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AGRICULTURE AND FISHERIES

LANDSCAPING OPERATIONS

PROGRAM OF STUDY
5571

REVISED VERSION

DECEMBER 1993

VOCATIONAL and TECHNICAL EDUCATION

Québec

AGRICULTURAL TECHNOLOGY

LANDSCAPING OPERATIONS

PROGRAM OF STUDY 5571

The *Landscaping Operations* program leads to the Secondary School Vocational Diploma (SSVD) and prepares the student to practise the trade of

LANDSCAPE WORKER

Direction générale de la formation professionnelle et technique

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English Version

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Gouvernement du Québec
Ministère de l'Éducation et de la Science

ISBN

Legal deposit - Fourth Quarter 1993
Bibliothèque nationale du Québec

ACKNOWLEDGMENTS

The ministère de l'Éducation et de la Science wishes to thank the following people for their invaluable assistance in the development of this program:

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INTRODUCTION

The *Landscaping Operations* program is based on the orientations for secondary school vocational education adopted by the government in 1986. It was designed on the basis of a new framework for developing vocational education programs that calls for the participation of experts from the workplace and the field of education.

The program of study is developed in terms of competencies, expressed as objectives. These objectives are divided into modules, which are organized into teaching blocks. Various factors were kept in mind in developing the program: training needs, the job situation, purposes, goals, and strategies and means used to attain objectives.

The program of study lists the competencies that are the minimum requirements for a **Secondary School Vocational Diploma (SSVD)**, for students in both the youth and adult sectors. It also provides the basis for organizing courses, planning teaching strategies, and designing instructional and evaluation materials.

The duration of the program is 930 hours, which includes 630 hours spent on the specific competencies required to practise the trade or occupation and 300 hours on general competencies. The program of study is divided into 21 modules which vary in length from 15 to 90 hours (multiples of 15). The time allocated to the program is to be used not only for teaching but also for evaluation and remedial work.

This document contains two parts. Part I is of general interest and provides an overview of the training plan. It includes a synoptic table of basic information about the modules, a description of the program training goals, the competencies to be developed and the general objectives, and an explanation of operational objectives. Part II is designed primarily for those directly involved in implementing the program. It contains a description of the operational objectives of each module.

In keeping with this broad approach, three accompanying documents will be provided: a teaching guide, an evaluation guide, and a planning guide.

GLOSSARY

Program Training Goals

Statements that describe the educational aims of a program. These goals are the general goals of vocational education adapted to a specific trade or occupation.

Competency

A set of socio-affective behaviours, cognitive skills or psycho-sensori-motor skills that enable a person to correctly perform a role, function, activity or task.

General Objectives

Instructional objectives that provide an orientation for leading the students to attain one or more related objectives.

Operational Objectives

Statements of the educational aims of a program in practical terms. They serve as the basis for teaching, learning and evaluation.

Module of a Program

A component part of a program of study comprising a first-level operational objective and the related second-level operational objectives.

Credit

A unit used for expressing quantitatively the value of the modules in a program of study. One credit corresponds to 15 hours of training. Students must accumulate a set number of credits to graduate from a program.

PART I

1. SYNOPTIC TABLE

Number of modules: 21
Duration in hours: 930
Credits: 62

Landscaping Operations

SESAME Code: 5571

SESAME	TITLE OF THE MODULE	DURATION	CREDITS
702262	1. The Trade and the Training Process	30	2
702444	2. Planting Trees and Shrubs	60	4
702272	3. Measurement and Calculations	30	2
702283	4. Describing Materials and Products	45	3
702292	5. Applying Occupational Health and Safety Rules	30	2
702302	6. Basic Carpentry Work	30	2
702314	7. Building Concrete Foundations and Structures	60	4
702322	8. Cutting Masonry Materials	30	2
702333	9. Building Mortarless Masonry Structures	45	3
702342	10. Interpreting Plans and Specifications	30	2
702382	11. Preventive Maintenance of Tools and Equipment	30	2
702372	12. Communicating in the Workplace	30	2
702355	13. Building Masonry Structures with Mortar Joints	75	5
702403	14. Relationships Between Landscaping and Ornamental Horticulture	45	3
702366	15. Building Wooden Structures	90	6
702391	16. Planning and Organizing Work	15	1
702254	17. Installing Lighting and Irrigation Systems	60	4
702424	18. Doing Excavation Work	60	4
702242	19. Creating Water Gardens and Rock Gardens	30	2
702412	20. Using Job Search Techniques	30	2
702435	21. Entering the Work Force	75	5

* 15 hours = 1 credit

This program leads to a Secondary School Vocational Diploma in *Landscaping Operations.*

2. PROGRAM TRAINING GOALS

The training goals of the *Landscaping Operations* program are based on the general goals of vocational education and take into account the specific nature of the trade or occupation. These goals are:

To develop effectiveness in the practice of a trade or an occupation.

- To teach students to perform tasks and activities related to the trade correctly, at an acceptable level of competence for entry into the job market.
- To prepare students to perform satisfactorily on the job by fostering:
  - the skills needed to plan and organize their work;
  - the basic skills needed to carry out tasks such as reading landscape plans and specifications, doing preventive maintenance work on tools and equipment, doing basic carpentry work, building concrete foundations and structures;
  - a constant concern for occupational health and safety;
  - a constant concern for the environment;
  - the development of attitudes consistent with professional ethics;
  - a concern for communicating effectively with future superiors, co-workers and customers.

To ensure integration into the world of work.

- To familiarize students with their rights and responsibilities as workers.
- To familiarize students with the job market in general and the landscaping industry and the trade of skilled landscape worker in particular.

To foster the development of occupational knowledge.

- To foster independence and instill a sense of responsibility.
- To encourage students to strive for excellence.
- To help students become accustomed to evaluating their own work.
- To help students develop effective work methods and self-discipline.

To ensure job mobility.

- To encourage further learning and research.
- To prepare students for a creative job search.

3. COMPETENCIES

The competencies to be developed in the *Landscaping Operations* program are shown in the grid of learning focuses on the following page. The grid lists general and specific competencies as well as the major steps in the work process.

General competencies involve activities common to several tasks or situations. They cover, for example, the technological or scientific principles that the students must understand to practise the trade or occupation. Specific competencies focus on tasks and activities that are of direct use in the trade or occupation. The work process includes the most important steps in carrying out the tasks and activities of the trade or occupation.

The grid of learning focuses shows the relationship between the general competencies on the vertical axis and the specific competencies on the horizontal axis. The symbol (△) indicates a correlation between a specific competency and a step in the work process. The symbol (○) indicates a correlation between a general and a specific competency.

The symbols (▲) and (●) indicate that these relationships have been taken into account in the formulation of objectives intended to develop specific competencies related to the trade or occupation.

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 of the grid shows the competencies directly related to the practice of a specific trade or occupation. These competencies are arranged in a relatively fixed order; therefore, the modules should be taught, insofar as possible, in the order represented on the grid. The modules including the general competencies on the horizontal axis should be taught in relation to those on the vertical axis. This means that some modules are prerequisite to others, while other modules are taught concurrently.

GRID OF LEARNING FOCUSES

LANDSCAPING OPERATIONS

	SPECIFIC COMPETENCIES (directly related to the practice of the specific occupation)	FIRST-LEVEL OPERATIONAL	DURATION (IN HOURS)	WORK PROCESS (major steps)						General Competencies (Technology, personal development, etc.)									TOTALS	
				Become familiar with the work to be done	Make a work plan	Select tools and materials	Do the work	Clean the work area	Write a report	Take measurements and do calculations	Describe materials and products	Apply occupational health and safety rules	Do basic carpentry work	Cut masonry materials	Interpret plans and specifications	Do preventive maintenance of tools and equipment	Communicate in the workplace	Apply a method of planning and organizing work	Use job search techniques	NUMBERS OF OBJECTIVES	DURATION (IN HOURS)
MODULES	MODULES									3	4	5	6	8	10	11	12	16	20		
	FIRST-LEVEL OPERATIONAL OBJECTIVES									B	B	B	B	B	B	B	B	B	B	10	
	DURATION (IN HOURS)									30	45	30	30	30	30	30	30	15	30		300
1	Determine their suitability for the trade and the training process	S	30	△	△	△	△	△	△	○	○	○	○	○	○	○	○	○			
2	Plant trees and shrubs	B	60	△	△	△	▲	▲	△	○		○			○	○	○	○			
7	Build concrete foundations and structures	B	60	△	△	▲	▲	△	△	●	●	●	●		○	○	○	○			
9	Build mortarless masonry structures	B	45	▲	△	▲	▲	▲	△	●	●	●		●	○	○	○	○			
13	Build masonry structures with mortar joints	B	75	▲	△	▲	▲	▲	△	●	●	●			●		○	○			
14	Establish relationships between landscaping and ornamental horticulture	S	45	△	△	△	▲	△	△			●			○	○	○	○			
15	Build wooden structures	B	90	△	△	▲	▲	△	▲	●	●	●	●		●	●	○	○			
17	Use techniques for installing lighting and irrigation systems	B	60	△	▲	▲	▲	△	△	●		●			●		●	●			
18	Do excavation work	B	60	▲	▲	▲	▲	▲	▲	●	●	●			●	○	●	●			
19	Apply concepts related to the creation of water gardens and rock gardens	B	30	△	△	△	△	△	△	●		○			○			●			
21	Enter the work force	S	75	▲	△	△	▲	△	△	○	○	●	○	○	○	○	●	○	●		
NUMBER OF OBJECTIVES		11																		21	
DURATION (IN HOURS)			630																		930

S: Situational objective

B: Behavioural objective

*: No particular objective

△ Correlation between a step and a specific competency

▲ Correlation to be taught and evaluated

○ Correlation between a general and a specific competency

● Correlation to be taught and evaluated

4. GENERAL OBJECTIVES

The general objectives of the *Landscaping Operations* program are presented below, along with the major statement of each corresponding first-level operational objective.

