

PROGRAM OF STUDY

SECONDARY SCHOOL

1928

CARPENTRY

VOCATIONAL EDUCATION

Québec ☐☐

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PROGRAM OF STUDY

CARPENTRY

The Carpentry program leads to
the Secondary School Vocational Diploma
and prepares the student to
practise the trade of

CARPENTER

**SECONDARY SCHOOL
VOCATIONAL EDUCATION**

Gouvernement du Québec
Ministère de l'Éducation
Direction générale des programmes

FOREWORD

This document was translated by Neville Saulter, with the assistance of other members of the Education Development in the English Language translation team, ministère de l'Éducation.

Although the technical terminology used in this document was extensively researched, there may remain terms that are inaccurate or that do not reflect current usage. The Education Development in the English Language translation team would appreciate receiving feedback from users of this document. The translators may be contacted at:

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INTRODUCTION

The Carpentry program is based on the orientations for secondary school vocational education adopted by the government in December 1986. It was designed on the basis of a new framework for developing vocational education programs that calls for the active participation of experts from the workplace and the field of education. It was developed with various factors in mind: training needs, the job situation, purposes, goals, and strategies and means used to attain objectives.

The program is developed in terms of competencies, which are then expressed as objectives, each of which constitutes a teaching module. These competencies are the minimum requirements for a diploma, for both young and adult students. The program of study not only lists the required competencies, it also provides the basis for organizing courses, planning teaching strategies, designing instructional and evaluation materials, and so on. It is the key document to be used for all related developments.

The total 1350 hours allocated to the program is to be used not only for teaching but also for evaluation and remedial work. The 25 modules vary in length from 15 to 105 hours. Modules are of two types:

- a) those focussing on the specific competencies required to practise the trade (795 hours);
- b) those focussing on the more general, transferable occupational competencies (555 hours).

This document has four sections. The first three are of general interest and provide an overview of the training plan. They include a synoptic table of basic information about each module, a description of the program training goals and a list of the general objectives.

The fourth section is more specific and is designed primarily for those directly involved in implementing the program. It contains a description of the operational objectives of each module. Three appendices are provided to help the reader better understand and use the program. A fourth appendix lists the people who have contributed to the program.

In keeping with this broad approach, three accompanying documents will be provided: the Teaching Guide, the Evaluation Guide, and the Planning Guide.

1. SYNOPTIC TABLE

CARPENTRY

Number of modules : 25

Duration (in hours): 1350

Credits : 90

PROGRAM CODE: 1928

CODE	N°	TITLE OF MODULE	DURATION	CREDITS*
755011	1	THE TRADE AND THE TRAINING PROCESS	15	1
755004	2	CONSTRUCTION SITES, EQUIPMENT AND ORGANIZATIONS	60	4
755002	3	HEALTH AND SAFETY ON CONSTRUCTION SITES	30	2
755022	4	HAND TOOLS	30	2
755032	5	PLANS AND SPECIFICATIONS	30	2
755044	6	BUILDING MATERIALS	60	4
755053	7	BUILDING LAYOUT	45	3
755062	8	SCAFFOLDS AND OTHER TEMPORARY STRUCTURES	30	2
755074	9	FOOTINGS AND CONCRETE WALLS	60	4
755086	10	BEAMS, SLABS, COLUMNS AND STAIRS	90	6

755094	11	SKETCHES AND DRAWINGS	60	4
755103	12	APPLIED MATHEMATICS	45	3
755113	13	POWER TOOLS	45	3
755127	14	FASTENING METHODS AND DEVICES	105	7
755135	15	WOOD FLOORS AND WALLS	75	5
755145	16	ROOFS	75	5
755153	17	INSULATION	45	3

755165	18	EXTERIOR FINISHING	75	5
755176	19	INTERIOR FINISHING	90	6
755182	20	COMMUNICATION AND MANAGEMENT	30	2
755194	21	CABINETS AND ACCESSORIES	60	4
755206	22	STAIRS	90	6
755213	23	DEMOLITION AND RENOVATION	45	3
755222	24	SPECIAL STRUCTURES AND PROJECTS	30	2
755232	25	JOB SEARCH	30	2

* 15 hours = 1 credit

--- Modules are grouped by semester

This program leads to a Secondary School Vocational Diploma in Carpentry.

2. PROGRAM TRAINING GOALS

In this program of study, vocational education goals have been adapted to the distinctive nature of CARPENTRY. These goals are:

To develop effectiveness in the practice of a trade

To teach students to perform carpentry tasks and activities correctly, acceptably and at the level of competence needed to enter the job market.

To prepare students to perform satisfactorily on the job by fostering:

- the development of cognitive skills needed to make sound decisions with regard to construction materials and techniques
- a concern for good working relationships and effective communication with superiors, colleagues and clients
- the development of professional ethics
- a constant concern for health and safety when performing carpentry jobs in the workshop or on the work site
- the development of attentiveness to detail and precision when performing carpentry jobs

To ensure integration into the work force

To familiarize students with the rights and responsibilities of workers.

To familiarize students with the job market in general and the carpentry trade in particular.

To help students develop a sense of respect for clients' rights.

To foster the development of professional knowledge and attitudes

To foster independence, a sense of responsibility, a concern for excellence and a desire to succeed.

To encourage self-expression, creativity and initiative.

To help students understand the principles underlying basic carpentry techniques.

To teach students good work habits and to instill a sense of discipline.

To enhance students' ability to learn, make inquiries and gather information.

To ensure job mobility within the trade

To foster a positive attitude toward technological change and new situations.

To teach effective job search skills.

3. GENERAL OBJECTIVES

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

To develop in students the basic competencies required to perform carpentry tasks.

- To use and maintain hand tools
- To use and maintain power tools
- To read and understand plans and specifications
- To make sketches and drawings
- To solve problems in applied mathematics
- To describe building materials
- To use fastening methods and devices
- To erect scaffolds and temporary structures

To develop in students the competencies required to do concrete work.

- To lay out a building
- To construct foundations and concrete walls
- To erect forms for concrete beams, slabs, columns and stairs

To develop in students the competencies required to construct framework.

- To construct wood floors and walls
- To construct roofs

To develop in students the competencies required to do finishing work.

- To do exterior finishing
- To insulate buildings
- To do interior finishing
- To make and install cabinets and accessories
- To construct wooden stairs

To develop in students the competencies required to perform specialized tasks.

- To do demolition and renovation
- To become familiar with related aspects of the trade: e.g. driving of stakes, driving of piles, bowling alleys, welding

To develop in students the competencies required for a smooth transition into the work force.

- To determine their suitability for the training process
- To provide them with a general knowledge of the types of construction sites, the equipment used, and the organizations involved in construction
- To introduce them to health and safety in the workplace

To develop in students the competencies required to communicate effectively.

- To apply job search techniques

4. FIRST- AND SECOND-LEVEL OPERATIONAL OBJECTIVES

4.1 Definition

First-level operational objectives are the main, compulsory teaching/learning targets, and they are specifically evaluated for certification. **Second-level operational objectives** are intermediate teaching/learning targets deemed prerequisite for attaining of first-level objectives.

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.

Please refer to **Appendix B: HOW TO READ BEHAVIOURAL OBJECTIVES** and to **Appendix C: HOW TO READ SITUATIONAL OBJECTIVES**.

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

The organization of competencies to be developed is shown in Appendix A. Two types of **competencies** are listed: those directly related to the practice of a specific occupation, and others of a more general nature but **fundamental** to the performance of specific occupational tasks. Also outlined are the sequential steps of the **work process**.

The symbol  indicates a correlation between a step and a specific competency.

The symbol  indicates that the correlation is to be taught and evaluated as part of the competency.

The symbol  indicates a correlation between a fundamental and a specific competency.

The symbol  indicates that the correlation is to be taught and evaluated as part of the specific competency.

4.2 Description of the Objectives by Module

CARPENTRY

MODULE 01

CODE: 755011

TITLE: THE TRADE AND THE TRAINING PROCESS

DURATION: 15 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 develop the competencies needed to **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

Outline of student activities:

PHASE I: The Trade

- Learning about the job market in carpentry-- potential areas of work, types of companies, products, prospects for employment, pay, possibilities for advancement and transfer, hiring criteria -- through field trips, documents, interviews, and so on.
- Learning about the nature and requirements of the job - tasks, work climate, performance evaluation, workers' rights and responsibilities - through field trips, interviews, documents, and so on.

PARTICIPATION CRITERIA

The students must:

PHASE I

- Gather information about most of the topics to be covered.
- Express their views about the trade at a group meeting, relating them to the information gathered

CARPENTRY

MODULE 01

CODE: 755011

TITLE: THE TRADE AND THE TRAINING PROCESS

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

LEARNING CONTEXT

Outline of student activities:

PHASE I: The Trade

- Presenting the information gathered at a group meeting and discussing their views on the advantages, disadvantages and requirements of the trade.

PHASE II: The Training Process

- Discussing the skills, aptitudes, habits and knowledge necessary to practise the trade.
- Becoming familiar with the training plan: the program of study, the training process, evaluation methods, certification of studies.
- Discuss how the training program prepares them to practise the trade of carpentry.

PHASE III: Career Choice

- Writing a report in which they:
 - describe their tastes, aptitudes and interests with respect to the trade and the training process
 - assess their career choice by comparing the different facets and requirements of the trade with their own tastes, aptitudes and interests.

PARTICIPATION CRITERIA

The students must:

PHASE II

- Give their opinions on certain basic aspects of carpentry.
- Study the documents provided.
- Listen carefully to explanations.
- Express their views on the training program at a group meeting.

PHASE III:

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

CARPENTRY

MODULE 01

CODE: 755011

TITLE: THE TRADE AND THE TRAINING PROCESS

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

INSTRUCTIONAL GUIDELINES

The teacher will:

- Create a climate that fosters students' personal growth and prepares them to enter the trade.
- Encourage students to engage in discussion and express their opinions.
- Involve students in the learning activities.
- Help students arrive at a clear, objective view of the trade.
- Help students assess their career choice honestly and objectively.
- Organize visits to companies representative of the industries that employ carpenters.
- Ensure that the students have access to pertinent reference materials, such as information about the trade, training programs and guides.
- Arrange for students to meet with specialists from the trade.

CARPENTRY

MODULE 01

CODE: 755011

TITLE: THE TRADE AND THE TRAINING PROCESS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To list the interests that make them suited for the trade: enjoying working alone, doing precision work, and so forth.

02. To discuss the qualifications needed to enter the job market.

03. To describe the various carpentry tasks, taking into account their relative importance and the frequency with which they are performed in the major companies that employ carpenters.

04. To identify the cognitive and motor skills required to practise the trade.

05. To identify the general behaviours required to practise the trade.

06. To indicate the advantages and disadvantages of the trade.

Phase I: The Trade.

07. To state their personal tastes, aptitudes and interests with respect to carpentry as an occupation.

08. To describe the training involved in becoming a carpenter.

09. To gather information about the teaching methods used.

10. To obtain general information about the evaluation of educational achievements.

11. To distinguish between the diploma and the student card that is equivalent to an apprentice carpenter's card.

12. To explain the importance of receiving a thorough training designed to meet the needs of the job market.

Phase II: The Training Process.

13. To be receptive to information about the trade and the training it involves.

14. To be willing to share their opinions about the trade with fellow students.

Phase III: Career Choice.

CARPENTRY

MODULE 02

CODE: 755004

TITLE: CONSTRUCTION SITES, EQUIPMENT AND ORGANIZATIONS

DURATION: 60 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 gain a general knowledge of the types of construction sites, the equipment used, and the organizations involved in construction, in particular:

- the operations involved in setting up, organizing and equipping various types of construction sites.
- the roles and responsibilities of those involved in setting up a project.
- the materials, equipment and tools commonly used on construction sites.
- the main roles and responsibilities of employers' organizations and union associations.
- the laws and regulations governing labour relations in the construction industry.

