Original Text in French

Electrical Engineering Technology: Networks and Telecommunications (243.F0)

College program

Sector – Sector 09 – Electrotechnology

College Education Program

Québec

The *Charter of the French language* and its regulations govern the consultation of English-language content.

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243.F0 Electrical Engineering Technology: Networks and Telecommunications

Type of certification:	Diploma of College Studies
Number of credits:	91⅔ credits
Number of periods of instruction:	2685 periods of instruction

General education component:	660	periods of instruction
Program-specific component :	2025	periods of instruction

Admission Requirements:

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 requirements, where applicable:

- In the Education Reform curriculum:
    - Secondary IV Mathematics, Technical and Scientific Option (TS) or Science Option (NS), or Secondary V Cultural, Social and Technical Option (CST)

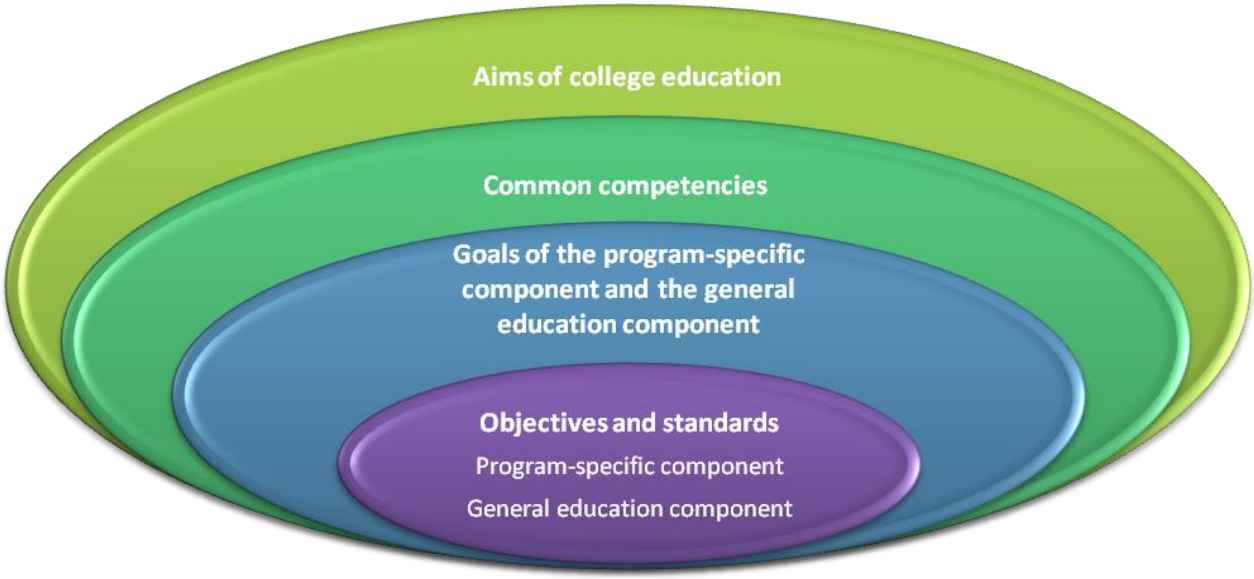
College-Level Programs

In Québec, college is the next stage after the compulsory years of schooling (elementary and secondary school). College graduates enter the labour market directly or proceed to university studies. The Ministère de l'Enseignement supérieur establishes the programs of study, while individual colleges ensure their implementation.

A college-level program provides the frame of reference within which the students acquire designated competencies in order to qualify for a profession or to pursue their studies. For the teachers, the program outlines learning objectives and defines the scope of their application.
The following figure illustrates the relationships among the elements of a college-level program, going from the general to the specific:

- Aims of college education
- Common competencies
- Goals of the program-specific component and the general education component
- Objectives and standards of the program-specific component and the general education component

Figure 1 – Elements of a College-Level Program



Programs leading to the Diploma of College Studies (DCS) include two main components: a general education component and a program-specific component. Both these components contribute to a student's education, as the knowledge, skills and attitudes imparted in one are emphasized and applied in the other, whenever possible. General education is an integral part of each program and, when coupled with the program-specific component as part of an integrated approach, fosters the development of the competencies required by all programs.

All college-level programs are characterized by three educational aims and five common competencies.

Aims of College Education

Educational aims guide the actions of those involved in the students' education. They facilitate the program-based approach by establishing the outcomes expected of students at the end of their college studies.

To educate students to live responsibly in society

At the personal level, students show they are engaged in their learning. They demonstrate rigour and perseverance as well as skills enabling them to analyze, synthesize and carry out research. At the professional level, they draw on their ability to apply their knowledge, skills and attitudes and to adapt to new situations. In the realm of social and civic life, students assume their role as informed and responsible citizens by adopting desirable attitudes and behaviours. They show evidence of open-mindedness and a sense of community in their dealings with others.

To help students integrate cultural knowledge into their studies

Students continue to enhance their personal culture and are able to appreciate various forms of cultural expression. Through their studies, they have become familiar with cultural productions. They can interpret the meaning and assess the value of these productions and are aware of the role they themselves play in the expression of culture. The development of their critical judgment and social conscience and the consolidation of their historical references have broadened their cultural horizons. Students recognize the diversity of social and cultural realities and appreciate the breadth and wealth of Québec's culture. Lastly, they apply their cultural knowledge by making connections among events occurring around them and by being involved in cultural, artistic, sports, technical or scientific activities.

To help students master language as a tool for thought, communication and openness to the world

Students understand and produce various forms of complex discourse in different situations. They are able to read and write independently at an advanced skill level. Their mastery of language allows them to engage in independent reflection, to know where they stand relative to various forms of discourse, and to express themselves in a structured, rational and precise manner. When faced with different communication situations, students are able to express their world view and identity. Language mastery also helps students be receptive to the dissemination of a broad range of knowledge. It allows them to share points of view and improve their communication skills in both the language of instruction and a second language.

Common Competencies of College Education

Common competencies are associated with the aims of college education. They help to ensure students are adequately prepared for personal and professional life.

Solve problems

Students can identify a problem and analyze its elements. They can list and classify possible solutions and implement the one they feel is most effective. They reflect on their approach, assess the appropriateness of the chosen solution and determine whether it can be applied in other situations.

Use creativity

Students discover new possibilities by juxtaposing, combining and reorganizing existing concepts, and by using ideas, strategies and techniques in new ways. Students are open to new ideas and different ways of doing things, while assessing their effectiveness.

Adapt to new situations

When faced with a new situation, students are both open and critical. After analyzing the situation at hand, they identify and test ways of dealing with it. To adapt to a world that is constantly changing, students work in teams and show concern for keeping their knowledge up to date.

Exercise a sense of responsibility

Students assume their role as responsible citizens and act in accordance with socially and democratically desirable attitudes and behaviours. They act ethically and with integrity, exercise critical judgment and are fully engaged, personally, socially and professionally. Independent and organized, they respect their commitments.

Communicate

Students deliver a coherent message adapted to each situation. They are able to listen and to structure their thoughts in order to formulate a clear message. They rely on a variety of communication strategies and use information and communications technologies. They evaluate the impact of their communication and review their strategies, as needed.

Implementation of College-Level Programs

Each college determines the ways in which the educational aims, common competencies, goals, objectives and standards are implemented. This does not mean that students in a college must follow common courses. Each course may contribute to the full or partial achievement of these elements. The important thing is that all of these elements are taken into consideration in one or more courses and that they become specific focuses of teaching and learning, since they have been recognized as essential to the practice of a profession or to the pursuit of university studies in a given discipline.

The Electrical Engineering Technology: Networks and Telecommunications program (243.F0)

The *Electrical Engineering Technology: Networks and Telecommunications* program was designed in accordance with the framework for developing technical programs. This approach involves the participation of partners working in the occupational 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 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 the occupation, but also a range of knowledge, skills and attitudes that will ensure their versatility.

The *Electrical Engineering Technology: Networks and Telecommunications* program includes four components: a program-specific component, a general education component that is common to all programs, a general education component that is specific to each program, and a general education component that complements the program.

- The program-specific component consists of 65 credits.
- The general education component that is common to all programs consists of 16⅔ credits:
  - Language of Instruction and Literature: 7⅓ credits
  - Philosophy or Humanities: 4⅓ credits
  - Physical Education: 3 credits
  - Second Language: 2 credits
- The general education component that is specific to the program consists of 6 credits:
  - Language of Instruction and Literature: 2 credits
  - Philosophy or Humanities: 2 credits
  - Second Language: 2 credits
- The complementary general education component, which aims to expose students to subject areas outside their program of study, consists of 4 credits and includes courses in the following areas:
  - Social Sciences
  - Science and Technology
  - Modern Language
  - Mathematics Literacy and Computer Science
  - Art and Aesthetics
  - Contemporary Issues

  Students may choose courses only in those areas that are outside their program of study.

Goals of the Program

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

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

Educational aims in the program-specific component 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.

For the *Electrical Engineering Technology: Networks and Telecommunications* program, the aims of the program-specific component are as follows:

- Develop autonomy, rigour, a methodical approach and analytical skills
- Develop the ability to exercise critical judgment and solve problems with an open mind
- Develop teamwork and collaboration skills
- Develop the ability to respond to contingencies
- Develop a concern for keeping their skills and knowledge up to date
- Develop the ability to adapt to technical, scientific and organizational changes
- Develop a concern for working with a view to sustainable development

In keeping with the aims of college education, the program-specific component is also intended to educate students to live responsibly in society, to help them integrate cultural knowledge into their studies and, lastly, to help them master language as a tool for thought, communication and openness to the world.

