

Technical Training Program

145.CO

Environmental and Wildlife Management

Training Sector

8

Land Use Planning
and the Environment

Québec 



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Training Sector

8

Land Use Planning
and the Environment

Formation professionnelle et technique
et formation continue

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Ministère de l'Éducation, du Loisir et du Sport, 2008-06-00831

ISBN 2-550-48586-6 (Printed version)
ISBN 978-2-550-48586-5
ISBN 2-550-48587-4 (PDF)
ISBN 978-2-550-48587-2

Legal Deposit – Bibliothèque et Archives nationales du Québec, 2008

Acknowledgments

The Ministère de l'Éducation, du Loisir et du Sport would like to thank the many people working in the field and in the education community who helped in the development of this technical program, in particular the following individuals:

Representatives Employed in the Field

Philippe Beaupré
Société de la faune et des parcs du Québec (FAPAQ)

Sacha Bois
Genivar inc.

Rémi Bouchard
Tecsult Inc.

Pierre Carter
Institut Maurice-Lamontagne

Patrice Delisle
Environnement illimité inc.

Bertrand Dumas
FAPAQ

André Dumont
Corporation de gestion de la Forêt de l'Aigle

Magalie Foy Guitard
Centre interuniversitaire de recherche sur le saumon atlantique (CIRSA)

Merlo Gauvreau
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Jean Huot
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Jacques Jutras
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Patrick Labonté
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Denis Masse
Parc national de la Mauricie

Shirley Orichefsky
Fondation Les oiseleurs du Québec inc.

Monique Pelletier
Ministère des Ressources naturelles et de la Faune

Hélène Roulet
Comité sectoriel de main-d'œuvre de l'environnement

Jean-François Rousseau
Foramec Inc.

Representatives Employed in Education

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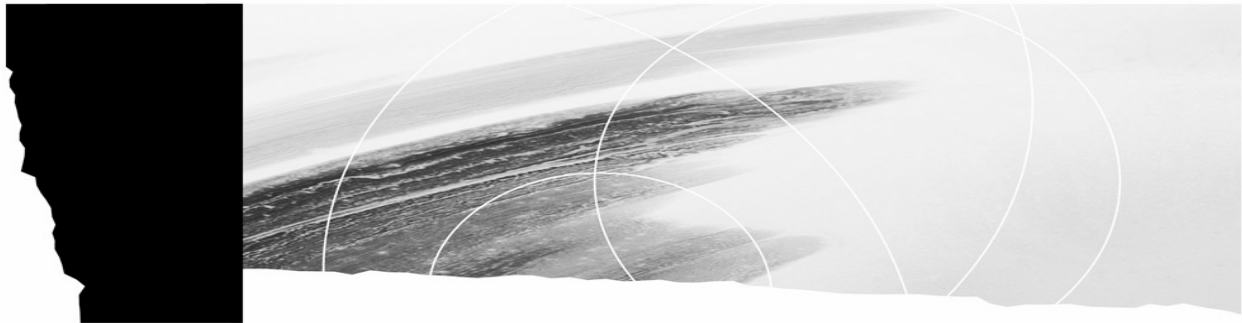
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Environmental and Wildlife Management

Year of approval: 2006

Certification:	Diploma of College Studies
Number of credits:	91 2/3 credits
Total duration:	2 700 hours of instruction

General education components:	660	hours of instruction
Program-specific component:	2 040	hours of instruction

Conditions for Admission:

To be admitted to the program, a person must meet the general requirements for admission set out in the *College Education Regulations*, as well as the following special conditions, where applicable:

- Chemistry 534
- Mathematics 436

Introduction to the Program

The *Environmental and Wildlife Management* program is in keeping with the aims and orientations of technical education that guide the Ministère de l'Éducation, du Loisir et du Sport. Designed in accordance with the framework for developing technical programs, this program is based on competencies, formulated in terms of objectives and standards.

The *Environmental and Wildlife Management* 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 65 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 Dissserter 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.

- 0448 To analyze the occupation.
- 0449 To analyze the dynamics of the physical components of a natural environment and the organisms that inhabit it.
- 044A To use digital and computer technologies on the job.
- 044B To describe the abiotic components of a natural environment.
- 044C To carry out laboratory analyses.
- 043W To establish the profile of a situation using statistics.
- 044E To convey scientific information.
- 044F To analyze how microorganisms live in and adapt to their environment.
- 044G To analyze how fungi and plants live in and adapt to their environment.
- 044H To analyze how animals live in and adapt to their environment.
- 044J To culture and maintain organisms.
- 044K To plan the technical and logistical aspects of an applied research project.
- 044L To work in a team.
- 044M To use a variety of field equipment.
- 044N To apply health and safety measures.
- 044P To apply wilderness survival techniques.
- 044Q To describe the biotic components of a freshwater and saltwater environment.
- 044R To describe the biotic components of a terrestrial environment.
- 044S To act within the legal and ethical parameters of the field.
- 044T To conduct an ecosystemic analysis of a territory.
- 044U To apply the scientific approach to problem-solving in a natural environment.
- 044V To conduct experiments related to a natural environment.
- 044W To apply intervention measures in a natural environment.

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.

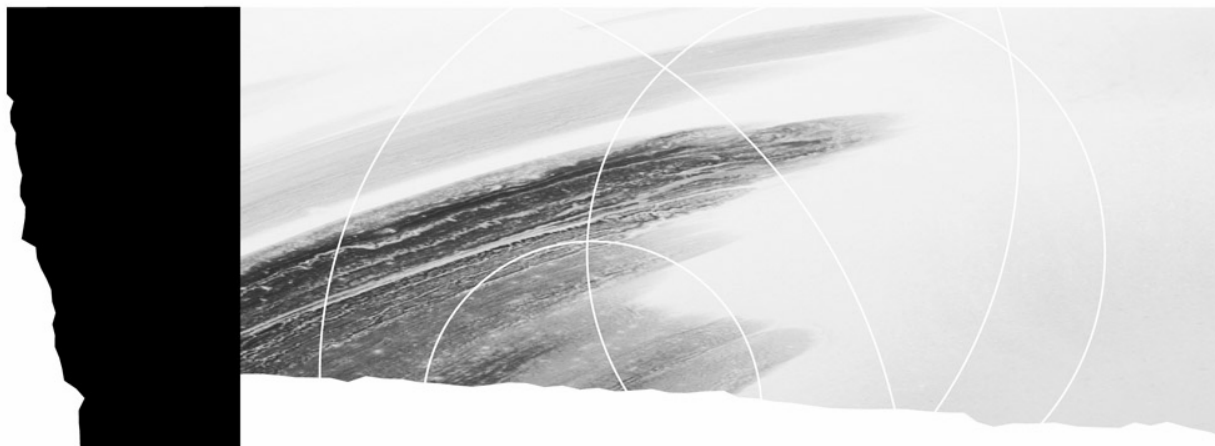
In the general education components, the performance criteria define the requirements for recognition of the attainment of the standard.

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 preuniversity 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
- effective 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 literacy and computer science
 - 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 the following knowledge, skills and attitudes:

- 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 Literacy and Computer Science

In Mathematics Literacy and 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.

Through 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.

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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Clear recognition of the formal characteristics of a literary genre |
| 2. To recognize the use of literary conventions within a specific genre. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Appropriate recognition of the relationship of a text to its period |
| 4. To explicate a discourse representative of a literary genre. | <ul style="list-style-type: none"> • 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

Objective**Standard****Statement of the Competency**

To apply a critical approach to a literary theme.

Elements of the Competency**Performance Criteria**

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. To recognize the treatment of a theme within a literary text. 2. To situate a literary text within its cultural context. 3. To detect the value system inherent in a literary text. 4. To explicate a text from a thematic perspective. | <ul style="list-style-type: none"> • 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 • Appropriate recognition of a text as an expression of cultural context • Adequate demonstration of the effects of significant literary and rhetorical devices • Appropriate identification of expression (explicit/implicit) of a value system in a text • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Adequate definition of the dimensions, limits and uses of fields of knowledge |
| 3. To situate a field of knowledge within its historical context. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Coherent organization of the main components |
| 5. To produce a synthesis of the main components. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

- | | |
|--|--|
| 1. Dégager le sens d'un message oral simple. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Repérage précis des difficultés d'expression. • Utilisation pertinente des techniques d'expression orale choisies. • Emploi pertinent du vocabulaire courant. • Expression intelligible du propos. |
| 3. Dégager le sens d'un texte. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. |

Learning Activities

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

Langue seconde (niveau II)

Code: 000A

Objective**Standard****Statement of the Competency**

Communiquer en français avec une certaine aisance.