LEARNING CONTEXT

Outline of student activities:

PHASE I: Information

- Becoming familiar with the objectives of the unit.

PHASE II: Learning

- Receiving information on the topic covered in the unit.
- Expressing opinions on the topic.
- Asking questions.

PHASE III: Reinforcement

- Reviewing the major concepts of the unit.
- Answering a series of questions individually.
- Correcting the answers in a group.

CARPENTRY

MODULE 02

CODE: 755004

TITLE: CONSTRUCTION SITES, EQUIPMENT AND ORGANIZATIONS

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

The students must:

- Participate in:
 - . 17 out of 23 units on the theme "Organization of a Construction Site."
 - . 6 out of 8 units on the theme "Construction Equipment."
 - . 7 out of 9 units on the theme "The Legal and Institutional Context."
- Pay attention in class.
- Stick to the topic during discussions.
- Behave appropriately.
- Ask pertinent questions and give appropriate answers.
- Do the exercises conscientiously.
- Correct the errors.

INSTRUCTIONAL GUIDELINES

The teacher will:

- Use a suitable room and proper materials
- Present the material in a dynamic manner
- Encourage the students to engage in group discussion
- Use charts and illustrations

CARPENTRY

MODULE 02

CODE: 755004

TITLE: CONSTRUCTION SITES, EQUIPMENT AND ORGANIZATIONS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To describe the characteristics and economic importance of the construction industry.
02. To identify the steps to be taken before setting up a construction site.
03. To describe the roles, responsibilities and relationships of those involved in setting up a construction site.
04. To identify the main legal restrictions to be considered before and during the setting up of a construction site.
05. To identify the types of work involved in road construction (e.g. construction of bridges, viaducts, tunnels, highways), the materials and equipment used, and the characteristics related to the organization of these types of construction sites.
06. To identify the steps involved in building aqueducts, sewers and pipelines, including the underground work, and the characteristics related to the organization of these types of construction sites.
07. To identify the types of work involved in building dams, power plants, transmission lines and transformer stations, and the characteristics related to the organization of these types of construction sites.
08. To identify the steps involved in installing distribution lines and communications networks, and the characteristics related to the organization of these types of construction sites.
09. To identify the types of buildings, their uses, basic structures, and main systems, as well as the equipment and materials used in their construction, including those related to production machinery.
10. To identify the principles applicable to the basic structure of a building, the types of structures (wood, concrete and steel) and the details of construction of the main parts (e.g. walls, floors, roof, stairs).
11. To identify the main types of roofs and the major features of roofing.
12. To identify the details of construction of electrical, mechanical (e.g. plumbing, heating, ventilation, refrigeration, air conditioning) and other systems and how they are integrated into the structure of a building.
13. To identify the elements related to insulating buildings.
14. To identify the main elements related to building partitions and ceilings.

CARPENTRY

MODULE 02

CODE: 755004

TITLE: CONSTRUCTION SITES, EQUIPMENT AND ORGANIZATIONS

SECOND-LEVEL OPERATIONAL OBJECTIVES

15. To identify the main types of exterior wall coverings, the methods of fastening them, and the various types of landscaping.
16. To identify the main types of interior finishing materials, mouldings and trim, and floor coverings.
17. To identify the hand tools and measuring and levelling instruments used in the construction industry, and their main uses.
18. To identify the portable electric, mechanical and pneumatic tools used in the construction industry, and their main uses.
19. To identify the motorized and pneumatic equipment commonly used in the construction industry.
20. To identify the main types of lifting and handling apparatus used for moving equipment and materials.
21. To identify the types of interior and exterior scaffolding used in the construction industry, and their main characteristics.
22. To become familiar with the Act respecting labour relations, vocational training and manpower management in the construction industry, and its scope.
23. To identify the laws and regulations respecting labour relations in the construction industry, and the Construction Decree.
24. To identify the employers' organizations and their roles and responsibilities.
25. To identify the representative union associations and their roles and responsibilities.
26. To identify the provisions related to vocational training and qualification and manpower management in the construction industry.
27. To identify the main provisions regarding supplemental fringe benefit plans in the construction industry.
28. To identify the main functions of the Commissaire de la construction, the Conseil d'arbitrage, and the Régie des entreprises de construction du Québec.
29. To identify the composition, structure and main functions of the Commission de la construction du Québec (CCQ).
30. To identify the powers of the CCQ and the provisions regarding violations of the Act respecting labour relations, vocational training and manpower management in the construction industry, or its regulations.

CARPENTRY

MODULE 03

CODE: 755002

TITLE: HEALTH AND SAFETY ON CONSTRUCTION SITES

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 **gain a general knowledge of health and safety on construction sites.**

SPECIFICATIONS

At the end of this module, the students will:

- Be familiar with the laws and regulations governing health and safety on construction sites.
- Be familiar with the roles and responsibilities of safety representatives and safety officers.
- Be aware of the hazards and safety measures related to performing certain tasks.
- Be aware of the hazards and safety measures related to the construction site itself.
- Be aware of the hazards and safety measures related to using certain products.
- Know what to do in case of an accident.

LEARNING CONTEXT

Outline of student activities:

PHASE I: Information

- Becoming familiar with the objectives of the unit.

PHASE II: Learning

- Receiving information on the topic covered in the unit.
- Forming and expressing an opinion on the topic.
- Asking questions.
- Listing the underlying principles of safe behaviour.
- Assessing their own observance of these principles.

CARPENTRY

MODULE 03

CODE: 755002

TITLE: HEALTH AND SAFETY ON CONSTRUCTION SITES

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

LEARNING CONTEXT

PHASE III: Reinforcement

- Reviewing the main concepts of the unit.
- Answering a series of questions.
- Correcting the answers and discussing them if necessary.

PARTICIPATION CRITERIA

The students must:

- Participate in at least 16 out of the 20 units, Unit 1 being compulsory.
- Pay attention in class.
- Stick to the topic during discussions.
- Behave appropriately.
- Ask pertinent questions and give appropriate answers.
- Do the exercises conscientiously.
- Correct the errors.

INSTRUCTIONAL GUIDELINES

The teacher will:

- Use a suitable room and proper materials.
- Present the material in a dynamic manner.
- Encourage the students to engage in group discussion.
- Make adequate use of teaching materials (e.g. tables, transparencies, films, videotapes, cards).

CARPENTRY

MODULE 03

CODE: 755002

TITLE: HEALTH AND SAFETY ON CONSTRUCTION SITES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To list the laws and regulations governing occupational health and safety in Québec.
02. To describe the rights and obligations of employers and workers.
03. To list the special provisions respecting construction sites.
04. To identify the causes and effects of industrial accidents and occupational diseases in the construction industry.
05. To identify the chemical, physical, biological, mechanical and psychosocial health hazards related to construction work.
06. To name some of the effects of health hazards on construction workers.
07. To identify the rights, obligations, roles and responsibilities of safety representatives and safety officers.
08. To identify the operations requiring the use of signs and signals and public safety measures.
09. To identify the nature and purpose of the different methods of signalling and the meanings of the signals as set forth in the Safety Code for the construction industry.
10. To identify when and how personal protective equipment must be used as set forth in the Safety Code.
11. To identify when and how collective protective equipment must be used as set forth in the Safety Code.
12. To identify the hazards and the safety measures related to housekeeping on construction sites.
13. To identify the hazards and the safety measures related to means of access and to work postures.
14. To identify the devices and safety measures for preventing falls as set forth in the Safety Code.
15. To identify the main tools used on construction sites, as well as possible injuries, safety measures and the effects of hazardous substances associated with the use of these tools.
16. To identify the types of scaffolding and the safety measures for erecting, installing, using and dismantling them as set forth in the Safety Code .
17. To identify the safety measures for operations requiring the use of heavy machinery as set forth in the Safety Code .
18. To identify the hazards and safety measures related to working near trenches and excavations.

CARPENTRY

MODULE 03

CODE: 755002

TITLE: HEALTH AND SAFETY ON CONSTRUCTION SITES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

19. To identify the hazards and safety measures related to working in trenches and excavations.
20. To identify the safety measures for working near power lines or on jobs requiring the use of electricity as set forth in the Safety Code.
21. To identify the basic precautions to be taken at the scene of an accident, and the roles of first-aiders and the different health centres and departments.

CARPENTRY

MODULE 04

TITLE: HAND TOOLS

CODE: 755022

DURATION: 30 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **use and maintain instruments, hand tools and portable power tools** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- For a project requiring the use of tools and equipment familiar to a carpenter
- Using the necessary instruments, tools and equipment
- In an appropriate workshop

GENERAL PERFORMANCE CRITERIA

- Mastery of the techniques for using tools
- Mastery of the techniques for using measuring and layout instruments
- Mastery of the techniques for using appropriate levelling tools
- Systematic preventive maintenance:
 - detection of the principal factors that cause wear, breakage and defects
 - lubrication
- Observance of safety rules

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use the following measuring instruments:
 - measuring tape
 - folding rule
 - surveyor's chain
 - rules
 - protractor
- Use the following layout instruments:
 - framing squares, combination squares and bevel squares
 - dividers
 - chalklines

SPECIFIC PERFORMANCE CRITERIA

- Right choice of instrument
- Accuracy of measurement
- Duplication of measurements
- Right choice of square
- Efficient use of instruments

CARPENTRY

MODULE 04

CODE: 755022

TITLE: HAND TOOLS

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use the right equipment for levelling:
 - spirit level
 - plumb bob
 - water level
 - surveyor's level
 - builder's transit
 - laser level
- Use hand tools for:
 - sawing
 - drilling
 - shaping
- Use portable power tools for:
 - sawing
 - drilling
- Use nailing techniques.

SPECIFIC PERFORMANCE CRITERIA

- Proper positioning:
 - stability of tripod
 - levelling procedures
 - correct focus
 - accurate reading of levelling rod
- Accuracy of measurements
- Accuracy of cutting
- Inspection of teeth
- Safe and efficient use
- Edges properly sharpened
- Right choice of cutting tool
- Correct adjustment
- Precision of cutting and squaring
- Safe use of tools
- Efficient use of hammer
- Right choice of nails
- Proper use of nail-set and accessories
- Correct positioning of members to be nailed
- Observance of safety rules

TITLE: HAND TOOLS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To distinguish the principal types of measuring tools used on construction sites.

02. To identify the squaring instruments used in construction.

03. To select various measuring and layout instruments according to their features.

Use the following measuring instruments: measuring tape, folding rule, surveyor's chain, rules, protractor.

Use the following layout instruments: framing squares, combination squares, bevel squares, dividers, chalklines, rules.

04. To identify the appropriate levelling tools.

05. To understand the methods for determining if a surface is level.

06. To understand the different methods when using lines for alignment.

Use the right equipment for levelling.

07. To identify hand tools for sawing.

08. To identify hand tools for shaping.

09. To identify hand tools for drilling (boring).

10. To find the grain of the wood.

11. To sharpen cutting instruments.

12. To identify portable power tools for sawing and drilling (boring).

Use hand tools for: sawing, drilling shaping.

13. To detect by eye, ear and smell the malfunctioning of equipment.

Use portable power tools for: sawing drilling.

14. To adopt safe work methods.

Use nailing techniques.