General Education Component Common to All Programs and General Education Component Specific to the Program

The general education components that are common to all programs and specific to the program contribute to the development of twelve competencies associated with the three aims of college education:

- for the aim To educate students to live responsibly in society:
  - Demonstrate independence and creativity in thought and action
  - Demonstrate rational, critical and ethical thinking
  - Develop strategies that promote reflection on their knowledge and actions
  - Pursue the development of a healthy and active lifestyle
  - Assume their social responsibilities
- for the aim To help students integrate cultural knowledge into their studies:
  - Recognize the influence of culture and lifestyle on the practice of physical activity and sports
  - Recognize the influence of the media, sciences or technology on culture and lifestyle
  - Analyze works in philosophy or the humanities emanating from different historical periods and movements
  - Appreciate literary and non-literary works of other artistic expressions emanating from different historical periods and movements
- for the aim To help students master language as a tool for thought, communication and openness to the world:
  - Improve communication in the second language
  - Master the basic rules of discourse and argumentation
  - Refine oral and written communication in the language of instruction

English, Language of Instruction and Literature

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

- will be able to demonstrate their knowledge of the following:
  - the basic vocabulary and terminology used when discussing literary works
  - ways to apply an independent analytical approach to literary genres
  - ways to apply an independent analytical approach to literary themes
  - the appreciation of literary and non-literary works or other artistic expressions of different historical periods and movements
  - ways to identify the socio-cultural and historical context of different periods and movements
  - ways to refine oral and written communication in the language of instruction

- will be able to demonstrate their ability to do the following:
  - read, write, listen and speak at a college level of proficiency
  - develop their own ideas in arguments and theses
  - organize their arguments and theses in a discourse and edit their work
  - produce and analyze various styles of discourse
  - communicate in the styles of discourse appropriate to one or more fields of study
- will be encouraged to develop the following attitudes:
  - independence, individuality, and open-mindedness in thought and action
  - an appreciation of literature and other artistic works from different periods
  - a recognition of the role of media within a society and its culture
  - an awareness of strategies that foster self-reflective practice in their learning and actions
  - critical and ethical thought

Humanities

Humanities constitutes a thematic, multidisciplinary and, at times, transdisciplinary exploration of humankind, including its accomplishments, failures, abilities, creations, ideas and values. Students who have achieved the general education objectives in humanities

- will be able to demonstrate their knowledge of the following:
  - the main concepts, limits and uses of a form of knowledge including significant historical reference points
  - the main concepts, limits and uses of a world view
  - the nature and organization of the basic elements of an ethical question
  - methods for coherent integration of concepts and the formulation and synthesis of ideas
  - the importance and practice of adequately substantiated argumentation, written and oral
- will be able to demonstrate their ability to do the following:
  - describe, explain and organize the 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
  - recognize forms of creativity and original thought
  - 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
  - utilize the multiple strategies of critical thinking
- will be encouraged to develop the following attitudes:
  - openness to diversity and pluralism
  - awareness of the limits of knowledge claims, world views and ethical perspectives
  - respect for the points of view of others
  - empathy and acceptance of others
  - concern for global issues
  - determination to continue learning

French as a Second Language

Students who have achieved the general education objectives in French as a Second Language:

- will be able to demonstrate their knowledge of the following:
  - different reading techniques
  - the formal elements needed to produce a structured text, both orally and in writing
  - different forms of discourse and their specific uses
- will be able to demonstrate their ability to do the following:
  - question, analyze, judge and defend an argument in French
  - reflect on their knowledge and actions notably by revising their written productions
  - maintain social relationships and share in the cultural life of Québec
  - establish and maintain work-related relationships in French
- will be encouraged to develop the following attitudes of:
  - openness to the various aspects of Québec culture
  - recognition and promotion of creativity
  - readiness to participate in social and economic life

Physical Education

Students who have achieved the general education objectives in physical education:

- will be able to demonstrate their knowledge of the following:
  - notions and concepts based on the findings of scientific research and how to apply them methodically to physical or sporting activities
  - the relationship between lifestyle, physical activity, physical fitness and health
  - ways to evaluate their own abilities and needs with respect to activities that can enhance their health and fitness
  - the rules, techniques and conditions involved in different types of physical or sporting activity
  - the main socio-cultural determinants of physical activity and a healthy lifestyle
- will be able to demonstrate their ability to do the following:
  - give an initial account of their abilities, attitudes and needs
  - choose physical activities on the basis of their motivation, their ability to adapt to effort and their need for change
  - apply the rules and techniques of a certain number of physical activities with a view to practising them sufficiently on a regular basis
  - set goals that are realistic, measurable, challenging and situated within a specific time frame
  - improve their mastery of basic techniques and strategies associated with physical activities
  - evaluate their skills, attitudes and progress in order to adapt their means or objectives in their practice of physical activities
  - autonomously maintain or increase their physical activity and fitness levels in order to develop a healthy and active lifestyle
  - use their creativity in physical activities
  - express their choice of activities in a clear and reasoned manner
- will be encouraged to develop the following attitudes:
  - awareness of the importance of regular and sufficient physical activity in order to improve their fitness

- awareness of the factors that encourage them to practise physical activity more often
- awareness of the importance of evaluating and respecting their ability to adapt to effort, as well as an awareness of the conditions necessary to carry out a physical activity program, before committing to it
- self-confidence, self-control, cooperation, respect and understanding, through knowledge and through the practice of a physical activity
- respect for ethical behaviour when participating in a sport or a physical activity
- respect for individual and cultural differences as well as for the environment in which the sport or physical activity takes place
- appreciation for the aesthetic value of physical activity as well as the opportunities for enjoyment it provides
- readiness to adopt the values of discipline, effort, consistency and perseverance
- readiness to promote, as a social value, the regular and sufficient practice of physical activity

Complementary General Education Component

Social Sciences

The goal of this subject area is to help students view the social sciences as a specific approach to the study of human existence. This goal may cover various aspects, including the study of the specific contribution of the social sciences to an understanding of contemporary issues and the application of approaches from the social sciences.

Science and Technology

The goal of this subject area is to present science and technology as a specific approach to the study of reality, by introducing students to this area of knowledge. This goal may cover various aspects, including the study of the general nature of science and technology and contemporary scientific or technological issues as well as the application of the scientific method.

Modern Language

The goal of this subject area is to introduce students to the basic structures and vocabulary of a third language and help them develop an awareness of the culture of its native speakers.

Mathematics Literacy and Computer Science

The goal of this subject area is to highlight a culture of mathematics and computer science. This goal may cover various aspects, including the study of the role of mathematics or computers in contemporary society as well as the use of mathematical or computer concepts, procedures and tools.

Art and Aesthetics

The goal of this subject area is to provide students with a cultural awareness by exploring various forms of art and to help students develop an aesthetic awareness. This goal may cover various aspects, including an appreciation of different art forms and the production of a work of art.

Contemporary Issues

This subject area focuses on current, transdisciplinary issues. The concept of transdisciplinarity refers to a type of approach that addresses a contemporary issue from the perspective of different disciplines and areas of knowledge, beyond a mere juxtaposition of the subjects studied.

Goals of the Program-Specific Component

The *Electrical Engineering Technology: Networks and Telecommunications* program is designed to train students to become electrical engineering technologists specializing in the development, improvement, modification and maintenance of networking and telecommunications systems and equipment. These technologists are expected to work on emerging medium- and high-level technologies.

Electrical engineering technologists work in the fields of electronics, wired and wireless networking, fibre optic transmission, mobile radio, microwave radio, telecommunications, radio and television broadcasting, telephony and information technology.

Among other tasks, electrical engineering technologists are required to:

- Set up and maintain network infrastructures
- Program and update network and telecommunications equipment and systems
- Calibrate electronic instruments and systems

Their expertise is particularly valuable when they propose solutions for data network infrastructure and wired and wireless telecommunications as part of designing and engineering projects.

Their typical work environment is in companies using telecommunications networks and equipment, in the residential, commercial, industrial, public and aeronautical sectors. They are employed in offices, research and development laboratories, consulting engineering firms, on the premises of clients, subcontractors and suppliers, as well as in educational institutions and other public organizations.

Objectives

Statements of the Competency

Program-Specific Component

02GN Explore the profession.
02GP Prevent damage to health, safety and the environment.
02GQ Solve problems in electronics.
02GR Communicate in the workplace.
02GS Analyze circuits.
02GT Analyze technical information.
02GU Do shop work.
02GV Take measurements.
02GW Create technical documents.
02GX Perform tests.
02GY Program a connected system or equipment.
02GZ Use operating systems.
02H0 Configure data networks.
02H1 Contribute to technological change.
02H2 Perform diagnostics on equipment or systems.
02H3 Install and commission telecommunications network equipment or systems.
02H4 Control the quality of telecommunications network equipment or systems.
02H5 Maintain telecommunications network equipment or systems.
02H6 Troubleshoot telecommunications network equipment or systems.
02H7 Provide technical support in the field of telecommunications networks.

General Education Component Common to All Programs and General Education Component Specific to the Program

16⅔ credits and 420 periods of instruction, 6 credits and 150 periods of instruction

English, Language of Instruction and Literature

4EA0 Analyze and produce various forms of discourse
4EA1 Apply an analytical approach to literary genres
4EA2 Apply an analytical approach to a literary theme
4EAP Communicate in the forms of discourse appropriate to one or more fields of study

Humanities

4HU0 Apply a logical analytical process to how knowledge is organized and used
4HU1 Apply a critical thought process to world views
4HUP Apply a critical thought process to ethical issues relevant to the field of study

French as a Second Language

One objective to be met from the following:

4SF0 Apply basic concepts for communicating in standard French
4SF1 Communicate in standard French with some ease
4SF2 Communicate with ease in standard French
4SF3 Explore a cultural and literary topic

One objective to be met from the following:

4SFP Apply basic concepts for communicating in French in relation to the student's field of study
4SFQ Communicate in French on topics related to the student's field of study
4SFR Communicate with ease in French on topics related to the student's field of study
4SFS Produce a text in French on a topic related to the student's field of study

Physical Education

4EP0 Analyze one's physical activity from the standpoint of a healthy lifestyle
4EP1 Improve one's effectiveness when practising a physical activity
4EP2 Demonstrate one's ability to assume responsibility for maintaining a healthy lifestyle through the continued practice of physical activity

Complementary General Education Component

4 credits, 90 periods of instruction

Two objectives to be met from the following, in subject areas outside the student's program of study:

000V	Estimate the contribution of the social sciences to an understanding of contemporary issues
000W	Analyze one of the major problems of our time using one or more social scientific approaches
000X	Explain the general nature of science and technology and some of the major contemporary scientific or technological issues
000Y	Resolve a simple problem by applying the basic scientific method
000Z	Communicate with limited skill in a modern language
0010	Communicate on familiar topics in a modern language
0067	Communicate with relative ease in a modern language
0011	Recognize the role of mathematics or computer science in contemporary society
0012	Use various mathematical or computer science concepts, procedures and tools for common tasks
0013	Consider various forms of art produced according to aesthetic practices
0014	Produce a work of art
021L	Consider contemporary issues from a transdisciplinary perspective
021M	Explore a contemporary issue from a transdisciplinary perspective

