Technical Education Program

221.B0

Civil Engineering Technology

Training Sector

7

Buildings and Public Works

Reach for your Dreams

Québec

Technical Education Program

221.B0

Civil Engineering Technology

Traning Sector 7 Buildings and Public Works

Formation professionnelle et technique
et formation continue

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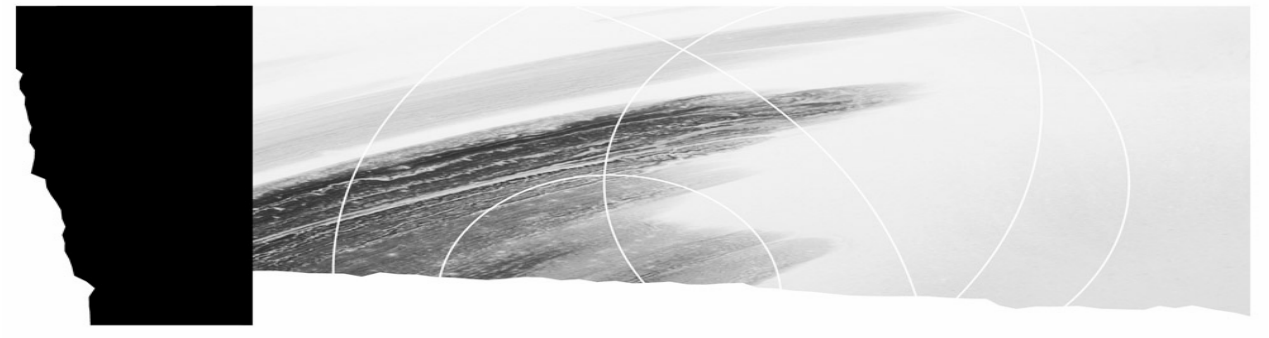


221.B0	**Civil Engineering Technology**

Year of approval: 2003

Certification:	Diploma of College Studies
Number of credits:	91 1/3 credits
Total duration:	2 625 hours of instruction

General education components:	660	hours of instruction
Program-specific component:	1 965	hours of instruction

Conditions for Admission:

To be admitted to the program, students must meet the general conditions for admission set out in section 2 of the *College Education Regulations*, as well as the following requirements, if applicable:

- Mathematics 526
- Physical Science 436

Introduction to the Program

The *Civil Engineering Technology* program is in keeping with the aims and orientations of technical education that guide the Ministère de l'Éducation. Designed in accordance with the framework for developing technical programs, this program is based on competencies, formulated in terms of objectives and standards.

The *Civil Engineering Technology* program includes a general education component common to all programs (16 2/3 credits), a general education component adapted to this program (6 credits), a complementary general education component (4 credits) and a program-specific component of 64 2/3 credits.

The program-specific component was also designed according to the framework for developing technical programs. This approach requires the participation of people working in the field and in education, and takes into account training needs, the job analysis and the general goals of technical education. The objectives and standards serve as the basis for the definition and the evaluation of learning activities, for which the colleges are responsible.

By successfully completing this program of study, students acquire not only the entry-level competencies required by the workplace to practise a trade or occupation, but also a range of knowledge, skills and attitudes that will ensure the students' versatility.

General Education Component Common to All Programs (16 2/3 credits)

0004 To analyze and produce various forms of discourse.

0005 To apply a critical approach to literary genres.

0006 To apply a critical approach to a literary theme.

00B2 To apply a logical analytical process to how knowledge is organized and used.

000G To apply a critical thought process to world-views.

0017 Appliquer les notions de base de la communication en français courant.

or

000A Communiquer en français avec une certaine aisance.

or

000B Communiquer avec aisance en français.

or

000C Traiter d'un sujet culturel et littéraire.

0064 To establish the role that being physically active plays amongst the lifestyle behaviours which promote health.

0065 To improve one's effectiveness when practising a physical activity.

0066 To demonstrate one's responsibility for being physically active in a manner which promotes health.

General Education Component Adapted to This Program (6 credits)

000L To communicate in the forms of discourse appropriate to one or more fields of study.

000U To apply a critical thought process to ethical issues relevant to the field of study.

0018 Appliquer des notions fondamentales de la communication en français, liées à un champ d'études.

or

000Q Communiquer en français dans un champ d'études particulier.

or

000R Communiquer avec aisance en français dans un champ d'études particulier.

or

000S Disserter en français sur un sujet lié au champ d'études.

Complementary General Education Component (4 credits)

000V To estimate the contribution of the social sciences to an understanding of contemporary issues.

000W To analyze one of the major problems of our time using one or more social scientific approaches.

000X To explain the general nature of science and technology and some of the major contemporary scientific or technological issues.

000Y To resolve a simple problem by applying the basic scientific method.

000Z To communicate with limited skill in a modern language.

0010 To communicate on familiar topics in a modern language.

0067 To communicate with relative ease in a modern language.

0011 To recognize the role of mathematics or informatics in contemporary society.

0012 To use various mathematical or computer concepts, procedures and tools for common tasks.

0013 To consider various forms of art produced by aesthetic practices.

0014 To produce a work of art.

Program-Specific Component **(64 2/3 credits)**

01X1 To analyze the occupation of civil engineering technician.
01X2 To solve mathematical problems related to buildings and public works.
01X3 To operate a computer environment.
01X4 To review plans and specifications for buildings and public works.
01X5 To analyze civil engineering projects.
01X6 To carry out a topometric survey.
01X7 To draw a plan.
01X8 To take responsibility for occupational health and safety.
01X9 To calculate the forces and loads applied to engineering works.
01XA To establish professional relationships.
01XB To implement construction works.
01XC To analyze the structural reactions of engineering works.
01XD To analyze construction materials.
01XE To do the technical design of structural elements.
01XF To analyze soils.
01XG To do the technical design of infrastructure projects.
01XH To inspect public works and buildings.
01XJ To propose environmental measures.
01XK To supervise site operations.
01XL To estimate construction or repair costs.
01XM To customize methods for producing construction materials.
01XN To participate in preparing bids and organizing site operations.
01XP To participate in preparing construction and repair projects.

Glossary

Program

A program is an integrated set of learning activities leading to the achievement of educational objectives based on set standards (*College Education Regulations,* section 1).

Competency

In the program-specific component of a technical program: a competency is the ability to act successfully and evolve in order to adequately perform work-related tasks and activities based on an organized body of knowledge, skills in a variety of fields, perceptions, attitudes, etc. (*Élaboration des programmes d'études techniques*, *Cadre-général – Cadre technique 2002*, p. 15).

Objective

An objective encompasses the competency, skills or knowledge to be acquired or mastered (*College Education Regulations,* section 1). It describes the competency to be acquired and includes the statement of the competency as well as the elements needed to understand it.

Statement of the Competency

In the program-specific component of a technical program, a statement of the competency is derived from the job analysis, the general goals of technical education and, in certain cases, other determinants. In the general education components, the statement of the competency is the result of an analysis of general education needs.

Elements of the Competency

In the program-specific component of a technical program, the elements of the competency include only what is necessary in order to understand the competency. They specify the major steps involved in carrying out a task or the main aspects of the competency.

In the general education components, the elements of the objective, formulated in terms of a competency, specify the main aspects of the competency. They include only what is necessary in order to understand and attain the competency.

Standard

A standard is the level of performance at which an objective is considered to be achieved (*College Education Regulations,* section 1).

Achievement Context

In the program-specific component of a technical program, the achievement context corresponds to the situation in which the competency is exercised at entry level on the job market. The achievement context does not specify the context for learning or evaluation.

Performance Criteria

In the program-specific component of a technical program, the performance criteria define requirements by which to judge the attainment of each element of the competency and, consequently, of the competency itself. The performance criteria are based on the requirements at entry level on the job market. The performance criteria are not the evaluation instrument but, rather, they serve as a reference for the development of the evaluation instrument. Each element of the competency requires at least one performance criterion.

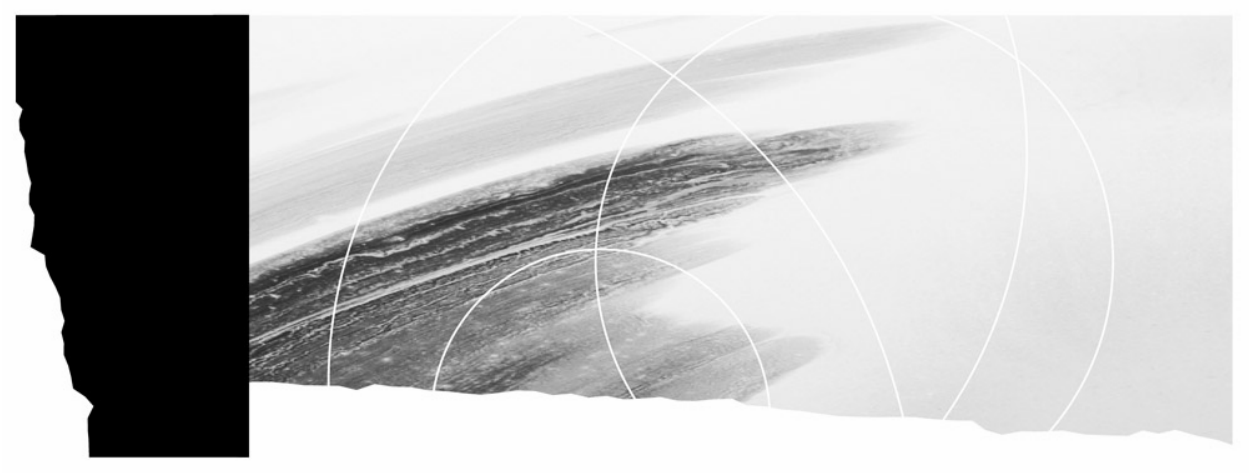
In the general education components, the performance criteria define the requirements for recognition of the attainment of the standard.

All the criteria must be respected for the objective to be recognized as having been attained.

Learning Activities

In the program-specific component of a technical program, the learning activities are classes (or labs, workshops, seminars, practicums or other educational activities) designed to ensure the attainment of the targeted objectives and standards. Colleges are entirely responsible for defining the learning activities and organizing the way in which programs are offered.

In the general education components, the elements of the learning activities that may be determined in whole or in part by the Minister are the field of study, the discipline(s), the weightings, the total hours of instruction, the number of credits and any details deemed essential.



Part I

Goals of the General Education Components

Educational Aims of the General Education Components

Objectives and Standards of the General Education Components

Goals of the General Education Components

In Québec, college is the next stage after the compulsory years of schooling in elementary and secondary school, during which students acquire basic knowledge and skills. It represents a major crossroads in that it places greater emphasis on the cultural content of education and leads directly to the job market or to university. The college system meets current needs with respect to technical and pre-university education. It allows students to further their education without narrowing their options, since they may switch from one type of program to the other. Finally, it provides students with a well-rounded, balanced education.

General education is an integral part of every program and comprises three components: a component common to all programs, a component adapted to the particular program and a complementary component. The aim of general education is threefold: to provide students with a common cultural core, to help them learn and develop generic skills, and to foster desirable qualities and attitudes. Its purpose is to educate students as individuals, to prepare them for their role as responsible members of society and to enable them to share in the common cultural heritage.

Common Cultural Core

The common cultural core is intended to help students:

- master the language of instruction as a tool for communication and reflection
- master the basic rules of rational thought, discourse and argumentation
- communicate in another language, primarily French or English
- be open to the world and to cultural diversity
- appreciate the riches of our cultural heritage through awareness of the accomplishments of human civilization
- relate to major currents in the history of human thought
- think independently and critically
- develop personal and social ethics
- acquire the knowledge essential for their physical and intellectual well-being
- become aware of the need to develop habits conducive to good health

Generic Skills

General education allows students to acquire and develop the following generic skills:

- conceptualization, analysis and synthesis
- coherent reasoning
- critical judgment
- articulate expression
- the ability to apply what they have learned to the analysis of situations
- the ability to apply what they have learned to decision making
- work methods
- the ability to reflect on what they have learned

Desirable Qualities and Attitudes

The common cultural core and generic skills help students acquire and develop the following qualities and attitudes:

- autonomy
- a critical sense
- awareness of their responsibilities toward themselves and others
- open-mindedness

- creativity
- openness to the world

These goals apply to the three general education components:

- General education component common to all programs, which is allotted 16 2/3 credits distributed as follows:

  – language of instruction and literature: 7 1/3 credits
  – humanities or *philosophie*: 4 1/3 credits
  – physical education: 3 credits
  – second language: 2 credits

- General education component adapted to programs, which introduces tasks or learning situations that are relevant to the program-specific component of a program. The breakdown of credits, for a total of 6, is as follows:

  – language of instruction and literature: 2 credits
  – humanities or *philosophie*: 2 credits
  – second language: 2 credits

- Complementary general education component, which provides students with learning activities chosen to balance their training and complement the program-specific component. Students may choose courses for a total of 4 credits in the following areas:

  – social sciences
  – science and technology
  – modern languages
  – mathematics and computer literacy
  – art and aesthetics

The knowledge and skills acquired in the general education components should be emphasized and, whenever possible, applied in the program-specific component, and vice versa. Thus, general education and the program-specific component of a program enhance each other as they contribute to the students' overall education.