To develop in the students the basic competencies needed to practise the trade.

- Take measurements and do calculations.
- Describe materials and products.
- Apply occupational health and safety rules.
- Do basic carpentry work.
- Cut masonry materials.
- Interpret plans and specifications.
- Do preventive maintenance of tools and equipment.
- Apply a method of planning and organizing work.

To develop in the students the competencies needed to perform tasks related to the trade of a skilled landscape worker.

- Build concrete foundations and structures.
- Build mortarless masonry structures.
- Build masonry structures with mortar joints.
- Build wooden structures.
- Do excavation work.
- Plant trees and shrubs.
- Use techniques for installing lighting and irrigation systems.
- Apply concepts related to the creation of water gardens and rock gardens.

To develop in the students the competencies required for their smooth integration into the school and work environments.

- Determine their suitability for the trade and the training process.
- Communicate in the workplace.
- Establish relationships between landscaping and ornamental horticulture.
- Use job search techniques.
- Enter the work force.

5. FIRST- AND SECOND-LEVEL OPERATIONAL OBJECTIVES

5.1 DEFINITION

A first-level objective is defined for each competency to be developed. Competencies are organized into an integrated training program designed to prepare students to practise the trade or occupation. This systematic organization of competencies produces better overall results than training by isolated objectives. More specifically, it fosters a smooth progression from one objective to the next, saves teaching time by eliminating needless repetition, and integrates and reinforces learning material.

First-level operational objectives are the main, compulsory teaching/ learning targets and they are specifically evaluated for certification. There are two kinds of operational objectives: behavioural and situational.

- **A behavioural objective** is a relatively closed objective that describes the actions and results expected of the student by the end of a learning step. Evaluation is based on expected results.

- **A situational objective** is a relatively open-ended objective that outlines the major phases of a learning situation. It allows for output and results to vary from one student to another. Evaluation is based on the student's participation in the activities of the learning context.

Second-level operational objectives are intermediate teaching/learning targets deemed prerequisite for attaining first-level objectives. They are grouped according to the specifications (see 5.2 A) or the phases (see 5.2 B) of the first-level objective.

The division of operational objectives into first- and second-level objectives is based on a clear distinction between the levels of learning:

- learning involving prerequisite knowledge

- learning involving competencies

Second-level operational objectives indicate prerequisite knowledge. They prepare the students to learn what is necessary to attain the first-level operational objectives, which collectively lead to the development of a competency. The objectives should always be adapted to meet the particular needs of the individual students or groups of students.

First-level operational objectives cover the learning that the students need to develop a competency:

- The specifications or the phases of the objective determine or guide specific learning, thereby allowing the competency to be developed step by step.

- The objective as a whole (i.e. the six components and in particular the last phase of a situational objective) determines or guides the overall learning and the integration and synthesis of this learning, allowing the competency to be developed fully.

To attain the objectives, the following learning activities may be prepared:

- specific learning activities for second-level objectives
- specific learning activities for the specifications or phases of first-level objectives
- general learning activities for first-level objectives

5.2 HOW TO READ FIRST-LEVEL OPERATIONAL OBJECTIVES

A. How to Read a Behavioural Objective

Behavioural objectives consist of six components. The first three provide an overview of the objective:

1. The **expected behaviour** states a competency in terms of the general behaviour that the students are expected to have acquired by the end of the module.
2. The **conditions for performance evaluation** define what is necessary or permissible to the students during evaluation designed to verify whether or not the students have attained the objective. This means that the conditions for evaluation are the same wherever and whenever the program is taught.
3. The **general performance criteria** define the requirements by which to judge whether or not the results obtained are generally satisfactory.

The last three components ensure that the objective is understood clearly and unequivocally:

4. The **specifications of the expected behaviour** describe the essential elements of the competency in terms of specific behaviours.
5. The **specific performance criteria** define the requirements for each of the specifications of behaviour. They ensure a more enlightened decision on the attainment of the objective.
6. The **field of application** defines the limits of the objective, where necessary. It indicates cases where the objective applies to more than one task, occupation or field.

B. How to Read a Situational Objective

Situational objectives consist of six components:

1. The **expected outcome** states a competency as an aim to be pursued throughout the course.

2. The **specifications** outline the essential aspects of the competency and ensure a better understanding of the expected outcome.

3. The **learning context** provides an outline of the learning situation designed to help the students develop the required competencies. It is normally divided into three phases of learning:

    - information
    - performance, practice or involvement
    - synthesis, integration and self-evaluation

4. The **instructional guidelines** provide suggested ways and means of teaching the course to ensure that learning takes place and that the same conditions apply wherever and whenever the course is taught. These guidelines may include general principles or specific procedures.

5. The **participation criteria** describe the requirements the students must fulfil, which are usually related to each phase of the learning context. 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 context.

6. **The field of application** defines the limits of the objective, where necessary. It indicates cases where the objective applies to more than one task, occupation or field.

PART II

MODULE 1: THE TRADE AND THE TRAINING PROCESS

SESAME: 702262 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will
determine their suitability for the trade and the training process.

SPECIFICATIONS

At the end of this module, the students will:

- Be familiar with the nature of the trade.
- Understand the training process.
- Confirm their career choice.

LEARNING CONTEXT

PHASE 1: **Information on the Trade**

- Learning about various socio-economic aspects of the ornamental horticulture industry in Québec: production and distribution sectors, sales revenues, employment level, possibilities for professional development, trends in the industry (through interviews, written material).

- Learning about the job market in landscaping: potential work environments (public and private sectors, type of work done), prospects for employment, salaries, opportunities for advancement and transfer, hiring criteria (through field trips, interviews, written material).

- Learning about the nature and requirements of the trade: tasks (compared with those performed by horticultural gardeners), working conditions, evaluation criteria, workers' rights and responsibilities, labour standards (through field trips, interviews, written material).

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

LEARNING CONTEXT

PHASE 1: **Information on the Trade** (Cont'd)

- At a group meeting, presenting the information gathered and discussing their views on the trade: advantages, disadvantages and requirements.

PHASE 2: **Information on and Participation in the Training Process**

- At a group meeting, discussing the skills, aptitudes and knowledge required to practise the trade.

- Learning about the training plan: development plan of the agricultural technology sector (horticulture), program of study, training process, evaluation methods, certification of studies.

- During a group discussion, describing the training program and how it relates to the trade.

PHASE 3: **Evaluation and Confirmation of Career Choice**

- Writing a report in which they:

  - describe their preferences, aptitudes and interests with respect to the trade
  - assess their career choice by relating the different aspects and requirements of the trade to their own preferences, aptitudes and interests.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Create a climate that favours the students' personal growth and entry into the job market.
- Encourage all students to engage in discussions and to express themselves.

INSTRUCTIONAL GUIDELINES (Cont'd)

The teacher should:

- Motivate the students to take part in the suggested activities.
- Help the students to acquire an accurate perception of the trade.
- Provide the students with the means to assess their career choice honestly and objectively.
- Organize field trips to companies representative of the industry (e.g. private and public sectors, various types of landscaping services).
- Make available all pertinent documentation (e.g. information on the trade, trade magazines, training programs).
- Organize meetings with trade specialists.
- Provide the students with model(s) of worksheet(s) so that they can record the information gathered during Phases 1 and 2.
- Provide the students with a model of the report to be handed in at the end of the module.

PARTICIPATION CRITERIA

PHASE 1:

- Become familiar with the information on most of the topics to be covered.
- Clearly express their views on the trade at a group meeting, relating them to this information.

PHASE 2:

- Give their opinions on some of the requirements that they will have to satisfy in order to practise the trade.
- Gather information on most of the topics to be covered.
- Clearly express their views on how the training program prepares them to practise the trade.

PHASE 3:

- Write a report that:
  - sums up their preferences, interests and aptitudes
  - explains in detail how they arrived at their career choice

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before undertaking the activities of Phase 1:

1. Understand the importance of choosing a training program that is suited to their specific needs.
2. Understand the targeted competency and the proposed learning process.
3. Understand the purpose of the module.
4. Find the appropriate information.
5. Decide on a way to record and present information.
6. Distinguish between "task" and "job."
7. Explain what is meant by "entry-level qualifications."
8. Explain the main rules governing group discussions.

Before undertaking the activities of Phase 2:

9. Distinguish the skills, aptitudes, attitudes and knowledge required to practise the trade.
10. Describe the nature, purpose and content of the program of study.

Before undertaking the activities of Phase 3:

11. Distinguish preferences, aptitudes and interests.
12. Describe the main parts of a report that confirms their career choice.