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

Electrical Engineering Technology: Networks and Telecommunications		**GENERAL COMPETENCIES**														
SPECIFIC COMPETENCIES	**Competency Number**	Explore the profession.	Prevent damage to health, safety and the environment.	Solve problems in electronics.	Communicate in the workplace.	Analyze circuits.	Analyze technical information.	Do shop work.	Take measurements.	Create technical documents.	Perform tests.	Program a connected system or equipment.	Use operating systems.	Configure data networks.	Contribute to technological change.	Perform diagnostics on equipment or systems.
Competency Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Install and commission telecommunications network equipment or systems.	16	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Control the quality of telecommunications network equipment or systems.	17	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Maintain telecommunications network equipment or systems.	18	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Troubleshoot telecommunications network equipment or systems.	19	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Provide technical support in the field of telecommunications networks.	20	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o

Program-Specific Component

Code : 02GN

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

Explore the profession.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• From a career-long orientation and training perspective, in the fields of networking and telecommunications
	• Individually or in collaboration with technologists and engineers
	• Using:
	  ○ publication platforms (media)
	  ○ documents on sustainable development
	  ○ information and communication technologies (ICT)
	• Given
	  ○ regulations governing the profession
	  ○ information on the workplace

	Performance Criteria for the Competency as a Whole
	• Relevance of the information collected • Proper identification of information • Responsible use of the digital environment

Elements of the Competency	**Performance Criteria**
1. Differentiate among workplaces.	• Accurate distinction between the main sectors of technological activity • Appropriate identification of the types of businesses
2. Examine the characteristics and outlook of the profession.	• Correct interpretation of current laws and regulations • Adequate examination of job opportunities • Recognition of major trends in the field • Accurate definition of the place of sustainable development in the profession • Accurate identification of the responsibilities related to the profession
3. Examine the tasks and duties of the occupation.	• Recognition of the importance of time and stress management • Accurate identification of the personal characteristics needed in the occupation
4. Examine the expected skills and behaviours.	• Recognition of the aspects related to reaching consensus for team decisions • Accurate identification of attitudes and behaviours that facilitate teamwork

Elements of the Competency	Performance Criteria
	• Careful examination of ways to ensure continued development of their skills throughout their career • Confirmation of their choice of training

Code : 02GP

Objective	*Standard*

Statement of the Competency	**Achievement Context**

Prevent damage to health, safety and the environment.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ personal and collective protective equipment
	  ○ Workplace Hazardous Materials Information System (WHMIS)
	  ○ informative posters
	  ○ mitigation measures
	• Given:
	  ○ guidelines on exposure to radio frequencies
	  ○ regulations on environmental protection

	Performance Criteria for the Competency as a Whole
	• Compliance with occupational health and safety laws and regulations

Elements of the Competency	**Performance Criteria**
1. Recognize the hazards present.	• Accurate recognition of the hazards present
2. Review occupational health and safety information.	• Accurate interpretation of current laws and recommendations • Accurate interpretation of occupational health and safety recommendations • Accurate interpretation of the organization's or client's internal rules
3. Adopt precautionary measures.	• Systematic verification of personal protective equipment • Compliant use of personal protective equipment • Adoption of ergonomic work postures • Systematic reporting of situations that are potentially dangerous for people or the environment

Code : 02GQ

Objective — *Standard*

Statement of the Competency	Achievement Context

Solve problems in electronics.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• Using:
	  ○ formulas related to electronics, circuits, etc.
	  ○ scientific concepts
	  ○ measuring instruments
	  ○ electromagnetic waves
	  ○ technical documents
	• Given:
	  ○ simple problems
	  ○ specialized software
	  ○ electrical circuits
	  ○ transmission media:
	  • electrical
	  • optical

	Performance Criteria for the Competency as a Whole
	• Rigorous approach • Observance of the International System of Units (SI)

Elements of the Competency	Performance Criteria
1. Characterize the scientific concepts involved in solving a problem.	• Correct naming of the concept • Accurate recognition of the contexts related to the problem • Adequate explanation of the concepts
2. Apply laws and equations to solve a problem.	• Accurate recognition of the applicable parameters related to the problem • Coherent formulation of problem-related equations • Appropriate application of equations within the context of the problem
3. Produce qualitative and/or quantitative results.	• Proper resolution of equations • Precise numerical expression of results in relation to the problem • Meticulous representation of results (graphically or numerically)
4. Interpret the results.	• Accurate qualification and/or quantification of results • Clear explanation of the results with regard to the problem

Code : 02GR

Objective	*Standard*

Statement of the Competency	**Achievement Context**
Communicate in the workplace.	• In industry, a laboratory or an office • On the client's premises, in person or remotely • By participating in meetings • In person or remotely • Using workplace technologies • Using communication tools (written, audio or video)

	Performance Criteria for the Competency as a Whole
	• Respect for the other speaker • Observance of rules of common courtesy • Observance of workplace culture

Elements of the Competency	**Performance Criteria**
1. Communicate with others.	• Accurate interpretation of messages received • Clear formulation of a message • Appropriate verification of the other person's understanding
2. Evaluate the quality of communications.	• Realistic assessment of the quality of their communications • Implementation of means to improve

3. Work as part of a multidisciplinary team.	• Appropriate display of:
	  ○ signs of respect
	  ○ open-mindedness
	  ○ cooperation
	• Respect for the team's operating rules
	• Respect for each person's role, responsibilities and expertise
	• Effective collaboration for problem solving

Code : 02GS

Objective — *Standard*

Statement of the Competency	Achievement Context

Analyze circuits.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ technical documents
	  ○ software (modelling, simulation, calculation)
	  ○ references
	• Given:
	  ○ schematic diagrams
	  ○ assembly diagrams
	  ○ calculation results

Elements of the Competency	Performance Criteria
1. Identify circuit components and their function.	• Complete identification of the components of a circuit • Sufficient consultation of technical documents or references relating to each component • Precise determination of the function of each component, considering its position in the circuit
2. Analyze the circuit.	• Clear delimitation of each component of the circuit, taking into account its specific function • Complete identification of each input/output for each component of the circuit • Precise designation of the function of each component of the circuit
3. Determine the operating status of the circuit.	• Accurate statement of operating hypotheses • Appropriate testing of hypothesis • Proper verification of result • Relevant expression of operating status
4. Document the analysis.	• Concise communication of the progress of the analysis • Pertinent documenting of results of the analysis

Code : 02GT

Objective — *Standard*

Statement of the Competency	**Achievement Context**

Analyze technical information.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ technical documents:
	  ▪ data sheets
	  ▪ network plans
	  ▪ others
	  ○ flow charts
	  ○ expert forums
	• Given:
	  ○ national and international norms and standards
	  ○ document and other templates
	  ○ technical documents

Elements of the Competency	**Performance Criteria**
1. Gather technical information.	• Proper identification of needs • Effective use of research strategies • Correct validation of sources • Appropriate selection of information
2. Interpret technical information.	• Appropriate synthesis of information • Thorough verification of search results

Code : 02GU

Objective — *Standard*

Statement of the Competency	**Achievement Context**

Do shop work.	• In industry, a laboratory or an office
	• On the client's premises
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ tools:
	  ▪ for soldering
	  ▪ for crimping
	  ▪ manual and electric
	  ▪ optical magnifier
	  ▪ others
	  ○ personal protective equipment
	  ○ technical instructions
	  ○ assembly or disassembly instructions
	• Given:
	  ○ a system
	  ○ a device
	  ○ connectors, cables, junction boxes, housings, an antenna tower, etc.

	Performance Criteria for the Competency as a Whole
	• Compliance with occupational health and safety laws and regulations • Compliance with principles of sustainable development

Elements of the Competency	**Performance Criteria**
1. Prepare the work.	• Appropriate choice of tools • Appropriate preparation of the work area • Rigorous verification of personal protective equipment
2. Carry out the work.	• Methodical work • Careful handling of expensive parts • Meticulous replacement of electronic components • Maintenance of a functional work area • Ensuring of adequate protection against electrostatic discharge
3. Verify the work.	• Verification of conformity of work • Systematic tidying up of work area

Code : 02GV

Objective — *Standard*

Statement of the Competency	**Achievement Context**

Take measurements.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ measuring instruments
	  ○ specialized tools
	  ○ technical documents
	• Given:
	  ○ equipment, systems or subsystems
	  ○ a procedure

	Performance Criteria for the Competency as a Whole

	• Compliance with current standards regarding:
	  ○ quality
	  ○ electromagnetic interference
	  ○ protection against electrostatic discharge
	• Compliance with occupational health and safety laws and regulations

Elements of the Competency	**Performance Criteria**
1. Assess the situation.	• Clarity of the overall picture • Precise identification of system • Correct identification of risks related to taking measurements • Effective consideration of impact of the measurement
2. Prepare to take measurements.	• Appropriate selection of the measuring instrument • Thorough verification of the condition of the instrument • Proper configuration of the instrument • Systematic preparation for taking measurements
3. Take measurements.	• Connection made safely • Validation of the procedure • Accuracy of the measurement • Precision of measurement reading
4. Record measurements.	• Systematic recording • Unambiguous recording

Code : 02GW

Objective	*Standard*

Statement of the Competency	**Achievement Context**

Create technical documents.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• Individually or as part of a team
	• Using:
	  ○ specialized software
	• Given:
	  ○ data sheets
	  ○ manufacturer's drawings
	  ○ national and international norms and standards
	  ○ document and other templates
	  ○ archived information
	  ○ previous versions

	Performance Criteria for the Competency as a Whole
	• Observance of copyright

Elements of the Competency	**Performance Criteria**
1. Plan document production.	• Appropriate choice of elements to be documented • Appropriate choice of document format
2. Prepare the document.	• Compliance with industry norms and standards • Efficient use of production tool • Thorough verification of compliance • Meticulous writing of the document
3. Distribute the document.	• Appropriate choice of distribution mode • Comprehensive archiving • Efficient management of versions