Elements of the Competency**Performance Criteria**

- | | |
|---|---|
| 1. Interpréter un texte oral simple de trois minutes en français courant. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. |

Learning Activities

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

Langue seconde (niveau III)

Code: 000B

Objective**Standard****Statement of the Competency**

Communiquer avec aisance en français.

Elements of the Competency**Performance Criteria**

- | | |
|---|--|
| 1. Produire un texte oral planifié de cinq minutes de complexité moyenne. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. |

Learning Activities

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

Langue seconde (niveau IV)

Code: 000C

Objective**Standard****Statement of the Competency**

Traiter d'un sujet culturel et littéraire.

Elements of the Competency**Performance Criteria**

- | | |
|--|---|
| 1. Analyser un texte culturel ou littéraire. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. |

Learning Activities

Discipline:	Français, langue seconde
Weighting:	3-0-3
Credits:	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**

- | Elements of the Competency | Performance Criteria |
|--|---|
| 1. To establish a relationship between their lifestyle and their health. | <ul style="list-style-type: none"> • Appropriate use of documentation • Appropriate connections between their lifestyle and their health |
| 2. To be physically active in a manner that promotes health. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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**

- | Elements of the Competency | Performance Criteria |
|---|--|
| 1. To make physical activity part of a healthy lifestyle. | <ul style="list-style-type: none"> • Practise of a physical activity while maintaining a balance between effectiveness and the factors promoting health |
| 2. To manage a personal physical activity program. | <ul style="list-style-type: none"> • 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**

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. To identify the forms of discourse appropriate to given fields of study. 2. To recognize the discursive frameworks appropriate to given fields of study. 3. To formulate a discourse. | <ul style="list-style-type: none"> • Accurate recognition of specialized vocabulary and conventions • Accurate recognition of the characteristics of the form of discourse • Clear and accurate recognition of the main ideas and structure • Appropriate distinction between fact and argument • 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**

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. To situate significant ethical issues in appropriate world-views and fields of knowledge. 2. To explain the major ideas, values, and social implications of ethical issues. 3. To organize the ethical questions and their implications into coherent patterns. 4. To debate the ethical issues. | <ul style="list-style-type: none"> • 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 • Adequate description of the salient components of the issues • 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 • 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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

- | | |
|---|--|
| <p>1. Dégager le sens d'un message oral simple lié à un champ d'études.</p> | <ul style="list-style-type: none"> • 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. |
| <p>2. Dégager le sens et les caractéristiques d'un texte lié à un champ d'études.</p> | <ul style="list-style-type: none"> • 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. |
| <p>3. Émettre un message oral simple lié à un champ d'études.</p> | <ul style="list-style-type: none"> • 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.

Learning Activities

Discipline:	Français, langue seconde
Hours of instruction:	45
Credits:	2

Langue seconde (niveau II)

Code: 000Q

Objective**Standard****Statement of the Competency**

Communiquer en français dans un champ d'études particulier.

Elements of the Competency**Performance Criteria**

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Distinguer les types de textes propres au champ d'études. 2. Interpréter des textes représentatifs du champ d'études. 3. Utiliser des techniques de production de textes appropriées au champ d'études. | <ul style="list-style-type: none"> • Distinction précise des caractéristiques formelles de chacun des principaux types de textes et des conventions utilisées. • 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. • 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. |
|--|--|

Learning Activities

Discipline:	Français, langue seconde
Hours of instruction:	45
Credits:	2

Langue seconde (niveau III)

Code: 000R

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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.

Learning Activities

Discipline:	Français, langue seconde
Hours of instruction:	45
Credits:	2

Langue seconde (niveau IV)

Code: 000S

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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.

Learning Activities

Discipline: Français, langue seconde
 Hours of instruction: 45
 Credits: 2

Social Sciences

Code: 000V

Objective**Standard****Statement of the Competency****Achievement Context**

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

- 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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**

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

Achievement Context

- 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**

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

Achievement Context

- 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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****Achievement Context**

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

- 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> For modern Latin-alphabet languages: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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.	<p>Learning a modern language requires becoming aware of the culture of the people who use the language.</p> <ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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

Objective**Standard****Statement of the Competency**

To communicate on familiar topics in a modern language.

Achievement Context

- 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.	<ul style="list-style-type: none"> • 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.	<p>Learning a modern language requires being aware of the culture of the people who use the language.</p> <ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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**

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

Achievement Context

- 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Descriptive summary of several major phases |
| 3. Recognize the contribution of mathematics or informatics to the development of other areas of knowledge. | <ul style="list-style-type: none"> • Demonstration of the existence of important contributions, using concrete examples |
| 4. Illustrate the diversity of mathematical or informatics applications. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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**

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

Achievement Context

- 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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**

To consider various forms of art produced by aesthetic practices.

Achievement Context

- Working alone
- Given a specified work of art
- In a written commentary of approximately 750 words.

Elements of the Competency**Performance Criteria**

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Develop an appreciation for the dynamics of the imagination in art. 2. Describe art movements. 3. Give a commentary on a work of art. | <ul style="list-style-type: none"> • Precise explanation of a creative process connected to the construction of an imaginary universe • Descriptive list of the main characteristics of three art movements from different periods, including a modern movement • 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**Standard****Statement of the Competency**

To produce a work of art.

Achievement Context

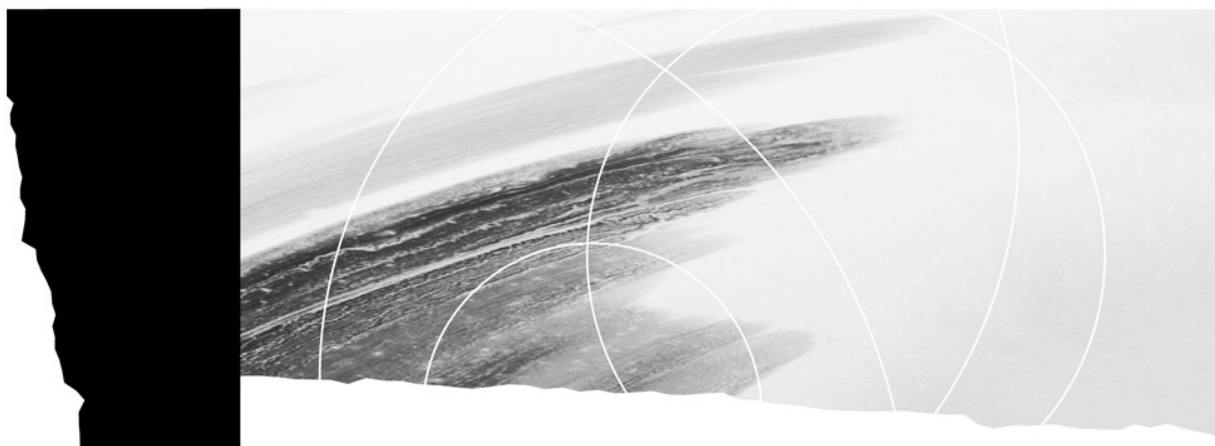
- Working alone
- During a practical exercise
- In the context of a creation or an interpretation
- Using the basic elements of the language and techniques specific to the medium selected

Elements of the Competency**Performance Criteria**

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Recognize the primary forms of expression of an artistic medium. 2. Use the medium. | <ul style="list-style-type: none"> • Identification of specific features: originality, essential qualities, means of communication, styles, genres • 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 aim of the *Environmental and Wildlife Management* program is to prepare students to practise the occupation of environmental and wildlife technician mainly in the fields of applied research, planning and education in the natural environment with a view to promoting conservation, the sustainable and rational use of natural resources as well as the sound and integrated management of natural environments and their biodiversity. The concept of *natural environment*, which forms one of the cornerstones of this program, is defined as the terrestrial, freshwater and saltwater ecosystems in a territory, as well as water, air, soil, plant and wildlife resources.

Environmental and wildlife technicians are employed in a variety of fields, the primary one being applied research. As part of a multidisciplinary team and under the supervision of a researcher, technicians work as assistants responsible for a variety of tasks, including taking censuses in the natural environment, organizing and managing the logistical aspects of the research, both in the field and in a lab, performing certain lab analyses as well as conducting experiments.