MODULE 2: PLANTING TREES AND SHRUBS

SESAME: 702444 **Duration: 60 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
plant trees and shrubs
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Working alone
- Using slides and plant specimens for identification purposes
- Using the most common balled-and-burlapped, container-grown and bare-root trees and shrubs (for planting)
- On a given planting site presenting normal and specific conditions
- Using raw materials such as peat moss, planting mixtures and fertilizers
- Using the necessary tools and equipment

GENERAL PERFORMANCE CRITERIA

- Observance of landscape standards (Quebec Standards Bureau - QSB)
- Observance of urban-planning regulations
- Proper use of tools and equipment
- Correct sequence of steps
- Clean, orderly work

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Associate environmental and technical factors with the survival of trees and shrubs after planting.	- Explanation of the main factors affecting the survival of plants after planting (e.g. transportation of plants, environmental conditions, planting techniques)

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Prepare the planting hole.	- Observance of minimum dimensions (landscape standards) - Proper drainage of hole - Proper preparation of planting bed - Proper use of tools (e.g. round shovel, pick, draw hoe)
C. Plant container-grown, balled-and-burlapped and bare-root trees and shrubs.	- Uniform application of fertilizer - Proper amount of fertilizer - Appropriate spacing between plants - Proper disposal of containers - Proper techniques for pruning roots, making the basin, placing the geotextile and mulch, and watering - Observance of landscape standards
D. Prune trees and shrubs after they have been planted.	- Mastery of pruning technique: • removal of branches proportionate to loss of roots (compensatory pruning) • clean cut - Observance of landscape standards
E. Stake trees and shrubs.	- Appropriate selection of stake or support - Sturdiness and appearance - Observance of landscape standards
F. Clean up the planting site.	- Complete removal of debris from the planting site - Proper levelling of soil

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to associate environmental and technical factors with the survival of trees and shrubs after planting (A):

1. Understand the importance of being familiar with plant physiology.
2. Locate the main organs on plants.
3. Describe briefly respiration, transpiration, photosynthesis and nutrient absorption.
4. Distinguish between a healthy plant and an unhealthy one.
5. Describe the characteristics of soil that is suitable for planting trees and shrubs.
6. Describe the importance of soil amendments for the survival of trees and shrubs after planting.
7. Understand the importance of watering when planting.
8. Describe the QSB standards for planting trees and shrubs.

Before learning how to prepare the planting hole (B):

9. Recognize the characteristics that are used to identify plants.
10. Explain the QSB standards for classifying trees and shrubs.
11. Differentiate among the most common species of trees and shrubs.
12. Consult urban-planning regulations and identify the major factors affecting planting.
13. Estimate the dimensions of the tree to be planted.
14. Use tools and equipment properly.
15. Determine which fertilizers to use.
16. Identify which organic soil amendments to use.
17. Determine the exact location of the planting site.

Before learning how to plant container-grown, balled-and-burlapped and bare-root trees and shrubs (C):

18. Identify the periods suitable for planting.
19. Make sure the planting hole is properly drained.
20. Determine whether the roots of the plant need to be pruned.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to prune trees and shrubs after they have been planted (D):

21. Define the purpose of pruning.
22. Apply pruning techniques.

Before learning how to stake trees and shrubs (E):

23. Determine the direction of prevailing winds.
24. Determine whether the plant needs to be staked.

Before learning how to clean up the planting site (F):

25. Develop clean, orderly work habits.

MODULE 3: MEASUREMENTS AND CALCULATIONS

SESAME: 702272 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
take measurements and do calculations
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On site
- Based on problems frequently encountered in the trade
- Based on information on standard dimensions provided by the teacher
- Using appropriate measurement instruments
- Using the imperial and international systems of measurement
- Based on actual sizes
- With or without a calculator

GENERAL PERFORMANCE CRITERIA

- Appropriate selection of instruments
- Proper use of instruments
- Correct recording of data
- Precise, accurate calculations and measurements (± 1 mm for every 5 m, ± 1/16" for every 10 ft.)

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Measure lengths, heights and widths.	- Proper use of measuring tape and manual odometer

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Measure lengths, heights and widths. (cont'd.)	- Precise, accurate planimetric measurements
B. Measure angles.	- Proper use of protractor and level - Proper use of mathematical formulas - Precise, accurate measurements
C. Level and plumb work.	- Proper use of levelling instruments - Levelness, plumbness and flatness
D. Do the calculations necessary to build straight stairways.	- Accurate calculation of stairway components - Proper use of mathematical formulas - Observance of standards and conventions
E. Produce an earth level chart.	- Proper use of builder's level - Inclusion and accuracy of all information in the level book
F. Estimate quantities and volumes of materials: • masonry units • wood units • mortar • concrete • earth • other	- Accurate results - Accurate calculation of percentage of waste - Accurate calculation of solid composition - Logical procedure - Proper use of mathematical formulas - Consideration of actual and nominal dimensions

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to measure lengths, heights, widths (A) and angles (B):

1. Identify practical applications of measurements and calculations in landscaping.
2. Understand the importance of taking accurate measurements.
3. Distinguish various measuring methods used in landscaping.
4. Define the terms used.
5. Describe the characteristics, limitations and use of the main types of measurement instruments (e.g. measuring tape, manual odometer, protractor, levels, builder's level).
6. Use the imperial and international systems of measurement.
7. Record mathematical data.

Before learning how to level and plumb work (C):

8. Check for squareness.
9. Detect changes in grades.

Before learning how to do the calculations necessary to build straight stairways (D):

10. Interpret a mathematical problem.
11. Describe different types of stairways.
12. Identify the standards for building stairways (e.g. step groove, headroom, width).

Before learning how to produce an earth level chart (E):

13. Apply the formulas used in surveying.
14. Explain the purpose of an earth level chart and describe its main components.

Before learning how to estimate quantities and volumes of materials (F):

15. Calculate the perimeters, areas and volumes of the geometric figures most frequently used in the trade.
16. Apply the rule of three.
17. Be familiar with the standard dimensions of materials.
18. Be familiar with typical quantities of materials used by distributors.

MODULE 4: DESCRIBING MATERIALS AND PRODUCTS

SESAME: 702283 **Duration: 45 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
describe materials and products
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on data provided by the teacher
- Based on materials frequently used in landscaping
- Referring to pertinent technical reference materials

GENERAL PERFORMANCE CRITERIA

- Use of specific terminology
- Observance of QSB and Association Paysage Québec standards

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

A. Differentiate the properties of frequently used materials:
   - drainage materials
   - materials used in foundations, masonry materials including exposed aggregate, materials used in wooden structures and in excavation work

SPECIFIC PERFORMANCE CRITERIA

- Identification of main products and materials
- Brief description of their composition
- Description of their main properties

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Associate standards in current use with the properties of products and materials.	- Correct associations
C. Select the materials necessary to build certain structures.	- Appropriate selection
D. Associate the conditions for transporting and storing the main products and materials with their preservation.	- Association of main conditions, such as temperature, wind, humidity and arrangement with the preservation of materials - Consideration of important factors

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to differentiate the properties of frequently used materials (A):

1. Describe the main elements that are used to identify materials.

Before learning how to associate standards in current use with the properties of products and materials (B):

2. Explain the purpose of a standard.
3. Distinguish a "manufacturing standard" from a "user's standard."
4. Identify the various government standards bureaus.
5. Name the private organizations that set standards.
6. Identify the standard materials used in landscaping.

Before learning how to select the materials necessary to build certain structures (C):

7. Explain the principles of colour coordination.
8. Detect differences in shades of colour or tone when arranging materials.
9. Distinguish the different sizes, lengths and volumes of materials.

Before learning how to associate the conditions for transporting and storing the main products and materials with their preservation (D):

10. Explain the laws applicable to the transport and storage of products and materials.
11. Describe possible risks of environmental pollution.
12. Describe ways in which products and materials can contaminate one another.
13. Explain the relationship between climatic conditions and storage.
14. Explain the health and safety rules applicable to the transport and storage of products and materials.

MODULE 5: APPLYING OCCUPATIONAL HEALTH AND SAFETY RULES

SESAME: 702292 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
apply occupational health and safety rules
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on cases specific to the trade
- By simulating real landscaping operations
- Administering first aid in the following situations only: eye irritation, allergic reaction, injury with external haemorrhaging, heat exhaustion, respiratory failure, possibility of fracture, burns, poisoning
- Using a first-aid kit
- Handling heavy objects (e.g. stones, slabs) and operating handling equipment (e.g. hand truck, wheelbarrow, cart)

GENERAL PERFORMANCE CRITERIA

- Observance of health and safety rules and professional ethics
- Appropriate solutions and action taken in case studies

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Explain the general hazards associated with the trade.	- List of main hazards associated with: • certain tasks • the work site • the use of certain types of tools, equipment, products and materials

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Explain the hazards associated with the trade. (cont'd)	- Accurate information
B. Describe the applicable preventive measures.	- Complete list of applicable measures - Accurate, coherent information
C. Adopt postures that are appropriate for the work.	- Observance of ergonomic principles
D. Operate lifting and handling equipment.	- Appropriate selection of equipment - Observance of health and safety rules
E. Describe the sequence of steps to follow in the event of a work-related injury or illness.	- Correct identification and sequence of steps - Description of important elements for each step - Description of appropriate measures - Observance of limitations of each measure
F. Administer first aid to an accident victim.	- Correct identification of signs and symptoms - Correct sequence of steps in administering first aid - Protection of victim from danger - Comfort and well-being of victim - Appropriate treatment of symptoms observed - Proper use of first-aid material

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to explain the general hazards associated with the trade (A):

1. Understand the importance of adopting safety-conscious behaviour.
2. Describe the Québec legislation governing occupational health and safety.
3. Identify sources of information on occupational health and safety.
4. List the main consequences of work-related accidents in ornamental horticulture in Québec.

