significant elements relating to colour, texture and odour.

2. Identify woody plants.

- Accurate identification of the main genera and species.
- Accurate identification of the main varieties and the main cultivars and hybrids.
- Accurate use of scientific nomenclature.
- Careful use of English and vernacular terminology.

3. Indicate different horticultural uses for woody plants.

- Accurate matching of woody plants with their hardiness zones or climate factors.
- Accurate interpretation of information on the main cultivation needs of woody plants.
- Accurate description of the main uses, benefits and disadvantages of woody plants.

*For the competency as a whole:*

- Appropriate use of reference documents.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Observe woody plants.

- Habit: ovoid, fastigiate, globular, etc.
- Stems and branches: hardness, flexibility, pubescence, roughness, size, etc.
- Buds: size, colour, number of scales, odour, arrangement, texture, etc.
- Leaves: arrangement, shape, contour, size, etc.
- Flowering and fructification periods.
- Bark colour: green, brown, black, yellow, etc.
- Leaf colour: green, red, grey, variegated, etc.
- Common and less common colours of flowers and fruits.
- Bark texture: hard, porous, soft, rough, etc.
- Scent: peppery, vanilla, minty, resinous, etc.

2. Identify woody plants.

- Main genera and main species of outdoor and indoor woody plants used in horticulture in Québec.
- Main cultivars and hybrids of outdoor and indoor woody plants used in horticulture in Québec.
- Use of scientific nomenclature for identification purposes.
- Use of certain English or vernacular terms when communicating with others.

3. Indicate different horticultural uses for woody plants.

- Hardiness zones: 0, 1, 2a, 2b, 3, 3a, etc.
- Climate factors: types of climate, precipitation, wind, sunlight, temperature, humidity, etc.
- Cultivation needs: exposure, irrigation, fertilization, soil type, etc.
- Main uses and appeal: ornamental, edible, melliferous, etc.
- Main disadvantages of certain woody plants: growth too fast or too slow, fragile structure, toxicity, allergenicity, sensitivity to disease, over-abundant fructification, sensitivity to urban environmental conditions, etc.

Competency 7      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Prune plants.

**Achievement Context**

- For plants that can be pruned from the ground.
- Using pruning tools: hand pruning shears, lopper, lopping shears, long-handled pruner, pole pruner, pruning saw, hedge-trimmer, garden shears, etc.
- Using disinfection and cleaning products.
- Using sharpening tools: file, stone, etc.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |  |   |
|--|---|
| 1. Prepare the pruning to be done.   | <ul style="list-style-type: none"> <li>• Appropriate identification of the type of pruning required.</li> <li>• Careful choice of pruning tools.</li> <li>• Compliance with disinfection requirements.</li> </ul> |
| 2. Prune hedges.   | <ul style="list-style-type: none"> <li>• Adequate trimming of current year's growth.</li> <li>• Structured, esthetically pleasing shape.</li> </ul>   |
| 3. Perform formative pruning, maintenance pruning, coppicing and rejuvenation pruning of plants. | <ul style="list-style-type: none"> <li>• Careful choice of stems to be cut.</li> <li>• Clean, precise cutting of stems.</li> <li>• Observance of the plant's natural or ornamental form.</li> </ul>               |
| 4. Finish the work.  | <ul style="list-style-type: none"> <li>• Proper cleaning of pruning tools.</li> <li>• Proper maintenance of pruning tools.</li> <li>• Proper storage of tools and products.</li> </ul>                            |

*For the competency as a whole:*

- Optimal waste management.
- Compliance with pruning requirements.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare the pruning to be done.
  - Frequency of pruning by species.
  - Types of pruning depending on the species, its developmental stage, the pruning period, the seasons, the correct temperature, etc.
  - Disinfection of tools using a 70% alcohol solution, bleach, etc.
2. Prune hedges.
  - Application of alignment methods and observance of the uniform appearance of the hedge.
  - Use of a hedge trimmer and garden shears: safety rules, pole length, direction of the blade or handle, etc.
  - Trimming and preservation of the current year's growth.
  - Shape of the hedge: rounded, conical, etc.
3. Perform formative pruning, maintenance pruning, coppicing and rejuvenation pruning of plants.
  - Choice of stems to be cut according to the natural or ornamental form of the plant and its developmental stage: stem distribution, removal of weak forks, apical dominance, etc.
  - Types of pruning:
    - maintenance, coppicing and rejuvenation pruning for shrubs
    - formative and maintenance pruning for young trees and fruiting shrubs
  - Use of pruning shears, lopper, lopping shears, long-handled pruner, pole pruner, pruning saw, or garden shears: safety rules, pole length, direction of the blade or handle, etc.
  - Natural form of a plant: bushy, upright, rounded, creeping, etc.
  - Ornamental form of a plant: conical, weeping, columnar, rounded, etc.
4. Finish the work.
  - Cleaning of pruning tools using a cleaning product along with brushing and wiping.
  - Maintenance of hand tools: use of a file or stone, removal of nicks, adjustment of the anvil-blade, sharpening of the blade with a file or stone, oiling, etc.
  - Maintenance of the hedge-trimmer: tightening of blades, oiling, etc.

Competency 8      Duration 75 hours      Credits 5

***Behavioural Competency***

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**Statement of the Competency**

Prepare soils and substrates and fertilize plants.

**Achievement Context**

- Using reference documents: crop data sheets, pH scales, fertilizer reference grids, application sheets, etc.
- Using measurement instruments: soil sampling probe, pH-metre, salinometer, soil analysis kit, measuring and dosage glass, etc.
- Using organic and mineral amendments and fertilizers.
- Using hand tools: garden hoe, broadfork (La Grelinette), spading fork, rake, garden claw, weeder, spreader, sprayer, watering can, etc.
- Using mechanical tools: rototiller, cultivator, sprayer, etc.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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1. Gather and analyze data on soils and substrates.

- Accurate identification of types of soils and substrates.
- Appropriate recognition of soil structures and textures.
- Appropriate recognition of the presence of living organisms.
- Accurate measurement of substrate pH and salinity.
- Accurate interpretation of data on soil pH.
- Accurate determination of the work to be done on the soils and substrates.

2. Loosen and aerate the soil.

- Thorough spading.
- Appropriate hoeing of soil surfaces.

3. Amend the soils and substrates.

- Appropriate choice of amendments.
- Proper determination of the quantities of amendments to be applied.
- Proper application of the amendments.
- Soils and substrates worked in compliance with requirements.



4. Fertilize plants.
  - Appropriate choice of fertilizers to apply.
  - Proper determination of the quantities of fertilizers to be applied.
  - Proper dosage of concentrated fertilizers, compliant with requirements.
  - Uniform application of fertilizers.
5. Finish the work.
  - Thorough cleaning of tools and measuring instruments.
  - Proper storage of products, tools and measuring instruments.

*For the competency as a whole:*

- Appropriate use of reference documents.
- Appropriate choice and use of measuring instruments.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Gather and analyze data on soils and substrates.
  - Types of soils: sandy, clayey, loamy, etc.
  - Soil composition: sand, loam, clay and humus.
  - Types of substrates: peat moss, coconut fibre, rice hulls, clay pebbles, bark, perlite, rock wool, etc.
  - Substrate characteristics: friability, porosity, water retention capacity, density, etc.
  - Soil structure: single grain, compact, gritty, etc.
  - Soil texture categories: sand, loam, clay, etc.
  - Use of a soil sampling probe, a pH-metre, a salinometer or a soil analysis kit.
  - pH data: alkaline, neutral or acid.
  - Data on salinity and electrical conductivity.
  - Organic components: earthworm, springtails, fungi, mycorrhiza, algae, bacteria, etc.
  - Problems encountered with respect to soils and substrates:
    - compacted soil
    - poor soils and substrates
    - lack of nutritional elements for plants
    - other
  - Period for application of amendments and fertilizers: seasonality, ideal temperature, plant developmental stage, etc.

2. Loosen and aerate the soil.

- Spading and use of a broadfork, spading fork, rototiller, cultivator, etc.
- Hoeing of the substrate surface and use of a garden hoe, rake, garden claw, weeder, etc.

3. Amend the soils and substrates.

- Types of organic amendments: compost, composted manure, ramial chipped wood, green fertilizer, etc.
- Types of mineral amendments: lime, gypsum, sulphate, sand, etc.
- Effects of amendments: nutritional, structural, acidifying, alkalinizing, etc.
- Quantities of amendments and execution of basic mathematical operations.
- Application of amendments on soils and use of a broadfork, spading fork, rake, rototiller, cultivator, etc.
- Application of amendments on substrates and use of a garden hoe, spading fork, garden claw, etc.