Research activities are aimed at the rational use of natural resources in a given territory. Such a territory may include protected areas, as well as recreational, agricultural, forest, urban and periurban areas. Environmental and wildlife technicians may be called upon to perform their duties in any or all of these areas.

Main tasks

Environmental and wildlife technicians primarily perform the following tasks:

- Describe a natural environment and its biotic and abiotic resources: This task includes censusing organisms in a given environment; studying the physical components of a territory; performing the required analyses; and collecting, processing and interpreting data in order to establish the most complete, accurate portrait possible of the situation.
- Identify the problems specific to a given natural environment and the corresponding fields of research: This task includes applying a scientific approach and problem-solving process in order to determine the types of problems and formulate relevant working hypotheses.
- Participate in research planning and the development of the corresponding protocols: Technicians are primarily responsible for ensuring the planning, acquisition and implementation of all types of resources and all types of material and organizational means required for the activities. These resources and means may include materials, apparatus, tools and equipment as well as transportation, lodging and food.
- Carry out research activities in an indoor lab and in a field lab, including preparing and using research equipment and apparatus, as well as doing the necessary documentary research: These activities include analyzing diversified samples (biotic and abiotic resources), culturing and maintaining organisms for research purposes, as well as conducting various experiments.

- Participate in writing scientific documents related to research activities and intervention measures in a natural environment: This includes producing technical reports (description of operations, their nature, the work sites, the method used, timing of operations, etc.); designing worksheets; and participating in writing research reports, including formulating recommendations on the possible actions to be taken in light of the results obtained.
- Plan and manage the experimental implementation of recommendations: Experiments involve implementing, on a smaller scale, the various measures related to environmental planning in order to verify the impact on the environment before these measures are implemented on a larger scale. They also comprise monitoring the progress of the work and experiment results as well as writing experiment reports, including recommendations for the generalization of proposed measures.
- Communicate with those who use and work in a given natural environment, within educational or information programs.

Types of services provided

Environmental and wildlife technicians working in the field of applied research in a natural environment primarily provide the following types of services:

- census of the different ecosystems
- biophysical studies
- diagnosis of different environments
- evaluation and formulation of professional opinions regarding the validity of certain land-use plans for a given territory
- assistance services in the field for biology researchers (managing logistical aspects, participating in sampling activities, participating in experiments, etc.)
- assistance services in the lab² for biology researchers
- consulting services for different parties in a given territory
- educational services for the general public and other parties concerned

Fields of application and employers

Environmental and wildlife technicians work in a variety of fields:

- environmental protection
- conservation and protection of natural resources
- integrated environmental management

Companies in the public, parapublic and private sectors require the services of environmental and wildlife technicians. The following are some examples:

- Ministère de l'Environnement; Ministère des Ressources naturelles et de la Faune, Ministère de l'Agriculture, des Pêcheries et de l'Alimentation; Environment Canada
- Société de la faune et des parcs du Québec (FAPAQ); Société des établissements de plein air du Québec (SEPAQ)
- various private companies
- universities and other research, training and educational institutions

2. The term "laboratory" should be taken in the broad sense to include indoor laboratory, field laboratory, experimental plot, etc.

The goals of the program-specific component of the *Environmental and Wildlife Management* program are based on the general goals of vocational and technical training. These goals are as follows:

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

- **To help students develop their ability to adapt to different work environments.** Environmental research techniques involve both lab work and field work. Lab work includes technical analyses for the purposes of identification, improvement, prevention, research and study. Field work is done for purposes of conservation, development and use of wildlife resources and their habitats, with a view to maintaining biodiversity and sustainable development. Environmental and wildlife technicians must therefore balance their love of nature and the outdoors with the specific requirements of lab work, and the characteristics of working outdoors with those of working indoors.
- **To promote physical fitness.** Environmental and wildlife technicians essentially perform scientific work, which is both intellectually and physically demanding. In fact, technicians must be in very good physical condition, given the nature of the occupation and that they work in a natural environment that is often in a remote area, requiring long walks and manual tasks related to site planning, census techniques, etc.
- **To help students develop social and socioaffective skills.** The image of a scientist working alone, cut off from the world and its social requirements, does not apply to environmental and wildlife technicians. These technicians generally work as part of a multidisciplinary team, and regularly collaborate with their colleagues, different users of a territory and the general public.
- **To help students achieve balance between requirements associated with change and those associated with conservation.** While striving to maintain biodiversity and ensure the sustainability of natural resources, technicians work in a world where demographics, technology, climate, environment, politics are constantly changing on a global scale. Maintaining a balance between change and conservation is a highly demanding challenge.
- **To encourage students to develop analytical and synthesis skills.** Environmental and wildlife technicians are required to demonstrate both analytical and synthesis skills. The ability to analyze is used to characterize each component of a natural environment, be it abiotic or biotic (plant, animal, marine, a microorganism, etc.). The ability to synthesize makes it possible to situate the objects being analyzed in a broader context, generally that of ecosystems, but also of watersheds or ocean basins.

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

SPECIFIC COMPETENCIES	Competency Number	GENERAL COMPETENCIES														
		To analyze the occupation	To analyze the dynamics of the physical components of a natural environment and the organisms that inhabit it	To use digital and computer technologies on the job	To establish the profile of a situation using statistics	To convey scientific information	To analyze how microorganisms live in and adapt to their environment	To analyze how fungi and plants live in and adapt to their environment	To analyze how animals live in and adapt to their environment	To plan the technical and logistical aspects of an applied research project	To work in a team	To use a variety of field equipment	To apply health and safety measures	To apply wilderness survival techniques	To act within the legal and ethical parameters of the field	To apply the scientific approach to problem-solving in a natural environment
Competency Number		1	2	3	6	7	8	9	10	12	13	14	15	16	19	21
To describe the abiotic components of a natural environment	4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
To carry out laboratory analyses	5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
To culture and maintain organisms	11	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
To describe the biotic components of a freshwater or saltwater environment	17	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
To describe the biotic components of a terrestrial environment	18	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
To conduct an ecosystemic analysis of a territory	20	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>				<input type="radio"/>	<input type="radio"/>
To conduct experiments related to a natural environment	22	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
To apply intervention measures in a natural environment	23	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Harmonization

The Ministère de l'Éducation, du Loisir et du Sport harmonizes its vocational and technical programs by establishing similarities and continuity between secondary- and college-level programs within a particular sector or between sectors, in order to avoid overlap in program offerings, 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 those that are shared by more than one program; once acquired in one program, they can be recognized as having been acquired in another. Competencies with exactly the same statement and elements are said to be identical. Common competencies that are not identical but have enough similarities to be of equal value are said to be equivalent.

Harmonization of the *Environmental and Wildlife Management* 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, Techniques de bioécologie*.

Code: 0448

Objective	Standard
Statement of the Competency To analyze the occupation.	Achievement Context <ul style="list-style-type: none"> • Using recent information on the occupation and the different work environments • During visits to companies as part of a job-search process
Elements of the Competency	Performance Criteria
1. Describe the occupation and the conditions under which it is practised.	<ul style="list-style-type: none"> • Relevant information gathered • Thorough analysis of the general characteristics of the occupation and the conditions for practising the occupation • Identification of the different work environments • Identification of the different career options
2. Analyze the tasks and operations related to the occupation.	<ul style="list-style-type: none"> • Appropriate analysis of the tasks and operations, the conditions under which they are carried out and the criteria associated with each of them • Accurate assessment of the relative importance of each task • Establishment of relationship between the steps in the work process and the occupational tasks
3. Analyze the skills and behaviours required to practise the occupation.	<ul style="list-style-type: none"> • Relevant connections between skills and behaviours, on the one hand, and the occupational tasks, on the other • Identification of professional rules of ethics
4. Analyze the requirements associated with entrepreneurship.	<ul style="list-style-type: none"> • Identification of self-employment opportunities in the sector • Appropriate analysis of strategies for preparing an offer of professional services • Analysis of requirements, constraints and resources related to starting up a business in this sector

Objective**Standard****Statement of the Competency**

To analyze the dynamics of the physical components of a natural environment and the organisms that inhabit it.