Before learning how to describe the applicable preventive measures (B):

5. Identify the rights and obligations of employers and workers.
6. Describe the rights, obligations, roles and responsibilities of various individuals and organizations involved in occupational safety.
7. Understand the importance of becoming personally committed to promoting safety at work.

Before learning how to adopt postures that are appropriate for the work (C):

8. Describe the risks involved in ignoring ergonomic principles.

Before learning how to operate lifting and handling equipment (D):

9. Describe the characteristics, limitations and operation of the main types of lifting and handling equipment used in landscaping.
10. Explain the health and safety rules applicable to the operation of lifting and handling equipment.
11. Describe certain situations that are dangerous or incompatible with the operation of lifting and handling equipment.

Before learning how to describe the sequence of steps to follow in the event of a work-related injury or illness (E):

12. Identify individuals who can provide assistance in an emergency.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to administer first aid to an accident victim (F):

13. List the types of emergencies most likely to occur in landscaping.
14. Define "first aid" and its purpose.
15. Explain the legal responsibility of the first-aider.

MODULE 6: BASIC CARPENTRY WORK

SESAME: 702302 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do basic carpentry work
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on the teacher's instructions concerning a comprehensive project or all the operations necessary to build a given wooden structure (e.g. tub, planter)
- Using the necessary tools, equipment and materials
- Using any relevant technical reference materials

GENERAL PERFORMANCE CRITERIA

- Conformity with the order received
- Observance of health and safety rules
- Appropriate selection of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

A. Do basic carpentry work on pieces of wood.

SPECIFIC PERFORMANCE CRITERIA

- Mastery of basic techniques:
  - marking off
  - sawing
  - cutting patterns
  - assembling (screwing, nailing, gluing)

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Do basic carpentry work on pieces of wood. (cont'd)	• treating surfaces (sanding, painting, staining, applying wood preservatives)
B. Build forms for: • footings • walls • columns • stairways • patios	- Appropriate selection of form type - Sturdiness - Watertightness - Observance of initial instructions: measurements, location of openings - Proper installation

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to do basic carpentry work on pieces of wood (A):

1. Identify the characteristics of various basic carpentry structures and the requirements for building them.
2. Describe the steps involved in building those structures.
3. Identify the expected performance criteria.
4. Distinguish the work process from the finished product.
5. Understand the importance of constantly checking their work.
6. Use time and materials efficiently.
7. Understand the importance of working carefully and accurately.
8. Take measurements. (See Module 3.)
9. Do calculations. (See Module 3.)
10. Explain the health and safety rules to follow when doing basic carpentry work on pieces of wood. (See Module 5.)
11. Understand the importance of developing clean, orderly work habits.
12. Use various reference materials explaining the manufacturers' instructions.

Before learning how to build forms (B):

13. Describe the different types of forms.
14. Associate methods of building forms with specific needs.
15. Describe the different parts of a form.
16. Understand how the quality of forms affects all subsequent operations.
17. Explain the principle of building openings in forms.

MODULE 7: BUILDING CONCRETE FOUNDATIONS AND STRUCTURES

SESAME: 702314 **Duration: 60 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
build concrete foundations and structures
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Outside
- Based on oral instructions and diagrams
- Using prefabricated forms
- Using the appropriate tools, equipment and materials

GENERAL PERFORMANCE CRITERIA

- Appropriate selection of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations
- Correct work techniques
- Observance of health and safety rules
- Conformity with instructions
- Observance of QSB and Association Paysage Québec standards
- Economical use of materials

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Select the necessary tools and equipment.	- Appropriate selection, based on the work to be done and the stability of the soil

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Build a gravel underlay.	- Mastery of techniques for compacting and spreading granular materials, for cut and fill operations, and for installing drain tiles and geotextiles - Tolerance of ±1 cm for finish grade
C. Describe a technique for building a gravel walkway.	- Inclusion of all steps and logical sequence - Complete description of each step - Accuracy of information - Observance of standards (layout, quantity and quality)
D. Pour a two-level concrete foundation, a retaining wall and steps.	- Mastery of techniques for building and stripping forms, preparing, tempering and pouring concrete, reinforcing it with steel and finishing its surface - Squareness, levelness, plumbness and alignment - Tolerance of ±1 cm for finish grade
E. Install anchors in a concrete structure.	- Appropriate selection of anchors, based on type of structure - Appropriate location of anchors - Correct technique for fastening anchors - Sturdiness of anchors
F. Build a 2-m^2 patio with a complementary colour scheme, using exposed aggregate.	- Preparation of auxiliary foundation in conformity with standards - Correct installation of forms - Correct installation of wire mesh

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
F. Build a 2-m^2 patio with a complementary colour scheme, using exposed aggregate. (cont'd)	- Mastery of techniques for preparing and spreading the ready-mixed concrete (rate at which ingredients are added, volume of concrete) - Correct location of expansion joints - Mastery of screeding and levelling techniques - Mastery of technique for applying the retarding agent - Adequate protection of surface - Observance of setting time - Mastery of washing technique - Mastery of technique for making expansion joints - Quality of finished product: • flat, even surface • uniform colour • adherence to colour scheme • clean work
G. Check the quality of the work.	- Consideration of all criteria - Correct assessment of every important step in the work process - Correct assessment of the quality of the finished product - Necessary corrections

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to select the necessary tools and equipment (A):

1. Define the terms used.
2. Describe the different types of soil.
3. Describe the characteristics, limitations and operation of the main tools required to build foundations and structures using concrete and exposed aggregate.
4. Describe the characteristics, limitations and operation of the main types of equipment required to build foundations and structures using concrete and exposed aggregate.
5. Identify the characteristics of various concrete foundations and structures and the requirements for building them.
6. Describe the steps involved in building those structures.
7. Identify the expected performance criteria.
8. Distinguish the work process from the finished product.
9. Understand the importance of constantly checking their work.
10. Take measurements. (See Module 3.)
11. Do calculations. (See Module 3.)
12. Explain the applicable health and safety rules. (See Module 5.)
13. Explain the QSB and Association Paysage Québec standards for building concrete foundations and structures.
14. Use various reference materials (e.g. standards, manufacturers' instructions).

Before learning how to build a gravel underlay (B):

15. Describe the products and materials required for the task. (See Module 4.)
16. Explain the purpose of vertical and horizontal drain tiles.
17. Associate different types of drain tiles with methods of connecting them.
18. Describe a technique for connecting PVC drain pipes.
19. Describe a technique for connecting concrete drain tiles.
20. Determine excavation grades.
21. Describe an excavation technique.
22. Describe a backfill technique.
23. Describe a technique for compacting granular materials.
24. Describe various methods of installing insulating materials.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to describe a technique for building a gravel walkway (C):

25. Distinguish a gravel walkway from a gravel underlay.

Before learning how to pour a two-level concrete foundation, a retaining wall and steps (D):

26. Distinguish concrete mixed on site from ready-mixed concrete.
27. Describe a technique for preparing concrete mixes.
28. Detect, by sight, irregularities or defects in a concrete mix.
29. Do the calculations necessary to build stairways. (See Module 3.)
30. Build forms. (See Module 6.)
31. Describe a technique for installing and stripping forms.
32. Explain why reinforcing rods are used in certain types of structures and determine their location.
33. Describe the methods used to ensure that concrete is properly cured.
34. Explain the importance of allowing enough time for the concrete to set.
35. Describe a technique for finishing a concrete surface.

Before learning how to install anchors in a concrete structure (E):

36. Describe the anchoring methods used in landscaping.
37. Identify the anchoring methods that can be used depending on the fastening method selected.
38. Identify the types of anchors that can be used in different operations.

Before learning how to build a 2-m^2 patio with a complementary colour scheme, using exposed aggregate (F):

39. Identify the characteristics of various exposed aggregate structures and the requirements for building them.
40. Identify various ways of contrc'ling dampness.

MODULE 8: CUTTING MASONRY MATERIALS

SESAME: 702322 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
cut masonry materials
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on written instructions for cutting stone and other masonry materials
- Using various types of materials (e.g. paving blocks, interlocking paving blocks, slabs, stones)
- Using the necessary tools, equipment and materials

GENERAL PERFORMANCE CRITERIA

- Proper use of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations
- Correct work techniques
- Observance of health and safety rules
- Observance of QSB and Association Paysage Québec standards
- Conformity with the order received

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Interpret data.	- Information obtained on dimensions of materials and methods of crushing, cutting and laying stones

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Select the appropriate cutting method.	- Appropriate selection, based on: • desired appearance • desired finish • characteristics of raw material • anticipated method of laying the stone
C. Cut precast concrete units and blocks at different angles.	- Mastery of cutting technique - Clean cuts - Correct dimensions
D. Cut stones at different angles.	- Mastery of cutting technique - Clean cuts - Correct dimensions

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to interpret data (A):

1. Define the terms used.
2. Read a cutting diagram.
3. Visualize the work to be done.

Before learning how to select the appropriate cutting method (B):

4. Describe the materials (e.g. stones, precast concrete units, paving blocks). (See Module 4.)
5. Identify various cutting methods.
6. Identify various landscaping structures that are built by cutting masonry materials.

Before learning how to cut precast concrete units, blocks (C) and stones at different angles (D):

7. Describe the steps involved in carrying out the task.
8. Identify the expected performance criteria.
9. Distinguish the work process from the finished product. (See Module 7.)
10. Understand the importance of constantly checking their work. (See Module 7.)
11. Use time and materials efficiently.
12. Calculate angles. (See Module 3.)
13. Take measurements. (See Module 3.)
14. Explain the health and safety rules to follow when cutting materials.
15. Operate handling equipment.
16. Describe how to make and use a template.
17. Mark off contour lines.
18. Install equipment.