Each college-level institution must provide general education through learning activities that are consistent with its educational project, in keeping with the aims, subject areas and ministerial guidelines provided.

The objectives and standards in the general education components were developed according to the provisions of the *College Education Regulations* (R.S.Q., c. C-29, s. 18).

Educational Aims of the General Education Components

The educational aims describe how each field of study in the common, adapted and complementary components of general education contributes to achieving the goals of general education. For the common and adapted components, the educational aims include a general statement of the role of each field of study; the principles underlying this role; the expected outcomes that define, in terms of cultural knowledge, generic skills, and qualities and attitudes, the contribution of each field to the achievement of the goals of general education; and an explanation of the sequence of objectives and standards.

General Education Common to All Programs and General Education Adapted to Programs

English, Language of Instruction and Literature

General Education Common to All Programs

The three sets of objectives and standards in English, Language of Instruction and Literature, pursue two general goals: mastery of the language of instruction and exploration of the riches of the literary heritage. Achievement of these goals is intended to bring the students to a college level of proficiency in the areas of reading, writing, listening and speaking. Building on the skills developed by students on completion of secondary school, the English program places a marked emphasis on written production and reading comprehension while at the same time consolidating listening and speaking skills.

The mastery of language skills will be achieved through regular and ongoing observance of the rules of correct writing and speaking and the production of texts, supported by reading and the study of literature. Students will also be encouraged to develop an appreciation of literature by becoming acquainted with a number of significant literary works representative of various genres and periods and expressing a variety of literary themes. Both the aesthetic and cultural value of these texts and their formal aspects will be the objects of study.

All students entering college will begin their English studies with an introductory set of objectives and standards. This set has two possible formats. While both provide a range of reading, writing and literary activities, one includes additional reinforcement of reading and writing skills.

General Education Adapted to Programs

The set of objectives and standards for English, Language of Instruction and Literature, is placed in the context of general education and is a complement to the general education common to all programs. Students will develop the skills required in order to communicate in the forms of discourse appropriate to their field of study.

Expected Outcomes

Students, who have achieved the general education objectives in English, Language of Instruction and Literature, will be able to:

- demonstrate a college level of proficiency in the areas of reading, writing, listening and speaking
- develop their own ideas into arguments and theses, organize them and edit their work
- understand basic vocabulary and terminology used when discussing literature
- analyze literary works

Humanities

Humanities, as part of the core curriculum, is intended to promote personal and social development and to give students a foundation that will help them understand their roles in contemporary society as members of the labour force, citizens and individuals. The three sets of objectives and standards in Humanities propose common frameworks for understanding the experiences, ideas and values of human beings and their diversity. They are aimed at developing critical thinking, reinforcing the ancillary skills involved in careful reading, organized writing, and well-developed oral presentations, and, where appropriate, improving media and computer literacy. Once students have mastered the three-stage process of analysis, synthesis and evaluation, they will be able to reflect in an informed manner and to communicate what they have learned in an organized and coherent fashion.

Principles

1) Humanities constitutes a thematic, multidisciplinary, at times transdisciplinary, exploration of the human experience, including its accomplishments, failures, abilities, creations, ideas and values.
2) Humanities helps students to recognize, define and classify information and provides them with common frameworks for diverse methods of analyzing, synthesizing and evaluating conceptions of society, knowledge and values.
3) Humanities aims to prepare students for common civic responsibilities and the exercise of rights.
4) Humanities pursues the general goal of developing critical thought, valuing it and recognizing its limitations.

Expected Outcomes

Students who have achieved the general education objectives in Humanities will be able to:

- describe, explain and organize main elements, ideas, values and implications of a world-view in a coherent fashion
- compare world-views
- recognize the basic elements in a specific example of the organization, transmission and use of knowledge
- define the dimensions, limits, and uses of knowledge in appropriate historical contexts
- identify, organize and synthesize the salient elements of a particular example of knowledge
- situate important ethical and social issues in their appropriate historical and intellectual contexts
- explain, analyze and debate ethical issues in a personal and professional context

Sequence of Objectives and Standards

The first two sets of objectives and standards in Humanities, which are part of the general education component common to all programs, develop similar skills in a recursive fashion.

In the first set the emphasis is on how knowledge is defined, acquired, classified, transmitted and applied. Students examine both messages and media to identify the strengths and limitations of each. Students learn to situate knowledge in a social, historical and personal context, a skill they will need in order to become lifelong learners.

The second set focuses on how individuals, groups, societies or nations organize ideas, perceptions and values into explanatory patterns. Students explore major ideas and value systems by which diverse individuals, groups, societies or nations seek to explain the world and their place in it.

The third set, which is part of the general education component adapted to programs, is aimed at deepening and reinforcing the critical thinking skills developed in the first two sets. It is, therefore, sequenced so that students can build on the critical skills, knowledge and insights developed in the first two sets. By situating these issues in their appropriate world-view and knowledge contexts, students

develop a critical and autonomous approach to ethical values in general and to the values involved in their own fields of interest in particular. This final set also provides students with an opportunity to consolidate personal and social values.

Français, langue seconde

L'enseignement du français, langue seconde, contribue à la formation fondamentale de la personne, en même temps qu'il a pour objet de lui permettre de communiquer efficacement avec ses concitoyens et concitoyennes.

Principes

1) La maîtrise du français, langue seconde, est essentielle pour quiconque veut participer pleinement à la vie de la société québécoise, dont le français est la langue officielle. En conséquence, la formation générale en français, langue seconde, a pour finalité de rendre les étudiants et les étudiantes aptes à utiliser de façon efficace les moyens dont dispose la langue pour communiquer en société. À cette fin, ils devront acquérir des connaissances en vue de les déployer dans les formes de discours qu'il leur faudra pratiquer.
2) À leur arrivée au collégial, les étudiants et les étudiantes ont déjà acquis des compétences dans les quatre habiletés langagières, à savoir : parler, lire, écouter et écrire, mais sont, de façon générale, plus compétents en matière d'expression orale. En conséquence, la formation porte sur le développement des quatre habiletés langagières tout en mettant l'accent sur la lecture et l'écriture.
3) En tant que partie intégrante de la formation générale, le français, langue seconde, contribue au développement de la pensée critique et de l'expression structurée.

Résultats attendus

Tout étudiant ou toute étudiante qui a atteint les objectifs de formation générale en français, langue seconde, pourra, selon son niveau de compétence, montrer :

- que, sur le plan des connaissances, il ou elle :
  - sait faire une présentation orale structurée;
  - connaît les différentes formes du discours;
  - connaît les différentes techniques de lecture et d'écriture;

- que, sur le plan des habiletés, il ou elle :
  - est capable de questionner, d'analyser, de juger, et d'argumenter en français;
  - est apte à entretenir des rapports sociaux et à partager la vie culturelle du Québec;
  - est apte à établir, à poursuivre et à pratiquer des rapports professionnels en français;

- que, sur le plan des qualités et des attitudes à développer, il ou elle :
  - fait preuve d'ouverture par rapport aux différents aspects de la culture québécoise;
  - a conscience des différences et des similitudes entre sa culture d'origine et la culture québécoise francophone;
  - a la préparation voulue pour s'insérer dans la vie sociale et économique.

Séquence des objectifs et des standards

Pour répondre aux divers besoins d'apprentissage des étudiants et des étudiantes du collégial, les ensembles en français, langue seconde, sont répartis selon quatre niveaux. Chacun de ces niveaux permet d'amener les étudiants et les étudiantes à interpréter et à produire des textes de plus ou moins grande complexité.

La formation générale en français, langue seconde, comporte deux ensembles prévus en séquence. Le premier, qui fait partie de la formation générale commune à tous les programmes, a pour objet de

consolider les connaissances linguistiques déjà acquises et de les développer pour amener les étudiants et les étudiantes à communiquer de façon plus précise sur le plan tant du vocabulaire et de la syntaxe que de l'organisation textuelle.

Le second ensemble, qui fait partie de la formation générale propre aux programmes, s'appuie sur les acquis développés dans le premier ensemble en les enrichissant d'éléments de compétence liés aux champs d'études de l'étudiant ou de l'étudiante. On cherche à développer la précision de l'expression dans des situations de communication particulières qui relèvent du champ d'études de l'étudiant ou de l'étudiante.

Physical Education

Physical Education is aimed at promoting the development of the whole person and encouraging students to acquire responsible behaviours with respect to their health and quality of life.

Principles

1) Physical Education introduces students to different ways of being physically active with a view to making them aware that they are responsible for their health. Students learn concepts and acquire knowledge drawn from research, and methodically apply them to physical activities that will lead them to adopt healthy lifestyle practices.
2) Physical Education enables students to improve their efficiency in an activity and, in doing so, serves to increase their motivation and perseverance to remain physically active, and makes them aware of the contributing factors. To this end, students use a learning process designed to enhance their aptitudes (i.e. their skills and attitudes) for a given physical activity.
3) Physical Education helps students take responsibility for their own health through the maintenance and improvement of their physical fitness and through the sensible practice of physical activity. Students learn to combine being physically active in an effective manner with other factors that promote health.
4) Physical Education makes students aware of the importance of sharing the knowledge and behaviours they have acquired. The pleasure and sense of well-being students get out of Physical Education classes motivate them to encourage others to be physically active and to adopt healthy practices.

Expected Outcomes

Students who have achieved the general education objectives in Physical Education will be able to demonstrate:

- their knowledge of:
  - the relationship between physical activity, lifestyle and health based on the findings of scientific research
  - the scientific principles for improving or maintaining physical fitness
  - ways to assess their abilities and needs with respect to activities that can improve their health
  - the rules, techniques and conditions involved in different types of physical activity
  - a method for setting goals
  - the factors that help make physical activity part of their lifestyle

- the skills that will enable them to:
  - choose physical activities on the basis of their motivation, abilities and needs
  - establish relationships between lifestyle and health
  - apply the rules, techniques and conditions involved in different types of physical activity
  - set goals that are realistic, measurable, challenging, and situated within a specific time frame

- improve their mastery of the basic techniques, tactics and strategies associated with sports, outdoor and expression-oriented activities
- use their creative and communication skills, particularly in group activities
- evaluate their skills, attitudes and progress with respect to different forms of physical activity
- maintain or increase their level of physical activity and fitness on their own
- manage a personal physical activity program and assume responsibility in the organization of physical activities

- the attitudes and qualities that will enable them to:
  - understand the importance of taking responsibility for their health
  - be aware of the need to evaluate and respect their abilities and the conditions for carrying out an activity, before undertaking the activity
  - recognize the importance of self-confidence, self-control, respect for others and cooperation, through knowledge they have acquired and through participation in physical activity
  - respect the environment in which the activities are held
  - appreciate the aesthetic and play value of physical activity
  - promote a balanced and active lifestyle as a social value

Sequence of Objectives and Standards

The three sets of objectives and standards in Physical Education are designed in a learning sequence. The first two are prerequisites for the third.

The first set focuses on the relationship between health and physical activity as related to a healthy lifestyle. Students are required to try one or more activities and to relate them to their abilities, needs, motivation, lifestyle and knowledge of health prevention. This enables them to make an appropriate and justified choice of activities.

The second set looks at the improvement of effectiveness through the use of a goal-oriented approach in a sports, outdoor or expression-oriented activity. After making an initial assessment of their abilities and attitudes, students are called upon to evaluate them with respect to a physical activity, to set goals and to interpret their progress.

The third set is aimed at helping students integrate physical activity into their lifestyle, more particularly through more effective management of factors that facilitate such integration. During the hours of instruction, students apply the knowledge they have acquired in the first two sets of objectives. This is done through the safe and effective practice of physical activity and through the development, realization and evaluation of a personal physical activity program, which students follow and validate under their teacher's supervision. The hours allotted for individual work enable students to complete their personal programs.

Complementary General Education

Social Sciences

The two sets of objectives and standards aim to familiarize students with the social sciences and their particular approach to the human condition.

The first set supports learning activities that allow students to look at one or more of the social sciences in relation to major contemporary issues: subjects studied in the social sciences; contribution of the social sciences to an understanding of contemporary issues; issues facing the social sciences in the future.

The second set supports learning activities in the social sciences that allow students to rigorously analyze one of the major problems of our time, using one or more social scientific approaches.

Science and Technology

In Science and Technology, the educational aim is to present science and technology as a specific approach to reality in order to familiarize students with this field of knowledge. This general intention can take several forms, such as helping students gain experience with the scientific method or study the evolution, challenges and consequences of scientific and technological discoveries.

The first set of objectives and standards emphasizes the general nature and scope of science and technology. The second set emphasizes using the scientific method.

Modern Languages

The three sets of objectives and standards in Modern Languages introduce students to the basic language structures and vocabulary of a third language while making them aware of the culture of the people who speak the language.

Because some modern languages use different structures and writing systems, the three sets of objectives and standards have been designed accordingly. The degree of competency acquisition will therefore vary according to how distant the language is from our own language or system of thought. Furthermore, awareness of the culture of the people using a modern language does not figure as an element of competency, since learning a modern language necessarily implies developing such awareness.

