

Vocational Training Program

5800

Tiling

Training Sector

7

Buildings
and Public Works

Québec 



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Tiling

Training Sector

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Buildings
and Public Works

Formation professionnelle et technique
et formation continue

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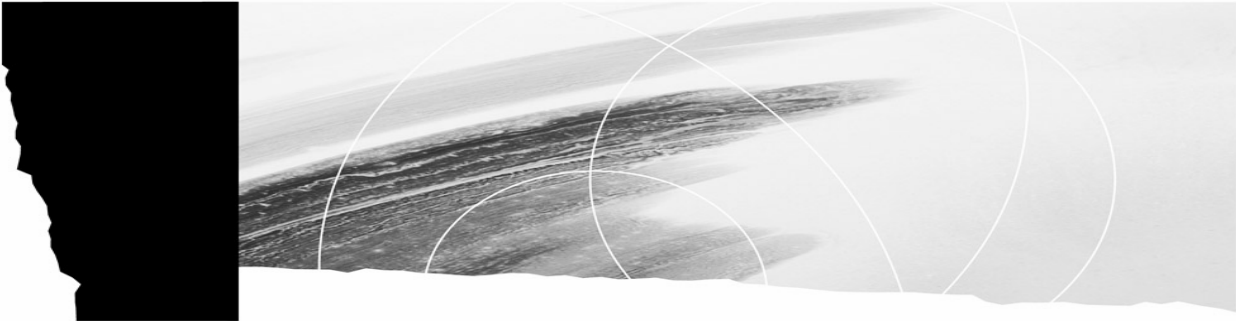
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5800

Tiling

Year of approval: 2005

Certification:	Diploma of Vocational Studies
Number of credits:	46
Number of modules:	11
Total duration:	690 hours

To be admitted to the *Tiling* program, students must meet one of the following conditions:

- Persons holding a Secondary School Diploma or its recognized equivalent are not subject to any additional admission requirements.

OR

- Persons who are at least 16 years of age on September 30 of the school year in which their training is to begin must meet the following additional requirement: to have earned the Secondary III credits in language of instruction, second language and mathematics in the programs of study established by the Minister, or to have been granted recognition of equivalent learning.

OR

- Persons who are at least 18 years of age must have the following functional prerequisites: the successful completion of the general development test and SPR 3, 4, 5, 6, or recognition of equivalent learning.

N.B. The requirement on the concurrency of general education courses and vocational training does not apply to this category.

Introduction to the Program

The vocational training curriculum, from which this program of study derives, is the responsibility of both the Ministère de l'Éducation, du Loisir et du Sport, which develops programs and their teaching guides, and the educational institutions, which implement the programs and the evaluation process. Programs of study include compulsory objectives and suggestions for competency-related knowledge, skills and attitudes.

Programs of study provide teachers with a frame of reference for planning teaching activities. They define the scope of teaching strategies by identifying the broad educational orientations to be favoured and the objectives to be attained. By successfully completing a program, students acquire not only the entry-level competencies required by the workplace in order to practise a trade or occupation, but also learning that provides students with a certain degree of versatility.

The duration of the program is 690 hours, which includes 540 hours spent on the specific competencies required to practise the trade and 150 hours on general, work-related competencies. The program of study is divided into 11 modules, which vary in length from 15 to 120 hours. The total hours allocated to the program include time devoted to evaluation for certification purposes and to remedial work.

Title of Module	Code	Module	Hours	Credits
The Trade and the Training Process	778 602	1	30	2
Measurements and Calculations	778 612	2	30	2
Installation Materials and Products	778 622	3	30	2
Health and Safety on Construction Sites	754 992	4	30	2
Preparation of Setting Surfaces	778 638	5	120	8
Plans and Specifications	778 643	6	45	3
Thin-Set Tiling Method	778 657	7	105	7
Thick-Set Tiling Method	778 663	8	45	3
Slab Surfaces	778 678	9	120	8
Terrazzo Surfaces	778 688	10	120	8
Job Search Techniques	778 691	11	15	1

Glossary

Program

A vocational training program is a coherent set of competencies to be acquired. It is formulated in terms of objectives and divided up into modules for administrative purposes. It describes the learning expected of students in accordance with a given performance level. Published as an official pedagogical document, the program leads to the recognition of training qualifying students to practise a trade or occupation.

A vocational training program includes compulsory objectives and content. Although the educational institutions are responsible for learning and evaluation activities, the program presents suggestions for competency-related knowledge, skills, attitudes and perceptions that must be enriched or adapted according to the needs of students, and information regarding the certification of studies.¹

Program Goals

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

Educational Aims

Educational aims are broad orientations to be favoured during training in order to help students acquire intellectual or motor skills, work habits or attitudes. Educational aims usually address important aspects of personal and vocational development that have not been explicitly included in the program goals or competencies. They help guide educational institutions in implementing the program.

Competency

A competency is the ability to act successfully and evolve in order to adequately perform work-related tasks or activities, based on an organized body of knowledge and skills from a variety of fields, perceptions, attitudes, etc.

Objectives

Objectives refer to the operational aspect of a competency to be acquired. They are expressed in terms of specific requirements and serve as the practical basis for teaching, learning and evaluation. Objectives are either behavioural or situational.

Objectives also provide indicators for learning, related knowledge, skills, attitudes and perceptions, and associated guidelines. These indicators are grouped according to elements of the competency (in the case of behavioural objectives) and according to phases of the learning context (in the case of situational objectives).

1. Behavioural Objective

A behavioural objective is a relatively closed objective that describes the actions and results expected of the student. Behavioural objectives consist of the following components:

- The *statement of the competency*, which is the result of the job analysis, the general goals of the program and other determinants.

1. Specifications regarding certification complement the program of study, but are presented in another document. Evaluation criteria are prescriptive.

- The *elements of the competency*, which correspond to essential details that are necessary in order to understand the competency and are expressed in terms of specific behaviours. They refer to the major steps involved in performing a task or the main components of the competency.
- The *achievement context*, which corresponds to the situation in which the competency is exercised at entry-level on the job market. The achievement context does not specify the context for learning or evaluation.
- The *performance criteria*, which define the requirements by which to judge the attainment of the competency. They may refer to each element of the competency, to several elements or to the competency as a whole. Those associated with a specific element correspond to the requirements for performing a task or activity; those associated with several elements indicate the expected level of performance or the overall quality of a product or service.

Evaluation is based on expected results.

2. Situational Objective

A situational objective is a relatively open-ended objective that outlines the major phases of a learning situation in which a student is placed. It allows for output and results to vary from one student to another. Situational objectives consist of the following five components:

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

Evaluation is based on the student's participation in the activities suggested in the learning context.

Competency-Related Knowledge, Skills, Attitudes and Perceptions

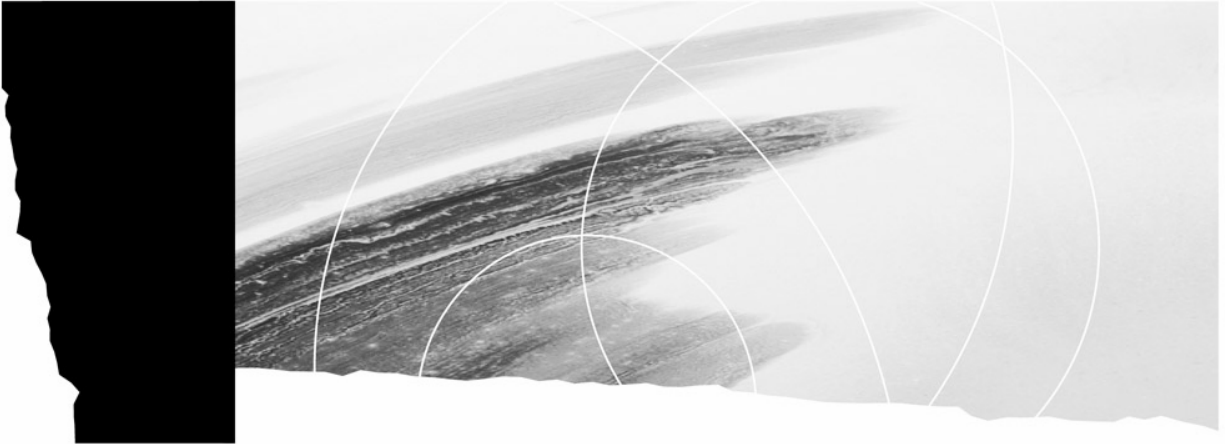
Competency-related knowledge, skills, attitudes and perceptions define the essential and important learning that the student must acquire in order to apply and continue to develop the competency. They correspond to activities in the job market and are accompanied by guidelines that provide information on the field of application, the level of complexity or content related to training. The knowledge, skills, attitudes and perceptions and the related guidelines are not prescriptive.