MODULE 9: BUILDING MORTARLESS MASONRY STRUCTURES

SESAME: 702333 **Duration: 45 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
build mortarless masonry structures
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on oral instructions
- On precast foundations
- Using blocks of various shapes and precast concrete units (paving blocks and slabs) of various sizes
- Using the appropriate tools and equipment

GENERAL PERFORMANCE CRITERIA

- Conformity with the order received
- Observance of health and safety rules
- Observance of QSB and Association Paysage Québec standards
- Appropriate selection of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations
- Economical use of materials
- Mastery of techniques for cutting materials

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Select and lay out the materials to be used.	- Appropriate selection, based on the structures to be built - Correct layout

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Select tools and equipment.	- Appropriate selection, based on the work to be done
C. Build a straight retaining wall with 90-degree corners, using interlocking paving blocks.	- Correct dimensions and angles - Correct arrangement of blocks - Mastery of backfilling technique - Proper installation and layout of geotextile, drain tiles and gravel - Mastery of technique for cutting materials - Quality of finished product: • squareness • levelness • alignment and plumbness
D. Build a straight stairway with three treads and risers, using paving blocks.	- Correct dimensions of treads and risers - Logical sequence of steps - Mastery of technique for cutting materials - Observance of construction standards for: • spreading stone dust (5 cm) • laying the paving blocks • spreading sand • compacting the paving blocks • minimum drainage slope - Quality of finished product: • uniform joints • flat, even surface • quality of grading
E. Build a walkway with concrete borders, using paving blocks.	- Correct width - Logical sequence of steps - Mastery of technique for cutting materials

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
E. Build a walkway with concrete borders, using paving blocks. (cont'd)	- Observance of construction standards for: • fastening borders • spreading stone dust (5 cm) • laying the paving blocks • spreading sand • compacting the paving blocks • minimum drainage slope - Quality of finished product: • uniform joints • flat, even surface • quality of grading
F. Build a patio, using concrete slabs.	- Correct dimensions and position - Observance of construction standards for: • spreading stone dust or sand • layout and stability of slabs • calculating joints on the basis of the appearance desired • minimum drainage slope - Quality of finished product: • uniform joints • flat, even surface • quality of grading
G. Clean the structure.	- Correct selection of cleaning method - Safe use of products - Cleanliness
H. Clean the work area.	- Appropriate disposal of debris - Salvaging of reusable materials - Careful cleaning of tools and equipment - Orderliness

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to select and lay out the materials to be used (A):

1. Define the terms used.
2. Visualize the work to be done.
3. Describe the products and materials required for the task. (See Module 4.)
4. Describe the conditions for storing materials. (See Module 4.)
5. Decide on the appropriate postures to adopt for the work. (See Module 5.)
6. Operate handling equipment. (See Module 5.)

Before learning how to select tools and equipment (B):

7. Describe the characteristics, limitations and operation of the main tools and equipment required to build mortarless masonry structures.
8. Identify the characteristics of various mortarless masonry structures and the requirements for building them.
9. Describe the steps involved in building those structures.
10. Identify the expected performance criteria.
11. Distinguish the work process from the finished product. (See Module 7.)
12. Understand the importance of constantly checking their work. (See Module 7.)
13. Use time and materials efficiently.

Before learning how to build a straight retaining wall with 90-degree corners, using interlocking paving blocks (C):

14. Take measurements. (See Module 3.)
15. Do calculations. (See Module 3.)
16. Install drain tiles. (See Module 7.)
17. Explain the health and safety rules to follow when building mortarless masonry structures.
18. Explain the QSB and Association Paysage Québec standards for building mortarless masonry structures.
19. Use various reference materials (e.g. standards, manufacturers' instructions).
20. Explain how corner blocks should be laid.
21. Explain the gradual backfilling technique.
22. Show concern for the appearance of the structure.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to build a straight stairway with three treads and risers, using paving blocks (D):

23. Do the calculations necessary to build stairways. (See Module 3.)
24. Cut paving blocks. (See Module 8.)
25. Describe various ways of laying paving blocks.
26. Describe the different methods of securing borders and fitting them together.

Before learning how to build a walkway with concrete borders, using paving blocks (E):

27. Cut borders. (See Module 8.)
28. Implement drawing specifications.

Before learning how to build a patio, using concrete slabs (F):

29. Distinguish various types of "dry" joints.

Before learning how to clean the structure (G) and the work area (H):

30. Understand the importance of developing clean work habits.
31. Be aware of the effects of a lack of cleanliness and orderliness on a customer's level of satisfaction.

MODULE 10: INTERPRETING PLANS AND SPECIFICATIONS

SESAME: 702342 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
interpret plans and specifications
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on complete landscape plans and specifications
- Using the appropriate landscape plan in an actual situation

GENERAL PERFORMANCE CRITERIA

- Accurate data and information
- Correct interpretation

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

A. Obtain the necessary technical information from the specifications.

SPECIFIC PERFORMANCE CRITERIA

- Overall description of work to be done
- Inclusion of technical information required to do the work:
  - type of materials
  - work method
  - quality of materials
  - standards and regulations to be observed

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Interpret graphic codes and symbols on landscape plans.	- Correct interpretation of codes and symbols
C. Interpret detail sketches.	- Correct identification of objects represented - Correct interpretation of symbols, lines and codes
D. Apply information in a plan to an actual situation.	- Correct location of grades and measurements

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to obtain the necessary technical information from the specifications (A):

1. Explain the purpose of specifications in a landscaping project.
2. Identify the different sections of specifications.
3. Identify the main headings used in specifications.
4. Define the main technical terms used.
5. Describe the products and materials required to build various landscape structures. (See Module 4.)
6. Understand the relationship between the landscape specifications and other components of the specifications.

Before learning how to interpret the graphic codes and symbols on landscape plans (B) and interpret detail sketches (C):

7. Describe the general information found in the plan.
8. Describe the different types of plans.
9. Master the plan view.
10. Master the concept of scaling.
11. Use the imperial and international systems of measurement. (See Module 3.)
12. Describe the landscape structures most frequently built.

Before learning how to apply information in a plan to an actual situation (D):

13. Visualize the actual dimensions of an area on the basis of a plan.
14. Show concern for implementing the information accurately.

MODULE 11: PREVENTIVE MAINTENANCE OF TOOLS AND EQUIPMENT

SESAME: 702382 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do preventive maintenance of tools and equipment
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using a sample crane log for the vehicle
- Based on a sampling of frequently used tools and equipment
- Using the necessary tools, equipment, spare parts and products
- Referring to any available technical reference materials (e.g. maintenance manuals, manufacturers' guides)

GENERAL PERFORMANCE CRITERIA

- Observance of legislation applicable to vehicles
- Observance of the sequence of maintenance operations
- Correct work techniques
- Observance of health and safety rules
- Proper use of tools
- Observance of manufacturers' recommendations
- Respect for the environment

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Do routine checks on the equipment.	- Complete identification of routine checks - Authorized corrective measures taken

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Do specific maintenance work: • adjusting and regulating • lubricating • sharpening • draining the oil • changing filters	- Accurate work - Appropriate choice of tools - Appropriate choice of materials - Safety equipment worn - Environmental protection measures taken
C. Associate transportation and storage conditions with the main tools and equipment.	- Correct association of main conditions and appropriate packing method
D. Complete a maintenance sheet.	- Inclusion of all necessary information - Clear, accurate information

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to do routine checks on the equipment (A):

1. Understand the importance of preventive maintenance for vehicles, equipment and tools.
2. Explain the operating principles of a motor.
3. Distinguish minor corrective measures from major repairs.
4. Assess the condition of the tools and equipment by touch, sight and sound.

Before learning how to do specific maintenance work (B):

5. Describe the operating principles, use and limitations of the main tools and equipment.
6. Understand the importance of checking tools and equipment regularly.
7. Use various reference materials.
8. Describe a preventive maintenance procedure for the main tools and equipment.
9. Explain the main factors causing wear and breakdown of equipment.
10. Describe the appropriate products and spare parts.
11. Explain the health and safety rules to follow when doing maintenance work on tools and equipment. (See Module 5.)
12. Understand the importance of developing clean, orderly work habits.
13. Explain the steps to take before storing tools and equipment.

Before learning how to associate transportation and storage conditions with the main tools and equipment (C):

14. Describe the main methods of packing tools and equipment.

Before learning how to complete a maintenance sheet (D):

15. Explain the purpose of a maintenance sheet.

MODULE 12: COMMUNICATING IN THE WORKPLACE

SESAME: 702372 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will
communicate in the workplace.

SPECIFICATIONS

At the end of this module, the students will:

- Understand the general communication process.
- Have improved their ability to communicate effectively.
- Have developed the ability to work in a team.

LEARNING CONTEXT

PHASE 1: **Information**

- Learning about the communication process (using audio-visual and written materials).
- Learning about the oral and written means of communication used in landscaping (through written materials).
- Identifying the characteristics of, and obstacles to, effective communication (through role-playing activities).
- Identifying the characteristics of an efficient work team (through role-playing activities).
- Learning about the important aspects of communication with customers (through role-playing activities).

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

LEARNING CONTEXT

PHASE 2: **Participation**

- Participating in role-playing activities specific to landscaping operations:
  - working in teams, communicating with customers and superiors
  - observing their attitudes and behaviour with respect to communication
  - identifying their strengths and weaknesses
- Participating in discussions on various aspects of oral and written communication in their future workplace.