Mathematics and Literacy Computer Science

In Mathematics and Literacy Computer Science, the two sets of objectives and standards are based on the aim of developing mathematical and computer culture.

The educational aim of the first set is to lead students to consider the place, role and evolution of this knowledge and these tools in our society and to describe their different uses. It consists of general education about the language of mathematics or computers, and does not include specialized training.

The second set targets the understanding and use of the language of mathematics or computers for everyday purposes. This intention refers mainly to the concepts, tools and general uses of mathematical or computer language in daily life.

Since the objectives and standards for the field of mathematics literacy and computer science are quite general, they can be used to define various learning activities that foster the development of competencies in mathematics or computer science, or in a combination of these two areas.

Art and Aesthetics

The educational aim of Art and Aesthetics is to help students to acquire general cultural knowledge by exploring various forms of art in one or more artistic fields. This basic education is intended to develop an artistic sensibility through exposure to works of art or experimentation in an artistic medium. Furthermore, it aims to teach the basic elements of the language of art and to enable students to make connections between those elements.

Through the first set of objectives and standards, students are introduced to works of art from contemporary culture and from other periods. This allows them to develop an appreciation for the dynamics of the imagination in art and to learn methods of analyzing artistic production.

Though the second set, students engage in creative or interpretive activities in a given artistic medium. As well, students are introduced to artistic works in that medium so that they may learn to recognize its primary forms of expression.

Language of Instruction and Literature	Code: 0004

Objective *Standard*

Statement of the Competency

To analyze and produce various forms of discourse.

Elements of the Competency	Performance Criteria
1. To identify the characteristics and functions of the components of discourse.	• Accurate explanation of the denotation of words • Adequate recognition of the appropriate connotation of words • Accurate definition of the characteristics and function of each component
2. To determine the organization of facts and arguments of a given discourse.	• Clear and accurate recognition of the main idea and structure • Clear presentation of the strategies employed to develop an argument or thesis
3. To prepare ideas and strategies for a projected discourse.	• Appropriate identification of topics and ideas • Adequate gathering of pertinent information • Clear formulation of a thesis • Coherent ordering of supporting material
4. To formulate a discourse.	• Appropriate choice of tone and diction • Correct development of sentences • Clear and coherent development of paragraphs • Formulation of a 750-word discourse
5. To edit the discourse.	• Thorough revision of form and content

Learning Activities

Discipline:	English
Weighting:	2-2-4 or 1-3-4
Credits:	2 2/3

Language of Instruction and Literature	Code: 0005

Objective	***Standard***

Statement of the Competency

To apply a critical approach to literary genres.

Elements of the Competency	**Performance Criteria**
1. To distinguish genres of literary discourse.	• Clear recognition of the formal characteristics of a literary genre
2. To recognize the use of literary conventions within a specific genre.	• Accurate recognition of the figurative communication of meaning • Adequate explanation of the effects of significant literary and rhetorical devices
3. To situate a discourse within its historical and literary period.	• Appropriate recognition of the relationship of a text to its period
4. To explicate a discourse representative of a literary genre.	• Selective use of appropriate terminology • Effective presentation of a 1000-word integrated response to a text

Learning Activities

Discipline:	English
Weighting:	2-2-3
Credits:	2 1/3

Language of Instruction and Literature	Code: 0006

Objective	***Standard***

Statement of the Competency

To apply a critical approach to a literary theme.

Elements of the Competency	**Performance Criteria**
1. To recognize the treatment of a theme within a literary text.	• Clear recognition of elements within the text which define and reinforce a theme and its development • Adequate demonstration of the effects of significant literary and rhetorical devices
2. To situate a literary text within its cultural context.	• Appropriate recognition of a text as an expression of cultural context • Adequate demonstration of the effects of significant literary and rhetorical devices
3. To detect the value system inherent in a literary text.	• Appropriate identification of expression (explicit/implicit) of a value system in a text
4. To explicate a text from a thematic perspective.	• Selective use of appropriate terminology • Effective presentation of a 1000-word integrated response to a text

Learning Activities

Discipline:	English
Weighting:	2-2-3
Credits:	2 1/3

Humanities	Code: 00B2

Objective	***Standard***

Statement of the Competency

To apply a logical analytical process to how knowledge is organized and used.

Elements of the Competency	**Performance Criteria**
1. To recognize the basic elements of a field of knowledge.	• Appropriate description of the basic elements • Appropriate use of terminology relevant to fields of knowledge
2. To define the modes of organization and utilization of a field of knowledge.	• Adequate definition of the dimensions, limits and uses of fields of knowledge
3. To situate a field of knowledge within its historical context.	• Accurate identification of the main components in the historical development of fields of knowledge • Accurate description of the effects of historical development and societal milieu on the limitations and uses of a field of knowledge
4. To organize the main components into coherent patterns.	• Coherent organization of the main components
5. To produce a synthesis of the main components.	• Appropriate analysis of the components • Coherent synthesis of the main components • Appropriate expression, including a significant individual written component, of an analysis of the context, importance and implications of the organization and uses of knowledge

Learning Activities

Discipline:	Humanities
Weighting:	3-1-3
Credits:	2 1/3

Humanities	Code: 000G

Objective *Standard*

Statement of the Competency

To apply a critical thought process to world-views.

Elements of the Competency	Performance Criteria
1. To describe world-views.	• Accurate description of a society or group with a distinctive world-view • Appropriate use of terminology relevant to these societies or groups
2. To explain the major ideas, values and implications of a world-view.	• Adequate explanation of the salient components of a world-view
3. To organize the ideas, values and experiences of a world-view into coherent patterns.	• Coherent organization of ideas about a world-view • Appropriate expression, including a significant individual written component, of an analysis of the context, importance and implications of world-views
4. To compare world-views.	• Comparative analysis of these world-views • Appropriate inclusion of central elements, relationships and organizational principles of the societies or groups in the analysis

Learning Activities

Discipline:	Humanities
Weighting:	3-0-3
Credits:	2

Langue seconde (niveau I)	Code: 0017

Objectif — *Standard*

Énoncé de la compétence

Appliquer les notions de base de la communication en français courant.

Éléments	Critères de performance
1. Dégager le sens d'un message oral simple.	• Repérage précis des difficultés de compréhension du message. • Utilisation pertinente des techniques d'écoute choisies. • Distinction précise du sens général et des idées essentielles du message. • Description précise du sens général et des idées essentielles du message.
2. Émettre un message oral simple.	• Repérage précis des difficultés d'expression. • Utilisation pertinente des techniques d'expression orales choisies. • Emploi pertinent du vocabulaire courant. • Expression intelligible du propos.
3. Dégager le sens d'un texte.	• Repérage précis des difficultés de compréhension du texte. • Utilisation pertinente des techniques de lecture choisies. • Distinction claire des principaux éléments du texte. • Description précise du sens général et des idées essentielles d'un texte de 500 mots.
4. Rédiger un texte simple.	• Repérage précis des difficultés d'écriture. • Utilisation pertinente des techniques d'écriture choisies. • Emploi pertinent du vocabulaire courant. • Formulation claire et cohérente d'un texte de 100 mots.

Activités d'apprentissage

Discipline:	Français, langue seconde
Pondération:	2-1-3
Nombre d'unités:	2

Langue seconde (niveau II)	Code: 000A

Objectif — *Standard*

Énoncé de la compétence

Communiquer en français avec une certaine aisance.

Éléments	Critères de performance
1. Interpréter un texte oral simple de trois minutes en français courant.	• Distinction claire des principaux éléments du texte oral. • Explication précise du sens des mots dans le texte. • Repérage précis des idées et des sujets traités dans le texte.
2. Produire un texte oral planifié de cinq minutes en français courant.	• Emploi pertinent du vocabulaire courant. • Respect du niveau de langue, du code grammatical et des règles de la prononciation. • Formulation claire et cohérente du propos.
3. Interpréter un texte écrit en français courant.	• Distinction claire des principaux éléments du texte. • Explication précise du sens des mots dans le texte. • Repérage précis des idées principales et de la structure d'un texte de 700 à 1000 mots.
4. Rédiger un texte simple en français courant.	• Respect du code grammatical et orthographique. • Utilisation judicieuse des principaux éléments du corpus. • Formulation claire et cohérente des phrases. • Articulation cohérente des paragraphes. • Rédaction d'un texte de 200 mots.

Activités d'apprentissage

Discipline:	Français, langue seconde
Pondération:	2-1-3
Nombre d'unités:	2

Langue seconde (niveau III)	Code: 000B

Objectif *Standard*

Énoncé de la compétence

Communiquer avec aisance en français.

Éléments	Critères de performance
1. Produire un texte oral planifié de cinq minutes de complexité moyenne.	• Emploi pertinent du vocabulaire courant. • Adaptation à l'interlocuteur ou à l'interlocutrice • Respect du niveau de langue, du code grammatical et des règles de la prononciation. • Formulation claire et cohérente du propos. • Agencement pertinent des idées.
2. Commenter un texte écrit de complexité moyenne.	• Distinction claire des principaux éléments d'un texte comprenant entre 2 500 et 3 000 mots. • Explication précise du sens des mots dans le texte. • Distinction précise des idées principales et secondaires, des faits et des opinions. • Formulation d'éléments implicites.
3. Rédiger un texte de complexité moyenne.	• Respect du code grammatical et orthographique. • Adaptation au lecteur ou à la lectrice. • Utilisation judicieuse des principaux éléments du corpus. • Formulation claire et cohérente des phrases, dont au moins trois sont complexes. • Articulation cohérente des paragraphes. • Rédaction d'un texte de 350 mots.

Activités d'apprentissages

Discipline: Français, langue seconde
Weighting: 2-1-3
Credits: 2

Langue seconde (niveau IV)	Code: 000C

Objectif *Standard*

Énoncé de la compétence

Traiter d'un sujet culturel et littéraire.

Éléments	Critères de performance
1. Analyser un texte culturel ou littéraire.	• Formulation personnelle des éléments principaux du texte. • Inventaire des thèmes principaux. • Relevé d'indices qui permettent de situer le texte dans son contexte socioculturel et historique. • Repérage des valeurs véhiculées. • Repérage juste de la structure du texte. • Articulation claire d'un point de vue personnel.
2. Rédiger un texte sur un sujet culturel ou littéraire.	• Respect du sujet. • Respect du code grammatical et orthographique. • Adaptation au lecteur ou à la lectrice. • Utilisation judicieuse des principaux éléments du corpus. • Formulation claire et cohérente d'un texte de 500 mots. • Articulation claire d'un point de vue personnel.

Activités d'apprentissage

Discipline: Français, langue seconde
Pondération: 3-0-3
Nombre d'unités: 2

Physical Education	Code: 0064

Objective *Standard*

Statement of the Competency

To establish the role that being physically active plays amongst the lifestyle behaviours which promote health.

Elements of the Competency	Performance Criteria
1. To establish a relationship between their lifestyle and their health.	• Appropriate use of documentation • Appropriate connections between their lifestyle and their health
2. To be physically active in a manner that promotes health.	• Observance of the rules involved in physical activities, including safety rules • Respect for their abilities when engaging in physical activities
3. To recognize their needs, abilities and motivational factors with respect to regular physical activity.	• Appropriate use of quantitative and qualitative physical data • Statement of their main physical needs and abilities • Statement of their main motivational factors with respect to regular physical activity
4. To propose physical activities that promote health.	• Appropriate and justified choice of physical activities according to their needs, abilities and motivational factors

Learning Activities

Discipline: Physical Education
Weighting: 1-1-1
Credits: 1

Physical Education	Code: 0065

Objective	***Standard***

Statement of the Competency

To improve one's effectiveness when practising a physical activity.

Element of the Competency	**Performance Criteria**
1. To use a process designed to improve their effectiveness during a physical activity.	• Initial assessment of their skills and attitudes in relation to a physical activity • Statement of their expectations and needs with respect to their ability to carry out the activity • Appropriate formulation of personal objectives • Statement of the means selected to achieve their objectives • Observance of the rules involved in the physical activity, including safety rules • Periodic evaluation of their skills and attitudes in relation to the activity • Meaningful interpretation of the progress achieved and the difficulties experienced during the activity • Appropriate, periodic adjustments of their objectives or the means used to achieve them • Appreciable improvement of the motor skills required by the activity

Learning Activities

Discipline:	Physical Education
Weighting:	0-2-1
Credits:	1

Physical Education	Code: 0066

Objective	***Standard***

Statement of the Competency

To demonstrate one's responsibility for being physically active in a manner which promotes health.

Elements of the Competency	**Performance Criteria**
1. To make physical activity part of a healthy lifestyle.	• Practise of a physical activity while maintaining a balance between effectiveness and the factors promoting health
2. To manage a personal physical activity program.	• Statement of their priorities according to their needs, skills, and motivational factors in relation to regular physical activity • Proper formulation of the objectives for their personal programs • Appropriate choice of activity or activities for their personal programs • Appropriate planning of the conditions in which the activity or activities in their personal programs are carried out • Appropriate choice of criteria for measuring the attainment of their personal programs • Periodic assessment of the time invested and the activities carried out during the program • Meaningful interpretation of the progress achieved and difficulties experienced during the activities • Appropriate, periodic adjustment of their objectives or the means used to attain them

Learning Activities

Discipline:	Physical Education
Weighting:	1-1-1
Credits:	1

Language of Instruction and Literature	Code: 000L

Objective *Standard*

Statement of the Competency

To communicate in the forms of discourse appropriate to one or more fields of study.