Module

A module is a component of a program of study comprising a prescriptive objective and suggestions for competency-related knowledge, skills, attitudes and perceptions.

Credit

A credit is 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 obtain a diploma or attestation.



Part I

Program Goals

Educational Aims

**Program Competencies and
Grid of Competencies**

Harmonization

Program Goals

The *Tiling* program prepares students to practise the occupation of tile-setter.

Tile-setters cut and set marble, granite, prefabricated terrazzo, slate, and ceramic tiles. They install strips, metal laths and anchors, and various aggregate mixtures, and lay the necessary base for this work. Finally, using a dry or wet process, they polish granite, marble or similar surfaces by hand or machine, and they fill the pores and grout lines.

The program goals of the *Tiling* program are based on the general goals of vocational training. These goals are:

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

Educational Aims

The aim of the *Tiling* program is to help students develop attitudes and behaviours that are deemed essential to the practice of the trade or occupation:

- to develop the habit of self-evaluation
- to develop problem-solving skills
- to develop behaviours conducive to the exchange of information and teamwork

Program Competencies and Grid of Competencies

List of Competencies

- To determine their suitability for the trade and the training process.
- To take measurements and make calculations.
- To choose installation materials and products.
- To prevent risks related to health, safety and physical well-being on construction sites.
- To prepare setting surfaces.
- To interpret plans and specifications.
- To set and repair tiles using the thin-set method.
- To set and repair tiles using the thick-set method.
- To set and repair slabs.
- To set and repair terrazzo.
- To use job search techniques.

Grid of Competencies

The grid of competencies shows the relationship between general competencies, which correspond to work-related activities, and specific competencies, which are required to practise the particular trade, as well as the major steps in the work process.

The general competencies appear on the horizontal axis and the specific competencies, on the vertical axis. The symbol (Δ) indicates a correlation between a specific competency and a step in the work process. The symbol (\bigcirc) indicates a correlation between a general and a specific competency. Shaded symbols indicate that these relationships have been taken into account in the formulation of objectives related to specific competencies.

The logic used in constructing the grid influences the course sequence. Generally speaking, this sequence follows a logical progression in terms of the complexity of the learning involved and the development of the students' autonomy. The vertical axis presents the specific competencies in the order in which they should be acquired. The modules 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 COMPETENCIES

TILING				GENERAL COMPETENCIES					WORK PROCESS					
	Competency Number	Type of Objective	Duration (in hours)	To take measurements and make calculations.	To choose installation materials and products.	To prevent risks related to health, safety and physical well-being on construction sites.	To interpret plans and specifications.	To use job search techniques.	To become familiar with the work to be done.	To prepare the work areas.	To prepare the surfaces to be covered.	To install the covering.	To check the quality of the work.	To clean the work area.
SPECIFIC COMPETENCIES	Competency Number	Type of Objective	Duration (in hours)	2	3	4	6	11						
	Competency Number	Type of Objective	Duration (in hours)	2	3	4	6	11						
	Type of Objective			B	B	S	B	B						
	Duration (in hours)			30	30	30	45	15						
To determine their suitability for the trade and the training process.	1	S	30	○	○	○	○	○	△	△	△	△	△	△
To prepare setting surfaces.	5	B	120	●	●	●	○	○	▲	△	▲	△	▲	▲
To set and repair tiles using the thin-set method.	7	B	105	●	●	●	●	○	▲	▲	△	▲	▲	▲
To set and repair tiles using the thick-set method.	8	B	45	●	●	●	●	○	▲	▲	▲	▲	▲	▲
To set and repair slabs.	9	B	120	●	●	●	●	○	▲	▲	△	▲	▲	▲
To set and repair terrazzo.	10	B	120	●	●	●	●	○	▲	▲	▲	▲	▲	▲

Harmonization

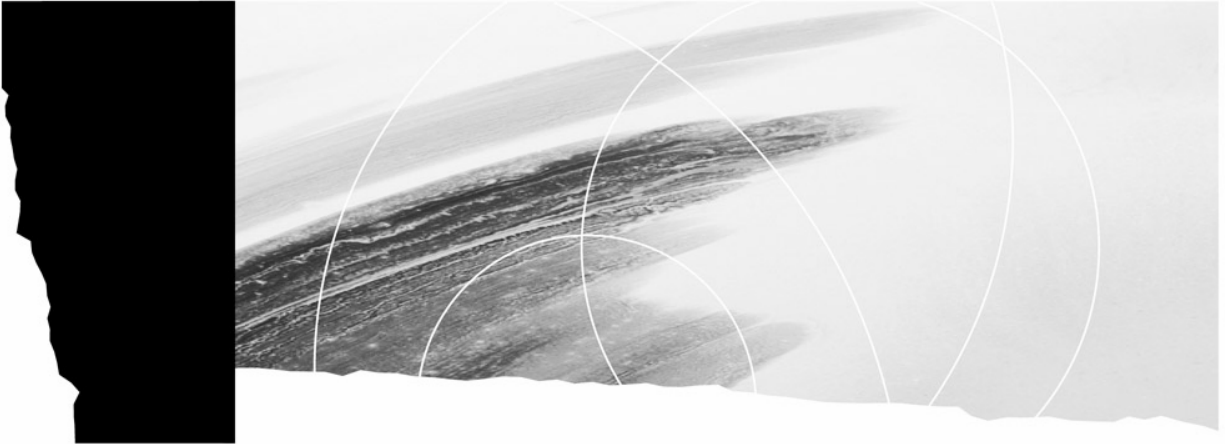
The Ministère de l'Éducation, du Loisir et du Sport harmonizes its vocational and technical programs by establishing similarities and continuity between secondary- and college-level programs within a particular sector or between sectors in order to avoid overlap in program offerings, to recognize prior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

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

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

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

The *Tiling* program does not share any competencies with other programs at this time.



Part II

Objectives

Module 1 Duration 30 hours

Situational Objective

Statement of the Competency

To determine their suitability for the trade and the training process.

Elements of the Competency

- Become familiar with the nature of the trade.
- Understand the training plan.
- Confirm their career choice.

Learning Context

Information Phase

- Learning about the job market in tiling: workplaces (types of businesses and products), job prospects, remuneration, opportunities for advancement or transfer, hiring of candidates (field trips, interviews, written material, etc.).
- Learning about the nature and requirements of the job (tasks, working conditions, evaluation criteria, rights and responsibilities of workers).
- Learning about the main roles and responsibilities of worker and employer organizations and associations in the building industry.
- Learning about the laws and regulations that govern the building industry.

Participation Phase

- Discussing the skills, aptitudes and knowledge required to practise the trade.
- Learning about the training plan: program of study, training process, evaluation procedures, certification of studies.
- Discussing how the training program relates to the tiling trade.

Synthesis Phase

- Assessing their career choice by comparing the different aspects and requirements of the trade with their own preferences, aptitudes and interests.
- Presenting the results of their self-evaluation in a report.

Instructional Guidelines

- Create a climate that favours the students' personal development and integration into the work force.
- Encourage all students to engage in discussions and express their opinions.
- Motivate students to engage in the suggested activities.
- Help students arrive at an accurate perception of the trade.
- Provide students with the means to assess their career choice honestly and objectively.
- Organize meetings with trade specialists.
- Organize visits to businesses representative of the tiling industry.
- Make available all relevant reference documents, such as written information about the trade, the training program and guides.