Code : 02GX

Objective	*Standard*

Statement of the Competency	**Achievement Context**

Perform tests.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Using:
	  ○ data sheets
	  ○ manufacturer's drawings
	  ○ specialized software
	  ○ specialized measuring instruments
	  ○ tools
	  ○ specialized information sources
	  ○ a test bench
	• Given:
	  ○ national and international norms and standards
	  ○ templates and/or a reference unit
	  ○ results of measurements
	  ○ equipment, systems or subsystems

	Performance Criteria for the Competency as a Whole

	• Compliance with current standards regarding:
	  ○ quality
	  ○ electromagnetic interference
	  ○ protection against electrostatic discharge
	• Compliance with occupational health and safety laws and regulations
	• Observance of integrity of the equipment or system

Elements of the Competency	**Performance Criteria**
1. Assess the situation.	• Clarity of the overall picture • Precise identification of the system • Accurate identification of risks related to testing • Effective consideration of impact of testing
2. Plan the test.	• Set-up of equipment or system • Thorough verification of condition of the test bench • Methodical preparation of the test sequence • Appropriate determination of environmental conditions for performing testing
3. Run the test.	• Methodical performance of the test sequence • Verification of consistency of the test sequence • Proper validation of test results • Accuracy of test results
4. Document the test.	• Systematic entry of data • Pertinent documenting of test results

Code : 02GY

Objective — *Standard*

Statement of the Competency	**Achievement Context**

Program a connected system or equipment.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On physical or virtual equipment
	• Individually or as part of a team
	• Using:
	  ○ integrated development environments
	  ○ specialized information sources
	  ○ technical documents
	  ○ libraries
	  ○ operating systems
	• Given:
	  ○ connected objects
	  ○ platforms
	  ○ basic programming languages
	  ○ programming software
	  ○ scripts

	Performance Criteria for the Competency as a Whole
	• Adherence to programming standards • Rigorous application of coding conventions • Careful handling of the connected equipment or system

Elements of the Competency	**Performance Criteria**
1. Examine the program.	• Correct recognition of language • Correct identification of common structures • Detailed examination of common algorithms • Recognition of variable types
2. Modify the program.	• Systematic backup of the original program • Pertinence of modifications
3. Run the program.	• Appropriate parameter adjustments before running • Efficient implementation of the program • Proper verification of results of execution • Pertinence of the iterations

Code : 02GZ

Objective — *Standard*

Statement of the Competency	Achievement Context

Use operating systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• On physical or virtual equipment
	• Individually or as part of a team
	• Using:
	  ○ manufacturer's drawings
	  ○ programming software or updates
	  ○ expert forums
	  ○ technical documents
	• Given:
	  ○ connected objects
	  ○ platforms
	  ○ operating systems
	  ○ scripts

	Performance Criteria for the Competency as a Whole
	• Observance of rules of hardware/software compatibility • Careful handling of the connected equipment or system

Elements of the Competency	Performance Criteria
1. Install an operating system.	• Judicious choice of operating system • Appropriate settings during installation • Methodical deployment • Systematic verification of functionality • Pertinence of virtualization
2. Configure an operating system.	• Pertinence of taking equipment off-line • Adapted choice of the control mode • Adapted use of the control mode • Proper operation of communication with peripherals • Thorough verification of operation
3. Update an operating system.	• Relevant update • Correct deployment • Effective detection of problems • Thorough verification of operation and/or communication with hardware • Proper planning of the next update
4. Archive the operating system.	• Appropriate modification of the documentation • Methodical archiving

Code : 02H0

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

Configure data networks.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• On physical or virtual equipment
	• Individually or as part of a team
	• In consultation with the monitoring centre
	• Using:
	  ○ switches
	  ○ routers
	  ○ access points
	  ○ connections
	  ○ technical documents
	  ○ instruments
	  ○ configuration files
	• Given:
	  ○ simulation software
	  ○ network plans
	  ○ addressing plans
	  ○ terminal devices

	Performance Criteria for the Competency as a Whole
	• Constant concern for cybersecurity • Appropriate forecasting of network evolution • Adherence to best practices

Elements of the Competency	**Performance Criteria**
1. Plan the data network configuration.	• Comprehensive identification of data network characteristics • Judicious organization of security strategies • Complete compliance of plan • Reasoned choice of equipment
2. Configure the equipment.	• Preliminary configuration check • Correct configuration of equipment • Systematic backup of configurations
3. Deploy the network.	• Structured connections of the infrastructure • Proper validation of cabling • Rigorous implementation of planning
4. Verify the network operation.	• Exhaustive validation of network functionalities • Observance of rules of network limitation • Proper use of testing equipment • Systematic recording of results and modifications

Code : 02H1

Objective — *Standard*

Statement of the Competency	Achievement Context

Contribute to technological change.	• In industry, a laboratory or an office
	• Individually or as part of a team
	• Using:
	  ○ specialized and mainstream media
	  ○ social networks for professionals
	  ○ online encyclopedias
	  ○ expert blogs
	  ○ communities of practice
	  ○ business websites
	  ○ technical documents
	  ○ training courses
	• Given:
	  ○ business change strategies
	  ○ specialized software
	  ○ self training strategies

Elements of the Competency	Performance Criteria
1. Conduct technology watch.	• Appropriate choice of information sources • Appropriate distinction between different technologies • Sufficient understanding of technology
2. Participate in the implementation of a technology.	• Critical assessment of information sources • Appropriate recognition of a need • Active participation in implementation
3. Document the implementation of a technology.	• Complete documentation

Code : 02H2

Objective — *Standard*

Statement of the Competency	Achievement Context

Perform diagnostics on equipment or systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• Individually or as part of a team
	• Using:
	  ○ data sheets
	  ○ manufacturer's drawings
	  ○ programming software, updates
	  ○ measuring instruments
	  ○ tools
	  ○ archives from communities of practice
	• Given:
	  ○ national and international norms and standards
	  ○ templates and/or a reference unit
	  ○ results of measurements

	Performance Criteria for the Competency as a Whole
	• Compliance with current quality standards • Compliance with occupational health and safety laws and regulations • Observance of integrity of the equipment or system

Elements of the Competency	Performance Criteria
1. Assess the problem.	• Accurate recognition of the complexity of the problem • Appropriate consultation of resources
2. Examine the elements.	• Comprehensive four-point inspection of equipment or system • Appropriate review of technical documents • Clear planning of tests to be carried out

3. Run a debugging loop.	• Appropriate isolation of elements to be tested
	• Methodical verification of components of the equipment or system:
	  ○ connections
	  ○ power supply
	  ○ compatibility of versions
	  ○ etc.
	• Accurate interpretation of measurement results
	• Correct identification of the source of the problem

4. Communicate diagnostic results.	• Concise communication of diagnostic progress • Clear presentation of conclusions • Appropriate archiving of results

Code : 02H3

Objective *Standard*

Statement of the Competency	Achievement Context

Install and commission telecommunications network equipment or systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• In collaboration with other team members
	• In consultation with the monitoring centre
	• Using:
	  ○ manufacturer's drawings
	  ○ specialized software
	  ○ specialized measuring instruments
	  ○ tools
	  ○ replacement parts
	  ○ replacement devices or equipment
	• Given:
	  ○ national and international norms and standards
	  ○ sustainable development regulations
	  ○ diagnostic reports
	  ○ templates and/or a reference unit

	Performance Criteria for the Competency as a Whole
	• Adherence to current quality standards • Compliance with occupational health and safety laws and regulations • Systematic verification of performances • Compliance with current environmental standards

Elements of the Competency	Performance Criteria
1. Plan the installation and commissioning.	• Exhaustive examination of installation and commissioning documentation • Appropriate verification of location of the equipment or system • Realistic estimate of material and human resources
2. Perform the installation.	• Appropriate set-up • Meticulous wiring of connections and interconnections • Safe power-up • Proper testing
3. Perform the commissioning.	• Complete network commissioning • Systematic verification of network operations • Precise adjustment of network parameters
4. Document installation and/or commissioning.	• Thorough documentation

Code : 02H4

Objective — *Standard*

Statement of the Competency	Achievement Context

Control the quality of telecommunications network equipment or systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• In collaboration with designers, operators, clients, repairers, etc.
	• Using:
	  ○ manufacturer's drawings
	  ○ test statistics
	  ○ specialized software
	  ○ specialized measuring instruments
	  ○ tools
	  ○ automated test benches
	  ○ calibration procedures
	• Given:
	  ○ national and international norms and standards
	  ○ templates and/or a reference unit
	  ○ specifications and technical requirements
	  ○ audit results
	  ○ radio frequency (RF)transceivers

	Performance Criteria for the Competency as a Whole
	• Adherence to current quality standards • Compliance with occupational health and safety laws and regulations

Elements of the Competency	Performance Criteria
1. Examine the network equipment and/or system.	• Pertinent consultation of documents (specifications, standards, etc.) • Correct interpretation of control objectives • Appropriate consultation of co-workers
2. Develop a quality control strategy.	• Pertinent selection of acceptability criteria • Appropriate determination of environmental conditions for quality control testing • Appropriate choice of measuring instruments • Methodical development of testing procedures • Methodical development of automated tests • Continuous improvement of quality control procedures
3. Carry out quality control of the equipment or system.	• Meticulous validation of quality according to established criteria • Precise adjustment of the equipment, the network, or the test conditions

Elements of the Competency	Performance Criteria
	• Regular verification of testing (automated or third-party tests) • Pertinent feedback to co-workers
4. Document the quality control.	• Compliant writing of report (test report, calibration report, etc.) • Validation of report by participants • Compliant archiving of documents

Code : 02H5

Objective — *Standard*

Statement of the Competency	Achievement Context

Maintain telecommunications network equipment or systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• In collaboration with other team members
	• In consultation with the monitoring centre
	• Using:
	  ○ manufacturer's drawings
	  ○ specialized software
	  ○ specialized measuring instruments
	  ○ tools
	  ○ replacement parts
	• Given:
	  ○ national and international norms and standards
	  ○ diagnostic reports
	  ○ templates and/or a reference unit

	Performance Criteria for the Competency as a Whole
	• Adherence to current quality standards • Compliance with occupational health and safety laws and regulations • Systematic verification of performance