4. Fertilize plants.

- Types of natural fertilizers of organic origin: seaweed meal, blood meal, dehydrated chicken manure, bone meal, etc.
- Types of mineral fertilizers:
  - Natural origin: sul-po-mag, Epsom salts, rock phosphate, basalt, etc.;
  - Synthetic origin: 20-20-20, 15-30-15, 46-0-0, etc.
- Composition of fertilizers:
  - Major primary elements: nitrogen, phosphorus and potassium
  - Major secondary elements: calcium, magnesium and sulfur
  - Trace elements: iron, boron, magnesium, copper, etc.
- Simple and compound fertilizers.
- Solid fertilizers (soluble powder, pellets, etc.) and liquid fertilizers (ready to use or concentrated).
- Gradual release (slow and fast) fertilizers.
- Impacts of fertilizers on plants (nutritional, acidifying, alkalinizing, etc.) and impacts of excess fertilizer use.
- Quantities of fertilizers to be applied and execution of basic mathematical operations.
- Application rate for solid or liquid fertilizers to be dissolved or diluted.
- Application of solid fertilizers, calibration and use of a spreader, use of a garden hoe, broadfork, spading fork, garden claw, etc.
- Application of liquid fertilizers and use of a watering can or a manual or motorized sprayer.

5. Finish the work.

- Scraping and washing of tools to clean them.
- Cleaning of measuring instruments by wiping or rinsing.

Competency 9      Duration 75 hours      Credits 5

***Behavioural Competency***

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**Statement of the Competency**

Assess plant health.

**Achievement Context**

- Using reference documents: identification guides, websites, herbariums, scouting observation sheets, plant health protection guides, history of plant health interventions, etc.
- Using materials for plant health assessment: magnifying glass, portable microscope, collection devices, traps, trowel, etc.

**Elements of the Competency****Performance Criteria**

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- |   |   |
|---|---|
| 1. Observe signs and symptoms of plant health.                                  | <ul style="list-style-type: none"> <li>• Thorough detection of damaged plant parts.</li> <li>• Adequate detection of the presence of harmful biotic factors.</li> <li>• Adequate detection of harmful abiotic factors.</li> <li>• Appropriate use of materials for plant health assessment.</li> </ul>                      |
| 2. Identify adventive plants and estimate growth stages.                        | <ul style="list-style-type: none"> <li>• Appropriate use of English or vernacular terminology.</li> <li>• Proper recognition of life cycles of adventive plants.</li> <li>• Adequate determination of developmental stages.</li> </ul>  |
| 3. Diagnose plant health problems.  | <ul style="list-style-type: none"> <li>• Accurate analysis of conditions conducive to the development of plant health problems.</li> <li>• Accurate interpretation of past plant health interventions.</li> <li>• Adequate estimate of the scope of plant health problems.</li> <li>• Accuracy of the diagnosis.</li> </ul> |
| 4. Propose classical (conventional) and sustainable plant health interventions. | <ul style="list-style-type: none"> <li>• Proper estimate of the ornamentally-related or socio-economic consequences of the damage.</li> <li>• Careful choice of a prevention or control method.</li> <li>• Compliance with rules governing environmental protection.</li> </ul>   |

*For the competency as a whole:*

- Appropriate use of reference documents.
- Complete and accurate recording of data in the plant health log.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Observe signs and symptoms of plant health.
  - Observation of signs and symptoms of plant health in a lawn, in a vegetable garden, on shrubs, in a greenhouse, for example.
  - Signs: mucus, honeydew, web, hair, hole, urine, excrement, etc.
  - Symptoms: desiccation, decline, defoliation, yellowing, distortion, etc.
  - Parts damaged: root, stem, leaf, etc.
  - Biotic factors: mammal, mollusk, mite, insect, fungus, bacterium, virus, etc.
  - Abiotic factors: nutritional deficiency, overwatering, overheating, drought, frost, anthropic elements (pollution, de-icing salt, trampling, poison, etc.), etc.
  - Use of materials to assess plant health: magnifying glass, portable microscope, collecting devices, traps, trowel, etc.
2. Identify adventive plants and estimate growth stages.
  - Main adventive plants present in Québec.
  - Use of certain English or vernacular terms when communicating with others.
  - Adventive plant life cycles: annual, biennial, perennial.
  - Adventive plant developmental stages: germination, plant development, flowering, fructification and senescence.
3. Diagnose plant health problems.
  - Conditions conducive to the development of plant health problems: hardiness zones, climate factors, exposure, soil type, anthropic elements, adaptation of plants to the environment, etc.
  - History of plant health interventions: nature of interventions, dates, frequency, etc.
  - Scope of plant health problems: number of plants damaged, ratio of plant/group, extent or surface area, status, etc.
  - Main plant health problems: fungal, bacterial or viral diseases, insect infestations, adventive plant invasions, etc.
4. Propose classical (conventional) and sustainable plant health interventions.
  - Ornamentally related consequences of damage: colour loss, volume changes, imbalance, loss of harmony, etc.
  - Socio-economic consequences of damage: loss of value, reduced harvest volume, loss of business, etc.
  - Prevention and control methods:
    - cultural: biological soil activity, companion planting, etc.
    - mechanical: weeding, pruning, etc.
    - biological: insects, predatory or parasitic mites or nematodes, organic pesticides, etc.
    - chemical (synthetic pesticides)

Competency 10      Duration 45 hours      Credits 3

### ***Behavioural Competency***

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#### **Statement of the Competency**

Use pesticides.

#### **Achievement Context**

- For different categories of pesticide use: herbicides, fungicides, insecticides, rodenticides, acaricides, etc.
- For application in contexts outside and inside buildings.
- Using documents: guide on pesticide usage, operators' manual for application equipment, meteorological data, regulatory signage, etc.
- Using application equipment: sprayer, brush, spreader, squeeze bulb, blower, aerosol container, etc.
- Using the required protective equipment.

#### **Elements of the Competency**

#### **Performance Criteria**

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- |   |  |
|---|--|
| 1. Search for information on the legal provisions governing pesticides. | <ul style="list-style-type: none"><li>• Accurate interpretation of current legal requirements and regulatory standards.</li><li>• Appropriate recognition of the impacts of pesticides on the environment.</li><li>• Accurate identification of situations involving risk, preventive measures and types of emergency interventions.</li></ul>   |
| 2. Plan the use of pesticides.  | <ul style="list-style-type: none"><li>• Accurate interpretation of information on categories of pesticide use.</li><li>• Accurate identification of pesticide modes of action.</li><li>• Careful choice of the pesticides to be used.</li></ul>  |
| 3. Simulate techniques for handling and applying pesticides.            | <ul style="list-style-type: none"><li>• Appropriate choice and use of protective equipment and application equipment.</li><li>• Accurate calculation of the quantities needed.</li><li>• Proper preparation of the pesticides.</li><li>• Stringent enforcement of environmental protection measures.</li><li>• Uniform spreading of sufficient quantities of pesticides.</li><li>• Proper preparation and installation of regulatory signage in clearly visible locations.</li></ul> |

- Complete and accurate recording of data in the pesticide usage log.
  - Compliance with waste management requirements.
- 4. Store pesticides.
  - Appropriate verification of storage locations.
  - Placement of pesticides in compliance with requirements.
  - Appropriate use of reserved storage locations.
  - Rigorous access controls.
- 5. Apply the provisions governing the sale of pesticides.
  - Accuracy of the information provided on the choice of pesticides, techniques for handling and applying pesticides and storage requirements.
  - Demonstration of professional ethics and responsible behaviours and attitudes.

*For the competency as a whole:*

- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Search for information on the legal provisions governing pesticides.
  - Current legal requirements and regulatory standards: *Pest Control Products Act, Pesticides Act, Regulation respecting permits and certificates for the sale and use of pesticides* (outdoor pesticide use for ornamental horticulture, indoor pesticide use for horticultural purposes, retail sale of pesticides).
  - Sources of contamination and impacts of pesticides on the environment:
    - point source contamination: accidental spillage, pesticide fire, improper disposal of pesticides, etc.
    - non-point source contamination: runoff, leaching, volatilization, drift, etc.
    - impacts of pesticides on surface water, aquatic plants, fish, etc.
    - impacts of pesticides on soils, plants and terrestrial animals, etc.
    - impacts of pesticides on air quality, avian fauna, etc.
  - Situations involving risk: discomfort or poisoning, spillage, fire, theft, etc.
  - Preventive measures: personal protection, environmental protection, safe handling, application and storage of pesticides, etc.
  - Types of emergency interventions: resource people, first aid, emergency plan, etc.