15. To describe nailing tools .

CARPENTRY

MODULE 05

CODE: 755032

TITLE: PLANS AND SPECIFICATIONS

DURATION: 30 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

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

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using existing plans
- Using building codes and standards

GENERAL PERFORMANCE CRITERIA

- Thorough understanding of data
- Compliance with standards and instructions
- Accuracy
- Sufficient verification of data
- Verification of compatibility of plans and specifications

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- | | |
|---|--|
| - Understand the terms and symbols generally used in construction. | - Accuracy of information |
| | - Correct use of symbols |
| - Read and understand the dimensions and notations on a technical drawing and on a blueprint. | - Accuracy of measurements |
| | - Clear understanding |
| | - Accurate use of dimensions |
| - Read and understand blueprints. | - Proper choice of views |
| | - Accuracy of data and information |
| - Read and understand building specifications. | - Accuracy of information |
| | - Agreement between plans and specifications |

CARPENTRY

MODULE 05

CODE: 755032

TITLE: PLANS AND SPECIFICATIONS

DURATION: 30 hours

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Relate the information from the various codes and reference documents to the plans and specifications.

SPECIFIC PERFORMANCE CRITERIA

- Accuracy of information
- Exactness of data
- Proper use of technical information

CARPENTRY

MODULE 05

CODE: 755032

TITLE: PLANS AND SPECIFICATIONS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|---|
| 01. To understand the different types of technical drawings. | 11. To identify the different types of building specifications. |
| 02. To identify the different views used in orthographic projections. | 12. To understand the types of information normally included in specifications. |
| 03. To identify the different terms used in technical drawing. | 13. To establish relations between specifications and drawings. |
| 04. To identify the different symbols used on blueprints. | Read and understand building specifications. |
| 05. To differentiate the symbols used on blueprints. | 14. To identify the different codes and reference documents. |
| Understand the terms and symbols generally used in construction. | 15. To understand the different codes and reference documents used in construction. |
| 06. To explain dimensioning procedures. | Relate the information from the various codes and reference documents to the plans and specifications. |
| 07. To explain the principle of scale drawings. | |
| Read and understand the dimensions and notations on a technical drawing and on a blueprint. | |
| 08. To distinguish the different types of drawings used in construction. | |
| 09. To read and understand the information on blueprints. | |
| 10. To visualize a construction from blueprints. | |
| Read and understand blueprints. | |

CARPENTRY

MODULE 06

CODE: 755044

TITLE: BUILDING MATERIALS

DURATION: 60 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

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

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- From among commonly used building materials
- Using blueprints and specifications
- Based on technical documents such as the National Building Code of Canada

GENERAL PERFORMANCE CRITERIA

- Basic knowledge of the properties of materials studied
- Use of correct terms
- Thorough understanding of information supplied by manufacturers
- Choice based on original data

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Recall the details of plans and specifications (see Plans and Specifications module)
- Describe the different types of sheet materials commonly used in construction.
- Describe the different related materials.
- Identify the different types of wood used in construction.

SPECIFIC PERFORMANCE CRITERIA

- Conformity of outline with plan
- Sizes, nailing details, area of use, installation procedures
- Framing materials, types of fasteners
- Sample of each material
- Correct selection

CARPENTRY

MODULE 06

CODE: 755044

TITLE: BUILDING MATERIALS

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Prepare a concrete mixture.

- Select, using plans and specifications, the materials necessary for a project.

SPECIFIC PERFORMANCE CRITERIA

- Conformity of mixture with original specifications
- Accurate estimate of quantity
- Desired consistency
- Mastery of mixing technique

CARPENTRY

MODULE 06

CODE: 755044

TITLE: BUILDING MATERIALS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|--|
| 01. To read and understand the symbols and notations on a blueprint and a specification sheet. (See Module 05: Plans and Specifications) | 08. To verify the proper measurement of aggregates. |
| 02. To describe, from blueprint data, the type of project to be implemented (See Module 05: Plans and Specifications) | 09. To understand the different types of concrete. |
| 03. To identify the different materials used in construction. | 10. To explain the role of cement in a concrete mixture. |
| Recall the details of plans and specifications. | 11. To explain the versatility of concrete. |
| Describe the different types of sheet materials commonly used in construction. | 12. To explain the role of additives in concrete. |
| Describe the different related materials. | 13. To explain the methods of curing concrete. |
| Describe the products used in construction. | 14. To explain the principle of reinforced concrete. |
| 04. To evaluate the strength of woods. | 15. To verify the consistency of concrete, using the slump test. |
| 05. To know the standards for the use of different materials. | 16. To calculate a concrete mixture according to the methods established by the P.C.A. (Portland Cement Association) and the A.C.I. (American Concrete Institute). |
| Identify the different types of wood used in construction. | 17. To detect by eye the irregularities or defects in a concrete mixture. |
| 06. To identify the different elements of masonry. | Prepare a concrete mixture. |
| 07. To identify the aggregates used to make concrete. | 18. To explain the importance of consistency in concrete mixtures. |

CARPENTRY

MODULE 06

CODE: 755044

TITLE: BUILDING MATERIALS

SECOND-LEVEL OPERATIONAL OBJECTIVES

19. To understand the importance of properly handling and placing concrete.
 20. To develop an awareness of the importance of using materials economically.
 21. To obtain information about materials, using plans and specifications. (See Module 05)
- Select, using plans and specifications, the materials necessary for a project.**
22. To explain the proper methods of transporting and storing materials.

CARPENTRY

MODULE 07

CODE: 755053

TITLE: BUILDING LAYOUT

DURATION: 45 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do the layout of a structure in order to erect it
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually, with the assistance of another student
- Based on instructions
- Using a layout plan
- Using the necessary tools, equipment and materials
- On a site approximating real conditions and with defined boundaries

GENERAL PERFORMANCE CRITERIA

- Safe and efficient use of tools and equipment
- Accurate use of blueprint data
- Consideration of the terrain
- Consideration of immediate environment
- Exactness of building location

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Make it a practice to check their work.
- Locate the corners of the building or structure.

SPECIFIC PERFORMANCE CRITERIA

- Use of different procedures for checking work
- Checking of squareness using different methods
- Location according to layout plan
- Correct procedures for determining a right angle
- Correct use of measuring tape
- Mastery of staking methods

CARPENTRY

MODULE 07

TITLE: BUILDING LAYOUT

CODE: 755053

DURATION: 45 hours

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Mark the excavation for the building.
- Make batter boards.
- Determine excavation levels.

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- Compatibility with depth of excavation and type of soil
- Careful choice of type of batter board
- Firm anchoring of stakes
- Correct location of batter boards
- Mastery of building technique
- Accurate location of building lines
- Uniformity of depth
- Correct use of builder's level
- Access facilities for cement mixer
- Consideration for municipal services

CARPENTRY

MODULE 07

CODE: 755053

TITLE: BUILDING LAYOUT

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To attach importance to precision work and to be aware of the importance of constantly checking their work.

Make it a practice to check their work.

02. To measure the distances between the boundaries of a building site.

03. To use the different types of levels and measuring instruments.

04. To use the 6"-8"-10" rule (Pythagorean theorem).

05. To establish a right angle.

06. To state the standards for building sites.

Locate the corners of the building or structure.

07. To describe the different types of soils.

08. To determine the required work areas around foundations.

Mark the excavation for the building.

09. To understand the various methods of relocating the building lines.

10. To explain various methods of installing stakes.

11. To understand different methods of making batter boards.

12. To use various means for checking the squareness of a building layout.

13. To understand the various methods of securing building lines.

Make batter boards.

14. To measure differences in elevation, using a level transit (see Module 04: Hand Tools).

15. To establish level points, using a transparent garden hose (see Module 04: Hand Tools).

16. To determine the concrete placement points for a ready-mix truck (access facilities).

17. To verify the location and positioning of municipal services (sewers) on town plans and on site.

Determine excavation levels.

CARPENTRY

MODULE 08

CODE: 755062

TITLE: SCAFFOLDS AND OTHER TEMPORARY STRUCTURES

DURATION: 30 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **select, assemble and use scaffolds and erect other temporary structures** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually, with the assistance of another student
- Using specific data
- Using the necessary tools, equipment and materials
- Scaffolds: minimum height of 3m
- Scaffolds: minimum length of 10m
- Using standard scaffolding members
- Other temporary structures: to scale or full size

GENERAL PERFORMANCE CRITERIA

Scaffolds:

- Careful selection of type of scaffolding
- Sturdiness of footing
- Structural strength of members
- Safe methods for moving scaffolds
- All necessary safety equipment
- In accordance with specified requirements

Other Temporary Structures:

- Selection of suitable materials for structure to be erected.
- Erection of structures in accordance with the National Building Code of Canada and the Safety Code for the construction industry.
- Ongoing safety awareness and continual adaptation of safety standards.
- Structural strength of members.
- Strength of fasteners and supporting members.
- Observance of safety rules

CARPENTRY

MODULE 08

CODE: 755062

TITLE: SCAFFOLDS AND OTHER TEMPORARY STRUCTURES

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Select the appropriate scaffold.
- Erect the supporting structures.
- Assemble and erect the components of a scaffold.
- Install safety equipment and accessories.
- Check the strength of the structure.
- Dismantle scaffolds.
- Apply safety rules.
- Determine the types of other temporary structures to be erected.
- Select wood materials to be used for erecting other temporary structures.
- Select the hardware items to be used for erecting other temporary structures.
- Install ladders and temporary stairs.

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- Correct choice
- Proper choice of materials
- Strength factor
- Economical use of materials
- Proper work procedure
- Proper alignment and levelling
- Ease of dismantling
- Observance of safety rules and measures
- Specific safety rules
- Observance of the Safety Code
- Strength of fasteners
- Access to safety equipment and accessories
- Sufficient checking and corrections
- Cleaning of components
- Proper storage of components
- Wearing of protective clothing
- Use of necessary safety equipment
- Consideration of all important factors
- Observance of Building and Safety Codes
- Consideration of all important factors
- Right choice of ladders and stairs
- Careful selection of materials
- Strength of fasteners

CARPENTRY

MODULE 08

CODE: 755062

TITLE: SCAFFOLDS AND OTHER TEMPORARY STRUCTURES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To understand the different types of scaffolds used in construction.

Check the strength of the structure.

02. To differentiate the main parts of a scaffold.

10. To list the precautions to take when dismantling a scaffold.

Select the appropriate scaffold.

Dismantle scaffolds.

03. To determine the type of scaffold suited to the situation.

11. To list the precautions to take when working on scaffolds.

04. To understand each component of the scaffold in order to provide the necessary stability and support.

Apply safety rules.

Erect the supporting structures.

12. To list the types of other temporary structures used in construction.

05. To describe the methods of assembling the various components of a scaffold.

13. To understand the types of guardrails used on construction sites.

06. To explain building standards for scaffolds.

14. To understand the signs used on construction sites.

07. To plan the operations involved in erecting scaffolds.

15. To understand the types of temporary stairs.

Assemble and erect the components of a scaffold.

16. To identify the temporary ramps, runways and platforms used on construction sites.

08. To understand the safety rules and standards that apply to working at a height.

17. To understand the necessary features or requirements of ladders built on site.

09. To apply the appropriate safety rules and standards.

18. To be knowledgeable about the safety rules for ladders.

Install safety equipment and accessories.

Determine the types of other temporary structures to be erected.

CARPENTRY

MODULE 08

CODE: 755062

TITLE: SCAFFOLDS AND OTHER TEMPORARY STRUCTURES

SECOND-LEVEL OPERATIONAL OBJECTIVES

Select the wood materials to be used for erecting other temporary structures.

19. To describe the fastening and securing methods used on temporary structures in relation to their function.

Select the hardware items to be used for erecting other temporary structures.

Install ladders and temporary stairs.

CARPENTRY

MODULE 09

CODE: 755074

TITLE: FOOTINGS AND CONCRETE WALLS

DURATION: 60 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
build footings, foundation walls and concrete walls
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using foundation plans
- Using the necessary tools, equipment and materials
- In a school workshop
- By building a typical part of a form

GENERAL PERFORMANCE CRITERIA

- Observance of safety measures
- Correct sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Strong, watertight structure in accordance with the plans, and easily stripped form
- Economical use of materials

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Plan the work.
- Determine the location of footings.