Participation Criteria

Information Phase

- Gather information on most of the topics to be covered.
- Express their views on the trade during a group discussion, referring to the information they have gathered.

Participation Phase

- Give their opinion on some of the requirements of the trade.
- Express their views on the training program during a group discussion.

Synthesis Phase

- Write a report containing:
 - a summary of their preferences, aptitudes and interests
 - an explanation of how they arrived at their career choice in the light of their preferences, aptitudes and interests

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the learning context, the elements of the competency related to each phase as well as the instructional guidelines.

Information on the Trade

- | | |
|---|---|
| <ul style="list-style-type: none"> • Be receptive to information on the trade and the training process. | Conditions of receptivity: favourable climate, interest, concentration, physical and psychological well-being |
| <ul style="list-style-type: none"> • Be willing to share their views on the trade with other members of the group. | Advantages of giving their opinion and listening to that of others |
| <ul style="list-style-type: none"> • Identify the relevant information. | Work method: <ul style="list-style-type: none"> – determination of information to look for – determination of available sources of information – identification of important points to remember – recording of points to remember |

- | | |
|--|--|
| <ul style="list-style-type: none"> • Choose a method of note taking. | <p>Methods of note taking: outline, table form, summary, etc.</p> |
| <ul style="list-style-type: none"> • Explain the main rules governing group discussions. | <p>Rules of group discussion:</p> <ul style="list-style-type: none"> – participation – respect of a person's turn to speak – keeping to the subject – attention paid to others – openmindedness to different points of view |
| <ul style="list-style-type: none"> • Learn about the job market in tiling. | <p>Information:</p> <ul style="list-style-type: none"> – structure of the industry and types of businesses – importance within the economy – coverings and products – job prospects according to region – salary prospects |
| <ul style="list-style-type: none"> • Learn about the nature and requirements of the trade. | <p>Information:</p> <ul style="list-style-type: none"> – main tasks – hiring conditions – working conditions – rights and responsibilities of workers |
| <ul style="list-style-type: none"> • Become familiar with work-related organizations and associations in the tiling industry. | <p>Employer associations: Association de la construction du Québec (ACQ), Association provinciale des constructeurs d'habitations du Québec (APCHQ), etc.; labour unions in the building industry; the Commission de la santé et de la sécurité au travail (CSST), etc.</p> |
| <ul style="list-style-type: none"> • Become familiar with the work setting during field trips. | <p>Arrangement of work areas, personnel, tasks, materials and equipment</p> |
| <ul style="list-style-type: none"> • Present the information gathered during a group meeting and discuss their perception of the trade. | <p>Differences between workplaces; skills and behaviours required to practise the trade; advantages, disadvantages and requirements of the trade</p> |

Information on and Participation in the Training Process

- | | |
|---|--|
| <ul style="list-style-type: none"> • List the skills, aptitudes, attitudes and knowledge required to practise the trade. | <p>Distinction between a skill, an aptitude, an attitude and knowledge
 Research into the skills, aptitudes, attitudes and knowledge that are essential to the work of a tile-setter
 Requirements in terms of physical strength
 Employers' perception of women working in tiling</p> |
| <ul style="list-style-type: none"> • Recognize attitudes to adopt with other workers. | <p>Appropriate language on construction sites
 Positive impact of mutual cooperation and respect between workers
 Teamwork and smooth progress of work</p> |

<ul style="list-style-type: none">• Describe the nature, function and content of a program of study.	Program objectives Links between modules Procedures involved in developing a program
<ul style="list-style-type: none">• Learn about the training program.	Program of study Training process Evaluation procedures Certification of studies
<ul style="list-style-type: none">• Learn about the equipment and materials in place as well as the rules to be followed.	
<ul style="list-style-type: none">• Discuss how the training program relates to the tiling trade.	Links between the different competencies of the program and the tasks of the trade
Evaluation and Confirmation of Career Choice	
<ul style="list-style-type: none">• Distinguish between preferences, aptitudes and interests.	Definition of the terms
<ul style="list-style-type: none">• Analyze their personal preferences, aptitudes and interests in terms of the requirements of the work of a tile-setter.	
<ul style="list-style-type: none">• Prepare a report indicating their preferences and aptitudes with respect to tiling and assess their career choice.	Highlighting of their personal qualities and knowledge gained through experience Recognition of types of problems likely to be encountered Anticipation of means to reduce problems
<ul style="list-style-type: none">• Discuss with the teacher the content of their résumé and the validity of their decision.	Summary of their preferences, aptitudes and interests Summary of the requirements of the trade Parallel between the previous two aspects Career choice

Module 2 Duration 30 hours

Behavioural Objective

Statement of the Competency

To take measurements and make calculations.

Achievement Context

- Given geometric figures representing:
 - irregularly shaped floors
 - walls with openings
- Given stairwell openings in which straight stairways are to be calculated
- Given actual problems
- Given a predetermined allowance for waste of materials, and tolerances accepted by industry

Elements of the Competency**Performance Criteria**

1. Measure lengths, heights and widths.

- Accurate measurements using the metric system
- Accurate measurements using the imperial system
- Correct use of measuring instruments
- Observance of acceptable tolerances

2. Measure angles.

- Accurate measurements using the metric system
- Accurate measurements using the imperial system
- Correct use of measuring instruments
- Observance of acceptable tolerances

3. Calculate areas.

- Accurate results

4. Calculate the quantity of covering materials required.

- Accurate results
- Consideration of predetermined allowance for waste

5. Calculate the quantity of setting products required.

- Accurate results
- Consideration of predetermined allowance for waste

6. Make the necessary calculations for the layout.

- Accurate results
- Accuracy of squareness

7. Make the necessary calculations for straight staircases.

- Accurate results

For the competency as a whole:

- Correct application of required mathematical formulas

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

1. Measure lengths, heights and widths.

- | | |
|---|--|
| • Use measuring instruments. | Tape measure, square, bevel square, builder's level, water level, laser level, metal straightedges, plumb line, chalk line |
| • Use the imperial and metric systems. | Imperial and metric units of measure
Conversion from one system to the other |
| • Carry out the four basic mathematical operations. | Addition, subtraction, multiplication and division |

2. Measure angles.

- | | |
|---|----------------------------------|
| • Check for squareness using the Pythagorean theorem. | 3-4-5 formula |
| • Transfer data to a cutting measurement. | Measurements of length and width |

3. Calculate areas.

- | | |
|--|--|
| • Calculate the perimeter and area of common geometric figures. | Geometric figures: square, triangle, right-angled triangle, circle, cylinder |
| • Interpret a calculation problem related to a geometric figure. | Whole numbers, decimals and fractions |

4. Calculate the quantity of covering materials required.

- | | |
|--|--|
| • Recognize the effect of calculation errors on the progress and cost of a job. | |
| • Gather the necessary data for calculating the quantity of covering materials required. | Number of tiles or slabs, length of mouldings or nonslip strips, area to be marked out, etc.
Percentage of waste to be considered |
| • Use mathematical formulas for calculating the quantity of covering materials required. | Application of basic mathematical operations
Rule of three |

5. Calculate the quantity of setting products required.

- Gather the necessary data for calculating the quantity of setting products required. Thickness of a product, number of layers, volume of products, area to be covered, etc.
Percentage of waste to be considered
- Use mathematical formulas for calculating the quantity of setting products required. Application of basic mathematical operations
Rule of three

6. Make the necessary calculations for the layout.

- Divide a floor or wall in terms of a layout pattern. Simple layout patterns
- Determine the cut of tiles or slabs in terms of the floor or wall layout. Simple problems (straight outside edges, simple designs)
Application of basic mathematical operations
Measuring of angles

7. Make the necessary calculations for straight staircases.

- Distinguish the components of a staircase. Stair rise, run of stairs, landing, stairwell, headroom, stringer, step, riser, tread, nosing, comfort factor
- Use mathematical formulas to check the conformity of a staircase. 1 step + 1 riser (430 to 460 mm)
1 step + 2 risers (610 to 635 mm)
1 step + 2 risers (450 to 485 mm)

Module 3 Duration 30 hours

Behavioural Objective

Statement of the Competency

To choose installation materials and products.