## 2. Plan the use of pesticides.

- Catégories of pesticides: acaricides, algicides, avicides, bactericides, fungicides, herbicides, insecticides, molluscicides, nematocides, piscicides, rodenticides, phytocides, defoliants and insect repellents.
- Types of action: contact, inhalation and ingestion.
- Choice of pesticides to apply based on plant developmental stages, environmental growing conditions (outdoors or inside a building) and the types and extent of plant health problems:
  - black soap on new cuttings
  - fungicide on mildew
  - insecticide on aphids
  - herbicide on adventive plants
  - dormant oil on apple trees
  - molluscicide near hostas
  - other

## 3. Simulate techniques for handling and applying pesticides.

- Type of protective equipment: chemical resistant gloves and boots, long-sleeved shirt, long pants, overalls, chemical resistant apron, anti-fog goggles, approved respirator mask, washable wide-brimmed hat (or fisherman's hat).
- Type of application equipment: electric, handheld or knapsack sprayer, paintbrush, spreader, squeeze bulb, blower, aerosol container, etc.
- Calculation of pesticide quantities and execution of basic mathematical operations.
- Preparation of pesticides according to their labels:
  - solid pesticides: powder, pellets, tablets, soluble pellets, wettable pellets, soluble powders, bait, tablets, dry flowables, etc.
  - liquid pesticides: emulsifiable concentrates, concentrated suspensions, solutions, aerosols, etc.
- Situations involving risk and environmental protection measures:
  - meteorological data, wind force (speed and direction), humidity and temperature
  - pesticide drift
  - pesticide leaching and soil characteristics
  - pesticide runoff and topography
  - storage of objects, closure of openings, protection of pets, protection of surfaces, application trajectory depending on wind, etc.
- Pesticide application methods: spraying or fogging, damping, spreading of pellets or powder and misting (or aerosol).
- Regulatory signage:
  - date of application, type of pesticide, re-entry time, etc.
  - number of signs by area, positioning of signs, etc.
- Data to be entered in the pesticide usage log: owner's name and contact information, date of the work, reasons for the work, name of the certificate holder who carried out the work, certificate number, location, treatment (area, volume or quantity), name of the pesticide used, names of the active ingredients, quantity of pesticide used, pesticide homologation number.
- Waste management requirements: disposal of empty containers and rinsing water, short-term re-use of slurry waste and disposal of pesticides that are unusable (expired or obsolete) from a regulatory standpoint.

4. Store pesticides.

- Verification of the dedicated storage locations: functioning of aeration and lighting systems, functioning of the fire alarm, presence of emergency intervention materials (personal protective equipment, clean water, absorbent material, ABC-type fire extinguisher, strong plastic bags, square shovel, first-aid kit), etc.
- Placement of products on shelves and not on the ground, by category of use, and by weight and container fragility, etc.
- Dedicated storage locations: pesticide room and security cabinet.
- Access control: locking and posting of entrances.

5. Apply the provisions governing the sale of pesticides.

- Information to be provided regarding the choice of pesticides, techniques for handling and applying pesticides and pesticide storage (see above).
- Professional ethics and importance of raising public awareness.



Competency 11      Duration 45 hours      Credits 3

### ***Behavioural Competency***

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#### **Statement of the Competency**

Ensure that horticultural equipment works properly.

#### **Achievement Context**

- Using reference documents: checklists, operators' manuals, maintenance manuals, etc.
- Using tools: wrench, screwdriver, pliers, etc.
- Using products: cleaning products, lubricants, fuel, oils, etc.
- Using replacement parts.
- Using the required protective equipment.

#### **Elements of the Competency**

#### **Performance Criteria**

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- |   |   |
|---|---|
| 1. Prepare a service vehicle.                           | <ul style="list-style-type: none"><li>• Secure hitching of a trailer.</li><li>• Choice and loading of appropriate tools and horticultural products.</li><li>• Appropriate verification of fluid levels and lights.</li><li>• Adequate detection of defects in the service vehicle.</li></ul>  |
| 2. Maintain and repair hand tools.                      | <ul style="list-style-type: none"><li>• Appropriate verification of the condition of hand tools.</li><li>• Proper lubrication and adjustment of mechanisms.</li><li>• Replacement or repair of broken parts.</li></ul>  |
| 3. Prepare electric and gas-powered tools prior to use. | <ul style="list-style-type: none"><li>• Appropriate verification of the condition of electric and gas-powered tools.</li><li>• Preparation and filling of tanks with oil or fuel compliant with requirements.</li><li>• Compliance with lubrication procedures.</li><li>• Compliance with oil-change procedures.</li><li>• Compliance with part-replacement procedures.</li><li>• Compliance with wintering procedures.</li></ul> |
| 4. Ensure that an irrigation system works properly.     | <ul style="list-style-type: none"><li>• Appropriate verification of the condition of the irrigation system.</li><li>• Appropriate cleaning of parts.</li><li>• Effective repairs of leaks.</li><li>• Proper calibration of sprinklers.</li><li>• Proper programming of the system.</li></ul>  |

*For the competency as a whole:*

- Appropriate use of reference documents.
- Appropriate choice and use of tools.
- Complete and accurate recording of information on the work done.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare a service vehicle.

- Types of service vehicles: van, all-terrain vehicle, two-seater four-wheel ROV, etc.
- Hitching of a trailer: hitching mechanism, safety chain or cable, electrical connection, etc.
- Securing of tools and horticultural products: maximum weight, balanced load, loading area for hazardous products or materials, fastening devices, etc.
- Verification of fluid levels: gasoline, wiper fluid and engine oil.
- Verification of lights: headlights and tail lights, indicators and brake lights.
- Defects identified and information to be given to the person in charge: problem with fluid levels, defective lights, etc.

2. Maintain and repair hand tools.

- Visual inspection and verification of hand tools: spading fork, hoe, wheelbarrow, garden shears, half moon edger, broadfork, garden claw, shovel, rake, weeder, pruning shears, etc.
- Lubrication and adjustment of shear mechanisms, etc.
- Replacement or repair of broken parts: punctured wheelbarrow tire, broken shovel handle, etc.

3. Prepare electric and gas-powered tools prior to use.

- Verification of mechanical tools: aerator, mechanical sweeper, cultivator, rototiller, leaf blower, edge cutter, power hedge trimmer, lawn mower, etc.
- Lubrication of a cultivator, etc.
- Type of oil for a two-stroke engine and gas-oil ratio.
- Change of oil in a four-stroke engine: draining and salvaging, type of oil and filling.
- Replacement of parts: spark plugs, filters, battery, filament, blade, etc.
- Winterizing: use of protective fluids and oils, removal of parts to be protected, etc.

4. Ensure that an irrigation system works properly.

- Start-up and verification of a drip or sprinkler-irrigation system.
- Verification of the rain gauge or humidity detector.
- Cleaning of nozzles and sprinkler heads.
- Repair of crushed or punctured hoses and use of junctions, collars, plugs, etc.
- Calibration of sprinklers: angle, distance and flow.
- Programming of the system and municipal by-laws: duration, alternation, timing, etc.

Competency 12      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Produce ornamental and edible plants.

**Achievement Context**

- Based on an order form and production schedule.
- Using reference documents.
- Using hand tools and measuring instruments. (probes, pH-meter, salinometer, lightmeter and hygrometer).
- Using the required equipment: screen, seed planter, pot, etc.
- Using plants or propagation materials.
- Using the required inputs: substrates, amendments, fertilizers, plant health products, growth regulators, etc.
- Using the required materials: disinfectants, containers, watering equipment, pest control materials, etc.
- Using control agents: insects, mites, nematodes, etc.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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1. Prepare to produce the plants.

- Accurate analysis of the order.
- Accurate analysis of the production schedule.
- Thorough cleaning of the production site.
- Compliance with disinfection procedures.
- Choice of suitable containers for the type of cultivation.
- Choice and preparation of appropriate substrates.

2. Propagate plants.

- Methodical application of propagation techniques.
- Legible, accurate labelling of plants.
- Legible, accurate marking of propagation dates.
- Proper installation of pest control materials.

3. Monitor the crop.
  - Choice of containers according to the developmental stage.
  - Appropriate choice and use of fertilizers
  - Proper completion of pricking out and repotting operations.
  - Exhaustive monitoring and thoughtful prevention interventions.
  - Introduction of control agents compliant with requirements.
  - Appropriate choice and use of growth regulators.
  - Careful choice and precise execution of pruning, pinching and disbudding.
  - Adequate staking of plants.
  - Thorough cleaning of plants.
  - Appropriate hardening off of plants.
4. Prepare the plants for transportation or storage.
  - Rigorous selection of plants.
  - Careful handling of plants.
  - Quantity of plants as stated in the order.
5. Finish the work.
  - Thorough cleaning of tools and measuring instruments.
  - Proper storage of tools, measuring instruments and products.
  - Accurate and complete recording of data in the log.
  - Optimal waste management.

*For the competency as a whole:*

- Appropriate choice and use of tools and measuring instruments.
- Adequate watering at the appropriate times
- Regular control of ambient conditions.
- Plants produced in accordance with production standards.
- Compliance with current certifications.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare to produce the plants.

- Order: delivery date, quantity, container format, etc.
- Species to be produced and characterization of plants (see competencies 2, 3 and 6)
- Production schedule: tasks to be performed, order of tasks, duration of tasks.
- Certifications: organic standard, sustainable production, etc.
- Cleaning of the production site: putting away of materials and tools left on the site, elimination of waste, weeds and algae, sweeping of the floor and work surfaces, salvaging of materials, etc.
- Disinfection procedures: tables and production tools cleaned using alcohol.
- Containers suited to the type of cultivation: multi-cell containers, liners, pots, etc.
- Substrates (see Competency 8).