SPECIFIC PERFORMANCE CRITERIA

- Good organization of work
- Proper preparation of materials
- Chalklines properly tensioned
- Suitable check for squareness
- Mastery of technique for using plumb bob

CARPENTRY

MODULE 09

CODE: 755074

TITLE: FOOTINGS AND CONCRETE WALLS

DURATION: 60 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Erect footing forms.
- Install keyways and openings for ducts and create watertight joints.
- Snap chalklines for the foundation wall.
- Set formwork in place.
- Form the openings and position the anchor bolts and nailing supports.
- Determine the placement levels of the concrete.
- Place the concrete.
- Strip formwork.
- Install the drainage system.

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- Correct choice of forms
- Proper levelling
- Correct locations
- Correct method of making keyway
- Correct location of openings
- Accuracy of squaring
- Thorough checking
- Proper levelling, correct alignment
- Stability
- Accuracy of layout
- Sheathing adequately protected and forms braced
- Stability of anchor bolts
- Conformity with plans
- Proper techniques for measuring and marking levels
- Mastery of techniques for handling and placing concrete
- Adequate protection of concrete
- Proper timing of stripping
- Proper technique for removing the ends of snap ties
- Thorough cleaning of materials
- Proper preparation of bed
- Proper grading
- Proper connections
- Adequate layer of gravel

CARPENTRY

MODULE 09

CODE: 755074

TITLE: FOOTINGS AND CONCRETE WALLS

DURATION: 60 hours

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Make installations dampproof.
- Inspect the work.

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- Plugging of all snap tie holes and other holes
- Sufficient thickness of tar
- Careful inspection of the foundation
- Sufficient motivation to correct errors

CARPENTRY

MODULE 09

TITLE: FOOTINGS AND CONCRETE WALLS

CODE: 755074

DURATION: 60 hours

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To state the operations required for erecting concrete forms and placing concrete.

Plan their work.

02. To identify the different types of footings.

Determine the location of footings.

03. To understand the different methods of building footing forms.

04. To determine the soil conditions.

Erect footing forms.

05. To understand the different types of joints used to create watertightness in formboards.

Install keyways and openings for ducts and create watertight joints.

Snap chalklines for the foundation wall.

06. To be knowledgeable about the different types of forms for concrete walls.

07. To understand the different components of a concrete wall form.

08. To understand the different types of form ties used with concrete walls and the method of attaching each.

09. To detect defects in the materials that can affect the strength of the overall structure.

Set formwork in place.

10. To explain the methods of making openings in concrete forms.

11. To identify the different types of anchor bolts and nailing supports used in a concrete structure and their method of installation.

12. To identify the areas requiring bracing.

Form the openings and position the anchor bolts and nailing supports.

13. To establish levels at appropriate positions (see Module 04: Hand Tools).

Determine the placement levels of the concrete.

14. To describe the different methods of placing concrete.

15. To explain the principle of lateral pressure on formwork during the placement of the concrete.

CARPENTRY

MODULE 09

CODE: 755074

TITLE: FOOTINGS AND CONCRETE WALLS

DURATION: 60 hours

SECOND-LEVEL OPERATIONAL OBJECTIVES

16. To explain the method of concrete placement around openings.

Place the concrete.

17. To understand the different types of drainpipes and their methods of installation.

Install the drainage system.

18. To explain the reasons for dampproofing foundation walls.

19. To describe the methods of applying dampproofing membranes to foundation walls.

Make installations dampproof.

20. To adopt safe work methods.

21. To be economical in the use of time and materials.

22. To handle materials safely.

Observe the safety rules required by the nature of the work.

23. To differentiate between the work process and the finished product.

24. To know the expected performance criteria.

Inspect the work.

CARPENTRY

MODULE 10

CODE: 755086

TITLE: BEAMS, SLABS, COLUMNS AND STAIRS

DURATION: 90 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **erect forms for concrete beams, slabs, columns and stairs** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually, with the assistance of another student
- Using structural plans
- Using the necessary tools, equipment and materials
- In a school workshop
- Without placement of concrete

GENERAL PERFORMANCE CRITERIA

- Proper planning of work
- Observance of safety measures
- Correct sequence of operations
- Satisfactory performance time
- Safe and efficient use of tools and equipment
- Strong, dampproof, easy-to-remove forms in conformity with plans

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Plan the work.
- Install the components.

SPECIFIC PERFORMANCE CRITERIA

- Good organization of work
- Proper preparation of materials
- Proper preparation of site
- Proper preparation of bearing surface
- Adjustment of footings

CARPENTRY

MODULE 10

CODE: 755086

TITLE: BEAMS, SLABS, COLUMNS AND STAIRS

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Install the girders.
- Build forms for columns.
- Erect column forms.
- Set the forms for beams and slabs in place.
- Construct the forms for a concrete stairway.
- Apply and observe safety measures.

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- Correct placing
- Correct spacing
- Careful selection of materials
- Right location of openings for cleaning and inspection
- Proper bracing: correct choice of method (metal band, sash clamp or frame-wall)
- Mastery of alignment technique
- Strength of installation
- Correct selection of types of forms
- Correct placing of parts
- Layout of stringers: dimensions in accordance with blueprint data
- Bevelling of riser boards
- Strength of braces
- Strengthening of forms
- Rise of stairs
- Constant concern for safety
- Application of safety measures in the workplace

CARPENTRY

MODULE 10

CODE: 755086

TITLE: BEAMS, SLABS, COLUMNS AND STAIRS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To describe the different types of concrete beams.

02. To describe the different types of concrete slabs.

03. To describe the different types of columns that support slabs and beams.

04. To describe the different types of concrete stairs.

05. To list the operations required for building forms for concrete beams, slabs, columns and stairs.

Plan the work.

06. To identify the different components used in building forms for slabs and beams.

Install the components.

07. To describe the different types of panels and girders.

08. To know the procedures for installing forms that require bracing.

Install the girders.

09. To understand the reasons for locating braces according to the type of structure.

10. To identify the areas that require bracing.

11. To identify the areas in a form that will bear the most lateral pressure during the placement of concrete.

12. To detect defects in girders, studs and panels that can affect the strength of the overall structure.

Build forms for columns.

13. To identify the different ways of bracing column forms.

Erect column forms.

14. To identify the methods of building special forms to meet specific requirements of concrete formwork.

Set the forms for beams and slabs in place.

15. To choose the methods of building forms for concrete stairs.

16. To specify the unit rise for a concrete stairway.

Construct the forms for a concrete stairway.

17. To adopt safe work methods.

18. To use time and materials economically.

Apply and observe safety measures.

CARPENTRY

MODULE 11

CODE: 755094

TITLE: SKETCHES AND DRAWINGS

DURATION: 60 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **make sketches and technical drawings of practical applications in construction** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using appropriate instruments and equipment
- On drawing paper
- In room equipped with drawing tables

GENERAL PERFORMANCE CRITERIA

- Mastery of the basics of technical drawing
- Clearness of drawings
- Precision of lines

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Draw various geometric figures (e.g. square, rectangle, circle, triangle, hexagon, octagon, ellipse).
- Draw freehand the orthographic projections of a simple technical object.
- Draw cross sections of a technical object.
- Indicate the dimensions on a technical drawing.

SPECIFIC PERFORMANCE CRITERIA

- Precision of drawings
- Exactness of forms and dimensions
- Observance of proportions
- Accuracy of relations between views
- Conformity to the alphabet of lines
- Accuracy of drawings
- Accuracy of drawing
- Correct crosshatching
- Clearness of drawing
- Compliance with current standards
- Correct location of lines

CARPENTRY

MODULE 11

CODE: 755094

TITLE: SKETCHES AND DRAWINGS

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Produce auxiliary drawings applicable to carpentry.

SPECIFIC PERFORMANCE CRITERIA

- Method congruent with type of auxiliary drawing
- Accuracy of drawings

CARPENTRY

MODULE 11

CODE: 755094

TITLE: SKETCHES AND DRAWINGS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To distinguish the different methods of representing technical components (see Module 05, Plans and Specifications).

02. To describe the different geometric figures used in construction.

03. To identify different methods of drawing geometric figures according to dimensions.

Draw various geometric figures (e.g. square, rectangle, circle, triangle, hexagon, octagon, ellipse).

04. To explain the difference between the American and European systems of projection.

05. To differentiate the views used in orthographic projections.

06. To match the different faces of an object with orthographic projections.

07. To know the different rules of technical drawing.

08. To develop a sense of proportion.

09. To draw freehand various types of lines at different angles.

10. To draw orthographic projections of simple objects using drawing instruments.

Draw freehand the orthographic projections of a simple technical object.

11. To explain the principle of cross-sections and various sectional drawings.

12. To identify the various types of crosshatching appropriate to different materials.

Draw cross-sections of a technical object.

13. To explain the methods of dimensioning orthographic drawings.

14. To understand the types of notations used on technical drawings and building plans.

Indicate the dimensions on a technical drawing.

15. To understand the roles and purposes of auxiliary drawings.

16. To explain the principle of auxiliary drawings.

17. To make auxiliary drawings of circular objects.

18. To make auxiliary drawings of inclined-surface objects.

19. To make auxiliary drawings of irregular objects.

Make auxiliary drawings applicable to carpentry.

CARPENTRY

MODULE 12

CODE: 755103

TITLE: APPLIED MATHEMATICS

DURATION: 45 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must solve practical problems requiring the use of units of measurement, mathematical operations or geometry in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using a house plan
- Using geometric figures representing:
 - floors of irregular shape
 - walls with openings
- Using problems based on real situations
- Using a predetermined loss percentage

GENERAL PERFORMANCE CRITERIA

- Right choice of operations
- Accuracy of calculations
- Logical process

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- State the expected result.
- Select the operations necessary to solve practical problems.

SPECIFIC PERFORMANCE CRITERIA

- Understanding of the problems to be solved
- Correct choice of operations

CARPENTRY

MODULE 12

CODE: 755103

TITLE: APPLIED MATHEMATICS

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

SPECIFIC PERFORMANCE CRITERIA (cont'd)

- | | |
|---|--|
| <ul style="list-style-type: none">- Perform the mathematical operations chosen to solve problems that require:<ul style="list-style-type: none">• checking squareness based on the Pythagorean triangle• estimating quantities of materials• calculations for single stairways• calculating the heat resistance of certain materials• calculating the volume of concrete• calculating the volume of soil to be moved.
- Develop accuracy in all calculations. | <ul style="list-style-type: none">- Accuracy of calculations- Customary verifications- Logic of reasoning

- Careful attention |
|---|--|

CARPENTRY

MODULE 12

CODE: 755103

TITLE: APPLIED MATHEMATICS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To understand a problem.
02. To master the four basic operations and to know their fundamental properties.
03. To master calculations using percentages.
04. To distinguish the principal units of measurement used on a construction site (international and imperial systems).

State the expected result.
05. To describe the problem-solving process.

Select the operations necessary to solve practical problems.
06. To find square roots.
07. To use the metric and imperial systems of weights and measures.
08. To use formulas for solving problems that they may encounter in their career.
09. To determine the angles and sides of a given triangle.
10. To calculate the perimeter and the area of common geometric figures.
11. To calculate lengths and elevations.
12. To calculate the volume of some of the most commonly used solids.
13. To calculate concrete volume based on two known methods (P.C.A. and A.C.I.).

Perform the mathematical operations chosen to solve problems that require:
 - checking squareness based on the Pythagorean triangle
 - estimating quantities of materials
 - calculations for single stairways
 - calculating the heat resistance of certain materials
 - calculating the volume of concrete
 - calculating the volume of soil to be moved.
14. To identify the practical applications of applied mathematics in carpentry.

Develop accuracy in all calculations.