Elements of the Competency	Performance Criteria
1. To identify the forms of discourse appropriate to given fields of study.	• Accurate recognition of specialized vocabulary and conventions • Accurate recognition of the characteristics of the form of discourse
2. To recognize the discursive frameworks appropriate to given fields of study.	• Clear and accurate recognition of the main ideas and structure • Appropriate distinction between fact and argument
3. To formulate a discourse.	• Appropriate choice of tone and diction • Correctly developed sentences • Clearly and coherently developed paragraphs • Appropriate use of program-related communication strategies • Formulation of a 1000-word discourse • Thorough revision of form and content

Learning Activities

Discipline: English
Hours of instruction: 60
Credits: 2

Humanities	Code: 000U

Objective	***Standard***

Statement of the Competency

To apply a critical thought process to ethical issues relevant to the field of study.

Elements of the Competency	**Performance Criteria**
1. To situate significant ethical issues in appropriate world-views and fields of knowledge.	• Accurate recognition of the basic elements of ethical issues • Appropriate use of relevant terminology • Adequate identification of the main linkages with world-views and fields of knowledge
2. To explain the major ideas, values, and social implications of ethical issues.	• Adequate description of the salient components of the issues
3. To organize the ethical questions and their implications into coherent patterns.	• Coherent organization of the ethical questions and their implications • Appropriate expression, including a significant individual written component, of an analysis of the context, importance and implications of the issues
4. To debate the ethical issues.	• Adequate development of substantiated argumentation including context and diverse points of view • Clear articulation of an individual point of view

Learning Activities

Discipline:	Humanities
Hours of instruction:	45
Credits:	2

Langue seconde (niveau I)	Code: 0018

Objectif	***Standard***

Énoncé de la compétence

Appliquer des notions fondamentales de la communication en français, liées à un champ d'études.

Éléments	**Critères de performance**
1. Dégager le sens d'un message oral simple lié à un champ d'études.	• Repérage précis des difficultés de compréhension du message. • Distinction juste des caractéristiques du message. • Repérage juste du vocabulaire spécialisé. • Utilisation pertinente des techniques d'écoute choisies. • Distinction claire des principaux éléments du message. • Description précise du sens général et des idées essentielles du message.
2. Dégager le sens et les caractéristiques d'un texte lié à un champ d'études.	• Repérage précis des difficultés de compréhension du texte. • Distinction juste des caractéristiques du texte. • Repérage précis du vocabulaire spécialisé. • Utilisation pertinente des techniques de lectures choisies. • Distinction claire des principaux éléments du texte. • Description précise du sens général et des idées essentielles du texte.
3. Émettre un message oral simple lié à un champ d'études.	• Repérage précis des difficultés d'expression orale. • Utilisation pertinente des techniques d'expression orale choisies. • Utilisation pertinente du vocabulaire courant et spécialisé. • Expression intelligible du propos.

Langue seconde (niveau I)	Code: 0018
4. Rédiger un court texte lié à un champ d'études.	• Repérage précis des difficultés d'écrire. • Utilisation pertinente des techniques d'écriture choisies. • Utilisation pertinente du vocabulaire courant et spécialisé. • Formulation claire et cohérente du texte.

Activités d'apprentissage

Discipline: Français, langue seconde
Nombre d'heures-contact: 45
Nombre d'unités: 2

Langue seconde (niveau II)	Code: 000Q

Objectif	***Standard***

Énoncé de la compétence

Communiquer en français dans un champ d'études particulier.

Éléments	**Critères de performance**
1. Distinguer les types de textes propres au champ d'études.	• Distinction précise des caractéristiques formelles de chacun des principaux types de textes et des conventions utilisées.
2. Interpréter des textes représentatifs du champ d'études.	• Distinction claire des principaux éléments du texte. • Interprétation claire du vocabulaire spécialisé. • Repérage précis des idées et des sujets traités. • Utilisation pertinente des techniques de lecture et d'écoute.
3. Utiliser des techniques de production de textes appropriées au champ d'études.	• Emploi pertinent du vocabulaire spécialisé et des conventions. • Respect du niveau de langue et du code grammatical. • Formulation claire et cohérente du propos. • Utilisation pertinente des techniques d'expression.

Activités d'apprentissage

Discipline: Français, langue seconde
Nombre d'heures-contact: 45
Nombre d'unités: 2

Langue seconde (niveau III)	Code: 000R

Objectif	***Standard***

Énoncé de la compétence

Communiquer avec aisance en français dans un champ d'études particulier.

Éléments	**Critères de performance**
1. Commenter des textes propres au champ d'études.	• Distinction précise des caractéristiques formelles des principaux types de textes et des conventions utilisées. • Explication précise du sens des mots dans le texte. • Repérage précis de la structure du texte. • Reformulation juste des idées principales et secondaires, des faits et des opinions. • Emploi juste du vocabulaire spécialisé.
2. Produire un texte sur un sujet lié au champ d'études.	• Respect du sujet. • Emploi pertinent du vocabulaire spécialisé et des conventions. • Respect du niveau de langue et du code grammatical. • Formulation claire et cohérente du propos. • Agencement pertinent des idées. • Adéquation entre forme et fond.

Activités d'apprentissage

Discipline: Français, langue seconde
Nombre d'heures-contact: 45
Nombre d'unités: 2

Langue seconde (niveau IV)	Code: 000S

Objectif — *Standard*

Énoncé de la compétence

Disserter en français sur un sujet lié au champ d'études.

Éléments	Critères de performance
1. Analyser un texte lié au champ d'études.	• Distinction précise des caractéristiques formelles des types particuliers de textes. • Formulation personnelle des éléments principaux. • Inventaire des thèmes principaux. • Repérage juste de la structure du texte. • Relevé d'indices qui permettent de situer le texte dans son contexte. • Articulation claire d'un point de vue personnel, s'il y a lieu. • Association juste des éléments du texte au sujet traité.
2. Rédiger un texte sur un sujet lié au champ d'études.	• Respect du sujet. • Emploi pertinent du vocabulaire spécialisé et des conventions. • Choix judicieux des principaux éléments du corpus en fonction du type de texte. • Formulation claire et cohérente du texte. • Respect du code grammatical et orthographique. • Articulation claire d'un point de vue personnel, s'il y a lieu.

Activités d'apprentissage

Discipline: Français, langue seconde
Nombre d'heures-contact: 45
Nombre d'unités: 2

Social Sciences	Code: 000V

Objective

Statement of the Competency

To estimate the contribution of the social sciences to an understanding of contemporary issues.

Standard

Achievement Context

- Working alone
- In an essay of approximately 750 words on the contribution of the social sciences to an understanding of contemporary issues
- Using documents and data from the social sciences

Elements of the Competency	Performance Criteria
1. Recognize the focus of one or more of the social sciences and their main approaches.	• Formulation of the focus specific to one or more of the social sciences • Description of the main approaches used in the social sciences
2. Identify some of the issues currently under study in the social sciences.	• Association of these issues with the pertinent areas of research in the social sciences
3. Demonstrate the contribution of one or more of the social sciences to an understanding of contemporary issues.	• Presentation of contemporary issues by emphasizing the interpretation of the social sciences • Illustration of the interaction between certain social changes and the contribution of the social sciences

Learning Activities

Hours of instruction: 45
Credits: 2

Social Sciences	Code: 000W

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To analyze one of the major problems of our time using one or more social scientific approaches.	• Working alone • In an essay of approximately 750 words on a topic related to human existence • Using reference materials from one or more disciplines in the social sciences
Elements of the Competency	**Performance Criteria**
1. Formulate a problem using one or more social scientific approaches.	• Presentation of the background to the problem • Use of appropriate concepts and language • Brief description of individual, collective, spatiotemporal and cultural aspects of the problem
2. Deal with an issue using one or more social scientific approaches.	• Clear formulation of an issue • Selection of pertinent reference materials • Brief description of historical, experimental and survey methods
3. Draw conclusions.	• Appropriate use of the selected method • Determination of appropriate evaluation criteria • Identification of strengths and weaknesses of the conclusions • Broadening of issue studied

Learning Activities

Hours of instruction: 45
Credits: 2

Science and Technology	Code: 000X

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To explain the general nature of science and technology and some of the major contemporary scientific or technological issues.	• Working alone • Given a written commentary on a scientific discovery or technological development • In an essay of approximately 750 words

Elements of the Competency	**Performance Criteria**
1. Describe scientific thinking and the standard method.	• Brief description of the essential characteristics of scientific thinking, including quantification and demonstration • Organized list and brief description of the essential characteristics of the main steps in the standard scientific method
2. Demonstrate how science and technology are complementary.	• Definition of terms and description of the primary ways in which science, techniques and technology are interrelated: logical and temporal connections, and mutual contributions
3. Explain the context and the stages related to several scientific and technological discoveries.	• Pertinent and coherent explanation of the relationship between the determining contexts of several scientific and technological discoveries • List of the main stages of scientific and technological discoveries
4. Deduce different consequences and questions resulting from certain recent scientific and technological innovations.	• Brief description of important consequences (of different types) and the current major challenges resulting from several scientific and technological discoveries • Formulation of relevant questions and credibility of responses to the questions formulated

Learning Activities

Hours of instruction: 45
Credits: 2

Science and Technology	Code: 000Y

Objective — *Standard*

Statement of the Competency

To resolve a simple problem by applying the basic scientific method.

Achievement Context

- Working alone or in groups
- Given a simple scientific and technological problem that can be resolved by applying the standard scientific method
- Using common scientific instruments and reference materials (written or other)

Elements of the Competency	Performance Criteria
1. Describe the main steps of the standard scientific method.	• Organized list and brief description of the characteristics of the steps of the standard scientific method
2. Formulate a hypothesis designed to solve a simple scientific and technological problem.	• Clear, precise description of the problem • Observance of the principles for formulating a hypothesis (observable and measurable nature of data, credibility, etc.)
3. Verify a hypothesis by applying the fundamental principles of the basic experimental method.	• Pertinence, reliability and validity of the experimental method used • Observance of established experimental method • Appropriate choice and use of instruments • Clear, satisfactory presentation of results • Validity of the connections established between the hypothesis, the verification and the conclusion

Learning Activities

Hours of instruction: 45
Credits: 2

Modern Languages	Code: 000Z

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To communicate with limited skill[1] in a modern language.	• For modern Latin-alphabet languages: – during a conversation consisting of at least eight sentences of dialogue – in a written text consisting of at least eight sentences Or • For non-Latin-alphabet languages: – during a conversation consisting of at least six sentences of dialogue – in a written text consisting of at least six sentences • Based on learning situations on familiar themes • Using reference materials
Elements of the Competency	**Performance Criteria**
1. Understand the meaning of a verbal message.	Learning a modern language requires becoming aware of the culture of the people who use the language. • Accurate identification of words and idiomatic expressions • Clear recognition of the general meaning of simple messages • Logical connections between the various elements of the message
2. Understand the meaning of a written message.	• Accurate identification of words and idiomatic expressions • Clear recognition of the general meaning of simple messages • Logical connections between the various elements of the message

1. This refers to the limited use of the structures, grammar and vocabulary of the language studied. This limitation varies depending on the complexity of the modern language.