2. Propagate plants.

- Seeding: preparation of seeds, quantity of seeds required, treatment to foster germination, prevention of damping off, etc.
- Division: correct timing, division techniques for each species.
- Propagation by cutting: selection of parent plants, removal of cuttings, use of natural rooting hormones, etc.
- Grafting: correct timing, grafting technique, choice of root stock and graft, binding of the graft to the root stock, etc.
- Layering: selection of plants; tip, mound and aerial layering, etc.
- Other propagation methods: in vitro cultivation, etc.
- Recording of information on plant types and propagation dates.
- Pest control materials: installation of glue traps to detect for harmful organisms, collection devices, etc.
- Watering materials: nozzle, spray head, capillary mat, sprinkler lines, micro-sprinklers, tricklers and watering spikes, etc.
- Control of ambient conditions and use of the lighting system: light-emitting diode (LED), fluorescent or high-pressure sodium lamp (HPS).

3. Monitor the crop.

- Choice of containers according to the size and needs of the plants, 4-litre pots, 7-litre pots, rigid containers for nurseries, etc.
- Use of fertilizers (see Competency 8).
- Pricking out: timing, removal of the plants, planting, required depth, etc.
- Repotting: timing, choice or preparation of the humus, planting, required depth, etc.
- Plant health monitoring (see Competency 9) and use of a prevention or control strategy.
- Introduction of control agents: screening for pests, choice of agents and quantities needed, release, control of ambient conditions, etc.
- Use of growth regulators: type, application rate, application method, frequency, etc.
- Pruning (see Competency 7), natural development of the plant species, types of plants to be pruned, timing, location of the cuts, etc.
- Pinching: timing, stems to be pinched, etc.
- Disbudding: types of plants to be disbudded, timing, number of flower buds to be eliminated, etc.

- Staking: choice of supports, stakes or trellis, placement of the staking materials, fixing of plants to the stakes, etc.
  - Cleaning of plants: removal of dried leaves and faded flowers, hoeing of the substrate, sweeping of plant waste from tables and the floor, etc.
  - Hardening off of plants: timing, temperature reduction, increased ventilation in the greenhouse, reduction of plant fertilizer, etc.
  - Watering materials: handgun sprayer, spray heads, capillary mat, sprinkler lines, micro-sprinklers, tricklers and watering spikes, etc.
  - Control of ambient conditions and use of the lighting system: light-emitting diode (LED), fluorescent or high-pressure sodium lamp (HPS).
4. Prepare the plants for transportation or storage.
- Selection of plants: verification of plant health and compliance of the plants with production standards.
  - Compliance of the crop with the order: inventory of each plant species, discrepancies, container formats, etc.
5. Finish the work.
- Washing of tools in water.
  - Wiping or rinsing of measuring instruments to clean them.
  - Data to be entered in the log: dates, species, quantity of seeds or cuttings, temperature, container format, quantities of inputs, quantities produced, etc.
  - Waste management (see Competency 5).

Competency 13      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Receive and present plants and complementary horticultural products.

**Achievement Context**

- Using reference documents and specialized documents: suppliers' catalogues, websites, inventory lists, orders, delivery slips, price lists, etc.
- Using a planogram or based on instructions for the marketing of products.
- Using the required materials: handling equipment, labels, promotional materials, theme-based accessories, etc.
- Using sales peripherals: labelling machine, optical reader, etc.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |  |  |
|--|--|
| 1. Help to take inventory.   | <ul style="list-style-type: none"> <li>• Accurate interpretation of information concerning the inventory process.</li> <li>• Accurate counting of plants and complementary horticultural products.</li> </ul>  |
| 2. Place orders.   | <ul style="list-style-type: none"> <li>• Accurate determination of the quantities to be ordered.</li> <li>• Accuracy of the information entered on the order form.</li> </ul>  |
| 3. Receive plants and complementary horticultural products.                  | <ul style="list-style-type: none"> <li>• Appropriate use of the order form and delivery slip.</li> <li>• Meticulous verification of the plants and complementary horticultural products.</li> <li>• Accurate determination of delivery problems.</li> <li>• Relevance and accuracy of the information given to their manager.</li> <li>• Compliance with quarantine procedures.</li> </ul> |
| 4. Place the plants and complementary horticultural products on the shelves. | <ul style="list-style-type: none"> <li>• Functional, harmonious arrangements of plants and complementary horticultural products.</li> <li>• Complete and accurate labelling of plants and complementary horticultural products.</li> <li>• Placement of information and theme-based accessories in appropriate locations.</li> <li>• Safety of the display.</li> </ul>                     |

- |   |  |
|---|--|
| 5. Place complementary horticultural products in storage. | <ul style="list-style-type: none"> <li>• Proper organization of the storage space.</li> <li>• Placement of complementary horticultural products in the appropriate locations.</li> </ul>   |
| 6. Maintain the plants and display shelves.               | <ul style="list-style-type: none"> <li>• Careful cleaning of the plants and display shelves.</li> <li>• Exhaustive monitoring and careful plant health interventions.</li> <li>• Sufficient, uniform watering of plants.</li> <li>• Full display shelves.</li> <li>• Rotation of plants and complementary horticultural products compliant with requirements.</li> </ul> |

*For the competency as a whole:*

- Appropriate use of reference documents and specialized documents.
- Appropriate use of material handling equipment.
- Appropriate use of peripheral sales equipment.
- Compliance with the planogram or instructions for marketing of the products.
- Compliance with the business' policies.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Help to take inventory.
  - Types of inventories:
    - annual: annual plants, flower-pot holders, containers, theme-based accessories, etc.
    - seasonal: perennial plants, bushes, specific varieties of annual plants, etc.
    - occasional: bags of substrate, compost and mulch, fertilizers, etc.
  - Information on the inventory process: names, quantities, dates, product integrity, etc.
  - Use of an inventory list and optical reader and recording of data.
2. Place orders.
  - Use of suppliers' catalogues and websites.
  - Calculation of quantities and performance of basic mathematical operations.
  - Completion of the order form: names, quantities, etc.



3. Receive plants and complementary horticultural products.

- Comparison of the order form with the delivery slip.
- Verification of the plants and complementary horticultural products and determination of delivery problems:
  - quantities
  - species received and characterization of plants (see competencies 2, 3 and 6)
  - plant health problems (see Competency 9)
  - plant abnormalities: damaged or dried-out plants, plants that have fallen from their pots, etc.
  - integrity of the complementary horticultural products
  - undelivered plants and complementary horticultural products (back orders)
  - other
- Policy of the business and information to be given to the manager.
- Plant quarantine: location, duration, log, etc.

4. Place the plants and complementary horticultural products on the shelves.

- Role of displays in marketing.
- Types of displays: new horticultural items, promotions, everyday products, basic products, etc.
- Arrangement of plants and complementary horticultural products in compliance with the planogram or marketing instructions: accessibility, height, product groups, positioning of the item label, colours, ambience, balance, etc.
- Information: role of posters, labels and promotional materials.
- Labelling and posting rules.
- Placement and visibility of labels and posters.
- Display security: theft prevention, heavy items placed near the ground, risks relating to water spillage, etc.
- Use of material handling equipment: cart, dolly, etc.
- Use of a labelling machine.

5. Place complementary horticultural products in storage.

- Types of storage spaces: storage shelves, racks, storage cabinets, baskets etc.
- Organization: temperature, humidity, ease of access, layout and arrangement of the space, etc.
- Placement of complementary horticultural products by category or group, in alphabetical or numerical order, etc.
- Use of material handling equipment: cart, dolly, etc.

6. Maintain the plants and display shelves.

- Cleaning of plants and removal of dead leaves and stems, adventive plants, etc.
- Cleaning of display shelves: removal of waste, dusting, etc.
- Plant health monitoring (see Competency 9) and use of a prevention or control strategy.

Competency 14      Duration 30 hours      Credits 2

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## ***Situational Competency***

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### **Statement of the Competency**

Communicate in a variety of work-related situations.

### **Elements of the Competency**

- Understand the importance of communication in horticulture and garden centre operations.
- Communicate in situations specific to the fields of horticulture and garden centre operations.
- Become aware of their strengths and weaknesses with respect to their ability to establish interpersonal relationships.

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### **Learning Context**

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#### **Information Phase**

- Learning about the basic principles of communication.
- Learning about the characteristics of working as part of a team in horticulture and garden centre operations.
- Learning about the characteristics of customers in horticulture and garden centres.
- Learning about ways to establish relationships with members of the general public in a customer service context.

#### **Participation Phase**

- Participating in scenarios designed to help them acquire attitudes and behaviours that promote teamwork.
- Participating in scenarios designed to help them acquire attitudes and behaviours to interact with customers and members of the general public.

#### **Synthesis Phase**

- Reviewing the strengths and weaknesses in the way they interact with others.
- Identifying the steps to be taken to improve their capacity for teamwork, customer service and public relations.

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### **Instructional Guidelines**

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- Provide the necessary documentation.
- Create a climate of trust, openness and mutual respect between the students.
- Organize scenarios that are representative of workplace activities.
- Encourage the students to try out new behaviours.
- Support students who have difficulty communicating.
- Assist students with the self-assessment process.

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**Participation Criteria**

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**Information Phase**

- Gather information on the subjects to be addressed.
- Express their perceptions of the requirements for communicating in the workplace.