Achievement Context

- Given covering materials and installation products commonly used in tiling
- Using technical reference documents and product specifications

Elements of the Competency

Performance Criteria

- | | |
|---|--|
| 1. Identify the installation materials and products to use. | <ul style="list-style-type: none"> • Identification of required materials and products according to characteristics of the materials and installation techniques |
| 2. Interpret installation specifications. | <ul style="list-style-type: none"> • Accurate interpretation of specifications to be respected during installation • Proper use of technical reference documents • Accurate interpretation of recipes |
| 3. Research information on installation products. | <ul style="list-style-type: none"> • Appropriate use of technical reference documents • Relevance of information gathered concerning product specifications |

For the competency as a whole:

- Use of terminology specific to the trade
- Proper consideration of *WHMIS (Workplace Hazardous Materials Information System)* symbols on materials and products

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

- | | |
|---|--|
| 1. Identify the installation materials and products to use. | |
| <ul style="list-style-type: none"> • Distinguish the materials and products used for preparing setting surfaces. | <p>Types of materials: sand, cement, cement glue, lime, admixture, levellers, etc.</p> <p>Types of products: water-resistant paper, vapour barrier, furring, mesh, membranes and metal laths, etc.</p> |

<ul style="list-style-type: none"> • Distinguish the materials used for installing coverings. 	<p>Tiles, slabs, marble chippings or terrazzo Materials used specifically for installing a floor, wall, ceiling or staircase Installation materials and techniques (thin-set and thick-set methods) Cost, durability, resistance, ease of fashioning, ease of installation, etc.</p>
<ul style="list-style-type: none"> • Distinguish the products used for installing coverings. 	<p>Cement glue, (intermediary, thin-set, quick-setting, etc.), high-bond mortar, organic adhesive, epoxy resin, polymer, etc. Fasteners: mechanical anchor, staple, caulking, etc. Grouting products Protective products</p>
<ul style="list-style-type: none"> • Distinguish residential, commercial and institutional covering materials. 	<p>Uses, characteristics and functions specific to each type</p>
<ul style="list-style-type: none"> • Distinguish standard and high-quality covering materials. 	<p>Price-quality ratio</p>
2. Interpret installation specifications.	
<ul style="list-style-type: none"> • Use manufacturers' reference documents. 	
<ul style="list-style-type: none"> • Interpret recipes for preparing products. 	<p>Ingredients, proportions, specifications for storing and preserving products, etc.</p>
<ul style="list-style-type: none"> • Recognize conditions for transporting and storing products and materials. 	
<ul style="list-style-type: none"> • Recognize the system for identifying hazardous materials. 	<p><i>Workplace Hazardous Materials Information System (WHMIS)</i> Symbols on product containers</p>
3. Research information on installation products.	
<ul style="list-style-type: none"> • Classify sources of information on installation products. 	<p>Specifications, technical reference documents, manufacturer's sales representative, etc.</p>

Situational Objective

Statement of the Competency

To prevent risks related to health, safety and physical well-being on construction sites.

Elements of the Competency

- Develop a responsible attitude toward health and safety risks.
- Be aware of the importance of complying with standards and regulations pertaining to occupational health and safety.
- Recognize a dangerous situation or a risky behaviour and the applicable preventive measures.

Learning Context

Information Phase

- Learning about the risks inherent in construction sites.
- Learning about the standards and regulations pertaining to health and safety on construction sites.
- Learning about the measures to take in the event of an emergency.
- Reflecting on the importance of acquiring the competency related to occupational health and safety.

Participation Phase

- Experimenting with situations that require risk prevention and elimination of dangers with respect to the environment, installations, equipment and machinery, materials and tools, energy sources, etc.
- Participating in activities allowing them to recognize risks related to transporting loads and to restrictive work postures.
- Participating in activities that allow them to recognize the symbols and signs related to risk prevention (dangerous products, road work, transportation of hazardous materials, etc.).
- Comparing the risky behaviours observed on a construction site and identifying the main principles underlying safe behaviour.

Synthesis Phase

- Producing a report in which they:
 - summarize their newly acquired knowledge and skills
 - assess their attitude toward occupational health and safety
 - list the objectives and steps to take to improve themselves

Instructional Guidelines

- Provide the required sources of information.
- Invite, as applicable, resource persons specialized in certain aspects of occupational health and safety.
- Optimally use audiovisual material.
- Extensively use scenarios representative of the real work situation on construction sites.
- Prevent any dangerous actions that the students could take during simulation activities.
- Encourage all students to participate during discussions.
- Guide the students' self-evaluation by providing them with appropriate tools (e.g. questionnaire) to help them analyze their experience and set objectives.

Participation Criteria

Information Phase

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

Participation Phase

- Participate conscientiously in the suggested activities.
- State the principles of safe behaviour.
- List the risks related to construction sites as well as applicable preventive measures.

Synthesis Phase

- Produce a report in which they:
 - summarize their newly acquired knowledge and skills
 - assess their attitude toward occupational health and safety
 - list the objectives and steps to take to protect their health, safety and physical well-being, as well as that of others, on a construction site

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the learning context, the elements of the competency related to each phase as well as the instructional guidelines.

Information Phase

- Be receptive to information on health and safety on construction sites.
- Recognize the most common risks related to health, safety and physical well-being on construction sites.
- Recognize the sources of information relating to health and safety on construction sites, and find information in them.
- Identify the advantages of complying with health and safety standards and rules.

Roles and responsibilities in matters relating to health and safety on construction sites
Legislative framework governing occupational health and safety

Prevention of illness and accidents

Participation Phase

- Associate the risks inherent in construction sites and the trade with applicable preventive measures.

Risks inherent in the site itself and in the practice of the trade
Preventive measures to apply according to the risk
Systems for identifying hazardous materials

Module 5 Duration 120 hours

Behavioural Objective

Statement of the Competency

To prepare setting surfaces.

Achievement Context

- On a wood, gypsum board, metal or concrete substrate with slight imperfections
- On a floor of at least 1 m² equipped with a drain
- On a wall of at least 2 m², with one angle and one opening
- Referring to the manufacturer's specifications for installing membranes
- Using the necessary materials, tools, equipment and preinstalled scaffolding
- Under prescribed environmental conditions

Elements of the Competency

Performance Criteria

- | | |
|---|--|
| 1. Check the substrates. | <ul style="list-style-type: none"> • Identification of all defects • Solid, uniform and clean substrate • Satisfactory verification of squareness, levelness, smoothness and flatness • Authorized repairs made |
| 2. Prepare the materials and tools. | <ul style="list-style-type: none"> • Appropriate choice of materials and tools • Accurate calculation of quantities of required products • Proper preparation of products • Meticulous verification of the solidity of the scaffolding |
| 3. Lay out the reference spots. | <ul style="list-style-type: none"> • Proper installation of reinforcement systems, water-resistant paper, vapour barrier and reinforcement mesh • Accuracy of reference spots • Appropriate layout • Sufficient number of reference spots selected |
| 4. Parge a wall. | <ul style="list-style-type: none"> • Observance of techniques used to apply scratch coats and levelling coats • Flat, uniform surface |
| 5. Place a mortar bed over a floor and staircase. | <ul style="list-style-type: none"> • Proper preparation of mortar mixture • Observance of procedure for applying mortar • Observance of drying time |

- | | |
|---|--|
| 6. Apply a levelling coat. | <ul style="list-style-type: none">• Proper use of products used as levelling coats• Observance of application technique• Observance of manufacturer's instructions |
| 7. Install membranes. | <ul style="list-style-type: none">• Observance of techniques used to install waterproofing and crack-suppressing membranes• Observance of manufacturer's instructions |
| 8. Check the quality of the work. | <ul style="list-style-type: none">• Accurate self-evaluation of work• Consideration of all current quality criteria• Necessary modifications made |
| 9. Ensure basic maintenance of tools and equipment. | <ul style="list-style-type: none">• Proper application of preventive maintenance procedures• Meticulous cleaning of tools and equipment |
| 10. Clean the work area. | <ul style="list-style-type: none">• Methodical storage of tools and equipment• Meticulous cleaning of work area |