PHASE 3: **Self-Evaluation**

- Assessing their progress with respect to the expected outcome (through group discussions).

INSTRUCTIONAL GUIDELINES

The teacher should:

- Encourage all students to participate.
- Use group leadership techniques.
- Ensure that the students have access to relevant reference materials.
- Give the students charts on which to enter information gathered in the course of their research and role-playing activities.
- Prepare guidelines for role-playing activities that reflect situations typical of the workplace.

PARTICIPATION CRITERIA

PHASE I:

- Gather information on the topics to be dealt with:
  - draw a diagram of the communication process
  - draw up a list of the characteristics of an effective work group
  - draw up a list of the situations requiring oral and written communication skills of landscape workers

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

PHASE 1 (Cont'd):

- draw up a list of the characteristics of, and obstacles to, effective communication
- draw up a list of the important aspects of communication with customers

- Participate actively in role-playing activities:
  - participate in preparing role-playing activities
  - follow instructions for the role-playing activities
  - express their reactions to the role-playing activities as observers

PHASE 2:

- Participate actively in role-playing activities.
- Participate actively in discussions.

PHASE 3:

- Evaluate their own communication skills.
- Be willing to discuss how they perceive themselves as communicators with other members of the group:
  - express how they perceive themselves as communicators
  - react to other people's perceptions of them as communicators
  - listen to others express how they perceive themselves as communicators
  - give their impressions of at least one other student as a communicator

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before undertaking the activities of Phase I:

1. Understand the importance of communication in the workplace.
2. Find information. (See Module 1.)
3. Determine a way to record and present this information. (See Module 1.)
4. Explain what role-playing consists of.

Before undertaking the activities of Phase 2:

5. Explain the main rules governing group discussion. (See Module 1.)

Before undertaking the activities of Phase 3:

6. Explain the steps in the self-evaluation process.

MODULE 13: BUILDING MASONRY STRUCTURES WITH MORTAR JOINTS

SESAME: 702355 **Duration: 75 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
build masonry structures with mortar joints
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on a landscape plan
- On prefabricated foundations and stairs
- Using stones, bricks and precast concrete units
- Using the appropriate tools and equipment

GENERAL PERFORMANCE CRITERIA

- Conformity with the landscape plan
- Observance of health and safety rules
- Observance of QSB and Association Paysage Québec standards
- Appropriate selection of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations
- Economical use of materials
- Correct work techniques
- Observance of principles of aesthetics

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Interpret the plan.	- Relevant information obtained (e.g. location, dimensions, grades, drainage slope, locations of drain tiles, types of materials) - Correct interpretation

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Select tools and equipment.	- Appropriate selection, based on work to be done
C. Determine the type and thickness of the joints.	- Appropriate selection, based on desired finish - Correct calculation
D. Build a brick retaining wall with angles, openings and curves.	- Mastery of technique for assembling blocks - Correct angle of inclination - Evenness of mortar and its adhesion to the foundation - Correct technique for installing expansion joints - Correct bricklaying technique - Mastery of brick-cutting technique - Mastery of backfilling technique - Proper layout of materials: geotextile fabric, drain tiles, gravel - Mastery of technique for preparing mortar - Correct technique for installing cap - Quality of finished product: • conformity with initial instructions • uniform joints • regularity of brickwork • flat, even surface • correct angles • levelness and plumbness

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
E. Build a stone patio with angles, curves and two steps.	- Evenness of mortar and its adhesion to the foundation - Correct technique for installing expansion joints - Mastery of stone-cutting technique - Appropriate selection of stones - Mastery of technique for preparing mortar - Minimum drainage slope - Quality of finished product: • conformity with initial instructions • uniform joints • appearance (layout of stones, joints) • flat, even surface • correct angles • levelness and plumbness
F. Clean the work.	- Proper use of cleaning products - Cleanliness

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to select tools and equipment (B):

1. Describe the products and materials required to carry out the task (e.g. mortar, cleaning products). (See Module 4.)
2. Describe the characteristics, limitations and operation of the main tools and equipment required to build masonry structures with mortar joints.
3. Identify the characteristics of various masonry structures with mortar joints and the requirements for building them.
4. Describe the steps involved in building those structures.
5. Identify the expected performance criteria.
6. Distinguish the work process from the finished product. (See Module 7.)
7. Understand the importance of constantly checking their work.
8. Show concern for using time and materials efficiently.

Before learning how to determine the type and thickness of the joints (C):

9. Distinguish the different types of joints used in landscaping.
10. Estimate the minimum thickness required to ensure that the structure is sturdy.
11. Identify the effects of various types and lengths of joints on different materials.
12. Take measurements. (See Module 3.)
13. Do calculations. (See Module 3.)

Before learning how to build a brick retaining wall (D) and a stone patio (E):

14. Explain the health and safety rules to follow when building masonry structures with mortar joints. (See Module 5.)
15. Explain the QSB and Association Paysage Québec standards for building masonry structures with mortar joints.
16. Use various reference materials (e.g. standards, manufacturers' instructions).
17. Assess the quality of the foundations. (See Module 7.)
18. Install drain tiles. (See Module 7.)
19. Cut masonry materials. (See Module 8.)
20. Assemble blocks. (See Module 9.)
21. Describe a technique for preparing mortar.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

22. Evaluate by sight the quality of the mortar.
23. Describe a technique for installing expansion joints.
24. Describe a technique for installing caps and applying surface-finishing products.
25. Explain the principles of selecting and laying stones.
26. Detect different shades of colour on the stones.

Before learning how to clean the work (F):

27. Identify cleaning products.
28. Estimate the required drying time.
29. Explain the laws and regulations governing the disposal of excess cleaning products and other toxic products.

MODULE 14: RELATIONSHIPS BETWEEN LANDSCAPING AND ORNAMENTAL HORTICULTURE

SESAME: 702403 **Duration: 45 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will
establish relationships between landscaping and ornamental horticulture.

SPECIFICATIONS

At the end of this module, the students will:

- Understand ornamental horticulture as it applies to landscaping.
- Be able to apply principles of ornamental horticulture to landscaping operations.

LEARNING CONTEXT

PHASE 1: **Information on Ornamental Horticulture**

- Understanding the concept of ornamental horticulture.
- Understanding the nature and requirements of horticultural gardening in landscaping: tasks, working conditions, evaluation criteria and labour standards, laws and regulations, horticultural gardeners' rights and responsibilities (through interviews, written material).
- Identifying plants frequently used in landscaping.

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

LEARNING CONTEXT

PHASE 2: **Participation in Landscape Gardening Operations**

- Observing horticultural gardeners perform various landscaping tasks and helping them carry out those tasks, particularly planting annuals, perennials and bulbs.
- Writing a brief report on the horticultural gardening operations observed and their own participation in those operations.

PHASE 3: **Relationships between Horticultural Gardeners and Landscape Workers**

- Discussing relationships between the work done by landscape workers and the work done by horticultural gardeners during landscaping operations.
- Outlining their views on a landscape worker's professional ethics with respect to gardening and the environment.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Arrange for the students to meet with horticultural gardeners working in companies offering landscaping services.
- Organize activities to identify common plants, using slides, illustrations, actual plants, etc.
- Arrange for the students to observe horticultural gardeners and to help them carry out work-related tasks.

PARTICIPATION CRITERIA

PHASE I:

- Obtain information on the topics to be covered:
  - sum up in their own words the concept of ornamental horticulture
  - collect data on the nature and requirements of horticultural gardening in landscaping operations
  - identify plants

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA (Cont'd)

PHASE 2:

- Follow instructions concerning the tasks assigned them.
- Write a report describing the tasks they observed horticultural gardeners perform, the tasks they themselves performed, and the specific areas in which they and the gardeners worked.

PHASE 3:

- Participate actively in discussions:
  - identifying relationships between their work and that of horticultural gardeners
  - giving their viewpoints on a skilled landscape worker's professional ethics with respect to gardening and the environment, and pointing out the consequences of a lack of professional ethics
  - listening to and questioning the viewpoints of others

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before undertaking the activities of Phase I:

1. Define the term "concept."
2. Distinguish "job" from "trade."

Before undertaking the activities of Phase 2:

3. Understand the organic processes that give plants life and ensure their survival. (See Module 2.)
4. Understand the role that a qualified landscape worker plays in the field of ornamental horticulture.
5. Become familiar with information and instructions.