**Participation Phase**

- Participate actively in the different scenarios.
- Show respect and demonstrate a serious attitude during the scenarios.
- Comply with the instructions for participation.

**Synthesis Phase**

- Identify the strong points and elements to be improved in the way they interact:
  - in a work team
  - with customers
  - with members of the general public

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each phase of the learning context, along with their attendant guidelines.

**Information Phase**

- Basic principles of interpersonal communication: verbal and non-verbal communication, impact of a message on the other person, etc.
- Characteristics of teamwork in horticulture and garden centre operations: company culture, types of labour, roles of team members, seasonality and organization of work, etc.
- Characteristics of customers in horticulture and garden centre operations: profession, age, income, ethnic origin, place of residence, preferences (or interests), etc.
- Relations with the general public in a context of community service: participation, involvement, fairness, social solidarity, etc.

**Participation Phase**

- Teamwork: division of tasks, mutual help, carrying out a project, etc.
- Interactions with customers and members of the general public: professional approach, greeting, courtesy, ability to listen, formulation of questions, tone, etc.

**Synthesis Phase**

- Introspection, self-criticism, honesty and indulgence towards themselves and others.

Competency 15      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Perform spring maintenance tasks in an in-ground garden.

**Achievement Context**

- For different types of gardens: landscape garden, vegetable garden, flower bed, edible landscaping, pollinator garden, permaculture garden, medicinal garden, etc.
- Using documentation relating to maintenance.
- Using plants and seeds.
- Using the necessary tools.
- Using the necessary inputs: plant health products, amendments, fertilizers, mulch, etc.
- Using the required materials: theme-based accessories, materials promoting biodiversity, watering devices, etc.
- With a service vehicle.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |  |  |
|--|--|
| 1. Prepare the work.                             | <ul style="list-style-type: none"> <li>• Accurate interpretation of maintenance requirements.</li> <li>• Accurate characterization of the plants in the garden.</li> </ul>   |
| 2. Carry out the seasonal opening of the garden. | <ul style="list-style-type: none"> <li>• Removal of all winter protection materials.</li> <li>• Thorough cleaning of the garden.</li> <li>• Adequate refreshment of borders.</li> <li>• Careful placement of theme-based accessories and materials promoting biodiversity.</li> </ul>  |
| 3. Perform spring maintenance tasks in a garden. | <ul style="list-style-type: none"> <li>• Careful determination of the cultivation needs of plants in the spring.</li> <li>• Exhaustive monitoring and careful plant health interventions.</li> <li>• Adequate soil preparation and adequate fertilization of plants.</li> <li>• Careful replacement of herbaceous and woody plants.</li> <li>• Division and relocation of herbaceous plants as appropriate.</li> <li>• Adequate removal of plants.</li> <li>• Careful planting of non-hardy plants.</li> </ul> |

- Correct execution of spring pruning.
  - Adequate sowing.
  - Adequate mulching.
  - Compliance with maintenance requirements.
4. Finish the work.
- Thorough cleaning of the site.
  - Thorough cleaning of tools.
  - Proper storage of products and tools.
  - Accurate recording of information on the work done and products used.

*For the competency as a whole:*

- Appropriate choice and use of tools.
- Adequate weeding.
- Sufficient, uniform watering.
- Optimal waste management.
- Relevance and accuracy of the information given to others.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare the work.
  - Requirements relating to maintenance and documents: service contract, maintenance schedule, work order, etc.
  - Characterization of plants in the garden (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
2. Carry out the seasonal opening of the garden.
  - Suitable times for removing winter protection materials, depending on plant types.
  - Removal of winter protection materials: rosebush cone, geotextile, cord, snow fencing, etc.
  - Cleaning of the garden and removal of leaves, dead branches, dead stems, adventive plants, debris and waste, etc.
  - Refreshment of borders (see Competency 5).
  - Placement of theme-based accessories and materials promoting biodiversity, insect hotels, nesting boxes, feeders, water troughs, etc.
3. Perform spring maintenance tasks in a garden.
  - Cultivation needs of plants in the spring (see competencies 3 et 6) and deepening of knowledge about maintenance.
  - Plant health monitoring (see Competency 9) and use of a prevention or control strategy.
  - Soil preparation and fertilization of the plants (see Competency 8).
  - Replacement of herbaceous or woody plants: dead or damaged plants, etc.

- Division and relocation of fall-flowering herbaceous plants, voluminous herbaceous plants, etc.
  - Removal of plants, senescent plants and poorly situated plants, special requests from customers, etc.
  - Planting of non-hardy plants:
    - non-hardy rhizomes, tubers or corms
    - annual plants
    - non-hardy perennial plants.
  - Spring pruning (see Competency 7).
  - Seeding (see Competency 5).
  - Mulching: placement of ramial chipped wood, cedar mulch, coconut mulch, cocoa shell mulch, etc.
4. Finish the work.
- Cleaning of the site: sweeping, salvaging of organic waste, removal of debris and bags, etc.
  - Cleaning of tools (see competencies 5, 7 and 8).
  - Recording of information:
    - work done: nature of the work, duration, points to watch, etc.
    - products used: types and quantities.

Competency 16      Duration 60 hours      Credits 4

***Behavioural Competency***

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**Statement of the Competency**

Perform summer and fall maintenance tasks in an in-ground garden.

**Achievement Context**

- For different types of gardens: landscape garden, vegetable garden, flower bed, edible landscaping, pollinator garden, permaculture garden, medicinal garden, etc.
- Using documentation relating to maintenance.
- Using plants and seeds.
- Using the necessary tools.
- Using the necessary inputs: plant health products, amendments, fertilizers, mulch, etc.
- Using the required materials: stakes, watering devices, items required for overwintering of plants, winter protection materials, etc.
- With a service vehicle.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |  |  |
|--|--|
| 1. Prepare the work.                             | <ul style="list-style-type: none"> <li>• Accurate interpretation of maintenance requirements.</li> <li>• Accurate characterization of the plants in the garden.</li> </ul>   |
| 2. Perform summer maintenance tasks in a garden. | <ul style="list-style-type: none"> <li>• Careful determination of the cultivation needs of plants in the summer.</li> <li>• Exhaustive monitoring and careful plant health interventions.</li> <li>• Careful replacement of herbaceous and woody plants.</li> <li>• Correct execution of summer pruning.</li> <li>• Adequate staking of plants.</li> <li>• Spading or aeration of the soil.</li> <li>• Adequate refreshment of borders.</li> </ul> |
| 3. Perform fall maintenance tasks in a garden.   | <ul style="list-style-type: none"> <li>• Careful determination of the cultivation needs of plants in the fall.</li> <li>• Division and relocation of herbaceous plants as appropriate.</li> <li>• Thoughtful planting of hardy bulbs or adequate seeding.</li> <li>• Correct execution of fall pruning.</li> <li>• Appropriate work done to the soil.</li> </ul>   |

4. Close the garden for the season.
  - Removal of all non-hardy plants.
  - Adequate overwintering of non-hardy plants.
  - Sowing of green manure compliant with requirements.
  - Storage of all materials present at the site.
  - Correct installation of winter protection.
5. Finish the work.
  - Thorough cleaning of the site.
  - Thorough cleaning of tools.
  - Proper storage of products and tools.
  - Accurate recording of information on the work done and products used.

*For the competency as a whole:*

- Appropriate choice and use of tools.
- Adequate weeding.
- Thorough cleaning of plants.
- Adequate mulching.
- Sufficient, uniform watering.
- Adequate fertilization of plants.
- Optimal waste management.
- Relevance and accuracy of the information given to others.
- Compliance with maintenance requirements.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare the work.
  - Requirements relating to maintenance and documents, service contract, maintenance schedule, work order, etc.
  - Characterization of plants in the garden (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
2. Perform summer maintenance tasks in a garden.
  - Cultivation needs of plants in the summer (see competencies 3 and 6) and deepening of knowledge about maintenance.
  - Plant health monitoring (see Competency 9) and use of a prevention or control strategy.
  - Replacement of herbaceous or woody plants: dead or damaged plants, etc.



- Pruning (see Competency 7).
  - Staking of plants and refreshment of borders (see Competency 5).
  - Spading or aeration of the soil (see Competency 8).
  - Fertilization of plants (see Competency 8).
3. Perform fall maintenance tasks in a garden.
- Cultivation needs of plants in the fall (see competencies 3 and 6) and deepening of knowledge about maintenance.
  - Division and relocation of spring-flowering herbaceous plants, voluminous herbaceous plants, etc.
  - Planting of hardy bulbs: garlic, crocus, tulip, daffodil, etc.
  - Pruning (see Competency 7).
  - Soil work (see Competency 8).
  - Fertilization of plants (see Competency 8).
4. Close the garden for the season.
- Removal of all non-hardy plants: non-hardy annuals, rhizomes, tubers and corms, annuals, non-hardy perennials.
  - Overwintering of non-hardy plants: cleaning, storage of plants in shelters, storage of rhizomes, tubers and corms in vermiculite, perlite or sand containers, etc.
  - Sowing of green manure: fall rye, crimson clover, forage radish, etc.
  - Storage of materials present at the site: theme-based accessories, stakes, materials promoting biodiversity, watering materials, etc.
  - Winter protection against cold, wind, ice, rodents, etc., and materials used: cord, snow fencing, geotextile, rose bush cones, etc.
  - Methods used to install winter protection and correct timing for each type of plant.
5. Finish the work.
- Cleaning of the site: sweeping, salvaging of organic waste, removal of debris and bags, etc.
  - Cleaning of tools (see competencies 5, 7 and 8).
  - Recording of information:
    - work done: nature of the work, duration, points to watch, etc.
    - products used: types and quantities.