For the competency as a whole:

- Observance of work procedures and techniques
- Proper use of tools and equipment
- Proper use of scaffolding
- Observance of quality standards
- Compliance with instructions
- Observance of occupational health and safety rules and ergonomic principles
- Clean, orderly work
- Observance of allotted time

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

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|--|--|
| 1. Check the substrates. | |
| <ul style="list-style-type: none">• Describe the types of substrates. | Types of substrates: concrete, gypsum board
Characteristics of substrates |
| <ul style="list-style-type: none">• Identify defects on substrates. | Criteria for uniformity, solidity and cleanliness of the surface
Cracks, holes, splinters, defective joints, defects in squareness
Problems caused by water infiltration |
| <ul style="list-style-type: none">• Determine the repairs to be made on a substrate. | Repairs that tile-setters are authorized to make |

- Handle and use common tiling tools. Common tiling tools: trowels (compaction trowel, cement trowel, cove trowel, etc.), hawk, bristle brush, sponge, hammer, mallet, thermometer, hygrometer, notched trowels, etc.
Transportation and storage of tools
Health and safety rules
 - Carry out procedures for cleaning, stripping and scraping the substrate. Steel brushes, scrapers, strippers
 - Repair cracks, holes and splinters on the substrate.
 - Check the squareness and levelness (trueness) of the setting surface. Importance of accuracy
Criteria for flatness of the surface
Quality of the angles
2. Prepare the materials and tools.
- Choose the tools required to prepare a setting surface.
 - Choose the materials and products required to prepare a setting surface. Types of materials: water-resistant paper, vapour barrier, furring, mesh, membranes, metal laths, etc.
Types of products: sand, cement, lime, admixture, levelling products, etc.
 - Estimate the quantities of materials and products required to prepare a setting surface. Measurements and calculations
Referral to plans and specifications
Effect of calculation errors on the cost of a job
 - Prepare the parging and mortar bed. Recipe for parging (sand, cement, lime and admixture)
Recipe for mortar bed (sand, cement and admixture)
Mixing technique
Factors to be considered: quality of sand and water, correct proportions, adequate mixing
Importance of the quality of sand and water
Curing period for cement
 - Distinguish the main types of scaffolding used in tiling. Rolling scaffolding, tubular scaffolding, etc.
 - Apply procedures for erecting and dismantling scaffolding. Manufacturer's instructions
Solidity criteria
 - Prepare the work area. Mortarboard and rolling scaffolding
Functional layout of work area

3. Lay out the reference spots.

- Install a reinforcement system. Technique used to fasten furring
Space indicated between furring
- Install water-resistant paper and vapour barrier. Characteristics and use of water-resistant paper and vapour barrier
Types of fasteners: nails, staples, etc.
Overlapping of water-resistant paper and vapour barrier
- Fasten the reinforcement mesh. Overlapping of reinforcement mesh
- Lay out reference spots on a wall. Technique for laying out reference spots: alignment with floor and wall
Number and layout of reference spots
- Make guides on the wall using reference spots.

4. Parge a wall.

- Handle a hawk and trowel. Technique for transferring parging from the hawk to the trowel
- Apply a scratch coat to a wall. Comb-scraping technique
Drying time
- Apply a levelling coat to a wall. Moistening of the wall
Guides and levelling
Criteria of the levelled surface: flatness and uniformity

5. Place a mortar bed over a floor and staircase.

- Install mesh and laths on a floor or staircase. Methods: cleavage plane or binders
- Install forms for risers. Layout of components
Solidity criteria
- Apply the mortar on a floor or staircase. Application methods: laying, spreading, compacting, trowelling, levelling
- Use a surface scraper for levelling the surface. Guides and levelling
Drying time

6. Apply a levelling coat.

- Choose a levelling product according to the surface. Main levelling products: primer, self-levelling finishing mixture, high-bond mortar
- Use the recommended mixing and application techniques. Manufacturer's instructions

7. Install membranes.

- Choose a type of membrane according to the surface. Main types of membranes: latex, fibreglass-reinforced, neoprene, PVC, etc.
- Use the recommended installation technique. Manufacturer's instructions
- Check the integrity of a membrane. Water test

8. Check the quality of the work.

- Recognize current quality criteria for preparing setting surfaces. Quality criteria with respect to flatness and solidity
- Suggest and make modifications, if necessary. Possible modifications at each step of the work process
Possible modifications of the finished product
- Recognize the importance of self-evaluation during the work process and at completion.

9. Ensure basic maintenance of tools and equipment.

- Clean the tools and equipment.
- Assess the condition of tools and equipment. Standards for use of tools and equipment
Preventive maintenance
Life span of tools and equipment
- Recognize the effect of preventive maintenance on the life span of tools and equipment.

10. Clean the work area.

- Store the tools, equipment, materials and products. Storage plan
- Recognize the importance of leaving the work area free of debris, dirt and excessive dust. Concern for clientele
- Recognize the importance of developing clean, orderly work habits.

Module 6 Duration 45 hours

Behavioural Objective

Statement of the Competency

To interpret plans and specifications.

Achievement Context

- Given situation scenarios
- Given installation plans, and simple, actual specifications or a book of specifications

Elements of the Competency

Performance Criteria

- | | |
|--|--|
| 1. Interpret the codes and symbols used in the plan. | <ul style="list-style-type: none"> • Accurate interpretation of following elements: <ul style="list-style-type: none"> – title block – scale – symbols used to represent the kind, location and shape of materials – lines used to represent ceilings, floors, divisions, levels and dimensions |
| 2. Interpret the dimensions found in the plan. | <ul style="list-style-type: none"> • Accurate interpretation of dimensions relating to the length, area, volume and weight of tiling materials • Accuracy of the dimensions taken from the plan |
| 3. Interpret the different views found in the plan. | <ul style="list-style-type: none"> • Accurate interpretation of views: <ul style="list-style-type: none"> – elevation – plan – section – etc. • Accurate interpretation of the orientation of the views |
| 4. Interpret the technical information in the plan required to do the tiling work. | <ul style="list-style-type: none"> • Accurate location of the section of the plan that relates to tiling • Accurate interpretation of the technical information required to determine: <ul style="list-style-type: none"> – type of work – type of materials – installation method – etc. |
| 5. Interpret regulations pertaining to the plan. | <ul style="list-style-type: none"> • Accurate interpretation of standards and regulations to be respected in the tiling work |

For the competency as a whole:

- Observance of standards
- Methodical work habits
- Concern for detail

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following is a list of knowledge, skills, attitudes, perceptions and guidelines related to each element of the competency.

1. Interpret the codes and symbols used in the plan.

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|---|--|
| • Distinguish the types of documents used in tiling. | Book of specifications, plans, specifications, quotations |
| • Distinguish the types of plans used in tiling. | Sketches, shop drawings, installation plan, architectural plan, engineering plan |
| • Distinguish the sections of a plan. | Title block, direction of north
Table of finishes |
| • Recognize the codes and symbols used in the plan. | Standard abbreviations and codes |
| • Recognize the types of lines used in technical drawings. | Identification of an opening, door, window, position of work surfaces; noting of dimensions
Dotted line
Continuous line broken up with dashes: axis, axis of symmetry, centre line |
| • Locate technical information in a plan specific to tiling work. | Table of modifications, structural plan, installation plan |

2. Interpret the dimensions found in the plan.

- | | |
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| • Recognize the dimensions found in the plan. | Dimensions relating to the length, area and weight of materials
Scale |
|---|--|

3. Interpret the different views found in the plan.

- | | |
|--|---|
| • Distinguish views that may be used in a plan. | Elevation, profile, section and detail views |
| • Analyze a layout pattern. | Dimensions and matching of tiles or slabs
Terrazzo pattern
Architectural plan
Engineering plan |
| • Locate applicability problems in a layout pattern. | |
| • Use drawing instruments. | Compass, square, architect's scale |

4. Interpret the technical information in the plan required to do the tiling work.

- Distinguish the sections of a plan.
- Locate and analyze technical information specific to tiling work in a plan.