Elements of the Competency	Performance Criteria
1. Identify maintenance needs for the equipment or system.	• Comprehensive consultation of documents • Correct interpretation of acceptance criteria • Relevant selection of acceptance criteria
2. Inspect the equipment or system.	• Complete four-point preliminary inspection of equipment or system in service • Meticulous validation of acceptance criteria • Safe inspection of equipment or system in service • Appropriate choice of a solution • Pertinent replacement of equipment or system • Pertinent replacement of component
3. Perform maintenance on the equipment or system.	• Pertinence of shutdown • Appropriate choice of sequence of operations • Systematic verification of instrument calibration • Relevant software update

4 Restart the equipment or system.	• Comprehensive verification of all the equipment or system • Meticulous verification of power supply and connections • Full return to service • Systematic check of operation
5. Document the maintenance of the equipment or system.	• Complete documentation • Systematic archiving of documents

Code : 02H6

Objective — *Standard*

Statement of the Competency	Achievement Context

Troubleshoot telecommunications network equipment or systems.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• On equipment or systems installed at height or underground
	• In collaboration with other team members
	• In consultation with the monitoring centre
	• Using:
	  ○ manufacturer's drawings
	  ○ specialized software
	  ○ specialized measuring instruments
	  ○ tools
	  ○ replacement parts
	  ○ replacement devices or equipment
	• Given:
	  ○ national and international norms and standards
	  ○ diagnostic reports
	  ○ templates and/or a reference unit
	  ○ sustainable development regulations

	Performance Criteria for the Competency as a Whole
	• Adherence to current quality standards • Compliance with occupational health and safety laws and regulations • Proper verification of performances

Elements of the Competency	Performance Criteria
1. Plan the troubleshooting.	• Thorough examination of the problem • Proper appropriation of the diagnostic report • Realistic estimate of impact of troubleshooting • Realistic estimate of material and human resources
2. Troubleshoot.	• Pertinence of shutdown • Correct selection of defective component • Meticulous replacement of the component • Careful handling of components to be recycled • Complete system check
3. Restart the equipment or system.	• Full return to service • Systematic check of operation
4. Document the troubleshooting of the equipment or system.	• Complete documentation • Systematic archiving of documents

Code : 02H7

Objective — *Standard*

Statement of the Competency	Achievement Context

Provide technical support in the field of telecommunications networks.	• In industry, a laboratory or an office
	• On the client's premises, in person or remotely
	• In collaboration with other team members
	• In consultation with the monitoring centre
	• Using:
	  ○ technical documents
	  ○ required hardware
	  ○ communication media
	  ○ data on requests
	  ○ technical support tickets
	  ○ information and communication technologies (ICT)
	• Given:
	  ○ history of processing requests
	  ○ data from discussions with clients
	  ○ national and international norms and standards
	  ○ diagnostic reports

	Performance Criteria for the Competency as a Whole
	• Observance of rules of common courtesy • Continuous assurance of client satisfaction

Elements of the Competency	Performance Criteria
1. Gather expectations and needs.	• Appropriate consultation of the history • Appropriate consultation with the people concerned • Correct identification of actions already taken • Review of information required for technical support
2. Analyze expectations and needs.	• Accurate interpretation of the context • Appropriate estimate of priority level of the request • Realistic outline of possible solutions or problem-solving strategies
3. Provide technical support.	• Proper transfer of the request to the appropriate person or department • Correct application of solutions • Rigorous monitoring of progress of the request • Clear communications of instructions • Explanations provided to client in non-technical language
4. Follow up on the request.	• Appropriate verification of results • Complete documenting of processing of the request

General Education Component Common to All Programs and General Education Component Specific to the Program

English, Language of Instruction and Literature	Code: 4EA0

Objective ***Standard***

Statement of the Competency
Analyze and produce various forms of discourse.

Elements of the Competency	**Performance Criteria**
1. Identify the characteristics and functions of the components of literary texts.	• 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. Determine the organization of facts and arguments of a given literary text.	• Clear and accurate recognition of the main idea and structure • Clear presentation of the strategies employed to develop an argument or thesis
3. Prepare ideas and strategies for a projected discourse.	• Appropriate identification of topics and ideas • Adequate gathering of pertinent information • Clear formulation of a thesis • Coherent ordering of supporting material
4. Formulate a discourse.	• Appropriate choice of tone and diction • Correct development of sentences • Clear and coherent development of paragraphs • Formulation of a 750-word discourse
5. Revise the work.	• Appropriate use of revision strategies • Appropriate revision of form and content

Learning Activities	
Discipline:	English, Language of Instruction and Literature
Weighting:	2-2-4 or 1-3-4
Credits:	2⅔

English, Language of Instruction and Literature	Code: 4EA1

Objective ***Standard***

Statement of the Competency
Apply an analytical approach to literary genres.

Elements of the Competency	**Performance Criteria**
1. Distinguish genres of literary texts.	• Clear recognition of the formal characteristics of a literary genre
2. Recognize the use of literary conventions within a specific genre.	• Accurate recognition of the figurative communication of meaning • Adequate explanation of the effects of significant literary and rhetorical devices
3. Situate a work within its historical and literary period.	• Appropriate recognition of the relationship of a text to its period
4. Write a critical analysis of a literary genre.	• Selective use of appropriate terminology • Effective presentation of a 1000-word coherent response to a literary text
5. Revise the work.	• Appropriate use of revision strategies • Appropriate revision of form and content

Learning Activities	
Discipline:	English, Language of Instruction and Literature
Weighting:	2-2-3
Credits:	2⅓

English, Language of Instruction and Literature	Code: 4EA2

Objective ***Standard***

Statement of the Competency
Apply an analytical approach to a literary theme.

Elements of the Competency	**Performance Criteria**
1. Recognize the treatment of a theme within a literary text.	• Clear recognition of elements within the text, which define and reinforce a theme and its development • Adequate demonstration of the effects of significant literary and rhetorical devices
2. Situate a literary text within its cultural context.	• Appropriate recognition of a text as an expression of cultural context • Adequate demonstration of the effects of significant literary and rhetorical devices
3. Detect the value system inherent in a literary text.	• Appropriate identification of expression (explicit / implicit) of a value system in a text
4. Write an analysis on a literary theme.	• Selective use of appropriate terminology • Effective presentation of a 1000-word coherent response to a literary text
5. Revise the work.	• Appropriate use of revision strategies • Appropriate revision of form and content

Learning Activities	
Discipline:	English, Language of Instruction and Literature
Weighting:	2-2-3
Credits:	2⅓

English, Language of Instruction and Literature	Code: 4EAP

Objective	*Standard*

Statement of the Competency
Communicate in the forms of discourse appropriate to one or more fields of study.

Elements of the Competency	**Performance Criteria**
1. Identify the forms of discourse appropriate to given fields of study.	• Accurate recognition of specialized vocabulary and conventions • Accurate recognition of the characteristics of the form of discourse • Exploration of a variety of topics
2. Recognize the forms of discourse appropriate to given fields of study.	• Clear and accurate recognition of the main ideas and structure • Appropriate distinction between fact and argument
3. Formulate an oral and a written discourse.	• Examine ways to address and structure a given topic • Appropriate choice of tone and diction • Correctly developed sentences • Clearly and coherently developed paragraphs • Appropriate use of program-related communication strategies including media and technology • Formulation of a 1000-word discourse
4. Revise the work.	• Appropriate use of revision strategies • Appropriate revision of form and content

Learning Activities	
Discipline:	English, Language of Instruction and Literature
Periods of instruction:	60
Credits:	2

Humanities	Code: 4HU0

Objective ***Standard***

Statement of the Competency
Apply a logical analytical process to how knowledge is organized and used.

Elements of the Competency	**Performance Criteria**
1. Recognize the basic elements of a field of knowledge.	• Appropriate description of the basic elements • Appropriate use of terminology relevant to a field of knowledge
2. Define the modes of organization and utilization of a field of knowledge.	• Adequate definition of the dimensions, limits, and uses of a field of knowledge
3. Situate a field of knowledge within its historical context.	• Accurate identification of the main components in the historical development of a field of knowledge • Accurate description of the effects of historical development and social context on the limits and uses of a field of knowledge
4. Organize the main components into coherent patterns.	• Coherent organization of the main components
5. Produce a synthesis of the main components.	• Appropriate analysis of the components • Coherent synthesis of the main components • Appropriate expression, including a significant individual written component, of an analysis of the context, importance and implications of the organization and uses of knowledge • Appropriate use of revision strategies • Appropriate revision of form and content

Learning Activities	
Discipline:	Humanities
Weighting:	3-1-3
Credits:	2⅓

Humanities	Code: 4HU1

Objective ***Standard***

Statement of the Competency
Apply a critical thought process to world views.

Elements of the Competency	**Performance Criteria**
1. Describe world views.	• Accurate description of a society or group with a distinctive world view • Appropriate use of terminology relevant to these societies or groups
2. Explain the major ideas, values, and implications associated with a given world view.	• Adequate explanation of the salient components of a world view
3. Organize the ideas, values and experiences of a world view into coherent patterns.	• Coherent organization of ideas about a world view • Appropriate expression, including a significant individual written component, of an analysis of the context, importance, and implications of world views
4. Compare world views.	• Comparative analysis of these world views • Appropriate inclusion of central elements, relationships, and organizational principles of the societies or groups in the analysis
5. Convey the ideas, attitudes, and experiences of the societies or groups studied.	• Coherent integration of the importance and implications of the world views for the given societies or groups • Appropriate use of revision strategies • Appropriate revision of form and content

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

Humanities	Code: 4HUP

Objective ***Standard***

Statement of the Competency
Apply a critical thought process to ethical issues relevant to the field of study.

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

Learning Activities	
Discipline:	Humanities
Periods of instruction:	45
Credits:	2

French as a Second Language (Level I)	Code: 4SF0

Objective ***Standard***

Statement of the Competency
Apply basic concepts for communicating in standard French.