Achievement Context

- While conducting watershed analyses in an ecological time scale
- While performing analyses including field work (when certain data provided must be validated) and the interpretation of thematic maps and aerial photographs
- Based on all the soil, sediment and water samples provided, meteorological data and a minimal description of the organisms found
- Using appropriate documentation: classification keys pertaining to soil, sediment and surface deposit studies; data sheets; thematic maps (all types of maps used in the field) and aerial photographs
- Using appropriate tools: instruments required for analyzing aerial photographs and maps

Elements of the Competency**Performance Criteria**

1. Describe the relief of a watershed or ocean basin.
2. Analyze the factors that influence the main characteristics of the soils and sediments of a watershed or ocean basin.

- Accurate interpretation of different thematic maps and aerial photographs
- Delineation of the watershed or ocean basin and description of its geomorphologic aspects
- Determination of the main erosive factors explaining the formation of the relief
- Accurate description of the components of the different types of soils, sediments and surface deposits
- Accurate description of the physical, physicochemical and biological properties of soils and sediments
- Relevant summary of the pedogenesis of soils, sediments and surface deposits
- Explanation of the influence of the geology, geomorphology, hydrology and climate of the environment on the properties of soils, sediments and surface deposits

3. Analyze the factors that influence the main physicochemical properties of freshwater and saltwater environments.
 - Description of the main physicochemical properties of freshwater and saltwater environments
 - Explanation of the influence of climate, runoff and currents on the properties of freshwater and saltwater environments
4. Explain how the physical components of an environment determine the living conditions of the organisms that inhabit it.
 - Description of the main abiotic ecological constraints inherent in the environment in terms of the living functions of the organisms that inhabit it
 - Explanation of the main mechanisms by which organisms adapt their anatomy, physiology and morphology to environmental requirements

Objective	Standard
<p>Statement of the Competency</p> <p>To use digital and computer technologies on the job.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For all work-related tasks • Using applications related to word and image processing, data processing and the creation of databases • Using applications related to geomatics, cartography and the presentation of data and scientific information
Elements of the Competency	Performance Criteria
1. Manage their computer environment.	<ul style="list-style-type: none"> • Correct installation of computer and peripherals • Correct installation of applications • Customizing of desktop and applications used • Efficient organization of files
2. Use word-processing applications.	<ul style="list-style-type: none"> • Formatting of scientific documents • Creation of templates and style sheets • Importing and integration of various elements
3. Use computerized tools for statistical processing and data representation.	<ul style="list-style-type: none"> • Design of relevant computerized worksheets useful for collecting and inputting data • Determination of a worksheet and file format adapted to the study parameters and their specific context • Validation of whether the worksheets are functional • Correct inputting of data provided • Use of basic functions related to the application's statistical processing • Use of basic functions related to the creation of pivot tables and the production of graphs • Correct transfer of data to a database • Formulation of queries in order to use the database
4. Use geomatics tools and georeferenced maps.	<ul style="list-style-type: none"> • Given existing maps and corresponding files, proper use of the functions for extracting data in order to represent certain aspects of a problem • Addition of data to existing maps in order to modify or update them, or to add supplemental information • Accurate interpretation of georeferenced maps

5. Use a variety of digital equipment for image processing.
 - Adequate use of a digital camera, camcorder and scanner
 - Transfer of data from a GPS system to a computerized system
 - Inputting and basic processing of a variety of images
 - Importing and integration of digital images in different types of files
6. Use the Internet and Intranet for purposes of research and communication.
 - Effective access to networks
 - Secure use of functions for sharing files and folders
 - Efficient use of Web browsers
 - Compilation of directory of sites relevant to the field

Objective	Standard
<p>Statement of the Competency</p> <p>To describe the abiotic components of a natural environment.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For all types of research involving ecosystem characterization • Working alone or in a team, with supervision and based on established or standardized research protocols, defined methods, a predetermined budget as well as predetermined formats for data input • Analyzing samples taken in the field or in the lab • Using the required documentation, apparatus, instruments and tools as well as all the means related to logistical aspects
Elements of the Competency	Performance Criteria
1. Plan the work under their responsibility.	<ul style="list-style-type: none"> • Determination of the sequence of all the steps involved in performing the work • Determination of all required organizational and material means as well as the conditions for implementing them • Location on maps of sampling points and stations • Determination of the route to be taken in compliance with environmental constraints • Observance of budget constraints • Observance of time constraints related to the types of protocols and established deadline • Consideration of all important health and safety aspects
2. Take samples.	<ul style="list-style-type: none"> • Adequate use of techniques for sampling water, soils and sediments • Observance of defined protocols • Ability to work independently in order to adapt the methods and techniques used to specific environmental constraints • Optimal accuracy and quality of samples • Appropriate conservation of samples
3. Analyze the samples.	<ul style="list-style-type: none"> • Analysis of all the physical and physicochemical parameters required • Rigorous use of analysis instruments in compliance with prescribed techniques • Good tactile and visual sensitivity

4. Take the necessary measurements.
 - Measurement of all physical and physicochemical parameters required
 - Rigorous use of measuring instruments in compliance with prescribed techniques
 - Optimal accuracy and quality of measurements according to established protocols
5. Compile all the data.
 - Complete, correct inputting of data on worksheets
 - Regular, methodical verification to ensure that data is valid and complete
6. Keep a technical log.
 - Complete list of the materials and products used
 - Sequential description of all the operations performed
 - Rigorous recording of all relevant complementary information:
 - methodology
 - work context and conditions
7. Analyze and interpret the data.
 - Establishment of a summary portrait of the physical environment and its components
 - Formulation of a plausible hypothesis on the quality of the environment in terms of the needs of the organisms that inhabit it

Code: 044C

Objective	Standard
<p>Statement of the Competency</p> <p>To carry out laboratory analyses.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For all types of research focusing primarily on ecosystem characterization, including conservation and restoration • While performing biochemical, physicochemical and genetic analyses • Working generally alone, with supervision and complying with all ethical considerations • Based on defined or standardized research methods and protocols, in particular, gravimetric and non-gravimetric separation, microscopy, photometry, electrochemistry; provided soil, water and organism samples and all related relevant information; a predetermined deadline and budget as well as predetermined formats for data input • Using the required procedures documentation, apparatus, instruments and tools as well as all the means related to logistical aspects
Elements of the Competency	Performance Criteria
<p>1. Plan the work under their responsibility.</p>	<ul style="list-style-type: none"> • Determination of the sequence of all the steps involved in performing the work • Determination of all required organizational and material means as well as the conditions for implementing them • Observance of budget constraints • Observance of time constraints related to the types of protocols and established deadline • Consideration of all important health and safety aspects
<p>2. Perform the preliminary work required for the analyses.</p>	<ul style="list-style-type: none"> • Proper assembly, adaptation and calibration of equipment • Accurate calculations for the dilution and concentration of solutions • Accurate conversions of concentration units • Methodical preparation of solutions, using volumetric instruments and the required materials • Preparation and preprocessing of samples according to the types of analysis required

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| 3. Perform biochemical, physicochemical and genetic analyses. | <ul style="list-style-type: none"> • Determination of the analysis method(s) according to the defined protocol • Relevant proposals for minor adaptations according to the defined protocol • Rigorous application of analysis methods and adequate use of corresponding work techniques • Proper use of apparatus • Results in conformity with the defined study parameters • Rigorous application of health and safety measures, and observance of standards in effect • Accurate interpretation of material safety data sheets for the products used |
| 4. Compile all the data. | <ul style="list-style-type: none"> • Complete, correct inputting of data on worksheets • Regular, methodical verification to ensure that data is valid and complete |
| 5. Perform additional tasks related to the analyses. | <ul style="list-style-type: none"> • Routine maintenance of laboratory equipment in compliance with the manufacturer's recommendations • Management of hazardous materials and biological waste in conformity with the laws and regulations in effect |
| 6. Keep a technical log. | <ul style="list-style-type: none"> • Sequential description of all the operations performed • Complete list of the materials and products used as well as the organisms studied |

Code: 043W

Objective**Standard****Statement of the Competency**

To establish the profile of a situation using statistics.