CARPENTRY

MODULE 13

TITLE: POWER TOOLS

CODE: 755113

DURATION: 45 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must **use and maintain machine tools and equipment** in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- On a project requiring the use of machine tools
- Using the necessary machine tools, equipment and materials
- In an appropriate workshop

GENERAL PERFORMANCE CRITERIA

- Mastery of the use of machine tools
- Systematic preventive maintenance
 - detection of the principal factors that cause wear, breakdown and technical defects
 - lubrication
- Observance of safety rules

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use a radial arm saw and a power mitre saw.
- Use a circular saw.
- Use a jointer and a thickness planer.

SPECIFIC PERFORMANCE CRITERIA

- Right choice of blade
- Correct adjustment of saw and its accessories
- Correct positioning of material to be sawn
- Observance of safety rules
- Right choice of blade
- Proper adjustment
- Safe and efficient sawing techniques
- Proper adjustment of machine
- Mastery of surfacing and planing techniques

CARPENTRY

MODULE 13

CODE: 755113

TITLE: POWER TOOLS

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use a band saw.
- Use a drill press.
- Use a portable router.
- Use sanding machines.
- Do preventive maintenance.

SPECIFIC PERFORMANCE CRITERIA

- Right choice of blade
- Proper adjustment
- Right choice of bit
- Correct procedure for sharpening bits
- Efficient drilling technique
- Right choice of bit
- Proper adjustment
- Correct routing techniques
- Right choice of abrasive
- Right choice of sanding machine
- Right choice of lubricant
- Thorough understanding of maintenance manual instructions

CARPENTRY

MODULE 13

CODE: 755113

TITLE: POWER TOOLS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To choose lubricants according to intended use and manufacturers' instructions.

02. To explain the operating principle of a radial arm saw and a power mitre saw.

03. To judge by eye and touch the sharpness of a cutting tool.

Use a radial arm saw and a power mitre saw.

04. To lubricate equipment.

05. To identify hazardous situations and appropriate safety measures.

06. To explain the operating principles of a circular saw.

Use a circular saw.

07. To explain the operating principles of a jointer and a thickness planer.

Use a jointer and a thickness planer.

08. To explain the operating principle of a bandsaw.

Use a band saw.

09. To explain the operating principle of a drill press.

Use a drill press.

10. To explain the operating principle of a portable router.

Use a portable router.

11. To explain the operating principles of sanding machines.

Use sanding machines.

12. To identify the maintenance points on the equipment used.

Do preventive maintenance.

13. To adopt safe work methods.

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

DURATION: 105

hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must attach various parts, make pre-assemblies and final assembly and be able to use basic welding techniques in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on actual building plans and specifications
- Based on the teacher's instructions
- Using the necessary tools, equipment and materials
- Using relevant technical reference material
- In an appropriate setting
- On various types of surfaces

GENERAL PERFORMANCE CRITERIA

- Appropriate choice of fastening and joining methods
- Mastery of anchoring and joining techniques
- Safe and efficient use of tools and equipment
- Strength of joints
- Use of appropriate terminology
- Observance of safety rules

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Choose the correct fastener for the task to be performed.
- Determine the position of the anchor points by referring to the plans and specifications.
- Install anchoring devices with a stud driver.

SPECIFIC PERFORMANCE CRITERIA

- Right choice
- Suitability of anchoring points to plans and specifications
- Correct amount of charge

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Install anchoring devices on different types of surfaces.
- Choose a joining method.
- Make joints
 - mortise-and-tenon
 - dowel
 - tongue-and-groove
 - half lap
- Reinforce joints.
- Choose a welding method.
- Weld parts with an oxyacetylene welding torch.
- Cut ferrous metals with a cutting torch.
- Arc weld metal parts.

SPECIFIC PERFORMANCE CRITERIA

- Right choice
- Effective technique
- Strength of joints
- Right choice based on certain important factors
- Right choice of equipment
- Proper preparation of work
- Right direction of flame
- Observance of established procedure
- Frequent inspections and corrections
- Enforcement of appropriate safety rules
- Cutting precision
- Proper use of nozzles
- Correct flame adjustment
- Observance of health and safety rules applicable to oxyacetylene cutting
- Thorough cleaning of parts to be welded
- Wearing of protective clothing and accessories
- Compliance with procedures
- Testing of the weld for quality

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use welding equipment correctly.
- Adopt safe work habits.

SPECIFIC PERFORMANCE CRITERIA

- Adjusting of the regulators
- Proper cleaning of the nozzles

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To read and understand plans and specifications (see Module 05: Plans and Specifications).

02. To identify the anchoring methods used in construction.

03. To identify the tools used for securing anchors.

Choose the correct fastener for the task to be performed.

04. To describe screws, bolts and nuts in terms of their dimensions.

Determine the position of the anchor points by referring to the plans and specifications.

05. To understand the types of projectiles and cartridges used in nail guns according to their nature and use.

06. To explain the safety rules for using stud drivers.

Install anchoring devices with a stud driver.

07. To determine the condition of the frames or structures used as anchoring bases.

Install anchoring devices on different types of surfaces.

08. To understand different common methods of joining.

Choose a joining method.

09. To use hand tools, clamps and jigs for making pre-assemblies and joints.

10. To adjust jigs.

11. To use rules.

12. To align component parts.

13. To identify different types of glue.

14. To attach parts using glue, dowels, nails or screws.

15. To check dimensions.

16. To maintain and to clean tools and clamps.

Make joints:

- mortise-and-tenon
- dowel
- tongue-and-groove
- half lap

17. To identify the different types of joining devices used in construction.

Reinforce joints.

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|---|---|
| 18. To understand the various methods of welding ferrous and non-ferrous metals by stating their respective uses. | 28. To identify pressure regulators according to their features. |
| 19. To understand the materials that can be damaged by excessive heat and welding splatter. | 29. To prepare a welding torch for use. |
| Choose a welding method. | 30. To ignite an oxyacetylene welding torch. |
| 20. To list the safety rules for welding. | 31. To properly regulate a welding torch. |
| 21. To understand the means of reducing the effects of expansion and contraction on a metal according to its use. | Weld parts with an oxyacetylene welding torch. |
| 22. To list the methods of truing welded members according to their use. | 32. To identify cutting torches according to their use. |
| 23. To differentiate the types of joints according to their position. | 33. To differentiate the nozzles of a cutting torch according to their use. |
| 24. To understand the components of an oxyacetylene welding machine according to their makeup and function. | 34. To connect a cutting torch to its hoses following the correct procedures. |
| 25. To differentiate the types of oxyacetylene welding. | 35. To differentiate the methods of scarfing the cutting. |
| 26. To identify welding torches according to their use. | 36. To adjust the equipment according to the task to be performed. |
| 27. To differentiate the types of nozzles used on oxyacetylene welding torches and their features. | 37. To explain special health and safety rules. |
| | Cut ferrous metals with a cutting torch. |
| | 38. To identify, according to their use, the equipment and tools used in arc welding. |

CARPENTRY

MODULE 14

CODE: 755127

TITLE: FASTENING METHODS AND DEVICES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- 39. To list the types of electrodes used in arc welding and to explain the use of each.
- 40. To list the advantages and disadvantages of pre-heating.

Arc weld metal parts.

Use welding equipment correctly.

- 41. To identify hazardous situations and safety measures pertaining to oxyacetylene cutting and welding.

Adopt safe work habits.

CARPENTRY

MODULE 15

TITLE: WOOD FLOORS AND WALLS

CODE: 755135

DURATION: 75 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
construct floors, exterior walls and partitions
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually, with the assistance of another student
- Using structural plans
- Using the appropriate tools, equipment and materials
- In a work shop or on a construction site
- By building part of a floor or wall

GENERAL PERFORMANCE CRITERIA

- Efficient planning and scheduling of work
- Observance of safety measures
- Correct sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Conformity with plans: e.g. placement of members, openings
- Conformity with building standards
- Structural strength

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Plan and schedule work.

SPECIFIC PERFORMANCE CRITERIA

- Scheduling of work
- Proper preparation of materials
- Neat and functional work area
- Clear understanding of plans and specifications
- Proper installation of columns
- Suitable method for putting girder into place

CARPENTRY

MODULE 15

CODE: 755135

TITLE: WOOD FLOORS AND WALLS

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Install the beam or load-bearing partition.
- Put into place and secure the joists.
- Cut and install the diagonal braces.
- Construct the sub-floor.
- Erect exterior walls.
- Construct partitions.
- Apply and observe safety measures.

SPECIFIC PERFORMANCE CRITERIA

- Supporting wall properly laid out
- Mastery of wall erecting techniques
- Joists of the required size
- Spacing in conformity with plans
- Correct framing of floor openings
- Mastery of layout techniques for diagonal braces
- Correct installation
- Proper positioning and securing
- Careful attention to finishing around openings
- Correct location of studs
- Proper framing for door and window openings
- Proper nailing techniques
- Lifting of walls into place
- Accuracy of squaring and alignment
- Proper installation of wall sheathing
- Correct location of studs
- Proper techniques for framing openings
- Proper nailing techniques
- Lifting of walls into place
- Accuracy of squaring and alignment
- Correct method of measuring and installing the top plates
- Constant concern for safety
- Safe work methods: e.g. wearing of protective clothing

CARPENTRY

MODULE 15

CODE: 755135

TITLE: WOOD FLOORS AND WALLS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|--|
| 01. To identify the support-framing (load-bearing) members of floors. | 12. To explain the principles of constructing floor and wall openings. |
| 02. To identify the parts of a floor. | 13. To detect by eye, building irregularities and defects. |
| 03. to identify the parts of load-bearing and non-load-bearing walls. | 14. To lay out the locations of floor joists and floor openings. |
| 04. To understand the types of exterior wall framing. | Cut and install diagonal braces. |
| 05. To explain various methods of erecting different frames. | Construct the sub-floor. |
| 06. To calculate the size of openings in walls and floors. | 15. To understand the nailing requirements and installation methods for board sheathing. |
| Plan and schedule work. | 16. To describe the techniques for assembling and joining various framing members. |
| 07. To identify the different types of beams and posts used in wood frame construction. | 17. To calculate the lengths of wall studs. |
| 08. To determine the size of the members in relation to the loads to be borne. | 18. To use time and materials economically. |
| 09. To detect by eye and touch the material defects that can affect the strength of the structure. | 19. To understand the methods of bracing a frame. |
| 10. To handle the materials safely. | Erect exterior walls. |
| 11. To understand the different techniques for assembling framing members. | Construct partitions. |
| Install the beam or the load-bearing partition. | 20. To adopt safe work methods. |
| | 21. To learn to work in a team. |
| | 22. To check the work sufficiently. |
| | Apply and observe safety measures. |

CARPENTRY

MODULE 16
TITLE: ROOFS

CODE: 755145
DURATION: 75 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE **BEHAVIOURAL OBJECTIVE**

EXPECTED BEHAVIOUR

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

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using framing plans
- Using the necessary tools, equipment and materials
- Constructing a scale or full-size model of part of a four-slope roof
- Applying a specific roof covering
- With or without scaffolding

GENERAL PERFORMANCE CRITERIA

- Proper planning of work
- Observance of safety measures
- Right sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Conformity with plans
- Conformity with building standards

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Check the condition of the framework
 - squaring, levelling, alignment
- Estimate the quantity of roofing materials required.

SPECIFIC PERFORMANCE CRITERIA

- Proper checking of squaring, levelling and alignment
- Accuracy of estimates
- Correct dimensions of members
- Accuracy of plan

CARPENTRY

MODULE 16
TITLE: ROOFS

CODE: 755145

FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Construct trusses to dimensions shown on building plans.
- Cut and assemble the components.
- Install the trusses or rafters according to the type of roof.
- Apply roof sheathing.
- Apply the flashing and the roof covering (asphalt or wood shingles, sheet metal).
- Observe safety measures.