Elements of the Competency	**Performance Criteria**
1. Write and revise a simple text.	• Clear, coherent formulation of a text of about 250 words • Adequate development of the text: intention, topic, reader • Formulation of simple, well-constructed sentences • Use of adequate vocabulary for the task • Satisfactory application of the rules of grammar, in particular agreement in gender and number; regular verbs; verb tenses in the present, compound past and simple future • Satisfactory correction of errors in spelling or grammar • Appropriate use of revision strategies
2. Understand the meaning of a simple text.	• Accurate description of the general meaning and essential ideas of a 500-word text • Accurate identification of the difficulties in understanding the text • Appropriate use of reading techniques • Accurate identification of the main elements of the text
3. Convey a simple oral message.	• Clear and coherent formulation of an oral presentation of at least four minutes • Appropriate use of standard vocabulary • Clear and coherent statements
4. Understand the meaning of a simple oral message.	• Accurate identification of the general meaning and essential ideas of an oral message of at least four minutes • Accurate identification of the difficulties in understanding the message • Accurate description of the general meaning and essential ideas of the message

Learning Activities	
Discipline:	French as a Second Language
Weighting:	2-1-3
Credits:	2

French as a Second Language (Level II)	Code: 4SF1

Objective ***Standard***

Statement of the Competency
Communicate in standard French with some ease.

Elements of the Competency	**Performance Criteria**
1. Write and revise a simple text.	• Writing of a text of about 350 words • Respect for grammar and spelling rules • Appropriate use of the main elements of the corpus • Clear, coherent formulation of sentences • Coherent organization of paragraphs • Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors
2. Interpret a written text.	• Accurate identification of the main ideas and structure of a text of 700 to 1 000 words • Accurate identification of the main elements of the text • Accurate explanation of the meaning of the words of the text
3. Produce a planned oral text.	• Clear and coherent formulation of an oral presentation of at least five minutes • Appropriate use of standard vocabulary • Respect for the level of language and rules of grammar and pronunciation
4. Interpret a simple oral text.	• Accurate identification of the main elements of an oral text of at least five minutes • Accurate identification of the ideas and subjects dealt with in the text • Accurate explanation of the meaning of the words of the text

Learning Activities	
Discipline:	French as a Second Language
Weighting:	2-1-3
Credits:	2

French as a Second Language (Level III)	Code: 4SF2

Objective ***Standard***

Statement of the Competency
Communicate with ease in standard French.

Elements of the Competency	**Performance Criteria**
1. Write a text of moderate complexity.	• Writing of a text of about 450 words • Respect for grammar and spelling rules • Adaptation to the intended audience • Appropriate use of the main elements of the corpus • Clear and coherent formulation of sentences, including at least three that are complex • Coherent organization of paragraphs
2. Revise and correct a text of moderate complexity.	• Appropriate use of revision strategies • Appropriate revision of the text
3. Comment on a written text of moderate complexity.	• Accurate identification of the main elements of a text of between 2 500 and 3 000 words • Accurate explanation of the meaning of the words of the text • Accurate identification of the main and secondary ideas, of facts and opinions • Accurate identification of what is implicit and what is explicit
4. Produce a planned oral text of moderate complexity.	• Clear and coherent formulation of an oral presentation of at least five minutes • Appropriate use of standard vocabulary • Respect for the level of language and rules of grammar and pronunciation • Adaptation to the intended audience • Appropriate sequencing of ideas

Learning Activities	
Discipline:	French as a Second Language
Weighting:	2-1-3
Credits:	2

French as a Second Language (Level IV)	Code: 4SF3

Objective ***Standard***

Statement of the Competency
Explore a cultural and literary topic.

Elements of the Competency	**Performance Criteria**
1. Write a text on a cultural or literary topic.	• Clear and coherent formulation of a text of about 550 words • Respect for the topic • Respect for grammar and spelling rules • Adaptation to the intended audience • Appropriate use of the main elements of the corpus • Clear articulation of a personal point of view
2. Revise and correct a text on a cultural or literary topic.	• Appropriate use of revision strategies • Appropriate revision of the text
3. Analyze a cultural or literary text.	• Personal formulation of the main elements of the text • Identification of the main themes • Identification of clues that help situate the text in its sociocultural and historical context • Accurate identification of the values expressed • Accurate identification of the structure of the text • Clear articulation of a personal point of view

Learning Activities	
Discipline:	French as a Second Language
Weighting:	3-0-3
Credits:	2

French as a Second Language (Level I)	Code: 4SFP

Objective ***Standard***

Statement of the Competency
Apply basic concepts for communicating in French in relation to the student's field of study.

Elements of the Competency	**Performance Criteria**
1. Write and revise a short text related to the student's field of study.	• Accurate identification of difficulties in writing • Appropriate use of writing techniques • Appropriate use of standard and specialized vocabulary • Clear and coherent formulation of the text • Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors
2. Understand the meaning and characteristics of a text related to the student's field of study.	• Accurate identification of difficulties in understanding the text • Accurate identification of the characteristics of the text • Accurate identification of specialized vocabulary • Accurate identification of the main elements of the text • Accurate description of the general meaning and essential ideas of the text
3. Convey a simple oral message related to the student's field of study.	• Accurate identification of the difficulties in oral expression • Appropriate use of techniques of oral expression • Appropriate use of standard and specialized vocabulary • Intelligible expression of the message
4. Understand the meaning of a simple oral message related to the student's field of study.	• Accurate identification of difficulties in understanding the message • Accurate identification of the characteristics of the message • Accurate identification of specialized vocabulary • Accurate identification of the main elements of the message • Accurate description of the general meaning and essential ideas of the message

Learning Activities	
Discipline:	French as a Second Language
Periods of instruction:	45
Credits:	2

French as a Second Language (Level II)	Code: 4SFQ

Objective ***Standard***

Statement of the Competency
Communicate in French on topics related to the student's field of study.

Elements of the Competency	**Performance Criteria**
1. Write a text related to the student's field of study.	• Appropriate use of specialized vocabulary and of conventions specific to different types of texts • Respect for the level of language and rules of grammar and spelling • Clear and coherent formulation of the text • Appropriate use of writing techniques
2. Revise and correct a text on a topic related to the student's field of study.	• Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors
3. Differentiate the types of texts specific to the student's field of study.	• Accurate identification of the formal characteristics of each of the main types of texts and the conventions used
4. Analyze texts representative of the student's field of study.	• Accurate identification of the main elements of the text • Accurate interpretation of specialized vocabulary • Accurate identification of the ideas and subjects dealt with • Appropriate use of reading and listening techniques

Learning Activities	
Discipline:	French as a Second Language
Periods of instruction:	45
Credits:	2

French, Second Language (Level III)	Code: 4SFR

Objective ***Standard***

Statement of the Competency
Communicate with ease in French on topics related to the student's field of study.

Elements of the Competency	**Performance Criteria**
1. Produce a text on a topic related to the student's field of study.	• Respect for the topic • Appropriate use of specialized vocabulary and the conventions specific to different types of texts • Respect for the level of language and rules of grammar and spelling • Clear and coherent formulation of the text • Appropriate sequencing of ideas • Appropriate form for the content
2. Revise and correct a text on a topic related to the student's field of study.	• Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors
3. Comment on texts specific to the student's field of study.	• Accurate identification of the formal characteristics of the main types of texts and the conventions used • Accurate explanation of the meaning of the words in the text • Accurate identification of the structure of the text • Accurate reformulation of the main and secondary ideas, of the facts and opinions • Accurate use of specialized vocabulary

Learning Activities	
Discipline:	French as a Second Language
Periods of instruction:	45
Credits:	2

French as a Second Language (Level IV)	Code: 4SFS

Objective ***Standard***

Statement of the Competency
Produce a text in French on a topic related to the student's field of study.

Elements of the Competency	**Performance Criteria**
1. Write a text on a topic related to the student's field of study.	• Respect for the topic • Appropriate use of specialized vocabulary and the conventions specific to different types of texts • Appropriate choice of the main elements of the corpus based on the type of text • Clear and coherent formulation of the text • Respect for the level of language and rules of grammar and spelling • Clear articulation of a personal point of view
2. Revise and correct a text on a topic related to the student's field of study.	• Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors
3. Analyze a text related to the student's field of study.	• Precise differentiation of the formal characteristics of specific types of texts • Personal formulation of the main elements • Listing of the main themes • Accurate identification of the structure of the text • Identification of clues that help situate the text in its context • Clear articulation of a personal point of view • Accurate association of elements of the text with the topic

Learning Activities	
Discipline:	French as a Second Language
Periods of instruction:	45
Credits:	2

Physical Education	Code: 4EP0

Objective ***Standard***

Statement of the Competency
Analyze one's physical activity from the standpoint of a healthy lifestyle.

Elements of the Competency	**Performance Criteria**
1. Establish the relationship between one's lifestyle habits and health.	• Proper use of documentation from scientific research or the media • Recognition of the influence of social and cultural factors on the practice of physical activity • Pertinent links made between one's lifestyle habits and the impact they have on health
2. Be physically active in a manner that promotes one's health.	• Respect for the rules specific to the physical activity practised • Respect for codes of ethics, safety rules and regulations when being physically active • Respect for one's abilities when practising physical activities
3. Recognize one's needs, abilities and motivational factors with respect to regular and sufficient physical activity.	• Appropriate use of strategies for the quantitative and qualitative evaluation of one's physical condition • Overall assessment of one's needs and abilities in terms of physical activity • Overall assessment of one's motivational factors with respect to being sufficiently active on a regular basis
4. Propose physical activities that promote one's health.	• Appropriate choice of physical activities according to one's needs, abilities and motivational factors • Use of clear reasoning to explain the choice of physical activity

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

Physical Education	Code: 4EP1

Objective ***Standard***

Statement of the Competency
Improve one's effectiveness when practising a physical activity.

Elements of the Competency	**Performance Criteria**
1. Plan an approach to improve one's effectiveness when practising a physical activity.	• Initial assessment of one's abilities and attitudes when practising a physical activity • Statement of one's expectations and needs with respect to the ability to practise the activity • Appropriate formulation of personal objectives • Appropriate choice of the means to achieve one's objectives • Use of clear reasoning to explain the choice of physical activity
2. Use a planned approach to improve one's effectiveness when practising a physical activity.	• Respect for the rules and regulations of the physical activity • Respect for codes of ethics, safety rules and regulations when being physically active • Appropriate use of strategies for the quantitative and qualitative evaluation of one's motor skills • Periodic assessment of one's abilities and attitudes when practising a physical activity • Meaningful interpretation of progress made and the difficulties encountered in the practice of physical activity • Pertinent, periodic and proper adjustments of one's objectives or means • Appreciable improvement in one's motor skills, techniques or complex strategies required by the physical activity

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

Physical Education	Code: 4EP2

Objective ***Standard***

Statement of the Competency
Demonstrate one's ability to assume responsibility for maintaining a healthy lifestyle through the continued practice of physical activity.