Competency 17      Duration 45 hours      Credits 3

***Behavioural Competency***

---

**Statement of the Competency**

Manually harvest edible and ornamental plants.

**Achievement Context**

- Based on requests.
- Using the required tools.
- Using the materials required for harvesting: containers, brushes, dryer, scale, bags, etc.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |  |  |
|--|--|
| 1. Prepare the harvest.                    | <ul style="list-style-type: none"> <li>• Accurate analysis of requests.</li> <li>• Accurate characterization of plants to be harvested.</li> <li>• Accurate determination of the developmental stages of the plants.</li> <li>• Careful determination of harvesting periods.</li> </ul>  |
| 2. Carry out the harvest.                  | <ul style="list-style-type: none"> <li>• Careful choice of plants to be picked, kept or rejected.</li> <li>• Plants properly picked, cut or lifted.</li> <li>• Volume of harvest in accordance with the requests.</li> </ul>   |
| 3. Prepare the plants for distribution.    | <ul style="list-style-type: none"> <li>• Adequate cleaning of the plants.</li> <li>• Appropriate sorting of the plants.</li> <li>• Correct identification of the quantities for distribution.</li> <li>• Conditioning of the plants compliant with requirements.</li> <li>• Compliance with the shelf life of the plants.</li> </ul> |
| 4. Oversee the distribution of the plants. | <ul style="list-style-type: none"> <li>• Adequate performance of distribution activities.</li> <li>• Relevance and accuracy of the information provided to others.</li> </ul>  |
| 5. Finish the work.                        | <ul style="list-style-type: none"> <li>• Thorough cleaning of the site.</li> <li>• Thorough cleaning of tools.</li> <li>• Proper storage of materials and tools.</li> <li>• Accurate recording of information about the harvest.</li> </ul>  |

*For the competency as a whole:*

- Careful handling of the plants.
- Appropriate choice and use of harvesting tools and materials.
- Optimal waste management.
- Compliance with requests.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Prepare the harvest.
  - Characteristics of requests: origin, desired plants (edible or ornamental), use of plants (consumption, distribution, propagation, etc.), harvesting context (urban farming, theme-based harvest, etc.), etc.
  - Characterization of the plants to be harvested (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
  - Plant developmental stages (see Competency 2).
  - Harvesting periods: periodical, during the season or at the end of the season.
2. Carry out the harvest.
  - Choice of plants to be harvested, kept or rejected: calibre, colour, bruising, wounds, shapes, plant health problems (see Competency 9), etc.
  - Picking of fruits or grains, cutting of flowers or medicinal plants, lifting of rhizomes or bulbs, etc.
  - Harvest volume: quantities harvested, minimization of waste, etc.
3. Prepare the plants for distribution.
  - Quantities to be distributed according to requests and performance of basic mathematical operations.
  - Factors influencing the shelf life of the plants (temperature, relative humidity, wounds, maturity or ripening, etc.).
  - Plant conservation techniques: dryer, refrigerator, cold room, packaging, etc.
4. Oversee the distribution of the plants.
  - Distribution of the plants: shipping, on site, etc.
  - Information given to others (see competencies 2, 3, 6, 9 and 14).
5. Finish the work.
  - Cleaning of the site: salvaging of organic waste, removal of debris, etc.
  - Cleaning of tools (see competencies 5, 7 and 8).
  - Recording of information on the harvest: products, quantities harvested, etc.

Competency 18      Duration 90 Hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Draw a planting plan.

**Achievement Context**

- For different types of gardens: landscape garden, vegetable garden, flower bed, edible landscaping, pollinator garden, permaculture garden, medicinal garden, indoor garden, etc.
- Using reference documents.
- Using a measuring tape and manual or computerized drafting materials.

**Elements of the Competency****Performance Criteria**

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- |   |   |
|---|---|
| 1. Gather data.                           | <ul style="list-style-type: none"> <li>• Accurate analysis of needs.</li> <li>• Adequate inventory of the site.</li> </ul>  |
| 2. Produce a sketch of the existing site. | <ul style="list-style-type: none"> <li>• Accurate determination of the scale.</li> <li>• Accurate reproduction of the site's boundaries.</li> <li>• Accurate reproduction of the built elements and plants to be preserved.</li> </ul>  |
| 3. Develop the design.                    | <ul style="list-style-type: none"> <li>• Determination of a main concept for the plan, based on needs and the characteristics of the site.</li> <li>• Accurate determination of the locations, sizes and shapes of planting sites.</li> <li>• Careful choice of plants.</li> <li>• Careful choice of materials, containers or accessories.</li> <li>• Careful choice of type of mulch.</li> <li>• Careful application of specific rules of composition.</li> <li>• Appropriate use of the available space.</li> </ul> |
| 4. Finalize the plan.                     | <ul style="list-style-type: none"> <li>• Accuracy of the notes.</li> <li>• Accuracy of the legend.</li> <li>• Clarity of the plan.</li> <li>• Compliance with design standards.</li> </ul>  |

*For the competency as a whole:*

- Appropriate choice and use of reference documents.
- Appropriate use of drawing materials.
- Compliance with legislation and regulations.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Gather data.

- Characteristics of needs according to the environment or sector: family, community, institutional, municipal, commercial, etc.
- Characteristics of a landscape garden, vegetable garden, flower bed, edible landscaping, pollinator garden, permaculture garden, medicinal garden, indoor garden, etc., according to:
  - usage or use: food-producing, ornamental, leisure, theme-based, etc.
  - the impact sought: structure, focal point, perspective, panorama, border, movement, etc.
  - style: contemporary, rustic, English, French, Japanese, etc.
  - cultivation method: in-ground or above ground
  - other
- Inventory of the site:
  - built elements: types of buildings (house, booth, etc.), types of equipment (swimming pool, furniture, etc.), types of inert materials (stone, paving, asphalt, wood, etc.), and services present on site (electricity, water outlet, drain, etc.)
  - plants present: species, health, location, size, etc.

2. Produce a sketch of the existing site.

- Scales: 1/50 and 1/100.
- Reproduction of the site's boundaries, built elements and plants to be kept, and use of a measuring tape.

3. Develop the design.

- Concept: theme, style, shapes, etc.
- Locations of planting sites: facade, isolated, border, to the rear, for structural purposes, etc.
- Dimensions of planting sites based on the inventory of the site and functionality.
- Shapes of planting sites: rectangular, square, kidney-shaped, circular, etc.
- Choice of plants to be introduced and kept, based on garden type, height, spread, cultivation needs, etc.
- Choice of materials (containers, stakes, trellis, theme-based accessories or materials promoting biodiversity), based on garden type and plant types.
- Choice of type of mulch (ramial chipped wood, cedar mulch, coconut mulch, cocoa shell mulch, etc.), based on garden type, cultivation needs, etc.
- Basic principles of composition: colour, texture, contrast, volume, balance, axis, harmony, etc.

4. Finalize the plan.

- Notes: particular comments or indications concerning the layout, choice of plants, mulch, development methods, etc.
- Legend: meanings of letters and symbols.
- Design standards: content of title box (scale, project name, etc.), location of geographical north, arrangement of the elements, etc.

Competency 19      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Lay out and maintain a raised-bed garden.

**Achievement Context**

- For different types of gardens: vegetable garden, edible landscaping, pollinator garden, medicinal garden, indoor garden, etc.
- Based on a planting plan.
- Using documents relating to maintenance.
- Using plants or seeds.
- Using the required tools and measuring instruments.
- Using the required inputs: substrates, amendments, fertilizers, drainage materials, hydroabsorbent polymers, mulch, plant health products, etc.
- Using the required materials: containers of different sizes, geotextile, theme-based accessories, materials promoting biodiversity, watering materials, etc.
- With a service vehicle.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |                                 |   |
|---------------------------------|---|
| 1. Plan the work.               | <ul style="list-style-type: none"> <li>• Accurate interpretation of the planting plan.</li> <li>• Accurate characterization of the plants to be used.</li> <li>• Correct determination of the operations to be performed.</li> <li>• Correct determination of the types and quantities of required inputs.</li> </ul> |
| 2. Prepare the site.            | <ul style="list-style-type: none"> <li>• Proper establishment of a safety perimeter.</li> <li>• Accurate transfer of data from the plan to the site.</li> <li>• Correct placement of containers, geotextile and drainage materials.</li> <li>• Appropriate preparation of substrate.</li> </ul>                       |
| 3. Lay out a raised-bed garden. | <ul style="list-style-type: none"> <li>• Careful planting of suitable plants or seeds.</li> <li>• Careful placement of theme-based accessories and materials promoting biodiversity.</li> <li>• Adequate mulching.</li> <li>• Compliance with the planting plan.</li> </ul>   |

4. Carry out maintenance work on a raised-bed garden.
  - Careful determination of the cultivation needs of the plants.
  - Exhaustive monitoring and careful plant health interventions.
  - Careful replacement of herbaceous or woody plants.
  - Correctly performed pruning.
  - Thorough cleaning of plants.
  - Adequate fertilization of plants.
  - Careful aeration of surfaces.
  - Compliance with maintenance requirements.
5. Finish the work.
  - Thorough cleaning of the site.
  - Thorough cleaning of tools and measuring instruments.
  - Proper removal of safety perimeter.
  - Proper storage of products, tools and measuring instruments.
  - Accurate recording of information on the work done and products used.