Modern Languages	Code: 000Z
3. Express a simple message verbally.	• Appropriate use of language structures in main and subordinate clauses • Appropriate application of grammar rules • Use of verbs in the present indicative • Appropriate use of basic vocabulary and idiomatic expressions • Comprehensible pronunciation • Coherent sequence of simple sentences • Spontaneous, coherent sequence of sentences in a dialogue
4. Write a text on a given subject.	• Appropriate use of language structures in main and subordinate clauses • Appropriate application of basic grammar rules • Use of verbs in the present indicative • Appropriate use of basic vocabulary and idiomatic expressions • Coherent sequence of simple sentences • Acceptable application of graphic rules for writing systems that do not use the Latin alphabet

Learning Activities

Hours of instruction: 45
Credits: 2

Modern Languages	Code: 0010

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To communicate on familiar topics in a modern language.	• During a conversation consisting of at least 15 sentences of dialogue • In a written text consisting of at least 20 sentences for Latin-alphabet languages • In a written text consisting of at least 10 sentences for non–Latin alphabet languages • Based on: – situations in everyday life – simple topics from everyday life • Using reference materials
Elements of the Competency	**Performance Criteria**
1. Understand the meaning of a verbal message.	Learning a modern language requires becoming aware of the culture of the people who use the language. • Accurate identification of words and idiomatic expressions • Clear recognition of the general meaning and essential ideas of messages of average complexity • Logical connection between the various elements of the message
2. Understand the meaning of a written message.	• Accurate identification of words and idiomatic expressions • Clear recognition of the general meaning and essential ideas of messages of average complexity • Logical connection between the various elements of the message
3. Express a simple message verbally, using sentences of average complexity.	• Appropriate use of language structures in main or subordinate clauses • Appropriate application of grammar rules • Use of verbs in the present indicative • Appropriate use of enriched basic vocabulary and idiomatic expressions • Comprehensible pronunciation • Coherent sequence of sentences of average complexity • Coherent dialogue of average complexity

Modern Languages	Code: 0010
4. Write a text on a given subject, using sentences of average complexity.	• Appropriate use of language structures in main or subordinate clauses • Appropriate application of grammar rules • Use of verbs in the present and past indicative • Appropriate use of enriched basic vocabulary and idiomatic expressions • Coherent sequence of sentences of average complexity • Acceptable application of graphic rules for writing systems that do not use the Latin alphabet

Learning Activities

Hours of instruction**:** 45
Credits: 2

Modern Languages	Code: 0067

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To communicate with relative ease in a modern language.	• Working alone • During a conversation consisting of at least 20 sentences of dialogue • In a written text of medium length (at least 25 sentences for Latin-alphabet languages and 15 sentences for other languages) • Given documents of a sociocultural nature • Using reference materials for the written text
Elements of the Competency	**Performance Criteria**
1. Understand the meaning of a verbal message in everyday language.	Learning a modern language requires being aware of the culture of the people who use the language. • Accurate explanation of the general meaning and essential ideas of the message • Clear identification of structural elements of the language
2. Understand the meaning of a text of average complexity.	• Accurate explanation of the general meaning and essential ideas of the text • Clear identification of structural elements of the language
3. Have a conversation about a subject.	• Appropriate use of the structural elements of the language according to the message to be expressed • Appropriate use of everyday vocabulary • Accurate pronunciation and intonation • Normal flow in a conversation in everyday language • Coherence of the message expressed • Pertinent responses to questions
4. Write a text of average complexity.	• Appropriate use of the structural elements of the language according to the text to be written • Accurate vocabulary • Coherence of the text as a whole • Observance of presentation and writing rules
Learning Activities	

Hours of instruction: 45
Credits: 2

Mathematics Literacy and Computer Science — Code: 0011

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To recognize the role of mathematics or informatics in contemporary society.	• Working alone • In an essay of approximately 750 words • Using several concrete examples selected by the student demonstrating the competency

Elements of the Competency	**Performance Criteria**
1. Demonstrate the acquisition of basic general knowledge in mathematics or informatics.	• Identification of basic notions and concepts • Identification of main branches of mathematics or informatics • Appropriate use of terminology
2. Describe the evolution of mathematics or informatics.	• Descriptive summary of several major phases
3. Recognize the contribution of mathematics or informatics to the development of other areas of knowledge.	• Demonstration of the existence of important contributions, using concrete examples
4. Illustrate the diversity of mathematical or informatics applications.	• Presentation of a range of applications in various areas of human activity, using concrete examples
5. Evaluate the impact of mathematics or informatics on individuals and organizations.	• Identification of several major influences • Explanation of the way in which mathematics or informatics have changed certain human and organizational realities • Recognition of the advantages and disadvantages of these influences

Learning Activities

Hours of instruction: 45
Credits: 2

Mathematics Literacy and Computer Science — Code: 0012

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To use various mathematical or computer concepts, procedures and tools for common tasks.	• Working alone • While carrying out a task or solving a problem based on everyday needs • Using familiar tools and reference materials
Elements of the Competency	**Performance Criteria**
1. Demonstrate the acquisition of basic functional knowledge in mathematics or informatics.	• Brief definition of concepts • Correct execution of basic operations • Appropriate use of terminology
2. Select mathematical or computer tools and procedures on the basis of specific needs.	• List of numerous possibilities available with mathematical and computer tools and procedures • Analysis of concrete situations and recognition of the usefulness of mathematical or computer tools and procedures • Appropriate choice according to needs
3. Use mathematical or computer tools and procedures to carry out tasks and solve problems.	• Planned, methodical process • Correct use of tools and procedures • Satisfactory results, given the context • Appropriate use of terminology specific to a tool or procedure
4. Interpret the quantitative data or results obtained using mathematical or computer tools and procedures.	• Accurate interpretation, given the context • Clear, precise formulation of the interpretation

Learning Activities

Hours of instruction: 45
Credits: 2

Art and Aesthetics	Code: 0013

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To consider various forms of art produced by aesthetic practices.	• Working alone • Given a specified work of art • In a written commentary of approximately 750 words

Elements of the Competency	**Performance Criteria**
1. Develop an appreciation for the dynamics of the imagination in art.	• Precise explanation of a creative process connected to the construction of an imaginary universe
2. Describe art movements.	• Descriptive list of the main characteristics of three art movements from different periods, including a modern movement
3. Give a commentary on a work of art.	• Coherent organization of observations, including identification of four basic elements of form and structure related to the language used as well as a justified description of the meaning of the work of art

Learning Activities

Hours of instruction: 45
Credits: 2

Art and Aesthetics	Code: 0014

Objective

Statement of the Competency

To produce a work of art.

Standard

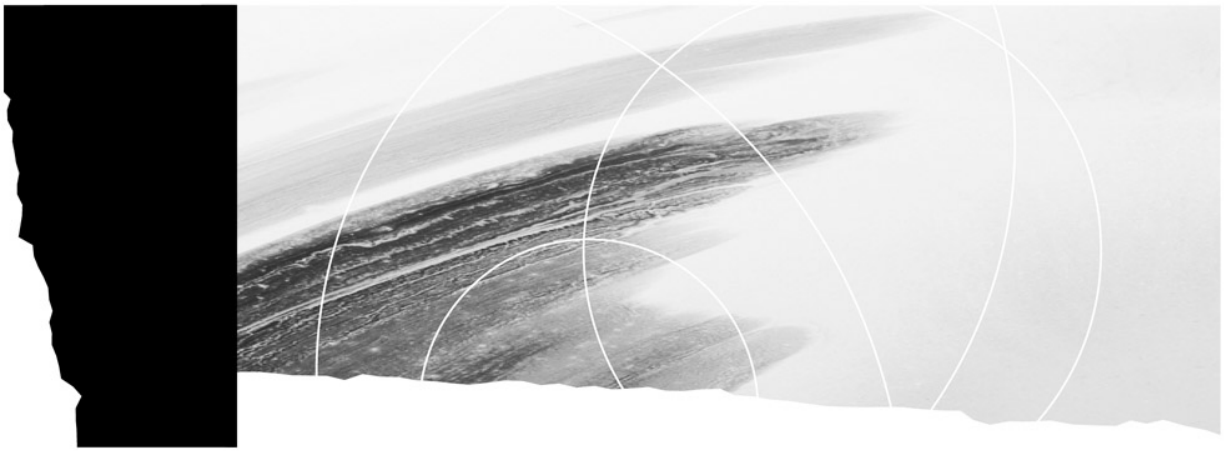
Achievement Context

- Working alone
- During a practical exercise
- In the context of a creation or an interpretation
- Using the basic elements of the language and techniques specific to the medium selected

Elements of the Competency	Performance Criteria
1. Recognize the primary forms of expression of an artistic medium.	• Identification of specific features: originality, essential qualities, means of communication, styles, genres
2. Use the medium.	• Personal, coherent use of elements of language • Satisfactory application of artistic techniques • Observance of the requirements of the method of production

Learning Activities

Hours of instruction: 45
Credits: 2



Part II

Goals of the Program-Specific Component

Educational Aims of the Program-Specific Component

Grid of Competencies

Harmonization

Objectives and Standards of the Program-Specific Component

Goals of the Program-Specific Component

The *Civil Engineering Technology* program prepares students to practise the occupation of civil engineering technician.

Graduates of this program will be able to work in the structural engineering, municipal engineering, road engineering, geotechnical engineering and environmental sectors. Their employers and clients will include engineering consulting firms, testing laboratories, government departments, municipalities and regional county municipalities, manufacturers of building materials or products, and building contractors.

Civil engineering technicians carry out survey work and soil or material analyses; contribute to the technical design of structural or infrastructure construction or repair projects; organize work on-site; monitor construction or repair work; inspect civil engineering works; and adapt the methods used to manufacture building materials. Civil engineering work is covered by the provisions of legislation and regulations governing construction, repair, environmental protection and occupational health and safety.

Civil engineering technicians are required to work as part of multidisciplinary teams, within the area of competency defined by the legislation and regulations governing professional occupations. Depending on the type of organization, they may be called upon to work with engineers, contractors or people from the municipal and manufacturing communities. They may also be self-employed.

The program meets the need for training in the design and execution of construction and repair work. To adjust to new labour market requirements, the program has also been designed to include environmental considerations.

One of the principal objectives of the program is to help students develop versatility. The general and program-specific competencies have therefore been formulated to incorporate various applications of civil engineering, within the limits of the profession.

The goals of the program-specific component of the *Civil Engineering Technology* program are based on the general goals of vocational and technical training. These goals are:

- To help students develop effectiveness in the practice of a trade or occupation, that is:
  - to teach students to perform roles, functions, tasks and activities associated with the trade or occupation upon entry into the job market
  - to prepare students to progress satisfactorily on the job (which implies having the necessary technical and technological knowledge and skills in such areas as communication, problem solving, decision making, ethics, health and safety)

- To help students integrate into the work force, that is:
  - to familiarize students with the job market in general and the context surrounding the occupation they have chosen
  - to familiarize students with their rights and responsibilities as workers

- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
  - to help students develop their autonomy and the desire to learn, and acquire effective work methods
  - to help students understand the principles underlying the techniques and the technology used in the trade or occupation
  - to help students develop self-expression, creativity, initiative and entrepreneurial spirit
  - to help students adopt the attitudes required to successfully practise the trade or occupation, and instill in them a sense of responsibility and a concern for excellence

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

Educational Aims of the Program-Specific Component

Educational aims are based on important values and concerns and serve as guidelines for interactions with students. As a general rule, educational aims focus on important aspects of the students' professional and personal development, such as attitudes, work habits and intellectual skills, which have not been explicitly formulated in the program's goals, objectives and standards.

The following is a description of the aims of the program-specific component of the *Civil Engineering Technology* program:

- To solve problems
- To adapt to change
- To develop the ability to work independently
- To develop a sense of responsibility
- To respect the needs of clients

Grid of Competencies

The grid of competencies provides an overview of a technical program. It brings together all of the components of a program and shows the relationship among the competencies.

The grid of competencies includes:

- the general competencies of the program-specific component, which deal with work-related activities common to various tasks or situations
- the specific competencies, which deal with tasks directly related to the practice of the trade or occupation

The grid of competencies shows the relationship between the general competencies on the horizontal axis and the specific competencies on the vertical axis. The symbol (❍) indicates a correlation between a general and a specific competency.

The order in which the competencies are presented reflects the program's design; it does not dictate the course sequence. The grid of competencies is provided for information purposes only.

GRID OF COMPETENCIES

CIVIL ENGINEERING TECHNOLOGY

SPECIFIC COMPETENCIES	Competency Number	GENERAL COMPETENCIES														
		To analyze the occupation of civil engineering technician.	To solve mathematical problems related to buildings and public works	To operate a computer environment.	To review plans and specifications for buildings and public works	To analyze civil engineering projects	To carry out a topometric survey	To draw a plan	To take responsibility for occupational health and safety	To calculate the forces and loads applied to engineering works	To establish professional relationships	To analyze the structural reactions of engineering works	To analyze construction materials	To analyze soils	To propose environmental measures	To estimate construction or repair costs
Competency Number		1	2	3	4	5	6	7	8	9	10	12	13	15	18	20
To implement construction works	11	o	o	o	o	o			o		o					
To do the technical design of structural elements	14	o	o	o	o	o		o		o	o	o				
To do the technical design of infrastructure projects	16	o	o	o	o	o	o	o	o	o	o			o		
To inspect public works and buildings	17	o	o	o	o		o		o	o	o	o	o	o		
To supervise site operations	19	o	o	o	o	o	o	o	o		o		o	o	o	
To customize methods for producing construction materials	21	o	o		o						o		o			o
To participate in preparing bids and organizing site operations	22	o	o	o	o				o		o				o	o
To participate in preparing construction and repair projects	23	o	o	o	o			o	o	o	o	o			o	o

Harmonization

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

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

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

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

Harmonization of the *Civil Engineering Technology* program has resulted in identifying competencies that are shared with other programs. Detailed information on the harmonization of this program and its results are presented in the document entitled *Tableaux d'harmonisation, Technologie du genie civil.*

Code: 01X1

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To analyze the occupation of civil engineering technician.	• Using recent information on occupational functions and on companies and institutions related to civil engineering • Using current laws, regulations, standards and codes
Elements of the Competency	**Performance Criteria**
1. To describe the job function and the working conditions.	• Relevance of the information obtained • Review of the fields in which civil engineering is applied • Complete examination of the characteristics of the occupation and the working conditions • Recognition of the contribution of specialists in the field of civil engineering or related fields • Recognition of the potential for entrepreneurship
2. To examine the tasks and operations related to the job function.	• Complete examination of the operations, conditions and performance criteria for each task • Precise assessment of the relative importance of each task
3. To examine the professional conduct related to the job function.	• Review of the laws, regulations and codes in force • Clear description of the values governing the profession
4. To examine the skills and behaviours necessary to carry out the job function.	• Complete examination of the qualities required to exercise the profession • Importance of the relationship between the skills and behaviours required and the tasks inherent to the occupation