Achievement Context

- For activities carried out in a natural environment: research, land-use planning, resource management, etc.
- Under the supervision of the project coordinator
- Based on raw or preprocessed data pertaining to the main aspects of the situation under study, a previously formulated working hypothesis and a general description of the situation
- Using the required tools, including appropriate software and any necessary documentation

Elements of the Competency**Performance Criteria**

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|---|---|
| 1. Input data using a computer. | <ul style="list-style-type: none"> • Formulation of appropriate queries according to the database • Proper use of appropriate applications, including formatting a spreadsheet • Complete, accurate data input |
| 2. Validate the data provided. | <ul style="list-style-type: none"> • Identification of bias related to data collection • Accurate assessment of the degree of accuracy and relevance of the measurements provided • Rejection of invalid and irrelevant data |
| 3. Determine the type of statistical processing required. | <ul style="list-style-type: none"> • Correct characterization of samples: types of samples, types of parameters and types of distributions • Selection of statistical operations and tests according to the type of data and the initial hypothesis |
| 4. Perform the statistical processing required. | <ul style="list-style-type: none"> • Selection of appropriate statistical functions • Selection of relevant variables • Proper execution of selected functions and accurate calculations |

5. Format and present the data in graph form.
 - Selection of the most appropriate form of graphic presentation
 - Quality of the tables:
 - relevance of data presented
 - consideration of appropriate parameters (format, organization and legibility to facilitate interpretation)
 - Quality of the figures:
 - presentation of highlights
 - conformity with presentation standards
6. Analyze and interpret the results obtained.
 - Correct definition of the different statistical concepts and terminology used
 - Accurate explanations regarding the statistical processing performed
 - Satisfactory degree of accuracy and significance meaning of the results presented
 - Accurate interpretation, given the initial problem

Objective	Standard
Statement of the Competency To convey scientific information.	Achievement Context <ul style="list-style-type: none"> • For purposes of interpretation and training, scientific popularization and the production of scientific materials, including technical reports and parts of research reports • Based on specific requests and expressed or perceived information needs • Given sufficient access to different sources of scientific data, models representing various forms of communication, the required computer equipment and any other appropriate apparatus
Elements of the Competency	Performance Criteria
1. Describe the different target audiences.	<ul style="list-style-type: none"> • Thorough analysis of the target audience's needs and characteristics • Accurate establishment of the target audience profile
2. Determine the objectives, approach and content of the communications.	<ul style="list-style-type: none"> • Accurate, relevant objectives defined • Methodical, effective review of literature on the subject • Selection of content based on relevance to objectives pursued • Determination of a communication approach and strategies adapted to these specific aspects
3. Plan and organize the content of the communications.	<ul style="list-style-type: none"> • Validation of the accuracy of the content with the qualified authorities • Strategic selection of communication means and media • Content and format of materials organized in order to communicate appropriate educational and strategic information
4. Produce all the elements required for the communications.	<ul style="list-style-type: none"> • Quality of the different communication elements produced: texts, images, tables, presentations • Appropriate popularization of the content of the communications • Use of terminology and language adapted to the target audience • General quality of the language and organization of the different communication elements • Consideration of applicable presentation standards

5. Present the content of the communications.
 - Correct application of rules and principles pertaining to oral and written communication as well as communication intended for the media
 - Appropriate use of the different media
 - Consideration of different communication styles in their dealings with the target audience
 - General quality of the communications: coherence, clarity, accurate language
6. Evaluate the effectiveness of the communication in order to make improvements.
 - Strategic evaluation of the achievement of initial objectives
 - Identification of elements that could be improved
 - Accurate modification of the different elements based on the weaknesses observed

Objective**Standard****Statement of the Competency**

To analyze how microorganisms live in and adapt to their environment.

Achievement Context

- Working alone on research that involves characterizing biotic and abiotic components in natural and controlled environments
- Working with the microorganisms present in a natural or controlled environment, including the organisms that inhabit it
- Based on water, soil and organism samples; information on the environment and the living conditions of microorganisms; and established or standardized research protocols
- Using the appropriate smears, apparatus and microbiological and biochemical tests as well as the required documentation, procedures and databases

Elements of the Competency**Performance Criteria**

1. Process the samples in order to isolate the microorganisms.

- Accurate determination and proper, safe application of techniques for taking and processing samples
- Proper use of the required apparatus
- Rigorous application of the required asepsis measures
- Isolation and conservation of all microorganisms present

2. Characterize the different microorganisms in order to identify them.

- Rigorous application of the techniques and methods associated with culturing, transplanting and identifying microorganisms
- Use of apparatus associated with identifying microorganisms according to established or standardized protocols
- Proper application of health, safety and asepsis measures
- Accurate description of the anatomical and morphological characteristics of microorganisms
- Relevant explanation of the main physiological mechanisms of microorganisms according to their specificities
- Identification of the microorganisms present at the taxonomic level required by the research parameters

3. Count the different microorganisms.
 - Rigorous application of counting methods according to established standards
 - Formulation of accurate diagnostic impressions in relation to the defined research parameters
4. Explain the connections between these microorganisms and their respective habitats.
 - Relevant explanation of the role of these microorganisms in their respective habitats
 - Accurate description of the factors influencing the relative abundance and diversity of these microorganisms
 - Forecast assessment of the impact of environmental changes on the microorganisms' ability to survive

Code: 044G

Objective**Standard****Statement of the Competency**

To analyze how fungi and plants live in and adapt to their environment.

Achievement Context

- Working alone on research that involves characterizing biotic and abiotic components in natural and controlled environments
- While performing analyses related to organisms
- Based on live or dead specimens and samples; specimens that have been given to or collected by the technician or that derive from a natural environment; information on the environment and the living conditions of fungi and plants; as well as established or standardized research protocols
- Using the required apparatus, lab tests, documentation, procedures and databases

Elements of the Competency**Performance Criteria**

1. Process the samples in order to isolate the fungi.
 - Accurate determination and proper, safe application of techniques for taking and processing samples.
 - Proper use of the required apparatus
 - Rigorous application of the required asepsis measures
 - Isolation and conservation of all fungi present
2. Characterize the fungi and plants in order to identify them.
 - Rigorous application of the techniques and methods associated with culturing, transplanting and identifying fungi and plants
 - Use of apparatus associated with identifying fungi and plants according to established or standardized protocols
 - Proper application of health, safety and asepsis measures
 - Accurate description of the anatomical and morphological characteristics of fungi and plants
 - Identification of the fungi and plants present at the taxonomic level required by the research parameters

3. Explain the connections between fungi and plants and their respective habitats.
- Relevant explanation of the main physiological mechanisms of fungi and plants according to their specificities
 - Relevant explanation of the role of fungi and plants in their respective habitats
 - Forecast assessment of the impact of environmental changes on the ability of fungi and plants to adapt and survive

Objective	Standard
<p>Statement of the Competency</p> <p>To analyze how animals live in and adapt to their environment.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • Working on research that involves characterizing biotic and abiotic components in natural and controlled environments • While performing analyses related to organisms • Based on live specimens (in captivity or free-ranging) or dead specimens; specimens that have been given to or collected by the technician; information on the environment and the living conditions of animals; as well as established research protocols • Using the required apparatus, lab tests, observation equipment, documentation, procedures and databases
Elements of the Competency	Performance Criteria
1. Characterize the animals in order to identify them.	<ul style="list-style-type: none"> • Rigorous application of the techniques and methods associated with identifying specimens • Proper use of apparatus associated with identifying animals • Accurate description of the anatomical and morphological characteristics of animals • Identification of animals at the taxonomic level required by the research parameters
2. Explain the connections between the characteristics of animals and their respective habitats.	<ul style="list-style-type: none"> • Relevant explanation of the main physiological mechanisms of animals according to their specificities • Relevant explanation of the role of animals in their respective habitats • Forecast assessment of the impact of environmental changes on the animals' ability to adapt and survive
3. Study the habits and behaviours of animals.	<ul style="list-style-type: none"> • Adaptation of observation protocols according to the type of study and its conditions • Observance of the requirements associated with applying protocols • Rigorous, methodical collection of all relevant information • Complete, accurate and precise description of the habits and behaviours of animals in terms of how they use their respective habitats

Objective	Standard
<p>Statement of the Competency</p> <p>To culture and maintain organisms.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For all types of research focusing primarily on ecosystem characterization, including conservation and restoration • While performing tasks related to culture and breeding, bioassays, <i>in vitro</i> culture and the conservation of scientific collections • Working alone or in a team, with supervision and complying with all ethical considerations • Using defined or standardized methods and protocols; provided soil, water or organism samples; information on the environment and conditions for breeding and preserving organisms; a predetermined budget as well as predetermined formats for data input • Using the required documentation and procedures, apparatus, instruments, tools and facilities as well as all the means related to logistical aspects
Elements of the Competency	Performance Criteria
<p>1. Plan the work under their responsibility.</p>	<ul style="list-style-type: none"> • Determination of the sequence of all the steps involved in performing the work • Determination of all required organizational and material means as well as the conditions for implementing them • Observance of budget constraints • Observance of time constraints related to the types of protocols and established deadline • Consideration of all important health and safety aspects