*For the competency as a whole:*

- Appropriate choice and use of tools and measuring instruments.
- Adequate staking of plants.
- Adequate weeding.
- Sufficient, uniform watering.
- Optimal waste management.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Plan the work.
  - Characteristics of a planting plan.
  - Characterization of the plants to be used (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
  - Operations to be performed: types of tasks, sequence, priorities, etc.
  - Choice of types of inputs (substrates, amendments, fertilizers, drainage materials, hydroabsorbent polymers, etc.) based on garden type.
  - Calculation of quantities and performance of basic mathematical operations.

## 2. Prepare the site.

- Safety perimeter based on the work area: cones, continuous barrier, dimensions, encroachment onto a public road, signage, etc.
- Placement of containers in accordance with the planting plan and stability requirements.
- Placement of geotextile in the containers: dimensions, cutting and positioning of the geotextile.
- Inclusion of drainage materials in the containers: stones, sand, clay pellets, polystyrene foam, etc.
- Incorporation of hydroabsorbent polymers, amendments or slow-release fertilizers in the substrate, as needed.
- Preparation of substrate: placement of the substrate in the containers, compaction, humidity, volume, uniformity, etc.

## 3. Lay out a raised-bed garden.

- Verification of plants: inventory of each plant species, health of plants, compliance of container formats or plant sizes, etc.
- Planting (see Competency 5).
- Sowing: preparation of seeds, quantity of seed required, treatment to encourage germination, etc.
- Placement of theme-based accessories and materials promoting biodiversity: insect hotels, nesting boxes, feeders, water features, etc.
- Mulching: placement of ramial chipped wood, cedar mulch, coconut mulch, cocoa shell mulch, etc.

## 4. Carry out maintenance work on a raised-bed garden.

- Requirements concerning maintenance and documents: service contract, maintenance schedule, work order, etc.
- Cultivation needs of the plants (see competencies 3 and 6) and deepening of knowledge about maintenance.
- Plant health monitoring (see Competency 9) and use of a prevention and control strategy.
- Replacement of herbaceous or woody plants: dead or damaged plants, etc.
- Pruning (see Competency 7).
- Cleaning of plants and removal of leaves, dead branches, dead stems, adventive plants, debris, etc.
- Fertilization of plants (see Competency 8).
- Aeration of surfaces (see Competency 8).

## 5. Finish the work.

- Cleaning of tools and measuring instruments (see competencies 5, 7 and 8).
- Recording of information:
  - work done: nature of the work, duration, points to watch, etc.
  - products used: types and quantities



Competency 20      Duration 60 hours      Credits 4

### ***Behavioural Competency***

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#### **Statement of the Competency**

Lay out an in-ground garden.

#### **Achievement Context**

- For different types of gardens: landscape vegetable garden, flower bed, edible landscaping, pollinator garden, permaculture garden, medicinal garden, etc.
- Based on a planting plan.
- Using plants or seeds.
- Using the required tools and measuring instruments.
- Using the required inputs: amendments, mulch, etc.
- Using the required materials: theme-based accessories, stakes, materials promoting biodiversity, watering materials etc.
- With a service vehicle.
- Using the required protective equipment.

#### **Elements of the Competency**

#### **Performance Criteria**

- |                                 |  |
|---------------------------------|--|
| 1. Plan the work.               | <ul style="list-style-type: none"> <li>• Accurate interpretation of the planting plan.</li> <li>• Accurate characterization of the plants to be used.</li> <li>• Correct determination of the operations to be performed.</li> <li>• Correct determination of the types and quantities of required inputs.</li> </ul>  |
| 2. Prepare the site.            | <ul style="list-style-type: none"> <li>• Proper establishment of a safety perimeter.</li> <li>• Accurate transfer of data from the plan to the site.</li> <li>• Adequate preparation of the soil and planting surface.</li> </ul>  |
| 3. Lay out an in-ground garden. | <ul style="list-style-type: none"> <li>• Careful planting of suitable plants or seeds.</li> <li>• Careful placement of theme-based accessories and materials promoting biodiversity.</li> <li>• Sufficient, uniform watering.</li> <li>• Adequate fertilization of plants.</li> <li>• Adequate staking of plants.</li> <li>• Adequate mulching.</li> <li>• Compliance with the planting plan.</li> </ul> |

## 4. Finish the work.

- Thorough cleaning of the site.
- Thorough cleaning of tools and measuring instruments.
- Proper storage of products, tools and measuring instruments.
- Proper removal of safety perimeter.
- Accurate recording of information on the work done and products used.

*For the competency as a whole:*

- Appropriate choice and use of tools and measuring instruments.
- Optimal waste management.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

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**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

## 1. Plan the work.

- Characteristics of a planting plan.
- Characterization of the plants to be used (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
- Operations to be performed: types of tasks, sequence, priorities, etc.
- Choice of amendment types based on garden type and soil characteristics.

## 2. Prepare the site.

- Safety perimeter based on the work area: cones, continuous barrier, dimensions, encroachment onto a public road, signage, etc.
- Transfer of data from the planting plan to the site: excavation depth, marking of planting areas, etc.
- Division of the planting surface.
- Preparation of the soil and planting surface (see competencies 5 and 8).

## 3. Lay out an in-ground garden.

- Verification of plants: inventory of each plant species, health of plants, compliance of container formats or plant sizes, etc.
- Planting (see Competency 5).
- Sowing: preparation of seeds, quantity of seed required, treatment to encourage germination, etc.
- Placement of theme-based accessories or materials promoting biodiversity, insect hotels, nesting boxes, feeders, water troughs, etc.
- Mulching: placement of ramial chipped wood, cedar mulch, coconut mulch, cocoa shell mulch, etc.

4. Finish the work.

- Cleaning of the site: sweeping, salvaging of organic waste, removal of debris and bags, etc.
- Cleaning of tools and measuring instruments (see competencies 5, 7 and 8).
- Recording of information:
  - work done: nature of the work, duration, points to watch, etc.
  - products used: types and quantities

Competency 21      Duration 60 hours      Credits 4

***Behavioural Competency***

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**Statement of the Competency**

Lay out and maintain an indoor living wall or a mosaiculture.

**Achievement Context**

- On an existing structure or planting surface.
- Based on a sketch or a model and technical specifications.
- Using documents relating to maintenance.
- Using plants.
- Using the required tools and measurement instruments.
- Using the required inputs: substrates, amendments, fertilizers, hydroabsorbent polymers, plant health products, etc.
- Using the required materials: containers, drainage materials, felt pouches, geotextile, shade cloth, etc.
- With a service vehicle.
- Using the required protective equipment.

**Elements of the Competency****Performance Criteria**

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- |   |  |
|---|--|
| 1. Plan the work.                                   | <ul style="list-style-type: none"> <li>• Accurate interpretation of the theme of the sketch or model.</li> <li>• Accurate interpretation of the technical specifications.</li> <li>• Accurate characterization of the plants to be used.</li> <li>• Correct determination of the operations to be performed.</li> <li>• Correct determination of the types and quantities of required inputs.</li> </ul> |
| 2. Prepare for installation.                        | <ul style="list-style-type: none"> <li>• Proper establishment of a safety perimeter.</li> <li>• Review of the services available.</li> <li>• Proper placement of materials.</li> <li>• Appropriate preparation of the substrate or soil.</li> </ul>  |
| 3. Lay out an indoor living wall or a mosaiculture. | <ul style="list-style-type: none"> <li>• Careful placement of the plants.</li> <li>• Compliance with the theme of the sketch or model.</li> </ul>  |

4. Maintain an indoor living wall or a mosaiculture.
  - Careful determination of the cultural needs of the plants.
  - Exhaustive monitoring and careful plant health interventions.
  - Careful replacement of herbaceous or woody plants.
  - Esthetic quality of pruning.
  - Thorough cleaning of plants.
  - Adequate fertilization of plants.
  - Adequate control of ambient conditions.
  - Compliance with maintenance requirements.
5. Finish the work.
  - Thorough cleaning of the site.
  - Thorough cleaning of tools and measuring instruments.
  - Proper removal of the safety perimeter.
  - Proper storage of products, tools and measuring instruments.
  - Accurate recording of information on the work done and products used.