Code: 01X2

Objective	***Standard***
Statement of the Competency To solve mathematical problems related to buildings and public works.	**Achievement Context** • On the basis of data from projects involving structural or infrastructure elements • Using computer applications or a graphic display calculator
Elements of the Competency	**Performance Criteria**
1. To examine the elements of a problem situation.	• Statement of data • Accurate determination of the operations to be performed • Pertinent and adequate graphical representation of the problem
2. To establish quantity ratios and percentages.	• Appropriate choice of a problem solving method • Proper application of the method selected
3. To apply trigonometric methods.	• Appropriate choice of trigonometric tools • Accurate conversion of the problem into trigonometric or algebraic equations • Trigonometric and algebraic calculations in accordance with the rules
4. To apply vector calculation methods.	• Appropriate choice of vector operations • Accurate conversion of the problem into algebraic equations or linear equation systems • Careful choice of a method to solve the linear equations • Algebraic calculations in accordance with the rules • Proper application of the problem solving methods
5. To calculate distances, areas and volumes.	• Appropriate choice of a problem-solving method • Proper application of the method selected
6. To present the results and justify the problem-solving process.	• Correct use of terminology and syntax • Presentation of results with the required level of detail • Critical assessment of the reasonableness of the results • Accurate interpretation of the results

Code: 01X3

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To operate a computer environment.	• Using software applications and peripherals • Using technical documentation • In collaboration with resource people
Elements of the Competency	**Performance Criteria**
1. To ensure that the computer workstation is designed ergonomically.	• Identification of potential risks to health and safety when using a computer workstation • Pertinence of the preventive measures
2. To check that the computer hardware is in working order and make any corrections required.	• Appropriate consultation of user guides and resource people • Appropriate verification of the hardware and connections • Correct setting of the operating system parameters and peripheral applications • Appropriate use of software verification, maintenance and upgrading procedures
3. To create local or network directories.	• Proper organization of the directory trees • Compliance with classification rules • Appropriate use of the operating system
4. To enter and manipulate texts.	• Appropriate use of the software application's basic functions • Compliance with layout standards • Saving and printing of the file
5. To produce tables and diagrams.	• Choice of an appropriate representation method • Appropriate use of the software application's basic functions • Compliance with table and diagram creation standards • Compliance with the rules of spelling and grammar • Saving and printing of the file
6. To consult a database.	• Appropriate use of the software application's basic functions • Pertinence of the search • Proper application of the rules of formal logic

	Code: 01X3
7. To exchange files.	• Identification of file formats • Appropriate conversion of the files • Judicious use of compression software • Appropriate use of telecommunications and browser applications

Code: 01X4

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To review plans and specifications for buildings and public works.	• On the basis of plans and specifications for construction projects and for structural and infrastructure repair projects • Using data from the International System of Units and the Imperial System • Using measuring instruments • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To interpret the plan.	• Identification of plan, elevation, detail and sectional views of the work • Accurate interpretation of the working perimeter • Accurate interpretation of graphic symbols • Accurate interpretation of annotations and dimensions • Pertinent connections between the views
2. To check the consistency of the plan and specifications.	• Appropriate consultation of resource people • Systematic comparison of the information contained in the plan and the specifications • Statement of inconsistencies • Statement of missing or incorrect information
3. To make the necessary changes to the plan.	• Appropriate consultation of resource people • Appropriate use of scales • Appropriate use of measuring instruments • Precise measurement or detailed calculation of dimensions not shown • Appropriate corrections to incorrect information
4. To make the necessary changes to the specifications and the general notes on the plan.	• Appropriate consultation of resource people • Appropriate corrections to incorrect information • Production of a clearly worded version of the missing information
5. To obtain approval for the plan and specifications.	• Clear presentation of the changes made to the plan and specifications • Appropriate corrections to the plan and specifications

Code: 01X5

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To analyze civil engineering projects.	• On the basis of construction projects and structural or infrastructure repair projects • Using the laws, regulations, standards and codes applicable to construction and repairs • Using material data profiles • Using equipment technical sheets
Elements of the Competency	**Performance Criteria**
1. To examine the request of the order giver.	• Identification of the order giver's socio-economic characteristics • Review of needs or the problems encountered • Review of the order giver's expectations and requirements • Review of the conditions for completion of the project
2. To identify the type of work.	• Identification of the type of structure or infrastructure • Identification of a construction or repair project • List of the distinctive features of the work
3. To analyze the technical characteristics of the materials.	• List of the types of structural materials and their physical and chemical properties. • List of the types of processing and protection materials and their physical and chemical properties. • Pertinent relationships between the materials, their use and their physical and chemical properties. • Appropriate use of the fact sheets.
4. To analyze the construction or repair method(s).	• List of the on-site activities to be carried out • List of the materials required • Accurate matching of activities and equipment to the construction or repair method(s)
5. To examine the legal provisions of the project.	• Review the applicable laws, regulations and standards • Review the project elements covered by legal provisions • Review the applicable sections of the codes • Accurate interpretation of the vocabulary used

Code: 01X5

6. To explain the project.	• Pertinent relationships between the order giver's request, the type of work, the materials, the construction or repair methods applied, and the legal provisions • Use of appropriate vocabulary • Clarity of the information given

Code: 01X6

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To carry out a topometric survey.	• Using conventional and non-conventional surveying equipment • Using surveying instruments • Using specialized software • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To plan the survey work.	• Appropriate consultation of resource people • Accurate analysis of the survey request • Assessment of the level of precision required • Appropriate determination of the survey perimeter • Consultation of appropriate documentation • Appropriate choice of a survey method • Appropriate choice of equipment • Verification and appropriate calibration of instruments
2. To establish the work area.	• Appropriate choice of the physical components to be surveyed • Choice of control stations, according to the survey method • Appropriate choice of control points • Respect for private property
3. To take measurements according to the survey method.	• Appropriate handling of the equipment • Proper instrument setup • Precise and complete measurement of the relative positions of control points • Precise and complete measurement of the relative positions of the physical components • Appropriate choice and use of a verification method • Compliance with occupational health and safety rules

	Code: 01X6
4. To fill out the field book.	• Clarity of the location sketches • Clarity of the field book • Agreement between the points surveyed and the notes taken • Compliance with the symbols and codes used for the elements measured and the industry standards
5. To maintain and store the equipment.	• Appropriate maintenance of the equipment • Proper storage of the equipment
6. To transfer data from the field survey into a processing application.	• Complete transfer of data • Appropriate use of the software application • Compliance with file exchange formats
7. To calculate the survey data.	• Accurate calculation of the circuit closure • Appropriate choice of a correction method • Appropriate distribution of circuit measurement correction • Accurate calculation of coordinates • Critical assessment of the reasonableness of the results • Appropriate use of the software application
8. To transfer the final coordinates into a graphics application.	• Complete transfer of coordinates • Appropriate use of the software application • Compliance with file exchange formats

Code: 01X7

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To draw a plan.	• Using sketches of construction and repair work for building and infrastructure projects • Using data calculated from topometric surveys • Using data from the International System of Units and the Imperial System. • Using drafting standards • Using CAD software • Using an electronic library of objects and symbols
Elements of the Competency	**Performance Criteria**
1. To prepare the drawing setup.	• Proper interpretation of the sketch(es) • Review of the views and sections to be drawn • Review of the descriptive data to be shown • Precise determination of the geometric elements to be represented • Choice of an appropriate paper format • Choice of an appropriate scale or scales
2. To structure the drawing file.	• Judicious use of a prototype drawing, a library of symbols or a basic plan template • Accurate generation of missing symbols and attributes • Setting of the drawing software application's parameters based on the data, the organization's own standards, the scale and the measurement units • Adequate personalization of the graphics interface • Compliance with drafting standards and conventions • Appropriate use of the software application

	Code: 01X7
3. To represent the geometric elements.	• Judicious choice of a real or symbolic representation of each element • Accurate vectorization of the reference lines and contour lines of each element • Proper application of symbolic representation standards • Appropriate use of the software application • Consistency of the drawing with the initial information • Compliance with the file structure • Compliance with the rules of readability • Compliance with drafting standards and conventions
4. To complete the drawing.	• Complete dimensioning, tailored to construction requirements • Clear and accurate notes • Accurate drafting of the title block • Proper application of standards for using symbols • Judicious use of cross-hatching • Appropriate use of the software application • Compliance with the rules of readability • Compliance with the rules of spelling
5. To finalize the page layout and print the drawing.	• Correct layout of views, cross-sections, border lines and title block • Proper application of scale(s) • Correct printer settings • Appropriate use of the software application and peripherals

Code: 01X8

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To take responsibility for occupational health and safety.	• Using a prevention program • Using the laws, regulations and codes governing site safety issues • Using WHMIS documentation and documents on hazardous materials
Elements of the Competency	**Performance Criteria**
1. To recognize hazardous situations and assess their consequences.	• Review of actual or potential sources of danger • Clear description of the risks associated with on-site work • Clear description of the risks associated with the presence of contaminants and hazardous products • Accurate interpretation of the laws, regulations and codes governing occupational health and safety • Precise assessment of the gravity of the situation and the consequences for one's own health and the health of others
2. To prevent workplace accidents.	• Recognition of individual responsibility • Appropriate and judicious use of a prevention program • Relevance of personal protection measures • Relevance of worker protection measures • Relevance of public protection measures • Proper application of WHMIS standards • Compliance with the laws, regulations and codes governing occupational health and safety
3. To take action when workplace accidents occur.	• Recognition of the seriousness of the accident • Pertinence of the decision to help the person concerned or call for outside help • Appropriate and judicious application of an emergency plan
4. To prepare accident and incident reports.	• Appropriate consultation of resource people • Consultation of appropriate documentation • Clear, accurate and objective information • Compliance with the rules of spelling, grammar, syntax and punctuation

Code: 01X9

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To calculate the forces and loads applied to engineering works.	• On the basis of projects involving structural and infrastructure elements • Using software applications or a graphic display calculator • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To make a schematic diagram of the work.	• List of the strategic points of the various elements • Judicious choice of elements for inclusion in the diagram • Appropriate representation of the significant elements of the work • Proper application of standards for using symbols • Clarity of the drawing
2. To analyze the forces and loads applied to the work.	• List of the forces and loads present • Appropriateness of the vector showing the position and intensity of localized forces • Appropriateness of the geometric figure showing the position and variation in intensity of a distributed load • Accurate determination of the direction of forces and loads • Recognition of the static or dynamic nature of the phenomenon
3. To establish the stresses and moments present in the work.	• Selection of an appropriate calculation method • Proper representation of the work's reactions at the supports or joints • Accurate calculation of the stresses and moments • Proper application of the principles of statics • Accurate determination of the position and direction of the stresses and moments • Accurate and appropriate conversion of measurement units • Critical appraisal of the reasonableness of the results

	Code: 01X9
4. To establish the hydraulic energy present in water support, distribution and capture works.	• Identification of the energies present at strategic points • Selection of an appropriate calculation method • Accurate calculation of potential energy, motive flow, pressure energy or pressure drops • Proper application of the principles of dynamics • Accurate and appropriate conversion of measurement units • Critical assessment of the reasonableness of the results
5. To have the calculations approved.	• Detailed presentation of results • Appropriate correction of calculations

Code: 01XA

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To establish professional relationships.	• In the presence of coworkers, clients, members of the public and site staff • On the basis of current laws, regulations and codes • According to the fields of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To present and receive professional information.	• Appropriate use of communications techniques • Relevance and exactness of the information • Appropriate note-taking • Compliance with the rules of professional ethics • A clearly demonstrated willingness and ability to listen
2. To defend a professional opinion.	• Accuracy of remarks • Clear arguments • Use of appropriate professional language • Respect for the opinions of others • Respect for professional boundaries and the expertise of other professions • A clearly demonstrated objective approach and an open-minded attitude
3. To appraise professional dilemmas.	• Accurate analysis of the situation • Accurate identification of codes, laws and regulations • Appropriateness of the decision • Compliance with the rules of professional ethics
4. To assess relationships in light of professional requirements.	• Identification of appropriate and inappropriate attitudes and behaviours • Accurate analysis of own strengths and weaknesses • Suggestions for ways of improving relationship quality

Code: 01XB

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To implement construction works.	• On the basis of plans and specifications for construction projects and data drawn from the topometric survey • Using conventional and non-conventional surveying equipment • Using surveying tools • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To plan the work.	• Appropriate consultation of resource people • Accurate analysis of the project • Accurate interpretation of the plan • Identification of control points from the topometric survey • Accurate identification of any constraints applicable to the construction work • Accurate identification of the elements to be implemented
2. To calculate implementation data.	• Accurate calculation of the coordinates of points to be implemented • Accurate, pertinent calculation of the coordinates of points to be offset • Consideration of the constraints applicable to the construction work
3. To prepare the move to the site.	• Appropriate choice of equipment • Clarity of the sketch • Relevance of the annotations • Complete transfer of implementation data and data calculated from the field survey in the logbook • Appropriate testing and calibration of the instruments