2. Perform tasks related to the culture, breeding and *in vitro* culture of organisms, as well as bioassays.
 - Rigorous application of techniques and methods associated with the different types of tasks
 - Appropriate use of the required means
 - Ability to work independently in order to fine-tune the methods, techniques and protocols suited to the circumstances
 - Effective resolution of all problems encountered during the work
 - Accurate, ongoing determination of the indicators observed
 - Accurate, precise interpretation of results in order to formulate a diagnostic impression of the condition of the environment
 - Rigorous application of the asepsis measures required for *in vitro* culture
3. Perform tasks related to the conservation of scientific collections.
 - Proper sampling and collection of the specimens required
 - Preparation of specimens according to the specific requirements of a scientific collection
 - Identification of the specimens at the required taxonomic level
 - Proper use of apparatus
 - Proper use of classification systems specific to the taxon studied
 - Rigorous application of conservation methods
4. Compile all the data.
 - Complete, correct inputting of data on worksheets
 - Regular, methodical verification to ensure that data is valid and complete
5. Keep a technical log.
 - Complete list of materials and products used as well as the organisms studied
 - Sequential description of all the operations performed
 - Rigorous recording of all relevant complementary information:
 - methodology
 - work context and conditions

Code: 044K

Objective**Standard****Statement of the Competency**

To plan the technical and logistical aspects of an applied research project.

Achievement Context

- For all types of research applied to a natural environment, performed in the field or in a lab
- Working alone or in a team, with supervision and based on a predefined research protocol, a general description of the tasks to be performed, a predetermined budget and a timetable
- Using the required documentation pertaining to purchases, permits and authorizations, as well as appropriate computer tools and a list of suppliers

Elements of the Competency**Performance Criteria**

- | | |
|---|--|
| <p>1. Analyze the determining parameters of a project.</p> | <ul style="list-style-type: none"> • Rigorous analysis of the problem and questions on which the research is based • Clear explanation of the project's objectives and issues • List of all of the project's important determinants, including those related to ethics |
| <p>2. Describe the tasks and operations involved in carrying out the project.</p> | <ul style="list-style-type: none"> • Complete list of relevant tasks and operations • Presentation of the different tasks in a logical sequence • Applicability of the sequence proposed • Optimal management of time allotted |
| <p>3. Determine the resources required.</p> | <ul style="list-style-type: none"> • Determination of the types and quantities of resources required • Appropriate use of different catalogues • Establishment of an exhaustive list of resources pertaining to lodging, transportation, food, equipment and safety • Establishment of an exhaustive list of materials involved in applying the protocol (technical aspects) |

4. Establish how to acquire and transport resources to the work site.
 - Complete inventory of resources already in stock
 - Selection of appropriate suppliers
 - Determination of acquisition method (lease or buy) according to the available budget
 - Determination of delivery method according to prescribed deadlines and the sequence of work tasks
 - Proper preparation of purchase orders
 - Appropriate planning of purchase and delivery follow-up
5. Take the legislative framework into account and adjust their planning accordingly.
 - Determination of all procedures related to laws and regulations in effect
 - Acquisition of required permits and authorizations
 - Planning in conformity with laws and regulations in effect

Code: 044L

Objective**Standard****Statement of the Competency**

To work in a team.

Achievement Context

- For work carried out as part of a disciplinary or multidisciplinary team
- In meetings and as part of heterogeneous teams made up of representatives of different users of a given territory

Elements of the Competency**Performance Criteria**

1. Exercise positive leadership within a team.

- Competent exercise of the role of team leader when the circumstances require it
- Balanced, equitable sharing of tasks and responsibilities among team members
- Effective management of potentially conflictual situations
- Proper leadership provided for tasks to be performed
- Openness to constructive criticism
- Significant contribution to creating an atmosphere of collaboration and consensus
- Formulation of relevant recommendations aimed at improving the effectiveness of the team

2. Participate actively in the team effort, taking on their share of responsibility.

- Proper preparation of work meetings and their personal participation
- Active contribution to achieving the objectives set by the team
- Organized presentation of their views on different topics on the agenda
- Clear, logical arguments proposed in support of their opinions
- Adequate emotional control with respect to interpersonal conflict and diverging opinions

3. Adapt to the people they are working with.
 - Continued effort to understand the occupational realities of the people they work with and the terminology they use
 - Accurate understanding of the dynamics among the various persons concerned:
 - determinants related to the specific cultural practices and aspects of the persons concerned
 - ongoing and completed project activities on the agenda
 - issues and interests defended by each party
 - quality and history of relationships between the various persons concerned
 - Adaptation of their language, approach and attitudes to the characteristics of the persons they are working with
 - Demonstration of a real ability to create a climate conducive to harmonious, productive work within a heterogeneous team

4. Establish and maintain quality professional relationships within a team.
 - Establishment of professional credibility and objectivity with their colleagues and other persons concerned
 - Adoption of attitudes conducive to maintaining good professional relationships:
 - respect
 - attentive listening
 - ethics
 - rigour
 - Projection of a polished professional image adapted to the circumstances

Code: 044M

Objective**Standard****Statement of the Competency**

To use a variety of field equipment.

Achievement Context

- For all types of activities performed in a natural environment
- Using various transportation vehicles, watercraft, positioning and communications equipment, and equipment and accessories required for field work (characterization, experimental research, land-use planning, etc.)
- Using the required materials: manufacturers' manuals in English and French, tools and products required for the routine maintenance of vehicles, watercraft and equipment; capturing, measuring, listening and general census materials

Elements of the Competency**Performance Criteria**

1. Obtain information on how to operate and maintain various pieces of equipment.

- Careful reading of user manuals
- Brief explanation of how various pieces of equipment are made and how they work
- Development of procedures summarizing how to use the equipment
- Preparation of maintenance sheets for the other team members

2. Operate various pieces of equipment.

- Thorough verification of equipment prior to use
- Application of procedures for adjusting and fine-tuning equipment prior to use
- Safe, proper use of equipment
- Observance of standards and regulations in effect

3. Perform routine and preventive maintenance on the equipment.

- Observance of the inspection schedule recommended by the manufacturer
- Adequate use of basic techniques:
 - removal and installation of certain components
 - lubrication
 - routine adjustments
 - replacement of various parts
- Safe use of tools and products required for maintenance
- Proper maintenance of equipment for storage purposes

4. Apply troubleshooting methods in the event of equipment breakdown.
 - Accurate identification of the nature and scope of the problem
 - Effective solution of the problem
 - Ability to work independently, and to be resourceful and innovative
5. Adapt and make various accessories and equipment.
 - Adaptation of various existing equipment to the working conditions
 - Fabrication of customized equipment, accessories and tools adapted to specific needs
 - Ability to work independently, and to be resourceful and innovative

Code: 044N

Objective**Standard****Statement of the Competency**

To apply health and safety measures.