Elements of the Competency	**Performance Criteria**
1. Plan a personal physical activity program.	• Mention of priorities according to one's needs, abilities, and motivational factors with respect to being sufficiently active on a regular basis • Proper and appropriate formulation of personal objectives • Appropriate choice of physical activity or activities to achieve personal objectives • Appropriate planning of the conditions for performing the physical activity or activities in personal program
2. Combine the elements of a regular and sufficient practice of physical activity as part of a healthy lifestyle.	• Respect for the rules and regulations of the physical activity • Respect for codes of ethics, safety rules and regulations when being physically active • Regular and sufficient practice of a physical activity while maintaining a balance between effectiveness and health-promoting factors
3. Manage a personal physical activity program.	• Appropriate choice of criteria for measuring the attainment of program objectives • Appropriate use of strategies for the quantitative and qualitative evaluation of one's physical activity • Periodic assessment of the time invested and activities practised during the program • Appropriate, periodic and proper adjustment of personal objectives or means used • Meaningful interpretation of the progress made and difficulties encountered in the practice of physical activities • Recognition of the effect of physical activity on one's lifestyle

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

Complementary General Education Component

Social Sciences	Code: 000V

Objective — *Standard*

Statement of the Competency	Achievement Context
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 field of social sciences

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

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 300 or 400 series of codes (except codes 300 and 360) to link a course to objective 000V. Use code 305 for a multidisciplinary course. Codes 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Social Sciences	Code: 000W

Objective — *Standard*

Statement of the Competency	Achievement Context
Analyze one of the major problems of our time using one or more social scientific approaches.	• Working alone • In an essay of approximately 750 words on a topic related to human existence • Using reference materials from the field of 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, spatio-temporal and cultural aspects of the problem
2. Address 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 the issue analyzed

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 300 or 400 series of codes (except codes 300 and 360) to link a course to objective 000W. Use code 305 for a multidisciplinary course. Codes 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Science and Technology	Code: 000X

Objective — *Standard*

Statement of the Competency	**Achievement Context**
Explain the general nature of science and technology and some of the major contemporary scientific or technological issues.	• Working alone • Using 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 scientific method.	• Brief description of the essential characteristics of scientific thinking, including quantification and demonstration • Ordered list and brief description of the essential characteristics of the main steps in the standard scientific method
2. Demonstrate how science and technology are complementary.	• Definition of terms and description of the primary ways in which science and technology are interrelated: logical and temporal connections, and mutual contributions
3. Explain the context and the stages related to several scientific and technological discoveries.	• Pertinent and coherent explanation of the relationship between the determining contexts related to several scientific and technological discoveries • Listing of the main stages of scientific and technological discoveries
4. Deduce different consequences and questions resulting from certain recent scientific and technological developments.	• 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	
Periods of instruction:	45
Credits:	2
Note:	Use the 100 or 200 series of codes to link a course to objective 000X. Use code 105 for a multidisciplinary course. Codes 109, 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Science and Technology	000Y

Objective — *Standard*

Statement of the Competency	Achievement Context
Resolve a simple problem by applying the basic scientific method.	• Working alone or in groups • Applying the standard scientific method to a given, simple scientific and technological problem • 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.	• Ordered list and brief description of the characteristics of the steps of the standard scientific method
2. Formulate a hypothesis designed to solve a simple scientific and technological problem.	• Clear, precise description of the problem • Observance of the principles for formulating a hypothesis (observable and measurable nature of data, credibility, etc.)
3. Verify a hypothesis by applying the fundamental principles of the basic experimental method.	• Pertinence, reliability and validity of the experimental method used • Observance of established experimental method • Appropriate choice and use of instruments • Clear, satisfactory presentation of results • Validity of the connections established between the hypothesis, the verification and the conclusion

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 100 or 200 series of codes to link a course to objective 000Y. Use code 105 for a multidisciplinary course. Codes 109, 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Modern Language	Code: 000Z

Objective — *Standard*

Statement of the Competency	Achievement Context

Communicate with limited skill in a modern language.	• For modern Latin-alphabet languages:
	  ○ during a conversation consisting of at least eight lines of dialogue
	  ○ in a written text consisting of at least eight sentences
	• For modern non–Latin-alphabet languages:
	  ○ during a conversation consisting of at least six lines 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 an oral message.	• Accurate identification of words and idiomatic expressions • Clear recognition of the general meaning of simple messages • 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 of simple messages • Logical connection between the various elements of the message
3. Express a simple message orally.	• Appropriate use of language structures in main and coordinate clauses • Appropriate application of grammar rules • Use of verbs in the present indicative • Appropriate use of basic vocabulary and idiomatic expressions • Clear pronunciation • Coherent sequencing of simple sentences • Spontaneous and coherent sequencing of sentences in a conversation
4. Write a text on a given subject.	• Appropriate use of language structures in main and coordinate clauses • Appropriate application of basic grammar rules • Use of verbs in the present indicative • Appropriate use of basic vocabulary and idiomatic expressions • Coherent sequencing of simple sentences • Acceptable application of graphic rules for writing systems that do not use the Latin alphabet

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	The acquisition of a modern language requires an awareness of the culture of its native speakers. “Limited skill” refers to the limited use of language structures, grammar and vocabulary. This limitation varies depending on the complexity of the modern language. Use the 600 series of codes to link a course to objective 000Z, with the exception of codes 601, 602, 603 and 604.

Modern Language	Code: 0010

Objective *Standard*

Statement of the Competency	Achievement Context
Communicate on familiar topics in a modern language.	• During a conversation that includes at least 15 lines 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: • common situations in everyday life • simple topics from everyday life • Using reference materials

Elements of the Competency	Performance Criteria
1. Understand the meaning of an oral 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
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 orally, 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 • Clear pronunciation • Coherent sequencing of sentences • Dialogue
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 sequencing of sentences of average complexity • Acceptable application of graphic rules for writing systems that do not use the Latin alphabet

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	The acquisition of a modern language requires an awareness of the culture of its native speakers. Use the 600 series of codes to link a course to objective 0010, with the exception of codes 601, 602, 603 and 604.

Modern Language	Code: 0067

Objective *Standard*

Statement of the Competency	Achievement Context
Communicate with relative ease in a modern language.	• Working alone • During a conversation consisting of at least 20 lines 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 an oral message in everyday language.	• Accurate explanation of the general meaning and essential ideas of the message • Clear identification of structural elements of the language
2. Understand the meaning of a text of average complexity.	• Accurate explanation of the general meaning and essential ideas of the text • Clear identification of structural elements of the language
3. Have a conversation on a subject.	• Appropriate use of the structural elements of the language according to the message to be expressed • Appropriate use of everyday vocabulary • Accurate pronunciation and intonation • Normal flow in a conversation in everyday language • Coherence of the message expressed • Pertinent responses to questions
4. Write a text of average complexity.	• Appropriate use of the structural elements of the language according to the text to be written • Accurate vocabulary • Coherence of the text as a whole • Observance of presentation and writing rules applicable to the text

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	The acquisition of a modern language requires an awareness of the culture of its native speakers. Use the 600 series of codes to link a course to objective 0067, with the exception of codes 601, 602, 603 and 604.

Mathematics Literacy and Computer Science	Code: 0011

Objective — *Standard*

Statement of the Competency	**Achievement Context**
Recognize the role of mathematics or computer science in contemporary society.	• Working alone • In an essay of approximately 750 words • Using different personally selected concrete examples

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

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Only the following codes can be used to link a course to objective 0011: 105, 201, 204, 420. Use code 204 for a multidisciplinary course. Codes 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Mathematics Literacy and Computer Science	Code: 0012

Objective

Standard

Statement of the Competency	Achievement Context
Use various mathematical or computer science concepts, procedures and tools for common tasks.	• Working alone • While carrying out a task or solving a problem based on everyday needs • Using familiar tools and reference materials

Elements of the Competency	Performance Criteria
1. Demonstrate the acquisition of basic functional knowledge in mathematics or computer science.	• Brief definition of concepts • Correct execution of basic operations • Appropriate use of terminology
2. Select mathematical or computing tools and procedures on the basis of specific needs.	• Listing of numerous possibilities available through the use of mathematical and computing tools and procedures • Analysis of concrete situations and recognition of the usefulness of mathematical or computing tools and procedures • Appropriate choice according to needs
3. Use mathematical or computing tools and procedures to carry out tasks and solve problems.	• Use of a planned and 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 computing tools and procedures.	• Accurate interpretation, given the context • Clear, precise formulation of the interpretation

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Only the following codes can be used to link a course to objective 0012: 105, 201, 204 and 420. Use code 204 for a multidisciplinary course. Codes 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Art and Aesthetics	Code: 0013

Objective — *Standard*

Statement of the Competency	Achievement Context
Consider various forms of art produced according to aesthetic practices.	• Working alone • Given a specified work of art • In a written commentary of approximately 750 words

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

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 500 series of codes (except 502) to link a course to objective 0013. Use code 504 for a multidisciplinary course. Codes 340, 345, 601, 602, 603 and 604 may be used, provided the courses are not related to the objectives of common or specific general education.

Art and Aesthetics	Code: 0014

Objective — *Standard*

Statement of the Competency	Achievement Context
Produce a work of art.	• Working alone • During a practical exercise • In the context of creating or interpreting a work of art • Using the basic elements of the language and techniques specific to the medium selected

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

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 500 series of codes to link a course to objective 0014, with the exception of code 502. Use code 504 for a multidisciplinary course. Codes 340, 345, 601, 602, 603 and 604 may be used, provided the courses are not related to the objectives of common or specific general education.

Contemporary Issues	Code: 021L

Objective *Standard*

Statement of the Competency	Achievement Context
Consider contemporary issues from a transdisciplinary perspective.	• Individually or in groups • Drawing on different fields of knowledge • Using documents and data from various disciplines

Elements of the Competency	Performance Criteria
1. Identify major contemporary issues.	• Exploration of various contemporary issues • Description of the main perspectives concerning these issues • Clear formulation of objects to study related to these issues
2. Recognize the specific role of several disciplines in the understanding of an issue.	• Identification of some of the theories used in analyzing the issue • Clear description of the concepts and methods used
3. Demonstrate the contribution of several disciplines to the understanding of an issue.	• Clear formulation of the perspectives of the issue • Precise description of the main contributions of the disciplines • Pertinent explanation of the interaction among various disciplines • Appropriate use of language and concepts from the disciplines

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	This objective lends itself to teaching by one or more teachers. Use code 365 to link a course to objective 021L in order to maintain the transdisciplinary nature of the competency.