	Code: 01XB
4. To proceed with implementation.	• Clear agreement on the type of work to be done • Relevant choice of referencing points • Appropriate handling of equipment • Accurate instrument setup • Precise placing of points • Clear identification of points • Relevance and accuracy of construction instructions on stakes • Selection and use of an appropriate verification method • Clear, detailed notes • Compliance with occupational health and safety rules
5. To situate the required batter boards.	• Judicious choice of batter board locations • Proper installation of batter boards • Points accurately attached to the batter boards • Compliance with any constraints on the construction work • Compliance with occupational health and safety rules
6. To maintain and store equipment.	• Appropriate maintenance of equipment • Proper storage of equipment

Code: 01XC

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To analyze the structural reactions of engineering works.	• On the basis of construction and repair projects • On the basis of calculated loads and moment data • Using steel, concrete and wood codes • Using the regulations and standards governing construction and repair work • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To examine data on the work.	• List of data on the materials used • List of structural element dimensions • List of data on loads and moments • List of strategic points in the structure
2. To establish the internal stresses of the structural elements.	• Selection and appropriate use of a calculation method • Accuracy of tension, compression, shear and deflection calculations for strategic points • Correct association of internal stresses with strategic points • Relevant and accurate conversion of measurement units • Critical assessment of the reasonableness of the results
3. To determine the strength of structural elements.	• Appropriate consultation of resource people • Appropriate use of materials codes • Full and accurate determination of breaking points • Brief description of cracks

	Code: 01XC
4. To determine any deformations in structural elements.	• Appropriate consultation of resource people • Accurate calculation of deflection, buckling, spillage or thermal movement at strategic points of structural elements • Relevant and accurate conversion of measurement units • Critical assessment of the reasonableness of the results • Appropriate use of standards • Complete determination of locations of excessive deformation
5. To have the analysis results approved.	• Detailed presentation of the results • Appropriate corrections to the calculations

Code: 01XD

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To analyze construction materials.	• Following a request for an analysis • Using samples of construction materials • Using standards, test procedures and technical documentation on quality control for granular materials, cement concretes, bitumen coatings, steel and membranes • Using laboratory equipment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To define the needs of the analysis.	• Identification of material type • Identification of the client's quality requirements • Identification of the context in which the material is used • Accurate determination of the mechanical characteristics and physico-chemical properties to be analyzed • Appropriate choice of the tests required or the pertinence of the decision to use a specialized laboratory
2. To prepare the tests.	• Accurate interpretation of standards and test procedures • Choice of appropriate equipment • Proper verification and calibration of the equipment • Proper planning of the steps in the test procedure • Proper application of appropriate sample preparation techniques
3. To carry out the tests.	• Appropriate use of the equipment • Proper application of standards and test procedures • Accuracy of manoeuvres • Clear and detailed notes on the data • Proper equipment maintenance • Compliance with laboratory health and safety rules

	Code: 01XD
4. To process the data.	• Proper use of data processing procedures • Appropriate use of statistical tools • Accuracy of calculations • Relevant, accurate conversion of measurement units • Determination of test reliability • Clear and detailed notes on the results. • Presentation of the results according to the equipment precision level, standards and test procedures • Critical assessment of the reasonableness of the results
5. To establish whether or not the materials are acceptable.	• Appropriate consultation of resource people • Consultation of appropriate technical documentation • Determination of the consistency of the results • Accurate interpretation of the standards, test procedures and quality requirements • Appropriateness of the recommendation • Complete, clearly-worded analysis report
6. To have the analysis report approved.	• Detailed presentation of the analysis report • Use of correct terminology • Appropriate corrections to the report

Code: 01XE

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To do the technical design of structural elements.	• On the basis of construction and repair project briefs • Using steel, concrete and wood codes • Using the regulations and standards governing construction and repair work • Using software applications • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To analyze the documents making up the project brief.	• Accurate analysis of the project • Accurate interpretation of the preliminary plan(s) • List of principal and secondary load-bearing elements and non load-bearing elements • Accurate determination of the applicable regulations • Identification of project constraints
2. To determine the technical characteristics of the principal and secondary elements.	• Appropriate consultation of resource people • Proper use of material codes • Accurate calculation of forces and loads • Accurate analysis of structural reactions • Appropriate choice of structural element shapes • Accurate dimensioning of the elements • Relevant and accurate conversion of measurement units • Accurate determination of the number of structural elements • Appropriate use of the software application
3. To specify the technical characteristics of the connection components.	• Appropriate consultation of resource people • Appropriate use of material codes • Choice of appropriate connection method • Precise positioning of connection components • Accurate determination of the number of connection components • Appropriate use of the software application • Consideration of stresses due to loads

Code: 01XE

4. To detail the structural elements and connection components.	• Appropriate use of material codes • Accurate positioning of structural elements and connection components • Consideration of clearance during erection and construction • Clarity and precision of shop drawings and tables • Appropriate use of the software application • Preparation of all required bills of materials
5. To specify the construction or repair work.	• Accurate identification of steps in the work process • Preparation of all specifications • Clarity and precision of the plan • Compliance with the construction or repair method • Consideration of work constraints • Compliance with regulations and standards applicable to construction or repair work
6. Have the plans and specifications approved.	• Detailed presentation of the plans and specifications • Use of correct terminology • Appropriate corrections to the plans and specifications

Code: 01XF

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To analyze soils.	• Following a request for a soil analysis • Using regulations, standards and technical documentation governing construction, repairs and environmental protection • Using sampling instruments and laboratory equipment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To define the needs for the analysis.	• Identification of the significant elements in the request for analysis • Accurate identification of the mechanical features and the physical and hydraulic properties to be analyzed • Appropriate choice of tests, or pertinence of the decision to use specialized laboratories • Choice of appropriate sampling instruments
2. To observe and describe the significant elements of the site.	• Identification of soil type • Identification of contamination indicators • Clear and detailed notes • Respect for private property
3. To collect samples and carry out the required in situ tests.	• Appropriate choice of sampling site(s) • Proper application of sampling techniques • Pertinence and compliance of in situ tests • Clear and detailed notes • Compliance with occupational health and safety rules • Respect for private property and the environment
4. To prepare the tests.	• Accurate interpretation of test standards • Choice of appropriate instruments • Verification and calibration of the instruments • Proper planning of steps in the test procedure • Proper application of sample preparation techniques

	Code: 01XF
5. To carry out the tests.	• Appropriate use of the instruments • Proper application of test standards • Precision of manoeuvres • Clear and detailed notes on the data • Proper instrument maintenance • Compliance with laboratory health and safety rules
6. To process the data.	• Proper application of data processing procedures • Appropriate use of statistical tools • Accuracy of the calculations • Pertinent, accurate conversion of measurement units • Determination of test reliability • Clear and detailed notes on the results • Presentation of the results according to the instrument precision level and the test standards used • Critical assessment of the reasonableness of the results
7. To establish the geotechnical and environmental constraints.	• Appropriate consultation of resource people • Consultation of appropriate technical documentation • Determination of the consistency of the results • Accurate interpretation of the regulations and test standards • Correct soil classification • Clear identification of the mechanical features and the physical and hydraulic properties of the soil • Complete, clearly-worded analysis report
8. To have the analysis report approved.	• Detailed presentation of the analysis report • Use of correct terminology • Appropriate corrections to the analysis report

Code: 01XG

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To do the technical design of infrastructure projects.	• On the basis of construction or repair project preliminary documents • Using the regulations and standards governing construction or repair work • Using technical documentation on material quality control and environmental protection • Using measuring instruments • Using sampling instruments and laboratory equipment • Using charts • Using software applications • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To analyze the preliminary documents for the project.	• Accurate analysis of the project • Accurate analysis of the preliminary plan(s) • List of the infrastructure elements and their features • Accurate determination of the applicable regulations • Accurate determination of the information required
2. To collect complementary data.	• List of existing structures and infrastructures • Relevance and precision of the topometric survey • Relevance and compliance of soil or water sampling • Relevance and compliance of in situ tests • Respect for private property and the environment • Compliance with occupational health and safety rules

	Code: 01XG
3. To stipulate any constraints on the work.	• Accurate analysis of field data • Complete and detailed description of the problems between the draft project footprint and on-site elements • Proper identification of the geotechnical and environmental constraints • Compliance with the order-giver's needs • Compliance with current regulations and standards governing construction or repair work
4. To stipulate the characteristics of the infrastructure components and the specific elements.	• Appropriate consultation of resource people • Accurate calculation of the hydraulic and geometric characteristics of the work • Choice of appropriate point features • Precise location of infrastructure components and the specific elements • Proper application of the regulations and standards governing construction or repair work • Relevant and accurate conversion of measurement units • Clarity of the plan view • Clearly-worded specifications • Appropriate use of charts • Appropriate use of software applications • Compliance with symbology • Compliance with constraints
5. To determine the infrastructure profile.	• Appropriate consultation of resource people • Accurate calculation of elevations, lengths and slopes • Choice of appropriate horizontal and vertical scales • Proper application of the regulations and rules applicable to construction or repair work • Relevant, accurate conversion of measurement units • Clarity of the longitudinal and transverse profile views • Clearly-worded specifications • Appropriate use of charts • Appropriate use of software applications • Compliance with standards for the use of symbols • Compliance with constraints

	Code: 01XG
6. To determine the earthworks required.	• Complete description of the materials to be added, moved or excavated • Precise location of earthworks • Accurate calculation of material volumes and masses • Clearly-worded, complete bill of materials • Relevant, accurate conversion of measurement units • Appropriate use of software applications • Compliance with the construction or repair method • Compliance with constraints • Compliance with the regulations and standards applicable to construction or repair work
7. To have the plans and specifications approved.	• Detailed presentation of the plans and specifications • Use of correct terminology • Appropriate corrections to plans and specifications

Code: 01XH

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To inspect public works and buildings.	• Using an inspection checklist or criteria • Using the regulations, standards and technical documentation applicable to: – construction or repair work – material quality control – environmental protection – occupational health and safety • Using measuring instruments • Using sampling instruments and laboratory equipment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To plan inspection work.	• Appropriate consultation of resource people • List of public works or buildings to be inspected • List of legal provisions • Appropriate use of technical documentation • Identification of the strategic points to be inspected • Choice of appropriate instruments and apparatus
2. To meet the people concerned.	• Clear explanation of the purpose of the inspection • Clarity of questions and answers • Relevance and objectivity of the information given and received • Use of correct terminology • Compliance with professional ethics

	Code: 01XH
3. To observe and record anomalies.	• Record of cracks • Evidence of deterioration of materials • Evidence of subsidence • Evidence of contamination • Record of breakage in roadwork features, network components and specific elements, as well as public facilities • Identification of poorly situated or missing features • Use of appropriate reference documents • Clear and detailed notes • Pertinence and clarity of sketches • Respect for private property • Compliance with occupational health and safety rules
4. To collect the necessary data.	• Choice and use of appropriate assessment techniques • Relevance of recording an image of the site or work • Relevance and accuracy of the topometric survey • Relevance and representativeness of material, soil and water sampling • Relevance and quality of in situ tests • Appropriate use of measuring instruments and apparatus • Respect for private property and the environment • Compliance with occupational health and safety rules
5. To establish the conformity of the public work or building.	• Appropriate consultation of resource people • Accurate analysis of field data • Accurate interpretation of legal provisions • Precise evaluation of the status of the work • Accuracy of the verdict • Appropriate use of standards, codes and technical documentation • Clear and objective inspection report
6. To have the inspection report approved.	• Detailed presentation of the inspection report • Use of correct terminology • Appropriate corrections to the inspection report

Code: 01XJ

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To propose environmental measures.	• On the basis of environmental impact assessments • Using documents from the construction or repair project to which the impact assessment relates • Using laws, regulations, standards and technical documentation concerning the environment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To analyze the environmental impact assessment.	• Appropriate consultation of resource people • Identification of significant elements from the assessment • List of environmental laws, regulations and directives • Relevant connections between the features of the project and the significant elements from the assessment
2. To select the environmental protection measures or corrective measures required for the work.	• Appropriate consultation of resource people • List of the advantages and disadvantages of the current environmental measures • Accurate interpretation of environmental laws, regulations and directives • Appropriate use of technical documentation • Selection of appropriate environmental measures
3. To explain the environmental impacts and the protection or corrective measures envisaged.	• Relevant connections between the project, the environmental impacts, the proposed measures and the legal provisions applicable to the environment • Use of correct terminology • Clarity of the information • Compliance with professional ethics