SPECIFIC PERFORMANCE CRITERIA

- Observance of dimensions and construction standards
- Right choice of gussets: e.g. wood, metal, dimensions, quality
- Proper installation of gussets
- Observance of nailing procedures
- Proper spacing of members
- Accurate alignment of members
- Proper securing techniques
- Right choice of material
- Installation of starter strip according to the covering and finishings
- In accordance with plans and construction standards
- Correct method of application
- Waterproofing around pipes
- Constant concern for safety
- Safe work methods: wearing of protective clothing

CARPENTRY

MODULE 16
TITLE: ROOFS

CODE: 755145

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|---|
| 01. To identify the different types of roofing. | Install the trusses or rafters according to the type of roof. |
| 02. To read and understand a plan (see Module 05: Plans and Specifications). | 09. To describe the types of roofing and their methods of application. |
| Check the condition of the framework
• squaring, levelling, alignment | Apply roof sheathing. |
| 03. To identify the components of a roof and the terms describing them. | 10. To describe the different types of roofing materials and their methods of application. |
| 04. To understand the different standards applicable to roof construction. | 11. To explain the techniques for waterproofing around pipes. |
| Estimate the quantity of roofing materials required (see Module 12: Applied Mathematics). | 12. To select scaffolding according to the type of roofing materials and pitch of the roof. |
| 05. To identify the different components that make up a roof or truss frame. | 13. To handle the materials safely. |
| 06. To use the framing square for laying out the components of a roof frame. | Apply the flashing and the roof covering (asphalt or wood shingles, sheet metal). |
| Construct trusses to dimensions shown on building plans. | 14. To adopt safe work methods. |
| 07. To detect by eye and touch the flaws in materials that could affect the quality of work. | Observe safety measures. |
| Cut and assemble the components. | |
| 08. To detect by eye construction irregularities and faults. | |

CARPENTRY

MODULE 17

CODE: 755153

TITLE: INSULATION

DURATION: 45 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
insulate a building
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using construction drawings
- Using the appropriate tools, equipment and materials
- In a work shop or on a construction site

GENERAL PERFORMANCE CRITERIA

- Proper planning and organization of work
- Observance of safety measures
- Logical sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Conformity with plans
- Quality of work:
 - Specified amount of insulation
 - Proper installation techniques

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Select the types of insulating materials according to needs or conditions.
- Install the insulating material in the walls and ceilings.
- Insulate and caulk openings.

SPECIFIC PERFORMANCE CRITERIA

- Right choice
- Right choice in the combination of materials
- Proper method of installation
- In accordance with installation instructions
- Appropriate choice of materials and products
- Proper method of installation
- Moisture control

CARPENTRY

MODULE 17

CODE: 755153

TITLE: INSULATION

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Install the other materials completing the insulation (insulating board, polystyrene, aluminium foil).
- Install the vapour barrier.
- Install the furring and the nailing supports.
- Secure elements sufficiently.
- Inspect work.

SPECIFIC PERFORMANCE CRITERIA

- Cutting precision
- Securing in accordance with the prescribed installation method
- Correct installation method
- Proper sealing of joints
- Correct locations
- Proper covering of columns, concrete walls and piping
- Thorough checking
- Compliance with quality criteria and standards
- Required corrections made
- Special attention to areas around openings

CARPENTRY

MODULE 17

CODE: 755153

TITLE: INSULATION

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To read and understand plans.

02. To identify the types of insulating materials.

03. To explain the thermal resistance principle of materials.

04. To understand insulation standards in relation to heating systems and regions.

05. To calculate the thermal resistance of compound elements (see Module 12: Applied Mathematics).

Select the types of insulating materials according to needs or conditions.

06. To explain the methods of installing different insulating materials.

07. To correct or to change the defective members of a frame structure.

Install the insulating material in the walls and ceilings.

08. To describe the products and materials used for caulking and insulating around openings (see Module 06: Building Materials).

Insulate and caulk openings.

Install the other materials completing the insulation (insulating board, polystyrene, aluminium foil).

09. To describe the types of vapour barriers.

Install the vapour barrier.

10. To determine the position of the necessary nailing supports.

11. To install furring strips on masonry or concrete walls.

12. To dress concrete columns.

Install the furring and the nailing supports.

Secure elements sufficiently.

13. To adopt safe work methods.

14. To be concerned about using time and materials economically.

15. To distinguish the work process and the finished product.

Inspect work.

CARPENTRY

MODULE 18

TITLE: EXTERIOR FINISHING

CODE: 755165

DURATION: 75 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do exterior finishing on residential structures and buildings
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using construction drawings
- Using the appropriate tools, equipment and materials
- In a work shop or on a building site

GENERAL PERFORMANCE CRITERIA

- Efficient planning and scheduling of work
- Observance of safety measures
- Correct sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Conformity with plans
- Precision work
- Quality of finished product (attractiveness, conformity with specifications)

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Check the condition of the frame
 - squaring, levelling, alignment
- Install the door and window frames.

SPECIFIC PERFORMANCE CRITERIA

- Proper checking of squaring, levelling and alignment
- Uniformity of heights
- Accuracy of squaring, levelling
- Proper securing

CARPENTRY

MODULE 18

CODE: 755165

TITLE: EXTERIOR FINISHING

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Check or set the building paper, flashing and furring strips.
- Install the necessary scaffolding (see Module 08: **Scaffolds and Other Temporary Structures**).
- Install strapping and/or mouldings around openings and intersections.
- Install the following types of sidings: wood, metal and vinyl.
- Caulk around openings and intersections.
- Finish roof overhang and eaves.
- Inspect work.

SPECIFIC PERFORMANCE CRITERIA

- Dampproofing around openings and at junction with foundations
- Proper securing methods
- Necessary sheathing
- Observance of safety measures
- Correct choice of type of scaffold
- Cutting precision
- Mastery of installation techniques
- Proper securing methods
- Mastery of cutting techniques
- Mastery of installation techniques
- Proper securing methods
- Compliance with design
- Correct choice of product
- Mastery of installation techniques
- Moisture control (vapour barriers)
- Choice of material in conformity with plans
- Mastery of cutting and securing techniques
- Compliance with design
- Thorough inspection
- Observance of National Building Code of Canada standards
- Motivation to make necessary corrections
- Special attention to areas around openings

CARPENTRY

MODULE 18

CODE: 755165

TITLE: EXTERIOR FINISHING

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|--|
| 01. To identify and to select the products for sheathing exterior walls. | 08. To identify the methods of installing and securing different types of sidings (see Module 14: Fastening Methods and Devices) |
| 02. To identify the types of exterior finishing.

Check the condition of the frame
• squaring, levelling, alignment | 09. To detect by eye the colour shades of finishing materials. |
| 03. To describe the different types of door and window frames and their method of installation.

Install the door and window frames. | 10. To develop a sense of, and taste for, good design. |
| 04. To explain the preliminary operations for different types of exterior finishing.

Check or set the building paper, flashing, and furring strips. | 11. To use time and materials economically.

Install the following types of sidings
• wood, metal, vinyl |
| 05. To identify and to install the types of scaffolds necessary for applying exterior finishes (see Module 8: Scaffolds and Other Temporary Structures).

Install the necessary scaffolding (see Module 08: Scaffolds and Other Temporary Structures). | 12. To explain the principles of dampproofing around openings and intersections.

Caulk around openings and intersections. |
| 06. To install different types of accessories and mouldings for applying finishing products.

Install strapping and/or mouldings around openings and intersections. | 13. To explain the importance of roof ventilation. |
| 07. To explain the principle of joint covering versus the order of applying materials. | 14. To understand different methods of ventilating roofs. |
| | 15. To fit different types of material together.

Finish roof overhang and eaves. |
| | 16. To adopt safe work methods. |
| | 17. To learn to work in a team.

Inspect work. |

CARPENTRY

MODULE 19

TITLE: INTERIOR FINISHING

CODE: 755176

DURATION: 90 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
do the interior finishing of residential structures and buildings
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using construction plans and specifications
- In a work shop
- Using appropriate tools, equipment and materials

GENERAL PERFORMANCE CRITERIA

- Proper planning and scheduling of work
- Correct sequence of operations
- Satisfactory turnaround time
- Precision and standard of work
- Right combination of products
- Conformity with plans
- Attractive appearance of work
- Safe and efficient use of tools and equipment

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Plan and schedule work.

SPECIFIC PERFORMANCE CRITERIA

- Scheduling of work
- Proper preparation of materials
- Neat and functional work area
- Clear understanding of plans and specifications

CARPENTRY

MODULE 19

CODE: 755176

TITLE: INTERIOR FINISHING

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Check the condition of the frame
 - squaring, levelling, alignment
- Install sheet materials (e.g. gypsum board) on walls and ceilings.
- Install drop ceilings.
- Fit interior and exterior doors.
- Sheathe around doors and windows and attach trim.

SPECIFIC PERFORMANCE CRITERIA

- Careful checking of squaring, levelling and alignment
- Access to roof
- All necessary nailing boards
- Mastery of cutting techniques
- Mastery of application techniques
- Proper securing
- Concern for appearance
- Proper sanding
- Mastery of levelling techniques
- Correct alignment of supports and proper anchoring
- Mastery of preassembled door installation
- Proper anchoring
- Proper fitting:
 - squaring, levelling and correct tolerances
- Mastery of hinge and lock installation
- Correct choice of materials
- Precise cutting and proper nailing procedures
- Proper preparation for finishing

CARPENTRY

MODULE 19

CODE: 755176

TITLE: INTERIOR FINISHING

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Lay wood floors.
- Install shelves, storage unit rods and various finishing accessories.
- Inspect work.

SPECIFIC PERFORMANCE CRITERIA

- Correct procedures
- Proper matching of colours
- Mastery of laying, anchoring and gluing techniques
- Proper preparation for finishing
- Cutting precision
- Compliance with standards and specifications
- Proper installation and sanding
- Regular inspection
- Compliance with standards of quality
- Sufficient interest in making the necessary corrections

CARPENTRY

MODULE 19

CODE: 755176

TITLE: INTERIOR FINISHING

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To describe the different types of interior finishing.

02. To calculate quantities of materials to facilitate choice.

Plan and schedule their work.

03. To explain the methods of truing walls and ceilings.

04. To apply various methods of alignment and levelling of ceiling surfaces.

Check the condition of the frame: e.g. squaring, levelling, alignment.

05. To identify the methods of applying and securing different interior wall coverings.

06. To cut different finishing materials with the required precision.

07. To handle finishing materials safely and efficiently.

Install sheet materials (e.g. gypsum board) on walls and ceilings.

08. To identify the various types of mouldings for drop ceilings.

Install drop ceilings.

09. To explain the method of installing pre-hung doors into prepared openings.

10. To know the standards and specifications for fitting interior and exterior doors.

11. To fit different types of handles, locks and other door hardware.

12. To fit different types of door hinges.

Fit interior and exterior doors.

13. To do groove and mitre joints.

14. To attach trim to different parts of the frame.

15. To fit together different types of materials.

Sheathe around doors and windows and attach trim.

16. To describe the different methods of wood floor finishing.

17. To detect slight differences in colour or pattern of finishing materials.

Lay wood floors.

CARPENTRY

MODULE 19

CODE: 755176

TITLE: INTERIOR FINISHING

SECOND-LEVEL OPERATIONAL OBJECTIVES

18. To know the standards and specifications for storage shelves, coat hanger rods and storage cupboards.

19. To attach different finishing accessories.

Install shelves, storage unit rods and various finishing accessories.

Inspect work.

CARPENTRY

MODULE 20

TITLE: COMMUNICATION AND MANAGEMENT

CODE: 755182

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 develop, through the use of pertinent information and participation in requisite activities, the competencies needed to ensure effective communication in a work team.

SPECIFICATIONS

At the end of this module, the students will:

- Be familiar with the communications process.
- Differentiate the requirements of teamwork from the requirements of individual work.
- Possess the communication skills necessary for effective teamwork.