Contemporary Issues	Code: 021M

Objective — *Standard*

Statement of the Competency	Achievement Context
Explore a contemporary issue from a transdisciplinary perspective.	• Individually or in groups • Drawing on different fields of knowledge • Using documents and data from various disciplines

Elements of the Competency	Performance Criteria
1. Present a research problem.	• Justification of the choice of research problem • Brief description of the main issues involved in the problem • Clear formulation of the main dimensions of the problem • Appropriate use of language and concepts from the disciplines • Clear formulation of the research question
2. Analyze the research problem.	• Relevant description of a research approach or method • Appropriate selection of research data • Proper application of the approach or method used • Appropriate use of an analytical framework
3. Propose solutions.	• Clear description of the main contributions from the disciplines • Pertinent explanation of the interaction among various disciplines • Justification of solutions proposed • Assessment of the strengths and weaknesses of the proposed solutions

Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	This objective lends itself to teaching by one or more teachers. Use code 365 to link a course to objective 021M in order to maintain the transdisciplinary nature of the competency.

Additional Information

Vocabulary Used in Technical Programs

Program

A program is an integrated set of learning activities leading to the achievement of education objectives based on set standards (*College Education Regulations,* s. 1). All college programs include a general education component common to all programs; a general education component adapted to the specific program; a complementary general education component; and a program-specific component (*College Education Regulations,* s. 6).

Competency

In the program-specific component of a technical program, a competency is defined as the ability to act, succeed and evolve in order to adequately perform tasks or work-related activities, based on an organized body of knowledge (including elements 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 is defined as the competency, skills or knowledge to be acquired or mastered (*College Education Regulations,* s. 1). Each objective is formulated in terms of a competency and includes a statement of the competency and its elements. The achievement of objectives and respect for the standards ensure the acquisition or mastery of the college-level general education competencies.

Statement of the Competency

In the program-specific component of a technical program, the statement of the competency is the result of an analysis of the needs of the job situation, the general goals of technical training and (in some cases) other factors. In the general education components, it is the result of an analysis of the needs of general education.

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 and master the competency. They refer to the major steps involved in performing a task or to the main components of the competency.
In the general education components, the elements of an objective, formulated in terms of a competency, specify the main aspects of the competency.

Standard

A standard is defined as the level of performance at which an objective is considered to be achieved (*College Education Regulations,* s. 1). In the program-specific component of a technical program, it is composed of an achievement context and performance criteria.
Le standard se définit comme le niveau de performance considéré comme le seuil à partir duquel on reconnaît qu'un objectif est atteint (*Règlement sur le régime des études collégiales*, article 1). Il comprend, pour la composante de Program-Specific Component à un programme d'études techniques, un Achievement Context et des Performance Criteria.

Performance Criteria

In the program-specific component of a technical program, the performance criteria define the requirements for determining whether the student has achieved each element of the competency and, by implication, the competency itself. The performance criteria are based on the requirements for entry into the workforce. Each element of the competency has at least one performance criterion.

In the general education component, the performance criteria define the requirements for recognizing the standard.

In both components, all criteria must be met to achieve the objective.

Achievement Context

In the program-specific component of a technical program, the achievement context corresponds to the situation in which the competency is implemented, upon entering the job market. The context does not define either the learning situation or the evaluation situation.

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 applying the program-based approach.
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 number of contact hours, the number of credits and any details deemed essential.

Glossary for the Program-Specific Component

The *Electrical Engineering Technology: Networks and Telecommunications* program includes a glossary to clarify certain terms used in formulating the objectives and standards.

The main sources of information used to prepare the glossary were the *Grand dictionnaire terminologique* of the Office québécois de la langue française and the *Terminology and Linguistic Data Bank (TERMIUM Plus)* of the Government of Canada.

Algorithm

The set of operating rules specific to a calculation or data-processing operation, defined with a view to obtaining a given result.

Archive (verb)

In a version control system, to transmit, validate and file, in a common workspace, duly marked changes made to files by one user for access by other users of the system

Calibration

An action consisting in expressing a statement, drawing up a function, creating a diagram, curve or table, or performing an additive or multiplicative correction of the measured value with an associated measurement uncertainty in order to correct the behaviour of a measuring device

Compliance

The action of observing a rule, respecting it, complying with it and applying it.

Configure (verb)

To program or parameterize a system element and/or a system to ensure it operates in a certain mode.

Connected object (Internet of Things [IoT])

An object that captures, stores, processes and transmits data, that can receive and give instructions, and that has the ability to connect to a network.

Cybersecurity

The body of technologies, processes, practices and response and mitigation measures designed to protect networks, computers, programs and data from attack, damage or unauthorized access so as to ensure confidentiality, integrity and availability.

Device

In technology, a measuring, electrical, electrotechnical, electronic or IT device is a functional finished product that performs the expected service largely autonomously.

Flow chart

A graphic representation of a process or the step-by-step solution of a problem, using suitably annotated symbols connected by flow lines for the purpose of designing or documenting a process or program.

Implementation

Installation on a computer of an operating system or software adapted to the user's needs and computer configuration.

Instrument

Hardware, software or both that allows a user to interact with a system, program or device.

Networking

The set of activities and techniques intended for creating, managing, operating, and using telecommunication or computer networks.

Operate (verb)]

To exploit an asset, to make it productive, to benefit from it. The verb "to operate" is at a higher taxonomic level than verbs related to application (e.g. to use). Competency content beginning with "Operate" reflects a higher level of requirement and complexity.

Operating system

The software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management.

Spectrum analyzer

A spectrum analyzer is a measuring instrument used to display the different frequencies contained in a signal as well as their respective amplitudes.

Telecommunication

Any transmission, emission or reception of signs, signals, writing, images, sounds or information of any nature by wire, cable, radio, visual, optical fibre or other electromagnetic system.

Telecommunications network

A network of nodes (switches, routers, clients, etc.) interconnected by links (optical, wired or wireless), set up in such a way that messages of any kind can be transmitted from one end of the network to the other by means of multiple links.

Virtualization

In computing, the process of running operating systems on a host machine in an isolated environment.

Workshop, shop

Any place where instruction is given in the use of tools or machines or where tools or machines are used for repair, adjustment, or the manufacture of parts or equipment.

Harmonization

The Ministère de l'Enseignement supérieur 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 work may be carried out in the future on other programs of study, which could result in identifying common competencies shared with the *Electrical Engineering Technology: Networks and Telecommunications* program. In this case, the results will be presented in the document entitled *Tableaux d'harmonisation, Technologie du génie électrique: Réseaux et télécommunications*

Occupational Health and Safety Hazards

This section expands on the risks associated with the competencies in the *Electrical Engineering Technology: Networks and Telecommunications* program.

The table below, “Sources and risk levels for each competency,” links competencies with the six sources of risk listed in the following typology. It also indicates whether the risk level is high or low. These levels of risk are provided for information purposes only since they vary depending on the operations carried out and the achievement context. The table serves as a guide for teachers to planning progressive learning activities, a way of organizing their teaching in compliance with occupational health and safety in the workplace.

Typology of occupational health and safety in the workplace with a list of dangers and hazardous situations:

- Chemical hazards or dangers:
  - Form of substance (solid, liquid, aerosol, gas, etc.) and exposure (inhalation, absorption through the skin, ingestion, etc.).
- Physical hazards or dangers:
  - Electrical hazards
  - Thermal hazards
  - Noise
  - Vibration
  - Other physical hazards
- Biological hazards or dangers:
  - Form of substance (dust, mist, fluid, etc.) and exposure (inhalation, absorption through the skin, ingestion, cuts, etc.).
- Ergonomic hazards or dangers:
  - Constrained postures
  - Excessive effort
  - Repetitive movements
- Psychosocial hazards or dangers:
  - Factors associated with the nature of the work
  - Factors related to the organization of the work
  - Social factors
- Safety hazards or dangers:
  - Hazards related to general mechanical phenomena
  - Hazards related to moving parts, tools or vehicles
  - Risk of falling (workers and objects)
  - Hazards linked to confined spaces
  - Fire or explosion hazards

SOURCES AND RISK LEVELS FOR EACH COMPETENCY							
COMPETENCY NUMBER	***ELECTRICAL ENGINEERING TECHNOLOGY: NETWORKS AND TELECOMMUNICATIONS* (243.F0)**	**Sources of risk**					
		Chemical hazards or dangers	Physical hazards or dangers	Biological hazards or dangers	Ergonomic hazards or dangers	Psychosocial hazards or dangers	Safety hazards or dangers
	STATEMENT OF THE COMPETENCY	1	2	3	4	5	6
1	Explore the profession.	○	○	○	○	○	○
2	Prevent damage to health, safety and the environment.	●	●	●	●		●
3	Solve problems in electronics.					○	
4	Communicate in the workplace.	○	○	○	○	●	○
5	Analyze circuits.	○	○	○	○	○	○
6	Analyze technical information.					○	
7	Do shop work.	●	●	●	●		●
8	Take measurements.	○	○	○	○	●	○
9	Create technical documents.						
10	Perform tests.	●	●	●	●	○	●
11	Program a connected system or equipment.					●	
12	Use operating systems.					○	
13	Configure data networks.					○	
14	Contribute to technological change.						
15	Perform diagnostics on equipment or systems.	○	○	○	○	●	○
16	Install and commission telecommunications network equipment or systems.	○	○	○	○	○	○
17	Control the quality of telecommunications network equipment or systems.	○	○	○	○	○	○
18	Maintain telecommunications network equipment or systems.	○	○	○	○	○	○
19	Troubleshoot telecommunications network equipment or systems.	○	○	○	○	●	○
20	Provide technical support in the field of telecommunications networks.					●	

Risk levels

Risk levels are indicated according to their frequency, duration or intensity, and not according to the severity of their effects on personal health and safety.

Low risk: ○ High risk : ●

Enseignement supérieur
Québec