Before undertaking the activities of Phase 3:

6. Define "professional ethics."

MODULE 15: BUILDING WOODEN STRUCTURES

SESAME: 702366 **Duration: 90 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
build wooden structures
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on plans and sketches
- On precast foundations
- Using the necessary tools, equipment and materials
- Referring to the manufacturer's standards for applying surface-finishing products

GENERAL PERFORMANCE CRITERIA

- Conformity with the order received
- Observance of health and safety rules
- Observance of QSB and Association Paysage Québec standards
- Appropriate selection of tools and equipment
- Use of tools and equipment in accordance with their functions and limitations
- Correct work techniques
- Preventive maintenance of tools and equipment
- Logical sequence of steps

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Select tools and equipment.	- Appropriate selection, based on the work to be done

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Check the materials to make sure they conform with the order.	- Thorough verification of the type, quality and quantity of material
C. Build a stairway with a landing, a handrail and a guard.	- Accurate calculations - Correct method of assembling components - Mastery of techniques for: • taking measurements • marking off and cutting stringers • assembly - Observance of standards for: • installing the handrail (height, distance from wall) • installing the guard (height, distance between balusters) • dimensions of steps - Quality of finished product: • conformity with plans • sturdiness • appearance • holes plugged • sanding of surfaces - Proper application of surface-finishing product
D. Build a raised two-level patio.	- Accurate calculations - Correct method of assembling - Mastery of measurement-taking techniques - Quality of finished product: • conformity with plans • sturdiness • appearance • holes plugged • sanding of surfaces

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
D. Build a raised two-level patio. (cont'd)	- Proper application of surface-finishing product - Observance of pattern when assembling boards
E. Build a wall.	- Accurate calculations - Correct method of assembling components - Mastery of measurement-taking techniques - Observance of minimum standards: • slope • positioning of ties - Quality of finished product: • conformity with plans • sturdiness • sanding of surfaces - Proper application of surface-finishing product
F. Write a report on the raw materials used.	- Inclusion of the following information: • type and quantity of materials • complete list of materials used • complete list of reusable materials - Accurate information - Legible report - Correct use of terminology

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to select tools and equipment (A):

1. Interpret the plans. (See Module 10.)
2. Interpret the sketches. (See Module 10.)
3. Define the terms used.
4. Visualize the work to be done.
5. Describe the characteristics, limitations and operation of the main tools and equipment required for the work.
6. Describe the characteristics, limitations and operation of the main instruments required for the work.

Before learning how to check the materials to make sure they conform with the order (B):

7. Describe the products and materials required to build wooden structures. (See Module 4.)
8. Detect, by sight and touch, any defects in the materials that are likely to affect the quality of the structure.
9. Master basic carpentry techniques. (See Module 6.)
10. Identify the characteristics of various wooden structures and the requirements for building them.
11. Describe the steps involved in building wooden structures.
12. Identify the expected performance criteria.
13. Distinguish the work process from the finished product. (See Module 7.)
14. Understand the importance of constantly checking their work.
15. Show concern for using time and materials efficiently.

Before learning how to build a stairway with a landing, a handrail and a guard (C), a raised two-level patio (D) and a wall (E):

16. Identify different types of stairs.
17. Describe the different methods of joining treads, risers and stringers.
18. Describe the different methods of anchoring stairs.
19. Describe the various ways of finishing the edges of treads.
20. Describe the various ways of bracing handrails and guards.
21. Distinguish an ordinary wall from a retaining wall.
22. Take measurements. (See Module 3.)

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

23. Do calculations. (See Module 3.)
24. Explain the QSB and Association Paysage Québec standards for building wooden structures.
25. Use various reference materials (e.g. standards, manufacturers' recommendations).
26. Explain the health and safety rules to follow when building wooden structures. (See Module 5.)
27. Show concern for the appearance of the structures.

Before learning how to write a report on the raw materials used (F):

28. Describe the content and purpose of a report.
29. Show concern for providing accurate information.

MODULE 16: PLANNING AND ORGANIZING WORK

SESAME: 702391 **Duration: 15 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
apply a method of planning and organizing work
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on a landscape plan
- Based on a specific project commonly encountered in landscaping
- Based on an actual or simulated project
- Referring to the necessary technical reference materials

GENERAL PERFORMANCE CRITERIA

- Logic, relevance and effectiveness of the plan of action proposed
- Observance of health and safety rules
- Observance of time limit for completing various tasks
- Respect for the environment

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the work to be done.	- Comprehensive description of operations required for the project: • special environmental conditions - Complete description of each product and the results expected - Description of techniques used in each operation

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the work to be done. (cont'd)	- Complete list of the necessary tools, equipment and materials - Brief description of the human resources required for the work - Correct assessment of completion time
B. Develop a plan of action.	- Realistic plan of action that takes into account: • the projected completion time • the rational use of tools and equipment • the rational use of human resources • occupational health and safety measures - Description of logical sequence of steps in carrying out all the operations
C. Describe a method of evaluating the plan of action.	- Rigorous method - Accurate evaluation

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to analyze the work to be done (A):

1. Understand the importance of a logical, rigorous planning process.
2. Describe the elements and the steps of the planning process.
3. Understand the limitations of planning.
4. Define the concept of "objective."
5. Visualize the work to be done.
6. Summarize the main steps of a systematic search for information.

Before learning how to develop a plan of action (B):

7. Understand the importance of using a planning aid.

Before learning how to describe a method of evaluating the plan of action (C):

8. Determine what should be checked and what should be evaluated when implementing a plan of action.

MODULE 17: INSTALLING LIGHTING AND IRRIGATION SYSTEMS

SESAME: 702254 **Duration: 60 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
use techniques for installing lighting and irrigation systems
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Working alone
- Based on a landscape plan and data provided by the teacher
- On a site that has already been landscaped
- Using the necessary materials and equipment
- Using technical reference materials (for the section on irrigation)

GENERAL PERFORMANCE CRITERIA

- Conformity with the landscape plan
- Appropriate selection of tools and materials
- Accurate assessment of quantities of materials needed
- Observance of health and safety rules
- Observance of QSB and Association Paysage Québec standards for the design and installation of the irrigation system

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Produce a detailed circuit diagram for a 12-volt effect lighting system.	- Consideration of data from the landscape plan - Consideration of desired effect - Appropriate positioning of components

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Produce a detailed circuit diagram for a 12-volt effect lighting system. (cont'd)	- Proper wire size and size of transformers - Accurate assessment of quantity of materials needed
B. Use techniques for installing a 12-volt effect lighting system.	- Proper use of schematic diagram - Proper wiring - Sufficient length of wire - Proper depth of wire - Proper orientation of lamps - Attractive concealment of wires, control boxes and fixtures, if applicable - Proper handling of materials - Logical sequence of steps - Functional installation
C. Produce a detailed hydraulic circuit diagram for an irrigation system.	- Consideration of data from the landscape plan - Consideration of specific site characteristics - Logical positioning of components - Appropriate selection of materials - Accurate assessment of quantity of materials needed
D. Use techniques for installing an irrigation system.	- Proper use of schematic diagram - Solid pipe connections - Solid electrical connections - Levelness - Proper assembly of sprinklers - Appropriate depth of pipes for sectors - Proper installation of control box - Proper adjustment of radii of sprinklers

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
D. Use techniques for installing an irrigation system. (cont'd)	- Attractive concealment of system components - Logical sequence of steps - Observance of Association Paysage Québec standards - Functional installation

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to produce a detailed circuit diagram for a 12-volt effect lighting system (A):

1. Interpret on a plan the symbols related to outside lighting.
2. Define Ohm's Law.
3. Describe the light bulbs, containers, transformers and other materials available on the market.
4. Explain how to create special effects with lighting.

Before learning how to use techniques for installing a 12-volt effect lighting system (B):

5. Define the electrician's role in installing lighting in landscaping projects.
6. Understand the importance of concealing light fixtures, wires and control boxes.

Before learning how to produce a detailed hydraulic circuit diagram for an irrigation system (C):

7. Interpret on a plan the symbols and data related to irrigation.
8. Define "rate flow" and "pressure."
9. Describe the types of pipes, sprinklers, gates, controls and other materials available on the market.
10. Describe the tools, equipment and instruments required to install an irrigation system.
11. Explain the Association Paysage Québec standards.
12. Define a plumber's and an electrician's role in installing irrigation systems.
13. Understand why it is important for an irrigation system to be flat. (See Module 3.)
14. List the factors that affect plants' needs for water. (See Module 2.)

MODULE 18: DOING EXCAVATION WORK

SESAME: 702424 **Duration: 60 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do excavation work
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Outside
- In a real situation
- In a team, and based on a rotation system, so that each student performs all of the tasks
- Based on a landscape plan and specifications
- Using the necessary tools, equipment and materials

GENERAL PERFORMANCE CRITERIA

- Methodical planning and organization of the work
- Conformity with the plan and specifications
- Appropriate selection of tools and equipment
- Respect for the environment
- Observance of occupational health and safety rules and standards
- Observance of QSB and Association Paysage Québec standards

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Plan the work to be done.	- Consideration of important elements - Logic, relevance and efficiency of plan

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Plan the work to be done. (cont'd)	- Proper sequence of the operations necessary to complete the work - Complete list of tools, equipment and materials required
B. Prepare the excavation site.	- Proper protection of plants to be conserved - Proper positioning of road signs for short-term construction work - Salvaging of useful materials (e.g. earth, stones) - Rational disposal of noxious, unsalvageable materials - Functional repository of materials and equipment required for the work
C. Stake out the work site.	- Proper use of builder's level - Conformity with the horizontal and vertical dimensions in the plan - Correct technique for driving in stakes: location, sturdiness - Precise marking of grades, sites for planting, underground structures, etc.
D. Make topographical changes to the earth: cut, fill and grading.	- Correct grades - Safe use of machinery - Clear communication with machine operators - Correct techniques for spreading excavation materials
E. Ensure surface drainage.	- Conformity with plan - Correct technique for installing drain tiles

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
E. Ensure surface drainage. (cont'd)	- Appropriate selection of drain tiles, sumps and granular materials, based on efficiency and appearance
F. Lay sod.	- Mastery of technique for spreading earth - Even grading and finish - Proper handling of sod - Mastery of technique for laying sod - Appropriate watering - Quality of the finished product: • even surface • firm adhesion of sod to the ground
G. Prepare a report on the work done.	- Clear, concise report - Accurate information - Inclusion of following information: • customer's name • description of work done • duration of work • transportation time • used and unused materials • defective tools and equipment (if applicable) • changes made to the plan (if applicable) - Proper use of terms
H. Clean the work area.	- Rational disposal of materials - Cleanliness of work site

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to plan the work to be done (A) and to prepare the excavation site (B):

1. Interpret a landscape plan and specifications. (See Module 10.)
2. Visualize the work to be done.
3. Apply a method for planning and organizing work. (See Module 16.)
4. Observe an excavation site.
5. Distinguish the characteristics of various tasks to be carried out.
6. Describe the steps involved in building various structures.
7. Identify the expected performance criteria.
8. Understand the importance of constantly checking their work.
9. Show concern for using time and materials efficiently.
10. Describe the materials required to complete the work.
11. Describe the characteristics, limitations and operation of the main tools and equipment required for excavation work.
12. Describe the applicable health and safety rules. (See Module 5.)
13. Describe the QSB and Association Paysage Québec standards for doing excavation work.
14. Explain the road signs used in short-term construction work.
15. Describe conditions for storing and transporting materials. (See Module 4.)
16. Determine the appropriate postures to adopt for the work. (See Module 5.)
17. Operate handling equipment. (See Module 5.)
18. Understand the importance of protecting the environment.