Information on the materials, techniques and work to be done: types of covering, installation method, etc.
Standards, time frame, temperatures, etc.

5. Interpret regulations pertaining to the plan.

- Distinguish tiling standards.
- Locate and analyze standards applicable to tiling work in a plan.

Terrazzo, Tile and Marble Association of Canada (TTMAC)
Guide and specifications for each type of covering: tiles, ceramics, slate, Portland cement terrazzo, marble and granite

Module 7 Duration 105 hours

Behavioural Objective**Statement of the Competency**

To set and repair tiles using the thin-set method.

Achievement Context

- Given a simple installation plan
- On prepared surfaces of at least 2 m², with angles and openings
- Under prescribed environmental conditions
- Using materials, tools, equipment and pre-installed scaffolding

Field of application

- Ceramic tiles of all dimensions and natural stone tiles measuring no more than 30 cm x 30 cm

Elements of the Competency**Performance Criteria**

1. Interpret the installation plan.

- Accurate interpretation of information relating to dimensions, drawings, angles and inserts

2. Prepare the materials, tools and equipment.

- Appropriate choice of materials, tools and equipment
- Meticulous verification of the solidity of the scaffolding
- Accurate calculation of the required number of tiles
- Accurate calculation of the required quantity of setting products
- Proper preparation of setting products according to the manufacturer's instructions

3. Prepare the work area.

- Thorough verification of the cleanliness, squareness, levelness, alignment and solidity of the surface to cover
- Meticulous verification of the temperature of the concrete
- Meticulous verification of surrounding ventilation, temperature and lighting
- Installation of appropriate protective material
- Consideration of important elements
- Authorized corrective action
- Consultation with the person in charge, if necessary

- | | |
|--|---|
| 4. Set tiles on a floor, wall and staircase. | <ul style="list-style-type: none">• Accurate layout of reference spots and lines• Installation of control joints in conformity with instructions• Level, uniform surface• Proper alignment of tiles• Proper adhesion of tiles• Proper filling of grout lines• Uniform grout line width• Minimum waste of materials• Matching of colours and patterns• Proper application of a protective product• Observance of the thin-set method for setting tiles• Observance of the installation plan |
| 5. Repair a tiled surface. | <ul style="list-style-type: none">• Accurate identification of sections to be repaired• Proper application of technique used to replace the damaged tiles and backing• Adequate protection of surroundings |
| 6. Check the quality of the completed work. | <ul style="list-style-type: none">• Accurate self-evaluation of work• Consideration of all current quality criteria• Necessary modifications made |
| 7. Carry out the basic maintenance of tools and equipment. | <ul style="list-style-type: none">• Proper preventive maintenance• Meticulous cleaning of tools and equipment |
| 8. Clean the work area. | <ul style="list-style-type: none">• Appropriate disposal of debris• Cleanup of waste• Meticulous storage of tools and equipment |

For the competency as a whole:

- Observance of work procedures and techniques
- Observance of quality standards
- Aesthetic finished product
- Observance of occupational health and safety rules and ergonomic principles
- Proper use of tools and equipment
- Clean, orderly work
- Observance of allotted time

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

1. Interpret the installation plan.

- Locate and analyze information on setting tiles using the thin-set method found in an installation plan.
 - Characteristics of the thin-set method
 - Types of tiling work using the thin-set method: on a floor, staircase and wall
 - Types of tiles, layout pattern, setting products, types of control joints or grout lines, etc.
- Recognize the importance of visualizing the layout pattern.
 - Dimensions and matching of tiles
 - Aesthetics, harmony and visual symmetry

2. Prepare the materials, tools and equipment.

- Choose the tools and equipment required for a tile-setting job.
- Choose the products and materials required for a tile-setting job.
- Estimate the quantity of products and materials required for a tile-setting job.
 - Measurements and calculations
 - Reference to plans and specifications
 - Effect of calculation errors on the cost of a job
- Prepare the setting products.
 - Manufacturer's instructions and installation standards

3. Prepare the work area.

- Use cutting tools.
 - Tile cutters, water saw, angle grinder, glass cutter, tile nippers, etc.
 - Transportation and storage of cutting tools
 - Health and safety rules
- Recognize the importance of environmental conditions.
 - Ventilation, temperature and lighting of the work area
 - Risks inherent in construction sites
- Recognize the importance of protecting surrounding surfaces.
- Check the substrate.
 - Cleanliness, squareness, trueness, alignment, solidity
- Check the temperature and moisture-level of the concrete.
 - Use of a thermometer and hygrometer
- Choose an appropriate notched trowel for setting the tiles.
 - Size and thickness of tiles to be set
 - Transfer: interior installation (80%) and exterior installation (100%)

4. Set tiles on a floor, wall and staircase.

- | | |
|--|--|
| • Distinguish tiling procedures specific to the thin-set method. | Use of rope, spacers, trowels, straightedges and mallets |
| • Recognize the difficulties inherent in setting tiles on a floor, wall and staircase. | Alignment and levelling techniques specific to each surface
Floor and wall: control joint
Staircase: exact measurements |
| • Determine the position of reference spots on a floor, wall or staircase. | Distinction between reference spots on a setting surface and those on a covering
Usefulness of reference spots on a tile covering
Position, number and level |
| • Determine the position of a control joint on a floor or wall. | Expansion joint, isolation joint, etc. |
| • Apply a setting product on the substrate. | Application section by section |
| • Cut and trim tiles. | Occupational health and safety |
| • Lay out the tiles on a floor. | |
| • Lay out the tiles on a wall. | |
| • Lay out the tiles on a staircase. | |
| • Prepare and install mouldings and thresholds. | Types of mouldings and thresholds
Installation techniques |
| • Prepare grouting products. | Grout, epoxy resin |
| • Fill the grout lines between the tiles. | Filling and finishing techniques |

5. Repair a tiled surface.

- | | |
|--|--|
| • Identify the types and causes of damage to tiles. | Broken tiles, damaged nosing, etc. |
| • Determine the type of repairs to be done. | Visual assessment |
| • Prepare the surface to be repaired. | Technique used to open grout lines and chip off tiles and substrate
Protection of surrounding surface |
| • Recognize the importance of maintaining the original finish. | Matching and flushness of original covering and new tile |

6. Check the quality of the completed work.

- Recognize current quality criteria for tile coverings.
Quality criteria with respect to alignment, levelness, harmonious appearance, thresholds and mouldings
Specific needs of clientele
- Suggest and make modifications, if necessary.
Possible modifications at each step of the thin-set method
Possible modifications of the finished product
- Recognize the importance of self-evaluation during the work process and at completion.

Module 8 Duration 45 hours

Behavioural Objective

Statement of the Competency

To set and repair tiles using the thick-set method.