Code: 01XK

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To supervise site operations.	• On the basis of plans and specifications for construction and repair projects involving structural or infrastructure elements • Using regulations and standards governing: – construction or repair work – material quality control – environmental protection – health and safety on construction sites • Using material data profiles • Using equipment technical sheets • Using appropriate administrative documents • Using measuring instruments • Using sampling instruments and laboratory equipment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To analyze the documents related to the work.	• Accurate analysis of the project • Accurate interpretation of the plans • List of accident prevention and environmental protection measures • Accurate analysis of loads • List of supervision targets • List of steps in the work procedure
2. To meet with the people involved in the project on the site.	• Recognition of individual responsibilities • Pertinence of remarks • Appropriateness of professional relationships • Clear and detailed notes

Code: 01XK	
3. To supervise operations.	• Appropriate consultation of resource people • Accurate interpretation of plans • Accurate interpretation of laws, regulations, standards and directives • Appropriate verification of the accident prevention and environmental protection measures applied • Accurate measurement of material quantities • Appropriate verification of material quality, or relevance of material sampling • Appropriate verification of compliance with the schedule • Relevance and accuracy of the topometric survey • Relevance and representativeness of on-site soil sampling or testing • Production of appropriate, clearly-worded work supervision documents • Compliance with health and safety rules on construction sites
4. To make decisions concerning work in progress and to give instructions.	• Appropriate consultation of resource people • Appropriateness of the decision to accept or refuse work • Appropriateness of the decision to accept or refuse materials • Relevance of the corrective measures and supervision • Quality of communications • Appropriateness of professional relationships • Production of appropriate, clearly-worded work supervision documents
5. To participate in end-of-work activities.	• List of elements not in conformity with the plans, specifications, regulations or standards • Pertinence of notices concerning corrections • Production of appropriate administrative reports • Clarity and precision of the as-built plan
6. To have the end-of-work documents approved.	• Detailed presentation of the end-of-work documents • Use of correct terminology • Appropriate corrections to end-of-work documents

Code: 01XL

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To estimate construction or repair costs.	• On the basis of bidding documents for construction and repair projects involving structural or infrastructure elements • Using a data bank containing information on the company's prices, labour costs and overheads • Using catalogues and material data profiles • Using equipment technical sheets • Using spreadsheets or estimating software applications
Elements of the Competency	**Performance Criteria**
1. To establish the cost of the materials.	• List of construction materials to be used or transported • Accurate calculation of lengths, areas, volumes and weights • Minimization of losses • Appropriate conversion of measuring units • Use of appropriate technical documentation • Appropriate use of the software application • Compliance with the client's needs • Compliance with the construction or repair method(s)
2. To estimate the cost of using equipment.	• Choice of appropriate equipment • List of equipment production and usage rates • Approximate calculation of usage time • Appropriate use of technical sheets • Appropriate use of the software application • Compliance with the construction or repair method(s)
3. To estimate labour costs.	• Accurate identification of the type of site staff required • Approximate calculation of labour time • Use of appropriate technical documentation • Appropriate use of the software application • Compliance with the construction or repair method(s)

	Code: 01XL
4. To produce the estimate report.	• Accurate calculation of overhead expenses • Clear presentation of the results, in the form of overall cost and unit cost • Use of appropriate technical documentation • Appropriate use of the software application • Compliance with the company's standards
5. To have the estimate report approved.	• Detailed presentation of the estimate report • Appropriate corrections to the estimate report

Code: 01XM

Objective	*Standard*
Statement of the Competency	**Achievement Context**
To customize methods for producing construction materials.	• Using standards, test procedures and technical documentation on preparation and quality control for granular materials, portland cement concrete, asphalt cement concrete and recycled materials • Using laboratory equipment • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To analyze a material production order.	• Accurate analysis of the technical features of the material to be produced • List of constraints applicable to the construction or repair project • Identification of the context in which the material will be used • List of the quantities of the material to be produced • Accurate identification of the applicable quality standards
2. To search for and analyze information on material production methods.	• Appropriate consultation of resource people • List of existing mixture formulas • List of the procedures used to produce the materials • Accurate analysis of the technical features of mixture components • Appropriate verification of the availability and cost of mixture components • Appropriate identification of the advantages and disadvantages of the mixtures • Use of appropriate technical documentation

	Code: 01XM
3. To customize the mixture formula.	• Appropriate consultation of resource people • Appropriate choice of the mixture formula to be customized • Relevant choice of substitutes • Accurate calculation of the particle-size distribution • Accurate calculation of the proportions of raw materials, bonding agents, additives or other materials
4. To produce the mixture.	• Appropriate use of the equipment • Proper application of the formula • Precise handling • Compliance with laboratory health and safety rules
5. To control the quality of the material produced.	• Choice of appropriate tests. • Accurate decision as to whether or not the material is acceptable • Compliance with quality standards • Compliance with laboratory health and safety rules
6. To customize the material production process.	• Appropriate consultation of resource people • Choice of appropriate equipment • Accurate decision concerning the production line layout • Accurate determination of the operational parameters used in the production process • Accurate calculation of the production volume • Accurate estimate of production costs • Compliance with the company's production standards
7. To have the production method approved.	• Detailed presentation of the mixture formula and the production process • Use of correct terminology • Appropriate corrections to the mixture formula or the production process

Code: 01XN

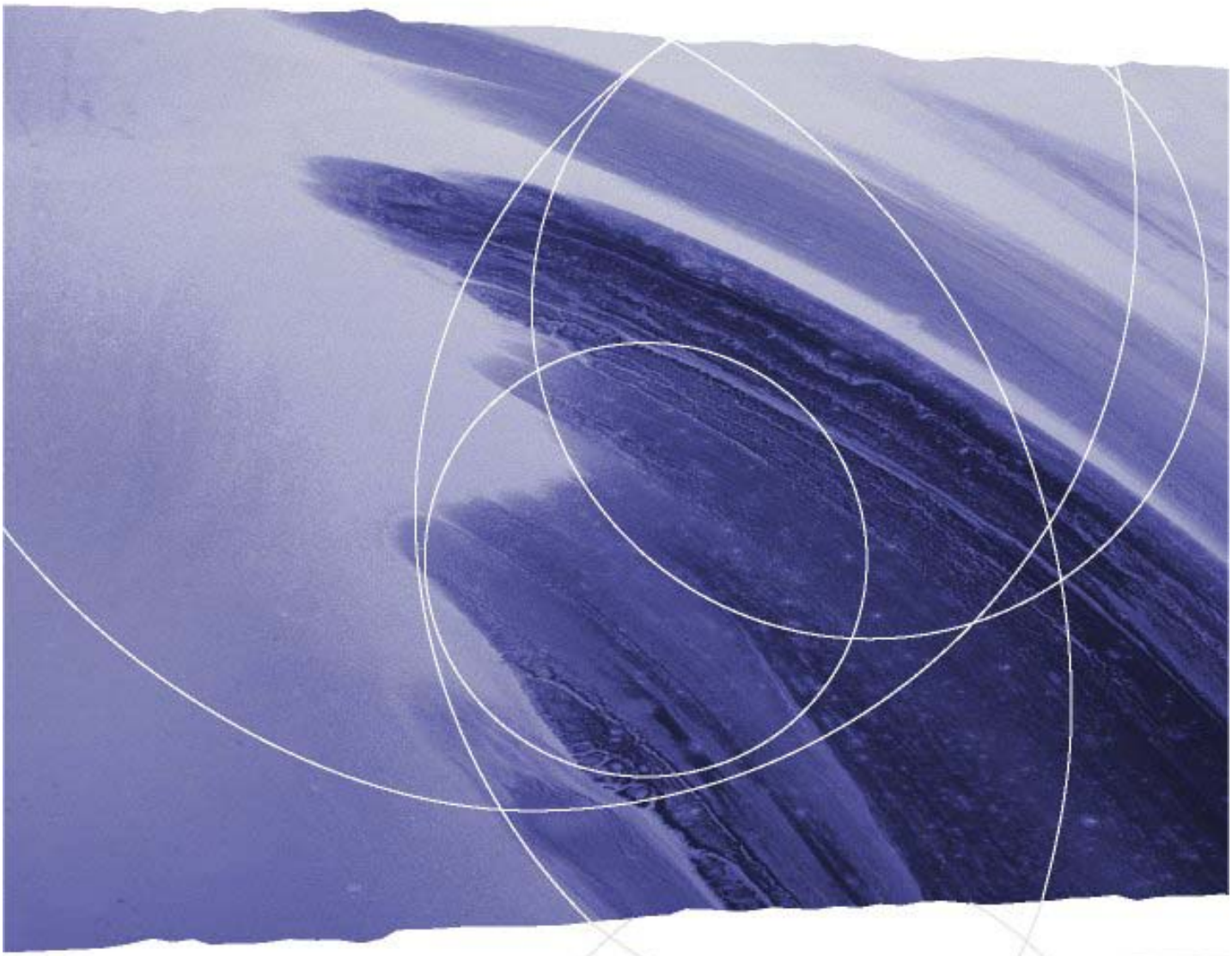
Objective	*Standard*
Statement of the Competency	**Achievement Context**
To participate in preparing bids and organizing site operations.	• Working in a team • On the basis of bid documents for construction or repair projects involving structural or infrastructure elements • Using regulations and standards governing: – construction or repair work – material quality control – environmental protection – health and safety on construction sites • Using material data profiles • Using equipment technical data sheets • Using spreadsheets or management software • In collaboration with resource people
Elements of the Competency	**Performance Criteria**
1. To analyze the call for tenders.	• Accurate analysis of the project • Accurate interpretation of the plan • List of the responsibilities of the various people involved in the project • Accurate identification of the applicable regulations • Use of appropriate methods to test the accuracy of information in the bidding documents
2. To choose a construction or repair method or methods.	• Appropriate consultation of resource people • Accurate identification of constraints on the work • Accurate identification of the logistics of the work • List of available equipment • Identification of all the required activities • Accurate analysis of the advantages and disadvantages of the construction or repair methods • Choice of an appropriate method or methods • Compliance with constraints • Compliance with quality requirements

	Code: 01XN
3. To prepare the bid documents and have them approved.	• Appropriate consultation of resource people • Accurate estimate of construction or repair costs • Use of correct terminology • Appropriate use of the software application • Compliance with the client's requirements • Compliance with the rules of spelling, grammar, syntax and punctuation • Compliance with deadlines • Compliance with professional ethics • Production of a clearly-worded bid and appropriate corrections where required
4. To establish the work schedule.	• Appropriate consultation of resource people • Accurate identification of the steps required to carry out the work • Appropriate use of a work management method • Appropriate use of the software application • Compliance with the construction or repair method(s) • Compliance with constraints
5. To establish work supervision targets.	• Appropriate consultation of resource people • Accurate identification of the topometric surveys required • Precise determination of the quantities to be checked • Precise determination of the tests required • Compliance with constraints • Compliance with quality requirements • Compliance with professional ethics
6. To plan on-site prevention and protection.	• Appropriate consultation of resource people • Accurate assessment of hazardous situations • Relevance of workplace accident prevention measures • Relevance of environmental protection measures • Accurate interpretation of occupational health and safety legislation, regulations and codes • Accurate interpretation of environmental laws, regulations and directives • Compliance with professional ethics
7. To take the required steps prior to start-up of the work.	• Appropriate consultation of resource people • Ordering of materials, equipment and labour according to the schedule • Preparation of permit applications • Collection of all required site documents • Appropriate use of the software application

Code: 01XP

Objective	***Standard***
Statement of the Competency	**Achievement Context**
To participate in preparing construction and repair projects.	• Working in a team • On the basis of a request for a structural or infrastructure project • Using regulations, standards and technical documentation governing: – construction or repair work – material quality control – environmental protection – health and safety on construction sites • Using software applications • In collaboration with resource people • According to the field of competency established by current laws and regulations
Elements of the Competency	**Performance Criteria**
1. To understand the client's request and any existing information.	• Appropriate consultation of resource people • Complete analysis of the client's request • Complete analysis of the information available on the site
2. To visit the site and record the information.	• List of available services • List of significant biotic and abiotic elements • Clear and detailed note-taking • Relevance and clarity of the sketch • Respect for private property and the environment • Compliance with health and safety rules
3. To participate in the analysis of the information collected.	• Appropriate consultation of resource people • Verification to ensure that any new information collected is consistent with existing information • Correct classification of the information • Use of appropriate technical documentation

	Code: 01XP
4. To participate in the preliminary project design.	• Appropriate consultation of resource people • Relevance of opinions concerning construction or repair choices • Relevance of opinions concerning the choice of materials • Relevance of opinions concerning the construction or repair methods to be applied • Relevance of opinions concerning the environmental impacts • Accuracy of calculations • Preliminary estimate of the costs • Clarity of the preliminary plan(s) • Accurate interpretation of laws, regulations, standards and codes • Use of appropriate technical documentation • Appropriate use of software applications
5. To participate in the presentation of the project.	• Relevance of remarks • Clear explanation of the project • Use of correct terminology • Clear demonstration of objective attitudes and behaviours, and an open-minded approach • Respect for the opinions of others • Compliance with professional ethics
6. To produce a document supporting the decision to select the recipient.	• Appropriate consultation of resource people • Appropriate verification of conformity of bids with the call for tenders • Proper summary of the information submitted by bidders • Appropriate use of the software package



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