Before learning how to stake out the work site (C):

19. Use a level. (See Module 3.)
20. Understand the importance of this task.
21. Learn their way around a work site.
22. Locate various underground structures.

Before learning how to make topographical changes to the earth: cut, fill and grading (D):

23. Operate a small tractor.
24. Understand the hand signals used to communicate on the work site.
25. Understand the importance of communicating clearly with machine operators. (See Module 12.)

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to ensure surface drainage (E):

26. Identify the units of lengths used in landscaping. (See Module 3.)
27. Reduce to scale. (See Module 10.)
28. Apply the rule of three. (See Module 3.)
29. Describe the characteristics, limitations and operation of various types of equipment used to collect and dispose of surface water and the requirements for installing them.
30. Describe the different types of soil. (See Module 7.)
31. Estimate volumes of water to be collected.
32. Describe the effects of freezing and thawing cycles and their relationships with the temporary accumulation of water at certain points. (See Module 7.)
33. Understand the relationships between land use, planting and the equipment installed.
34. Explain the laws and regulations governing the disposal of surface water in municipalities.
35. Describe the ways in which municipalities dispose of water.
36. Understand the relationships between excavating and filling operations and the conservation of existing plants.
37. Install drain tiles. (See Module 7.)

Before learning how to clean the work area (H):

38. Be aware of the effects of a lack of orderliness and cleanliness on a customer's level of satisfaction.
39. Explain the laws and regulations governing the disposal of materials and waste.

MODULE 19: CREATING WATER GARDENS AND ROCK GARDENS

SESAME: 702242 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **apply concepts related to the creation of water gardens and rock gardens** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Working alone
- Based on written data provided by the teacher

GENERAL PERFORMANCE CRITERIA

- Consideration of initial constraints
- Accurate assessment of quantities of materials needed
- Clear explanations concerning appropriate techniques

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Apply concepts related to the installation of a water garden with a flexible PVC liner and lighted water jet.	- Logical sequence of steps - Description of materials, equipment and accessories required for the installation - Accurate assessment of quantities - Accurate description of installation techniques

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Apply concepts related to the creation of a rock garden.	- Accurate description of steps involved in preparing the site - Correct identification of criteria for selecting stones - Accurate description of techniques for anchoring stones

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to apply concepts related to the installation of a water garden with a flexible PVC liner and lighted water jet (A):

1. Describe types of water gardens.
2. Understand the importance of water depth for subsequent plant arrangement.
3. Understand the importance of uniform water level. (See Module 3.)
4. Describe the function of the overflow pipe.
5. Describe the types of liners, pumps, nozzles, filters, pipes and other materials for water pools that are available on the market.
6. Identify the components of an underwater lighting system. (See Module 17.)

Before learning how to apply concepts related to the creation of a rock garden (B):

7. Explain the principles of surface erosion.

MODULE 20: USING JOB SEARCH TECHNIQUES

SESAME: 702412 **Duration: 30 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
use job search techniques
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on a personal profile of their strengths and weaknesses
- Using sample résumés and job application letters
- Simulating a real situation or in relation to a search for a practicum position
- Using data provided by the teacher concerning employment prospects for qualified landscape workers
- Referring to any pertinent reference materials

GENERAL PERFORMANCE CRITERIA

- Quality of oral and written presentation

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Describe the steps in a creative job search.	- Inclusion of all steps - Logical sequence of steps - Description of important elements
B. Prepare their own résumé.	- Quality of presentation: • legible text • attractive layout • neat presentation

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
B. Prepare their own résumé. (cont'd)	- Quality of content: • inclusion of relevant information (e.g. personal information, education and experience) - Quality of written text: • correct style, grammar and spelling
C. Prepare a job application letter.	- Quality of presentation: • legible text (typed or handwritten) • attractive layout • neat presentation - Quality of content: • relevance of content to position sought - Quality of written text: • correct style, grammar and spelling
D. Undergo a job interview.	- Quality of presentation: • good grooming • courtesy • attentiveness • clear oral expression - Quality of candidate's comments: • good general knowledge of company and position sought • answers appropriate to questions asked
E. Describe a technique for following up a job interview.	- Inclusion of important elements - Description of follow-up measures

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before learning how to describe the steps of a creative job search (A):

1. Define the concept of "creative job search."
2. Identify the attitudes necessary to find a job.

Before learning how to prepare their own résumé (B):

3. Prepare a personal profile of their strengths and weaknesses with respect to the job search.
4. Define the purpose and advantages of using a résumé.

Before learning how to prepare a job application letter (C):

5. Define the purpose of a job application letter.

Before learning how to undergo a job interview (D):

6. Describe the different types of interviews.
7. Prepare for a job interview.
8. Explain how certain attitudes and behaviour can help them or work against them during an interview.

Before learning how to describe a technique for following up a job interview (E):

9. Define the purpose of following up a job interview.
10. Determine whether or not a follow-up is required.

MODULE 21: ENTERING THE WORK FORCE

SESAME: 702435 **Duration: 75 hours**

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will
enter the work force.

SPECIFICATIONS

At the end of this module, the students will:

- Have found a practicum position.
- Be familiar with the workplace.
- Evaluate their performance as workers.
- Be aware of how their experience in a workplace has changed their perceptions in the following areas: work situation, trade practices, aptitudes, preferences, interests and the training they received.

LEARNING CONTEXT

PHASE 1: **Seeking a Practicum Position**

- Obtaining information about the practicum and its terms and conditions.
- Establishing criteria for selecting host companies.
- Identifying companies likely to accept student trainees.
- Taking steps to obtain practicum positions.

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

LEARNING CONTEXT (Cont'd)

PHASE 2: **Becoming Involved in the Workplace**

- Observing the work environment: the socio-economic milieu (type of landscaping work done by the host company, customers), trade associations, the company's operational structure, equipment, technological changes, working conditions, interpersonal relations, the role of women, health and safety, etc.
- Observing, participating in and carrying out various tasks.
- Writing a brief report outlining their observations of the work environment and the tasks they carried out in the host company.
- Evaluating their own performance as workers.

PHASE 3: **Comparing Pre- and Post-Practicum Views**

- Identifying the aspects of the trade that differ from their training.
- Discussing the accuracy of their views on the trade before and after the practicum: workplace, trade practices.
- Discussing how the experience will affect their career choice: aptitudes, preferences and interests.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Encourage the students to take part in discussions and exchange their views, especially during phases 1 and 3.
- Provide the students with the means to help them select appropriate host companies.
- Provide the students with a practicum journal and worksheets on which to record information during the practicum.
- Make sure that the person in charge of the practicum in the host company (practicum supervisor) thoroughly understands the objectives of the practicum.
- Make it possible for students to observe and perform tasks.
- Ensure that the students are under the constant supervision of a responsible individual in the host company.
- Ensure on-site support and supervision of the students.
- Intervene if problems or difficulties arise.
- Make sure that the practicum supervisor completes an evaluation report on the students.
- Maintain close ties between the school and the host companies.

FIRST-LEVEL OPERATIONAL OBJECTIVE
SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

PHASE 1:

- Identify, in order of preference, three potential host companies that meet their selection criteria.
- Meet with representatives of selected host companies to apply for a position as a trainee.

PHASE 2:

- Observe the company's work schedule and policies regarding the activities they are authorized to carry out as trainees.
- Write a report describing at least five of the aspects to be observed, as well as the tasks they observed or performed themselves.
- Participate in the evaluation of their practicum with the teacher and the practicum supervisor.

PHASE 3:

- Discuss with their colleagues their experiences in the workplace, using their reports as the basis for discussion.
- Explain to the teacher how they perceive themselves as workers, using the evaluation reports completed by their practicum supervisors.

SECOND-LEVEL OPERATIONAL OBJECTIVES

IN ORDER TO ACHIEVE THE FIRST-LEVEL OBJECTIVE, THE STUDENTS SHOULD HAVE PREVIOUSLY ATTAINED SECOND-LEVEL OBJECTIVES, SUCH AS:

Before undertaking the activities of Phase 1:

1. Make a personal inventory of the preferences, interests and values to take into account when selecting a host company.

Before undertaking the activities of Phase 2:

2. List the elements to be recorded during their practicums.
3. Describe an observation method.
4. Determine a way of recording their observations.
5. Describe the main parts of a report on their observations.