Achievement Context

- Given an installation plan
- On surfaces of at least 1 m², with angles and openings
- Using materials, tools, equipment and a mobile platform
- Under prescribed environmental conditions

Field of application

- Ceramic tiles of all dimensions or thin natural stone tiles measuring no more than 30 cm x 30 cm

Elements of the Competency

1. Interpret the installation plan.
2. Prepare the materials, tools and equipment.
3. Prepare the work area.

Performance Criteria

- Accurate interpretation of information relating to dimensions, drawings, angles and inserts
- Appropriate choice of materials, tools and equipment
- Accurate calculation of the required number of tiles
- Accurate calculation of the required quantity of setting products
- Proper preparation of setting products according to the manufacturer's instructions
- Thorough verification of the cleanliness, squareness, levelness, alignment and solidity of the surface to cover
- Meticulous verification of the temperature of the concrete
- Meticulous verification of surrounding ventilation, temperature and lighting
- Installation of appropriate protective material
- Proper preparation of the mortar bed
- Authorized corrective action

- | | |
|--|---|
| 4. Set tiles on a floor with angles and on a staircase. | <ul style="list-style-type: none"> • Accurate layout of reference spots and lines • Installation of control joints in conformity with instructions • Level, uniform surface • Proper alignment of tiles • Proper adhesion of tiles • Proper filling of grout lines • Uniform grout line width • Minimum waste of materials • Matching of colours and patterns • Observance of the thick-set method for setting tiles • Observance of the installation plan |
| 5. Repair a tiled surface. | <ul style="list-style-type: none"> • Accurate identification of sections to be repaired • Proper application of technique used to replace the damaged tiles and backing • Adequate protection of surroundings |
| 6. Check the quality of the completed work. | <ul style="list-style-type: none"> • Accurate self-evaluation of work • Consideration of all current quality criteria • Necessary modifications made |
| 7. Carry out the basic maintenance of tools and equipment. | <ul style="list-style-type: none"> • Proper preventive maintenance • Meticulous cleaning of tools and equipment |
| 8. Clean the work area. | <ul style="list-style-type: none"> • Appropriate disposal of debris • Cleanup of waste • Meticulous storage of tools and equipment |

For the competency as a whole:

- Observance of work procedures and techniques
- Observance of quality standards
- Aesthetic finished product
- Observance of occupational health and safety rules and ergonomic principles
- Proper use of tools and equipment
- Clean, orderly work
- Observance of allotted time

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

1. Interpret the installation plan.

- Locate and analyze information on setting tiles using the thick-set method found in an installation plan.
 - Conventional nature, and characteristics of the thick-set method
 - Types of tiling work using the thick-set method: on a sloping floor or staircase
 - Types of tiles and grout lines, thickness of mortar bed, installation plan, etc.
- Interpret the installation plan.
 - Importance of visualizing the layout pattern

2. Prepare the materials, tools and equipment.

- Prepare terra cotta tiles.
 - Dipping method

4. Set tiles on a floor with angles and on a staircase.

- Use straightedges, mallets and vibrators.
 - Techniques for tapping tiles
- Recognize the difficulties inherent in setting tiles using the thick-set method.
 - Method of moving around on the working surface
- Build a mortar bed on the substrate.
- Apply a bond coat on the mortar bed.
 - Spreading or bleeding of cement
- Install the tiles on the mortar bed.
 - Laying out of tiles one by one
 - Dry deposition
 - Techniques of levelling and alignment

5. Repair a tiled surface.

- Prepare the surface to be repaired.
 - Techniques used to open grout lines and chip off tiles and substrate
 - Vibrations and risk of causing fractures in the surface
 - Protection of surrounding surface

6. Check the quality of the completed work.

- Suggest and make modifications, if necessary.
 - Possible modifications at each step of the thick-set method

Module 9 Duration 120 hours

Behavioural Objective

Statement of the Competency

To set and repair slabs.

Achievement Context

- Given work instructions
- Given a shop drawing (installation plan) of average complexity
- On a prepared surface
- Using materials, tools and equipment
- Under prescribed environmental conditions

Field of application

- Slabs for interior and exterior work, on vertical and horizontal surfaces with inside angles and outside corners, as well as on staircases (marble, granite, slate and quartzite slabs, and slabs of other unclassified natural stone)

Elements of the Competency

Performance Criteria

- | | |
|---|---|
| 1. Interpret the plan and specifications. | <ul style="list-style-type: none"> • Accurate interpretation of main information • Accurate interpretation of codes and symbols • Accurate location of main elements |
| 2. Interpret the shop drawing (installation plan). | <ul style="list-style-type: none"> • Meticulous verification of conformity of materials (dimensions and matching of patterns) • Accurate determination of anchor positioning |
| 3. Place the materials and equipment in the proper location. | <ul style="list-style-type: none"> • Observance of lifting and handling rules • Planning of traffic lanes • Observance of conditions for storing materials and equipment |
| 4. Set slabs on a floor and staircase using the thin-set and thick-set methods. | <ul style="list-style-type: none"> • Accurate layout of reference spots • Level, uniform surface • Proper alignment of slabs • Proper adhesion of slabs • Proper filling of grout lines • Uniform grout line width • Proper application of a protective product (sealer) • Aesthetic finished product |

- | | |
|---|--|
| 5. Set slabs on a wall using anchors. | <ul style="list-style-type: none"> • Accurate layout of anchors • Plumb, uniform surface • Proper alignment of slabs • Stability of slabs • Proper filling of grout lines • Uniform grout line width • Minimum waste of materials • Aesthetic finished product |
| 6. Repair slabs. | <ul style="list-style-type: none"> • Accurate identification of sections to be repaired • Observance of procedure for replacing and repairing damaged slabs |
| 7. Check the quality of the completed work. | <ul style="list-style-type: none"> • Accurate self-evaluation of work • Consideration of all current quality criteria • Necessary modifications made |
| 8. Clean the work area. | <ul style="list-style-type: none"> • Appropriate disposal of debris • Cleanup of waste • Meticulous storage of tools and equipment |

For the competency as a whole:

- Conformity with plans and specifications
- Observance of shop drawing
- Observance of work procedures and techniques
- Observance of quality standards
- Aesthetic finished product
- Observance of occupational health and safety rules and ergonomic principles
- Proper use of tools and equipment
- Clean, orderly work
- Observance of allotted time

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

- | | |
|--|---|
| 1. Interpret the plan and specifications. | |
| <ul style="list-style-type: none"> • Locate and analyze information on setting slabs found in a plan. | Types of slab-setting work: on a floor, a staircase, a wall and a ceiling, of standard and superior quality |
| <ul style="list-style-type: none"> • Locate and analyze information on setting slabs found in specifications. | Types of slabs and anchors, specific standards |
| 3. Place the materials and equipment in the proper location. | |
| <ul style="list-style-type: none"> • Use lifting and handling equipment. | Freight elevator, motor winch, stretcher, suction elevator, hook, etc. |

- Recognize standard conditions for handling and storing materials and equipment. Cost factor of certain materials and equipment
Usefulness of a slab A-frame
- Show concern for placing materials and equipment in a functional and safe manner. Traffic lane

4. Set slabs on a floor and staircase using the thin-set and thick-set methods.

- Distinguish procedures for setting slabs. Thin-set and thick-set methods
- Determine the position of reference spots on a floor or staircase.
- Show concern for the flatness of the substrate at the beginning and during the work process. Thin-set method
- Apply adhesive products on the substrate and under the slab. Application on the substrate: section by section
Backbuttering method
- Fix the slabs on a floor and staircase using the thin-set method. Adjustment and laying out of slabs one by one (beating in)
- Lay out a slab on the mortar bed. Thick-set method
Building of the mortar bed section by section
Dry deposition
Levelling and alignment techniques
- Apply a bond coat on the mortar bed. Spreading method
- Fix slabs on a floor or staircase. Adjustment and laying out of slabs one by one

5. Set slabs on a wall using anchors.

- Distinguish the methods of anchoring slabs to a wall. Mechanical anchors, gauge wire
- Determine the position of the anchors on the wall.
- Fix the anchors to the wall. Anchor position: drilling, bolting
- Use a circular saw. Diamond blade
Health and safety rules
- Prepare slabs to be set. Drilling, grooving, cutting, chamfering, sanding, etc.
- Lay the slabs on the anchors. Spacers
Dry deposition
- Plumb and align the laid slab. Straightedges and levels
- Fix the slab. Consolidation

- Fill the grout lines between the slabs.

Mechanical anchoring: caulking

6. Repair slabs.

- Identify the types and causes of damage to a floor or staircase.
- Determine the nature of the repair work to be done.
- Prepare the surface to be repaired.

Broken slabs, damaged nosing, nonslip bands to be replaced, etc.

Visual assessment

Techniques used to open grout lines and chip off slabs and substrate
Vibrations and risk of causing fractures and chips in the thick-set surface
Protection of surrounding surface

- Recognize the importance of maintaining the original finish.

Matching and flushness of the existing and new slabs
Manual technique for polishing slabs

7. Check the quality of the completed work.

- Recognize current quality criteria for slab coverings.

Quality criteria of the finished product: trueness, uniformity, clean surface, observance of installation plan
Specific needs of clientele

- Suggest and make modifications, if necessary.