Achievement Context

- For all types of activities performed in a natural environment and in a lab
- Using the required documentation
- Using the required materials: first-aid kit, protective clothing and equipment, and health and safety facilities

Elements of the Competency**Performance Criteria**

1. Recognize the potential risks in a lab and in the field.

- Accurate distinction of the different types of risks:
 - environmental factors
 - factors related to the types of tasks, including handling and containing a variety of organisms
 - factors related to the use of products, apparatus and equipment
 - factors related to attitudes and general behaviours
- Careful observation and accurate interpretation of signs of potential danger
- Realistic assessment of the degree of danger involved in various risky situations

2. Apply the necessary health and safety preventive measures.

- Adequate understanding of the site evacuation plan
- Accurate location of equipment and identification of resource persons in the event of an emergency
- Verification that all health and safety materials are accessible and in good working order
- Development of materials according to the weaknesses observed
- Adoption of safe behaviours and attitudes in all circumstances
- Rigorous application of preventive measures with respect to:
 - handling organisms
 - using hazardous products
 - using equipment

3. Take action in an emergency or in the event of an accident on the work site.
- Full knowledge of their obligations and responsibilities
 - Application of emergency measures with level headedness and according to established procedures
 - Proper administration of first aid in the field and in the lab
 - Effective organization of procedures for evacuating injured persons
 - Prompt communication with the appropriate authorities

Code: 044P

Objective	Standard
Statement of the Competency To apply wilderness survival techniques.	Achievement Context <ul style="list-style-type: none"> • In an emergency situation and in extreme conditions • Working alone or in a team • Using basic survival materials and a basic first-aid kit
Elements of the Competency	Performance Criteria
1. Apply the necessary preventive measures in a natural environment.	<ul style="list-style-type: none"> • Recognition of the sources of potential danger according to the types of tasks and the conditions for performing them • Establishment of an emergency plan • Preparation of all necessary materials • Communication of adopted measures to the persons concerned
2. Find their bearings in an emergency situation.	<ul style="list-style-type: none"> • Identification of landmarks in order to determine their position • Determination of cardinal points based on clues in the environment • Determination of the direction required for their return
3. Find food in an emergency situation.	<ul style="list-style-type: none"> • Identification of edible species • Application of techniques for capturing animal species • Lighting of fire • Location of a source of drinking water
4. Find shelter in an emergency situation.	<ul style="list-style-type: none"> • Adequate construction of a temporary shelter • Adequate protection against wind, cold and rain

5. Adopt appropriate attitudes and behaviours in an emergency situation.
 - Demonstration of self-control and level headedness
 - Ability to work independently and to be resourceful
 - Effective management of factors that could compromise their survival:
 - pain
 - cold
 - thirst
 - hunger
 - fatigue
 - boredom and isolation
 - hazards of all kinds
6. Manage the factors that could contribute to the survival of a group.
 - Proper, methodical organization of group members
 - Optimal use of each member's skills
 - Realistic study of the situation and demonstration of decision making appropriate to the circumstances
 - Quick reflexes and ability to apply survival skills

Objective**Standard****Statement of the Competency**

To describe the biotic components of a freshwater and saltwater environment.

Achievement Context

- For all types of research involving ecosystem characterization
- Working alone or in a team, with supervision and based on established or standardized research protocols, defined methods, a deadline and a predetermined budget as well as predetermined formats for data input
- While performing analyses of samples taken from the field or in the lab
- Using the required documentation, apparatus, instruments and tools as well as all the means related to logistical aspects

Elements of the Competency**Performance Criteria**

1. Plan the work under their responsibility.

- Determination of the sequence of all the steps involved in performing the tasks
- Determination of all required organizational and material means as well as the conditions for implementing them
- Location on maps of sampling points and stations
- Determination of the route to be taken in compliance with environmental constraints
- Observance of budget constraints
- Observance of time constraints related to the types of protocols and established deadline
- Consideration of all important health and safety aspects

2. Take censuses.

- Adequate use of census methods
- Observance of defined protocols
- Ability to work independently in order to adapt the methods and techniques used to specific environmental constraints
- Accuracy and quality of information gathered, in particular with respect to:
 - identifying the species present
 - counting the species present
 - delineating the distribution areas of the species present

3. Take samples.
 - Adequate use of techniques for sampling organisms or parts of organisms
 - Observance of defined protocols
 - Ability to work independently in order to adapt the methods and techniques used to specific environmental constraints
 - Optimal accuracy and quality of samples
 - Appropriate conservation of samples
4. Analyze the samples.
 - Appropriate preparation of samples and materials according to the type of analysis to be done
 - Analysis of all required parameters according to established protocols
 - Rigorous use of analysis instruments in compliance with prescribed techniques
 - Accuracy of results according to research requirements
5. Take the required measurements.
 - Measurement of all required parameters
 - Rigorous use of measuring instruments in compliance with prescribed methods and techniques
 - Optimal accuracy and quality of measurements according to established protocols
6. Compile all the data.
 - Complete, correct inputting of data on worksheets
 - Regular, methodical verification to ensure that data is valid and complete
7. Keep a technical log.
 - Complete list of materials and products used
 - Sequential description of all the operations performed
 - Rigorous recording of all relevant complementary information:
 - methodology
 - work context and conditions
8. Analyze and interpret the data.
 - Establishment of a summary portrait of the ecosystem's biotic components
 - Formulation of a plausible hypothesis on the condition of the communities, populations and organisms in terms of the ecosystem's characteristics

Code: 044R

Objective**Standard****Statement of the Competency**

To describe the biotic components of a terrestrial environment.

Achievement Context

- For all types of research involving ecosystem characterization
- Working alone or in a team, with supervision and based on established or standardized research protocols, defined methods, a deadline and a predetermined budget as well as predetermined formats for data input
- While performing analyses of samples taken from the field or in the lab
- Using the required documentation, apparatus, instruments and tools as well as all the means related to logistical aspects

Elements of the Competency**Performance Criteria**

1. Plan the work under their responsibility.

- Determination of the sequence of all the steps involved in performing the tasks
- Determination of all required organizational and material means as well as the conditions for implementing them
- Location on maps of sampling points
- Determination of the route to be taken in compliance with environmental constraints
- Observance of budget constraints
- Observance of time constraints related to the types of protocols and established deadline
- Consideration of all important health and safety aspects

2. Take censuses.

- Adequate use of census methods
- Observance of defined protocols
- Ability to work independently in order to adapt the methods and techniques used to specific environmental constraints
- Accuracy and quality of information gathered, in particular with respect to:
 - identifying the species present
 - counting the species present
 - delineating the distribution areas of the species present

3. Take samples.
 - Adequate use of techniques for sampling organisms or parts of organisms
 - Observance of defined protocols
 - Ability to work independently in order to adapt the methods and techniques used to specific environmental constraints
 - Optimal accuracy and quality of samples
 - Appropriate conservation of samples
4. Analyze the samples.
 - Appropriate preparation of samples and materials according to the type of analysis to be done
 - Analysis of all required parameters according to established protocols
 - Rigorous use of analysis instruments in compliance with prescribed techniques
 - Accuracy of results according to research requirements
5. Take the required measurements.
 - Measurement of all required parameters
 - Rigorous use of measuring instruments in compliance with prescribed methods and techniques
 - Optimal accuracy and quality of measurements according to established protocols
6. Compile all the data.
 - Complete, correct inputting of data on worksheets
 - Regular, methodical verification to ensure that data is valid and complete
7. Keep a technical log.
 - Complete list of materials and products used
 - Sequential description of all the operations performed
 - Rigorous recording of all relevant complementary information:
 - methodology
 - work context and conditions
8. Analyze and interpret the data.
 - Establishment of a summary portrait of the ecosystem's biotic components
 - Formulation of a plausible hypothesis on the condition of the communities, populations and organisms in terms of the ecosystem's characteristics

Objective**Standard****Statement of the Competency**

To act within the legal and ethical parameters of the field.

Achievement Context

- For all work-related activities
- In accordance with the laws and regulations in effect, in particular the *Forest Act*, *Environment Quality Act*, *An Act respecting the conservation and development of wildlife* and the guidelines developed by the Canadian Council on Animal Care
- In accordance with the legal guidelines applicable to the issue of permits and authorizations
- Using the required documentation