LEARNING CONTEXT

Outline of student activities:

PHASE I: Information

Obtaining information, through consultation of audiovisual and written documents, about the communications process.

- Perceive, through the study of documents, and identify, from learning contexts, the characteristics of effective communication.
- Perceive, through the study of documents, and identify, from learning contexts, the obstacles to effective communication.
- Perceive, through the study of documents, and identify, from learning contexts, the characteristics of a productive work team.

PARTICIPATION CRITERIA

The students must:

PHASE I: Information

- Collect information on the subjects discussed.
- Participate actively in learning contexts.

CARPENTRY

MODULE 20

CODE: 755182

TITLE: COMMUNICATION AND MANAGEMENT

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

PHASE II: Involvement

- Record, using a grid, their attitudes and behaviour in a communications situation.
- Participate actively in learning contexts.
- Identify, during learning contexts, their strengths and weaknesses in a teamwork situation.

PHASE III: Self-Evaluation

- Assess, during a group discussion, their progress with respect to the anticipated outcome.
- Identify, from learning contexts, their strengths and weaknesses in a teamwork situation.

INSTRUCTIONAL GUIDELINES

The teacher will:

- Create an atmosphere conducive to mutual tolerance and the exchanging of ideas among members of the group.
- Agree to discuss with other members of the group how they perceive themselves as communicators.
- Involve the students in the proposed activities.
- Favour a dynamic approach.
- Make available the necessary facilities and documentation: e.g. exercises, learning contexts, texts.
- Consider the situation of each student.

CARPENTRY

MODULE 20

CODE: 755182

TITLE: COMMUNICATION AND MANAGEMENT

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To grasp the importance of effective communication in a work team.
02. To be receptive to communications-related information.

Phase I Activities: Information

03. To know their attitude towards the communications process.
04. To want to know their basic feelings about being part of a work team.
05. To describe the communications process.
06. To identify the principal obstacles to effective communication.

Phase II Activities: Involvement

07. To want to share their perception of themselves as communicators with other members of the group.

Phase III Activities: Self-Evaluation

08. To develop attitudes that result in more effective communication in the workplace.

CARPENTRY

MODULE 21

TITLE: CABINETS AND ACCESSORIES

CODE: 755194

DURATION: 60 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
install cabinets and accessories
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using construction drawings
- Using the appropriate tools, equipment and materials
- In a work shop
- Using suitable hardware

GENERAL PERFORMANCE CRITERIA

- Efficient planning of work
- Correct sequence of operations
- Satisfactory turnaround time
- Precision and quality of work
- Right combination of materials
- Conformity with plans
- Attractive appearance of work
- Safe and efficient use of tools and equipment

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Plan work.

SPECIFIC PERFORMANCE CRITERIA

- Observance of the sequence of operations and conformity to the work process
- Proper organization of work area

CARPENTRY

MODULE 21

CODE: 755194

TITLE: CABINETS AND ACCESSORIES

FIRST-LEVEL OPERATIONAL OBJECTIVE

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Read and understand plans and specifications.
- Build cabinets.
- Apply the following types of finishes to cabinets: oil, lacquer, mixed finishes.
- Hang and secure modules.
- Install built-in-place and prefabricated counter tops.
- Install mouldings and trim (e.g sunshades, false beams, metal fittings, trim).
- Assemble moving parts of cabinets and check work.

SPECIFIC PERFORMANCE CRITERIA

- Accurate application of plan data
- Checking of accuracy of data application
 - in-place measurement if necessary, checking of squaring and levelling
- Careful choice of materials
- Compliance with building standards
- Mastery of techniques for machining materials
- Proper choice of joining methods
- Quality of construction
- Smoothness and quality of sanding
- Careful choice of products
- Mastery of finishing techniques
- Smoothness of finishes
- Proper levelling and positioning
- Careful choice of fasteners
- Mastery of the technique for installing fasteners
- Mastery of cutting and installing techniques
- Quality of fit
- Precision in boring and cutting internal openings
- Careful choice of materials
- Quality of hardware installation
- Quality of work:
 - e.g. appearance, finishing of joints
- Mastery of appropriate techniques
- Project handling
- Concern for appearance of work
- Mastery of repair and touch-up procedures

CARPENTRY

MODULE 21

CODE: 755194

TITLE: CABINETS AND ACCESSORIES

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To identify the different materials used in the making of cabinets.

02. To identify the different types of cabinets.

03. To explain the methods of fitting pre-assembled components to different types of material.

04. To select the fasteners necessary for the installation of cabinets.

Plan work.

Read and understand plans and specifications.

05. To identify the standards that apply to cabinets in housing units.

06. To select the tools and equipment for cutting and assembling different types of materials.

07. To estimate amounts of hardware and materials.

08. To detect by eye and touch defects or differences in colour in materials that can affect the quality of the work.

09. To assemble various materials.

10. To install different types of hardware.

11. To prepare different materials for finishing.

12. To do simple finishing.

Build cabinets.

Apply the following types of finishes to cabinets: oil, lacquer, mixed finishes.

13. To level cabinets.

14. To install different fasteners.

15. To repair minor damage to materials or finishes.

Hang and secure modules.

16. To understand different methods of cutting laminated materials.

Install built-in-place and prefabricated counter tops.

17. To install different types of cabinet hardware.

Install mouldings and trim (e.g. sunshades, false beams, metal fittings, trim).

Assemble the moving parts of cabinets and check work.

CARPENTRY

MODULE 22

TITLE: STAIRS

CODE: 755206

DURATION: 90 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

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

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using given data
- Using suitable tools, equipment and materials
- In a work shop
- By constructing a part of a staircase with landing
- By installing part of a handrail

GENERAL PERFORMANCE CRITERIA

- Efficient planning of work
- Observance of safety measures
- Correct sequence of operations
- Satisfactory turnaround time
- Safe and efficient use of tools and equipment
- Conformity with plans
- Precision of work
- Workmanship and attractiveness of finished product

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Make the calculations necessary for the construction of stairs: e.g. unit of rise, stairwell opening.
- Cut out stringers.

SPECIFIC PERFORMANCE CRITERIA

- Mastery of calculation methods
- Observance of building standards
- Accuracy of calculations
- Conformity with the required dimensions.
- Right selection of materials
- Accuracy of layout
- Mastery of cut-out techniques

CARPENTRY

MODULE 22

CODE: 755206

TITLE: STAIRS

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Construct and join treads and risers.
- Install and assemble the staircase.
- Finish stairs.
- Install the handrail.
- Install the railing around the stairwell.

SPECIFIC PERFORMANCE CRITERIA

- Right selection of materials
- Mastery of machining techniques
- Proper method of joining treads and risers
- Mastery of assembly and installation techniques
- Firm anchoring
- Adequate preparation for finishing
- Proper finishing of the stairwell
- Compliance with building standards:
 - height, distance from wall
- Mastery of the installation techniques
- Compliance with building standards:
 - height, distance between balusters
- Mastery of the technique for firmly anchoring the balusters

CARPENTRY

MODULE 22

CODE: 755206

TITLE: **STAIRS**

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

- | | |
|--|---|
| 01. To identify the different types of stairs. | 14. To identify the different varieties of wood generally used for making stairs. |
| 02. To understand the building standards for stairs: e.g. unit of rise, headroom, unit of width. | Construct and join treads and risers. |
| 03. To calculate the riser height of stairs. | 15. To understand the methods of anchoring stairs. |
| 04. To calculate the length of a stairwell. | Install and assemble the staircase. |
| 05. To understand the standards that govern the length of a flight of stairs. | 16. To understand the various methods of finishing stairs. |
| 06. To calculate the stairwell opening for winder stairs. | 17. To know how to finish the edges (nosing) of stairs. |
| Make the calculations necessary for the construction of stairs: e.g. unit of rise, stairwell opening. | 18. To cut and install finishing baseboards on stairs. |
| 07. To understand different methods of assembling treads, risers and stringers. | 19. To develop an interest in stair design. |
| 08. To understand the different types of stair stringers. | Finish stairs. |
| 09. To understand the various methods of reinforcing stairs. | 20. To install handrails for various types of stairs. |
| 10. To make cut-out stringers. | Install the handrail. |
| 11. To dado stringers. | 21. To know the building standards for stair railings. |
| 12. To make housed stringers. | 22. To understand the various methods for strengthening stair railings. |
| 13. To make stringers for winder stairs. | Install the railing around the stairwell. |
| Cut out stringers. | |

CARPENTRY

MODULE 23

CODE: 755213

TITLE: DEMOLITION AND RENOVATION

DURATION: 45 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

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

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- Using construction drawings
- Using the necessary tools, equipment and materials
- Changing the location of a wood frame window already encased in a finished wall

GENERAL PERFORMANCE CRITERIA

- Efficient planning of work
- Correct sequence of operations
- Satisfactory turnaround time
- Precision and quality of work
- Conformity with plans
- Execution of design
- Safe and efficient use of tools and equipment
- Minimal waste of materials

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Read and understand plans and specifications.
- Plan work.

SPECIFIC PERFORMANCE CRITERIA

- Accurate application of plan data
- Correct identification of the elements to be demolished
- Proper scheduling of work
- Careful recruitment of necessary semi-skilled labour

CARPENTRY

MODULE 23

CODE: 755213

TITLE: DEMOLITION AND RENOVATION

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIOURAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Set up protective barriers around work site.
- Erect scaffolding.
- Do demolition.
- Remove elements of a building: e.g. doors, windows, cabinets.
- Assemble and install the salvaged elements.
- Do the finishing on the structure.
- Do various types of repair work.

SPECIFIC PERFORMANCE CRITERIA

- Public safety
- Sufficiently large and sheltered work areas
- Correct choice of methods and materials
- Suitable work methods
- Correct choice of tools and equipment
- Suitable work method
- Thorough cleaning up of work areas
- Proper work method
- Right choice of tools
- Sufficient protection of elements
- Careful choice of assembly and anchoring methods
- Stability of structure
- Concern for design
- Mastery of the techniques for applying various materials
- Right choice of anchoring methods
- Precision and strength of work

CARPENTRY

MODULE 23

CODE: 755213

TITLE: DEMOLITION AND RENOVATION

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To identify, using plans and specifications, the features of different types of construction.

02. To identify, on a construction site, the features of existing structures.

Read and understand plans and specifications.

03. To understand the various protective measures to be adopted during demolition work.

04. To be knowledgeable about the various means of removing debris according to work site conditions.

05. To estimate the semi-skilled labour and special equipment required for the work to be done.

06. To understand the safety measures to adopt during demolition and renovation work.

Plan work.

07. To choose the scaffolding required for the work.

08. To identify means of removing debris.

09. To erect temporary structures (see Module 08, **Scaffolds and Other Temporary Structures**).

Set up protective barriers around the work site.

10. To identify, from plans or on-site observation, the supporting members of a structure.

11. To choose the means of temporary support for structures.

Erect scaffolding

12. To select methods of dismantling the structural and anchoring members.

13. To use a pneumatic drill.

14. To adopt safe work methods.

Do demolition.

15. To remove window panes.

Remove elements of a building: e.g. doors, windows, cabinets.

16. To select methods of assembling and anchoring various salvaged materials.

Assemble and install the salvaged elements.

17. To combine new materials with salvaged materials.

Do the finishing on the structure.

CARPENTRY

MODULE 23

CODE: 755213

TITLE: DEMOLITION AND RENOVATION

SECOND-LEVEL OPERATIONAL OBJECTIVES

- 18. To understand work methods used in roof repair.
 - 19. To understand work methods used in floor repair.
 - 20. To understand work methods used in repairing concrete structures.
 - 21. To understand work methods used in demolishing and moving supporting and non-supporting walls.
- Do various types of repair work.**

CARPENTRY

MODULE 24

CODE: 755222

TITLE: SPECIAL STRUCTURES AND PROJECTS

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 develop the competencies needed to **understand their role in the building of special structures and the implementation of special projects that are a part of carpentry.**

SPECIFICATIONS

At the end of this module, the students will:

- Be familiar with certain special structures and projects in carpentry that require a particular type of specialization: e.g. bowling alleys, driving of piles, installation of pile planks and braces.
- Understand corresponding construction methods.
- Understand the work process corresponding to these tasks.