Possible modifications at each step of the thin-set and thick-set methods
Possible modifications of the finished product

Module 10 Duration 120 hours

Behavioural Objective

Statement of the Competency

To set and repair terrazzo.

Achievement Context

- Working alone or with a partner
- Given work instructions
- Given a simple plan and simple specifications
- On prepared surfaces of at least 2 m², with angles and at least one opening, or on a straight staircase with at least one step and two risers
- Using materials, tools and equipment
- Under prescribed environmental conditions

Elements of the Competency

Performance Criteria

1. Interpret the plan and specifications.

- Accurate interpretation of main information
- Accurate interpretation of codes and symbols
- Accurate location of main elements

2. Prepare the work to be done.

- Careful inspection of the surface to be covered
- Careful verification of surrounding ventilation, temperature and lighting
- Adequate protection of surroundings
- Verification of conformity of materials with plans and specifications (type, quantity, quality)
- Proper layout of materials and equipment
- Accurate layout of reference spots

3. Set terrazzo on a floor, baseboard and staircase using the conventional method.

- Quality of finished product:
 - flat, uniform surface
 - homogeneous colour
 - straight, visible divider strips
- Observance of techniques used to install divider strips, and to prepare and lay the aggregate mixture
- Observance of techniques used to spread and roll the seed, and to control moisture
- Proper installation of nonslip strips on steps

- | | |
|--|--|
| 4. Set terrazzo on a floor, baseboard and staircase using the thin-set method. | <ul style="list-style-type: none"> • Quality of the finished product: <ul style="list-style-type: none"> – flat, uniform surface – homogeneous colour – straight, visible divider strips • Observance of techniques used to install divider strips, and to mix and lay the aggregate mixture • Observance of techniques used to spread and roll the seed, and to control moisture • Proper installation of nonslip strips on steps |
| 5. Polish the terrazzo. | <ul style="list-style-type: none"> • Flat, uniform surface • Observance of curing time • Observance of drying time prior to applying the sealant |
| 6. Repair terrazzo. | <ul style="list-style-type: none"> • Accurate identification of sections to be repaired • Observance of procedure for replacing the affected area |
| 7. Check the quality of the completed work. | <ul style="list-style-type: none"> • Accurate self-evaluation of work • Consideration of all current quality criteria • Necessary modifications made |
| 8. Clean the work area. | <ul style="list-style-type: none"> • Appropriate disposal of debris • Cleanup of waste • Meticulous storage of tools and equipment |

For the competency as a whole:

- Conformity with instructions
- Conformity with plans and specifications
- Observance of shop drawing
- Observance of work procedures and techniques
- Observance of lifting and handling rules
- Observance of quality standards
- Aesthetic finished product
- Observance of occupational health and safety rules and ergonomic principles
- Proper use of tools and equipment
- Clean, orderly work
- Observance of allotted time
- Efficient and respectful collaboration with work partner

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

1. Interpret the plan and specifications.

- Locate and analyze information on setting terrazzo found in a plan.

Types of terrazzo work: on a floor, baseboard or staircase

Importance of visualizing the installation plan: geometric form of drawing

- Locate and analyze information on setting terrazzo found in specifications.

Types of aggregates, matrix, tint, divider strips, etc.

2. Prepare the work to be done.

- Recognize the importance of protecting surrounding surfaces.

Effect of oils, oily substances and dust

3. Set terrazzo on a floor, baseboard and staircase using the conventional method.

- Use regular equipment for laying terrazzo.

0.6-m terrazzo roller
1.3-m terrazzo roller

- Distinguish the steps involved in laying terrazzo using the conventional method.

Sweeping, moistening of the setting surface, mixing and application of binder, mixing and application of aggregate mixture, levelling, seeding, rolling, sweeping, trowelling

- Recognize the difficulties inherent in laying terrazzo using the conventional method.

Work done on a fresh mortar bed
Moisture control and atmospheric conditions

- Install divider strips.

Metal divider strips, nonconducting plastic strips, metal U-shaped strips
Installation techniques: conventional method or thin-set method
Elements for marking out patterns
Techniques for cutting, levelling and aligning strips

- Prepare aggregate mixtures.

Recipes
Mixing technique

- Apply aggregate mixtures using the conventional method.

Procedure for moistening setting surface
Uniformity of application (one worker to cover one surface)
Techniques for spreading and rolling
Importance of homogeneous concentration of aggregate mixture for steps and risers

- Install nonslip strips on the steps.

4. Set terrazzo on a floor, baseboard and staircase using the thin-set method.

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|--|---|
| <ul style="list-style-type: none"> • Distinguish the steps involved in laying terrazzo using the thin-set method. | <p>Application of adhesive products, mixing and application of aggregate mixtures and binders, spreading of seed, rolling, trowelling</p> |
| <ul style="list-style-type: none"> • Apply aggregate mixtures using the thin-set method. | <p>Techniques for spreading and rolling</p> |

5. Polish the terrazzo.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Use standard equipment for polishing terrazzo. | <p>Floor squeegee, burnishing machine, abrasive buff, diamond polisher, dry polisher
Risks related to the presence of water and electricity
Personal safety equipment</p> |
| <ul style="list-style-type: none"> • Distinguish the steps involved in polishing terrazzo. | <p>Grinding, cleaning, puttying, washing, glazing, application of sealant</p> |
| <ul style="list-style-type: none"> • Recognize the importance of observing the curing time. | <p>Effects on pumicing</p> |

6. Repair terrazzo.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Identify the types and causes of damage to a terrazzo floor, baseboard or staircase. | <p>Cracks, holes, etc.</p> |
| <ul style="list-style-type: none"> • Determine the nature of the work to be done. | |
| <ul style="list-style-type: none"> • Prepare the surface to be repaired. | <p>Technique for demolishing a damaged covering and backing
Laying new covering
Protection of surrounding surface</p> |
| <ul style="list-style-type: none"> • Recognize the importance of maintaining the original finish. | <p>Matching and flushness of original and new covering</p> |

7. Check the quality of the completed work.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Recognize current quality criteria for terrazzo coverings. | <p>Flat, uniform surface; homogeneous colour; straight visible dividers</p> |
| <ul style="list-style-type: none"> • Suggest and make modifications, if necessary. | <p>Possible modifications at each step of the work process for setting terrazzo
Possible modifications of the finished product</p> |

Behavioural Objective

Statement of the Competency

To use job search techniques.

Achievement Context

- During a simulated job interview
- Referring to a personal profile
- Given sample letters of application
- Given real or plausible data related to tiling jobs
- Using a dictionary and grammar book

Elements of the Competency**Performance Criteria**

1. Write a résumé.

- Quality of format
- Inclusion of pertinent information
- Clear, concise style
- Observance of grammar and spelling rules

2. Write an application letter.

- Relevance of content with respect to job sought
- Observance of formatting standards for this type of letter
- Observance of grammar and spelling rules

3. Take part in a job interview.

- Observance of rules of presentation and conduct in an interview
- Relevance of answers and remarks

For the competency as a whole:

- Observance of document formatting standards
- Quality of oral and written communication

Suggestions for Competency-Related Knowledge, Skills, Attitudes and Perceptions

The following suggestions take into account the elements of the competency, the main components of these elements and the performance criteria related to the competency.

1. Write a résumé.

- Recognize the attitudes required for a creative job search. Personal profile
- List the various sources of job placement in the construction field. Use of a telephone directory and electronic sources of information
- Determine relevant information with respect to their occupational profile. Occupational profile: training and experience

- Show concern for the quality of written English and document format. Use of the dictionary
Formatting standards
- 2. Write an application letter.
 - Draw up a plan of the letter of application. Research on the company
Relevant information with respect to their occupational profile
 - Show concern for the quality of written English and document format. Use of the dictionary
Formatting standards
- 3. Take part in a job interview.
 - Prepare for a job interview. Research on the company
 - Show concern for the quality of spoken English.
 - Show concern for their appearance and conduct. Effect of appearance and conduct on the perception of the interviewer