Elements of the Competency**Performance Criteria**

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| <ol style="list-style-type: none"> 1. Learn about the legal and ethical parameters that apply to various work-related situations. 2. Evaluate the practical consequences of the parameters on their work-related tasks. 3. Participate in the application of the laws and regulations that pertain to their field. 4. Conduct themselves in an ethical manner in their work-related activities. | <ul style="list-style-type: none"> • Complete list of the different aspects of the protocol affected by these parameters • Determination of the authorities, laws and regulations concerned • Identification and consultation of relevant information sources • Determination of constraints, limits and obligations ensuing from the legal framework • Methodical review of the protocol and work plan with respect to the legal and ethical parameters • Adjustment of logistical and practical aspects under their responsibility • Accurate communication of relevant information to the persons concerned • Preparation of the forms required to obtain permits and authorizations • Adoption of professional practices in compliance with laws and regulations • Relevant dealings with users of an environment for education purposes • Ongoing demonstration of openness to the values and prerogatives of others • Attitude of intellectual honesty at all times • Application of ethical practices • Constant concern for the impact of their practices on organisms and their habitats • Constant concern for the impact of their practices on human communities |
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Objective	Standard
<p>Statement of the Competency</p> <p>To conduct an ecosystemic analysis of a territory.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • As part of a team, with supervision and under the aegis of public, parapublic or private authorities, and working in terrestrial, freshwater and saltwater environments • While performing tasks for purposes of characterizing an environment, establishing master plans and action plans, evaluating the impact of various activities on the environment as well as possibly carrying out interpretation and education activities, etc. • Based on guidelines pertaining to a clearly defined problem: population dynamics, condition of a habitat; the planning, use and conservation of resources; impact studies, etc. • Preparing a summary using all the studies on the environment in question and all the required data, in particular georeferenced and thematic maps, databases, research and census reports • Using the required computer tools and corresponding applications
Elements of the Competency	Performance Criteria
1. Participate in planning the work according to the initial problem.	<ul style="list-style-type: none"> • Determination of the different aspects and components to be analyzed • Strategic distribution of work among team members • Development of a common methodology and analysis grid
2. Understand the data related to the components of the natural environment.	<ul style="list-style-type: none"> • Rigorous analysis of data on the biotic or abiotic resources specific to the components studied • Extraction of data relevant to the initial problem • Justification of data retained and summary processing of the data • Summary reconciling the common points and differences among various studies • Formulation of an overall impression of the component(s) analyzed
3. Establish the interactions among the different components.	<ul style="list-style-type: none"> • Clear, accurate and brief reporting • Highlighting of the predominant interactions among components in terms of the initial problem

4. Participate in producing a summary portrait of the environment.
 - Formulation of a diagnostic impression to determine the predominant factors accounting for the dynamics of the environment
 - Determination of factors that may be influenced
5. Participate in formulating recommendations for solving the initial problem.
 - Relevance and feasibility of the recommendations formulated

Objective	Standard
Statement of the Competency	Achievement Context
To apply the scientific approach to problem-solving.	<ul style="list-style-type: none"> • For research conducted alone, under supervision and in the field and in a lab • Based on concrete study, analysis and intervention situations where problems require that lab protocols and methods be adjusted or modified or that practices for intervening in the natural environment be modified according to specific conditions and constraints • Taking into consideration predetermined time and budget constraints • Using the required scientific and technical documentation, tools, computer applications, equipment, apparatus and products
Elements of the Competency	Performance Criteria
1. Define the problem.	<ul style="list-style-type: none"> • Accurate interpretation of the clues observed • Relevant, clear questions formulated • Accurate description of the nature and scope of the problem • Clear, accurate statement of the problem
2. Formulate a hypothesis regarding the causes of the problem.	<ul style="list-style-type: none"> • Relevant hypothesis put forth • Theoretical validation of the hypothesis put forth in terms of the current knowledge on the subject • Determination of the type of approach to take • <i>A priori</i> determination of the expected results and the degrees of confirmation of the hypothesis
3. Plan the research process.	<ul style="list-style-type: none"> • Rigorous determination of how the work should proceed: <ul style="list-style-type: none"> – nature of parameters and data – methodological elements and corresponding steps – procedures for inputting and processing data • Determination of the required resources • Effective organization of how and where the work should take place • Consideration of all health and safety aspects

4. Apply the chosen methodology.
 - Rigorous application of protocol
 - Adequate use of the techniques associated with different operations
 - Collection of complete, accurate data
 - Appropriate processing of data
5. Analyze the results obtained in order to confirm or reject the hypothesis.
 - Detailed review of the application of the process in order to confirm that the data obtained is reliable
 - Identification of the main sources of errors and bias that could interfere with the quality of results and their interpretation
 - Systematic comparison of actual and expected results
 - Relevant conclusions regarding the initial hypothesis
6. Write a technical report.
 - Complete report in conformity with the standards in effect for scientific presentation:
 - description of the initial problem
 - description of the methodology
 - data and results obtained
 - analysis of results and ensuing conclusions
 - Formulation of relevant recommendations:
 - generalization of the solution if the hypothesis is confirmed
 - formulation of a new hypothesis if the hypothesis is rejected

Objective	Standard
<p>Statement of the Competency</p> <p>To conduct experiments related to a natural environment.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For a variety of very complex activities that involve experimenting with methods, techniques and approaches, prior to their generalization • As part of a team, with supervision • Based on specific instructions, defined experimental research protocols and methods, a predetermined budget as well as predetermined formats for data input • Using the required means: various documentation, equipment and transportation methods
Elements of the Competency	Performance Criteria
<p>1. Participate in determining objectives, procedures and a timetable.</p>	<ul style="list-style-type: none"> • Determination of the sequence of all the steps involved in performing the work • Determination of all required organizational and material means as well as the conditions for implementing them • Observance of budget constraints • Observance of time constraints related to the types of protocols and established deadline • Consideration of all important health and safety aspects • Formulation of a relevant opinion on the technical feasibility of the project
<p>2. Perform the preliminary tasks required for the experiments.</p>	<ul style="list-style-type: none"> • Proper preparation of materials and equipment in stock • Purchase of necessary supplies • Organization of transportation • Preparation for data collection • Distribution of tasks among team members

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| 3. Conduct experiments in the field. | <ul style="list-style-type: none"> • Rigorous application of experimental protocol • Adequate use of techniques associated with various operations • Methodological and organizational adjustments adapted to circumstances in the field • Complete, accurate data collected • Effective management of logistics in the field • Timely technical support offered to various team members • Adoption of all relevant safety practices |
| 4. Conduct pre-experiment and post-experiment activities in a lab. | <ul style="list-style-type: none"> • Rigorous application of experimental protocol • Adequate use of techniques associated with various operations • Appropriate adaptation of methods and techniques to the circumstances • Complete, accurate data collected • Effective management of logistics in the lab • Adoption of all relevant safety practices |
| 5. Write a technical report. | <ul style="list-style-type: none"> • Sequential description of all the operations performed • Complete list of the materials and products used as well as the organisms studied |
| 6. Participate in analyzing the results in order to confirm or reject the hypothesis. | <ul style="list-style-type: none"> • Detailed review of the application of the process in order to confirm that the data obtained is reliable • Identification of the main sources of errors and bias that could interfere with the quality of results and their interpretation • Systematic comparison of actual and expected results • Relevant conclusions regarding the initial hypothesis |
| 7. Participate in writing an experiment report. | <ul style="list-style-type: none"> • Complete, accurate description of the experiment's technical framework • Presentation of results in the form of tables and figures • Optimal quality of written communication |

Objective	Standard
<p>Statement of the Competency</p> <p>To apply intervention measures in a natural environment.</p>	<p>Achievement Context</p> <ul style="list-style-type: none"> • For activities that involve land-use planning measures, in particular, related to attenuation, restoration, recovery and compensation • As part of multidisciplinary teams and based on studies and research conducted in a natural environment, recommendations and statements formulated as part of these studies as well as the problems and conclusions of these studies • Using all the required documentation, tools, apparatus and equipment
Elements of the Competency	Performance Criteria
1. Participate in preliminary tasks leading to the development of an action plan.	<ul style="list-style-type: none"> • Rigorous analysis of the problem, its nature, and the objectives and issues related to the project • Active participation in determining the goals, objectives and action strategies • Active participation in establishing priorities, a timetable and the sharing of responsibilities • Determination, as a team, of the indicators for monitoring and evaluating the tasks
2. Plan the work under their responsibility.	<ul style="list-style-type: none"> • Determination of the sequence of all the steps involved in performing the work • Determination of all required organizational, material, technical and logistical means as well as the conditions for implementing them • Observance of budget constraints • Observance of time constraints related to the types of measures to be implemented • Obtaining of permits and negotiation of agreements and authorizations • Consideration of all important health and safety aspects
3. Begin the work in the field.	<ul style="list-style-type: none"> • Accurate delineation of work site(s) • Verification to ensure that everyone concerned understands the work instructions • Distribution of tasks and responsibilities among team members

4. Coordinate the work.
 - Coordination and monitoring of the progress of the work according to predefined indicators
 - Adequate use of work techniques associated with the measures to be implemented
 - Quality of the work
 - Safe execution of the work
 - Application of appropriate adjustments while carrying out the work
 - Production of a complete technical report
5. Evaluate the results obtained.
 - Medium- and long-term monitoring of the various predefined indicators
 - Description of the results obtained
 - Proposal of corrective actions in the case of unsatisfactory results