LEARNING CONTEXT

Outline of student activities:

PHASE I: Information

- Understanding the objectives of the unit.
- Becoming informed about the particular details and specifications of the following tasks: driving of piles, installation of pile planks and braces, construction of bowling alleys.

PARTICIPATION CRITERIA

The students must:

PHASE I

- Collect information about the conditions required to perform each of the tasks to be studied.
- Attend class regularly and show a satisfactory degree of interest.
- Be attentive and take notes.

CARPENTRY

MODULE 24

CODE: 755222

TITLE: SPECIAL STRUCTURES AND PROJECTS

FIRST-LEVEL OPERATIONAL OBJECTIVE SITUATIONAL OBJECTIVE

PHASE II: Appropriation

- Receiving information about each of the items to be dealt with.
- Viewing films and slide tape sets on each of the subjects to be dealt with.
- Reading the pertinent documentation on each of the subjects.
- Express coherently their perception of the conditions in which each of the tasks will be performed.

PHASE III: Reinforcement

- Expressing, in group discussions, their opinions with respect to each of the subjects.
- Producing a summary report on each of the tasks.
- Preparing a synthesis document that states the characteristics of the tasks to be studied, the work process and the particular requirements.

INSTRUCTIONAL GUIDELINES

The teacher will:

- Make a suitable classroom available.
- Make pertinent documentation available.
- Foster exchanges of ideas between students and encourage individual expression of opinion.

CARPENTRY

MODULE 24

CODE: 755222

TITLE: SPECIAL STRUCTURES AND PROJECTS

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To identify the principal features of piledriving.
02. To identify the principal features of driving pile planks according to the conditions existing on various construction sites.
03. To identify the principal features related to the construction of bowling alleys.
04. To list the operations to be performed for driving piles.
05. To list the operations to be performed for the construction of bowling alleys.
06. To list the operations to be performed for the construction of underground formwork.
07. To list the operations to be performed for the construction of underwater formwork.
08. To identify the safety rules and measures that apply to the construction of underground and underwater formwork.
09. To identify the safety rules and measures that apply to the construction of bowling alleys.
10. To interpret the principal hand signals used on construction sites.
11. To describe the principal operations specific to the driving of piles, the installation of pile planks and braces.
12. To identify the equipment necessary for driving piles.
13. To identify the conditions that require the use of piles.
14. To identify the equipment necessary for the construction of underwater and underground formwork.
15. To identify the principal accessories used for the construction of bowling alleys.

CARPENTRY

MODULE 25
TITLE: JOB SEARCH

CODE: 755232
DURATION: 30 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE **BEHAVIOURAL OBJECTIVE**

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
prepare for a creative job search
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on a résumé
- Based on models of résumés and job-application letters
- Simulating a job interview
- Using information provided by the teacher based on concrete or hypothetical situations in carpentry
- Using a dictionary and a grammar book

GENERAL PERFORMANCE CRITERIA

- Observance of document formatting rules
- Quality of written and verbal communication

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Describe the steps for creative job search.
- Write a résumé.
- Write a job-application letter.

SPECIFIC PERFORMANCE CRITERIA

- Description of all steps
- logical sequence
- Description of important elements
- Quality of document presentation
- Relevant information
- Concise and clear style
- Relevance to job sought
- Absence of grammatical and spelling errors
- Appropriate form and content

CARPENTRY

MODULE 25

CODE: 755232

TITLE: JOB SEARCH

**FIRST-LEVEL OPERATIONAL OBJECTIVE
BEHAVIORAL OBJECTIVE**

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Attend a job interview.

- Describe effective follow-up techniques.

SPECIFIC PERFORMANCE CRITERIA

- Good general knowledge of construction site and type of job sought
- Politeness
- Attentiveness
- Relevant answers to questions
- Clarity of expression

- Inclusion of key elements
- Description of follow-up methods

CARPENTRY

MODULE 25

CODE: 755232

TITLE: JOB SEARCH

SECOND-LEVEL OPERATIONAL OBJECTIVES

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

01. To define the concept of "creative job search."

02. To identify the necessary job-search attitudes.

Describe the steps for a creative job search.

03. To write a résumé with a view to a creative job search.

04. To define the role of a résumé, keeping in mind its advantages.

05. To indicate the characteristics of a good résumé.

06. To describe each part of a résumé.

Write a résumé.

07. To define the role of a job-application letter.

08. To indicate the characteristics of an effective job-application letter.

Write a job application letter.

09. To describe common types of interviews.

10. To prepare for an interview.

Attend a job interview.

Describe effective follow-up techniques.

APPENDIX A: GRID OF LEARNING FOCUSES

CARPENTRY	NUMBER	FIRST-LEVEL OPERATIONAL OBJECTIVES	DURATION (IN HOURS)	WORK PROCESS (major steps)						COMPETENCIES of a fundamental nature (technology, personal development, etc.)												TOTALS	
				To read and understand plans and specifications	To plan work	To cut materials	To make assemblies	To check work	To clean up the work site	To gain a general knowledge of the types of construction sites, the equipment used, and the organizations involved in construction	To gain a general knowledge of health and safety on construction sites	To use and maintain hand tools	To read and understand plans and specifications	To describe building materials	To erect scaffolds and other temporary structures	To make sketches and technical drawings	To use and maintain power tools	To solve problems of applied mathematics	To use fastening and joining techniques	To develop communication skills	To prepare for creative job search	NUMBER	DURATION (IN HOURS)
COMPETENCIES (directly related to the practice of the specific trade)				14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
NUMBER										S	S	B	B	B	B	B	B	B	B	S	B	12	
FIRST-LEVEL OPERATIONAL OBJECTIVES										60	30	30	30	60	30	60	45	45	105	30	30	1	555
DURATION (IN HOURS)																							
To determine their suitability for the trade and the training process	1	S	15							○	○	○	○	○	○	○	○	○	○	○	○		
To do the layout of a structure	2	B	45	▲	△	△	△	▲	△	○	○	●	●	○	○	○	○	○	○	○	○		
To build footings and concrete walls	3	B	60	▲	▲	▲	▲	▲	△	○	○	●	●	○	○	○	○	○	○	○	○		
To erect forms for concrete beams, slabs, columns and stairs	4	B	90	▲	▲	▲	▲	△	△	○	○	●	●	●	●	○	○	○	○	○	○		
To construct wood floors and walls	5	B	75	▲	△	▲	△	△	△	○	○	●	●	●	●	○	●	●	●	○	○		
To construct roofs	6	B	75	▲	△	△	△	△	△	○	●	●	●	●	●	○	●	●	●	○	○		
To insulate a building	7	B	45	▲	▲	▲	▲	△	▲	○	○	○	○	●	○	○	○	○	○	○	○		
To do exterior finishing	8	B	75	△	▲	▲	▲	△	▲	○	●	●	●	●	●	○	●	●	●	○	○		
To do interior finishing	9	B	90	▲	▲	▲	▲	▲	▲	○	○	●	●	●	○	●	●	●	●	○	○		
To build and install cabinets and accessories	10	B	60	▲	▲	▲	▲	▲	△	○	○	●	●	●	○	●	●	●	●	○	○		
To build wood stairs	11	B	90	▲	▲	▲	▲	▲	△	○	○	●	●	●	●	●	●	●	●	○	○		
To do demolition and renovation	12	B	45	▲	▲	△	△	△	▲	○	●	●	●	●	●	●	●	●	●	○	○		
To understand their role in the building of special structures and the implementation of special projects	13	S	30	△	△					○	○	○	○		○								
NUMBER		13																				28	
DURATION (IN HOURS)			795																				1350

S: Situational objective
B: Behavioural objective

△ Correlation between step and specific competency
▲ Correlation to be taught and evaluated

○ Correlation between a fundamental and a specific competency
● Correlation to be taught and evaluated

APPENDIX B

HOW TO READ BEHAVIOURAL OBJECTIVES

EXPECTED BEHAVIOUR

Under this heading is the major statement of the objective outlining the performance to be achieved and the result to be attained by the students at the end of the module. The wording is identical to that in the grid of learning focuses.

CONDITIONS FOR PERFORMANCE EVALUATION

The information under this heading is designed to ensure that evaluation is the same wherever and whenever the program is taught, by listing what is necessary, useful and permissible.

GENERAL PERFORMANCE CRITERIA

The requirements by which to judge whether or not the expected behaviour is satisfactory are listed under this heading.

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

In order to ensure that the objective is clearly understood, this section outlines the major steps in attaining the expected behaviour.

SPECIFIC PERFORMANCE CRITERIA

Specific criteria are usually given for each of the specifications of behaviour. They ensure a more complete and enlightened decision on the attainment of the objective.

FIELD OF APPLICATION

Some objectives can apply to more than one task, occupation or field. In such cases, the range of applications is indicated under this heading.

CARPENTRY

MODULE 04

CODE: 755022

TITLE: HAND TOOLS

DURATION: 30 hours

FIRST-LEVEL OPERATIONAL OBJECTIVE BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must use and maintain instruments, hand tools and portable power tools in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Individually
- For a project requiring the use of tools and equipment familiar to a carpenter
- Using the necessary instruments, tools and equipment
- In an appropriate workshop

GENERAL PERFORMANCE CRITERIA

- Mastery of the techniques for using tools
- Mastery of the techniques for using measuring and layout instruments
- Mastery of the techniques for using appropriate levelling tools
- Systematic preventive maintenance:
 - detection of the principal factors that cause wear, breakage and defects
 - lubrication
- Observance of safety rules

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR

- Use the following measuring instruments:
 - measuring tape
 - folding rule
 - surveyor's chain
 - rules
 - protractor
- Use the following layout instruments:
 - framing squares, combination squares and bevel squares
 - dividers
 - chalklines

SPECIFIC PERFORMANCE CRITERIA

- Right choice of instrument
- Accuracy of measurement
- Duplication of measurements
- Right choice of square
- Efficient use of instruments

APPENDIX C

HOW TO READ SITUATIONAL OBJECTIVES

EXPECTED OUTCOME

Under this heading, the major statement of the objective identifies the competency to be acquired by the end of the module. The wording is identical to that in the grid of learning focuses.

SPECIFICATIONS

Listed under this heading are details which provide a better understanding of the expected outcome.

LEARNING CONTEXT

This is an outline of the learning situation designed to help the students develop the required competencies. It is divided into distinct phases, such as information, involvement and self-evaluation.

PARTICIPATION CRITERIA

Listed under this heading are requirements the students must fulfill, 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.

INSTRUCTIONAL GUIDELINES

Outlined under this heading are general directions to be followed and particular means to be used in teaching the program, so that the same requirements can apply wherever and whenever it is taught.

CARPENTRY

MODULE 01

TITLE: THE TRADE AND THE TRAINING PROCESS

CODE: 755001

DURATION: 15 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 develop the competencies needed to **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

Outline of student activities:

PHASE I: The Trade

- Learning about the job market in carpentry-- potential areas of work, types of companies, products, prospects for employment, pay, possibilities for advancement and transfer, hiring criteria -- through field trips, documents, interviews, and so on.
- Learning about the nature and requirements of the job - tasks, work climate, performance evaluation, workers' rights and responsibilities - through field trips, interviews, documents, and so on.

PARTICIPATION CRITERIA

The students must:

PHASE I

- Gather information about most of the topics to be covered.
- Express their views about the trade at a group meeting, relating them to the information gathered

APPENDIX D

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