*For the competency as a whole:*

- Appropriate choice and use of tools and measuring instruments.
- Sufficient, uniform watering.
- Optimal waste management.
- Compliance with occupational health and safety rules.
- Compliance with rules governing environmental protection.

### **Suggestions for Competency-Related Knowledge and Know-How**

The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Plan the work.
  - Themes of a sketch or mosaiculture model: characters, emblem, animals, events, lettering, etc.
  - Technologies for a sketch of an indoor living wall: hydroponic walls, modular walls, self-bearing panels, wall-mounted containers, etc.
  - Characterization of the plants to be used (see competencies 2, 3 and 6) and deepening of knowledge about plant identification.
2. Prepare for installation.
  - Safety perimeter based on the work area: cones, continuous barrier, dimensions, encroachment onto a public road, signage, etc.
  - Services present at the site and access point: electricity, water outlet, etc.
  - Placement of the materials (containers, drainage materials, felt pockets, geotextile, shade cloth, etc.) in line with the technical specifications.

- Incorporation of hydroabsorbent polymers, amendments or slow-release fertilizers in the substrate, as needed.
  - Preparation of the substrate or soil: placement of the substrate or soil, compaction, humidity, volume, uniformity, etc.
3. Lay out an indoor living wall or mosaiculture.
- Verification of the plants: inventory of each plant species, health of plants, compliance of container formats or plant sizes, etc.
  - Placement of the plants: planting (see Competency 5) or insertion.
4. Maintain an indoor living wall or mosaiculture.
- Requirements concerning maintenance and documents: service contract, maintenance schedule, work order, etc.
  - Cultivation needs of the plants (see competencies 3 and 6) and deepening of knowledge about maintenance.
  - Plant health monitoring (see Competency 9) and use of a prevention and control strategy.
  - Replacement of herbaceous or woody plants: dead or damaged plants, etc.
  - Pruning (see Competency 7).
  - Cleaning of plants and removal of dead leaves and branches, adventive plants, debris, etc.
  - Fertilization of plants (see Competency 8).
  - Control of ambient conditions including: pH, lighting, irrigation, fertilizer quantities, etc.
5. Finish the work.
- Cleaning of the site: sweeping, salvaging of organic waste, removal of debris and bags, etc.
  - Cleaning of tools and measuring instruments (see competencies 5, 7 and 8).
  - Recording of information:
    - work done: nature of the work, duration, points to watch, etc.
    - products used: types and quantities

Competency 22      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Sell plants and complementary horticultural products and provide customer service.

**Achievement Context**

- Using reference documents and specialized documentation: plant catalogues, websites, price lists, blank invoices, etc.
- Using the required materials: customer loyalty materials, packaging, etc.
- Using sales peripherals: optical reader, cash drawer, sales terminal, etc.

**Elements of the Competency****Performance Criteria**

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- |                                 |   |
|---------------------------------|---|
| 1. Greet customers.             | <ul style="list-style-type: none"> <li>• Demonstration of dynamic, professional attitudes and behaviours.</li> <li>• Greeting of customers in the order in which they arrive or are placed in the queue.</li> </ul>   |
| 2. Provide customer service.    | <ul style="list-style-type: none"> <li>• Correct formulation of questions.</li> <li>• Accurate determination of the customers' needs.</li> <li>• Relevance and accuracy of the information provided on the plants, complementary horticultural products and services offered by the business.</li> </ul>  |
| 3. Make sales.                  | <ul style="list-style-type: none"> <li>• Correct preparation of the invoice.</li> <li>• Clarity of the explanations given concerning return policies and warranties.</li> <li>• Accurate calculation of the total price.</li> <li>• Appropriate use of customer loyalty methods.</li> <li>• Compliance with requirements concerning the collection of payments.</li> <li>• Wrapping compliant with requirements.</li> </ul> |
| 4. Provide after-sales service. | <ul style="list-style-type: none"> <li>• Thorough processing of complaints.</li> <li>• Compliance with the business' return policy.</li> <li>• Relevance and accuracy of the information given to their manager.</li> </ul>   |

*For the competency as a whole:*

- Appropriate use of reference documents and specialized documentation.
- Appropriate use of sales peripherals.
- Quality of communication with customers.
- Compliance with the customer-greeting policy.
- Compliance with professional ethics.
- Compliance with occupational health and safety rules.

### **Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each element of the competency, along with their attendant guidelines.

1. Greet customers.

- Interaction with customers (see Competency 14).
- Importance of respecting the order in which customers arrive and of managing the queue at busy times, to ensure a good customer experience.
- Specific policies of certain businesses: greeting, dress code, terms to be used, etc.

2. Provide customer service.

- Types of questions: open, closed and directed.
- Customers' needs: level of the customer's horticultural knowledge, the plants required (colour, flowering, etc.), utility or use, price, etc.
- Information on plants and plant maintenance (see competencies 2, 3, 6, 7, 8 and 9).
- Information on complementary horticultural products: inputs (substrate, fertilizer, pesticide, etc.), tools and other complementary horticultural products (containers, geotextile, theme-based accessories, protection materials, materials promoting biodiversity, clothing, etc.).
- Information on the services offered by the business: delivery, location, consultations by appointment, planting, turnkey projects, etc.
- Procedures relating to layaways.

3. Make sales.

- Preparation of the invoice: creation of a customer record, information to be entered on a blank invoice, etc.
- Calculation of the total price: taxes, discounts, delivery charges, etc.
- Payment procedures: use of sales peripherals, collection of the payment, giving of change.
- Wrapping for plants: cord, plastic, sleeve, box, etc.
- Wrapping for complementary horticultural products: box, bag, etc.
- Customer loyalty methods: gift card, discount coupon, birthday, etc.
- Offer of drive-through service.



#### 4. Provide after-sales service.

- Importance of customer satisfaction for the business' image.
- Types of complaints (examples): dead plants, plant health problems, defective tools, incorrect invoices or invoices that are difficult to understand, unsatisfactory service, etc.
- Consequences of dissatisfaction: loss of customers, damage to the business's reputation, fewer sales, etc.
- Processing of complaints: listening, paraphrasing, customer's expectations of the business, questions, gathering of information, suggesting solutions, checking with the customer, etc.
- Return, exchange and warranty policies: time limit for exchanges and reimbursements, plants or complementary horticultural products that cannot be exchanged or reimbursed, etc.
- Validity of the invoice and procedures for refunds or exchanges.
- Follow-up of the complaint with their manager.

Competency 23

Duration 105 hours

Credits 7

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### ***Situational Competency***

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#### **Statement of the Competency**

Enter the workforce.

#### **Elements of the Competency**

- Become familiar with the way the occupation is exercised in the workplace.
- Integrate the knowledge, skills, attitudes and work habits acquired during training.
- Become aware of how a practicum will change their perception of the occupation.

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#### **Learning Context**

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##### **Information Phase**

- Becoming familiar with information about the practicum and its terms and conditions.
- Taking steps to obtain a place as a trainee in a horticultural business.

##### **Participation Phase**

- Observing the work setting.
- Performing various occupational tasks.
- Recording their observations of the work setting and the tasks performed.

##### **Synthesis Phase**

- Identifying aspects of the occupation that are connected with and that differ from the training received.
- Discussing how their practicum will affect their choice of future employment: aptitudes and interests.

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#### **Instructional Guidelines**

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- Maintain close ties between the school and the host company.
- Provide the documentation required to prepare the practicum.
- Make it possible for students to carry out work-related tasks.
- Provide periodical supervision of trainees.
- Make sure trainees are under the supervision of a responsible individual in the host company.
- Intervene if problems or difficulties arise.

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#### **Participation Criteria**

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##### **Information Phase**

- List companies that meet the predetermined selection criteria.
- Update their resumé.
- Write a letter of application.

**Participation Phase**

- Comply with the host company's rules.
- Interact with co-workers.
- Record information on the work setting and the tasks performed.

**Synthesis Phase**

- Present a brief summary of their experience.
- Discuss their experience in the workplace with other students.

**Suggestions for Competency-Related Knowledge and Know-How**

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The following is a summary of the knowledge, skills, strategies, attitudes and perceptions related to each phase of the learning context, along with their attendant guidelines.

**Information Phase**

- Consultation of documentation about businesses that take in trainees.
- Content of a résumé: personal information, education, previous work experience, achievements, etc.
- Content of a letter of application: additional information not in the résumé, explanation of how their skills qualify them for the practicum, thanks and signature.
- Types of companies and finding a practicum host: landscaping and garden maintenance companies, garden centres, municipal services, non-profit organizations, etc.
- Agreement on the terms and conditions of the practicum: aims of the practicum, duration, supervision conditions and participation criteria.

**Participation Phase**

- Business' policies: work schedules, tasks to be performed, tools permitted, etc.
- Communication with individuals in the workplace (see Competency 14).
- Practicum log and important information on the work setting: tasks performed, work methods, tools used, introduction to new work techniques, etc.

**Synthesis Phase**

- Profile of the workplace, particular situations encountered and reactions.
- Presentation of a summary of their experience in the workplace.
- Participation in the discussions, ability to listen, allowing others to speak in turn, staying on topic, attention to others, open-minded attitude to different opinions, etc.

