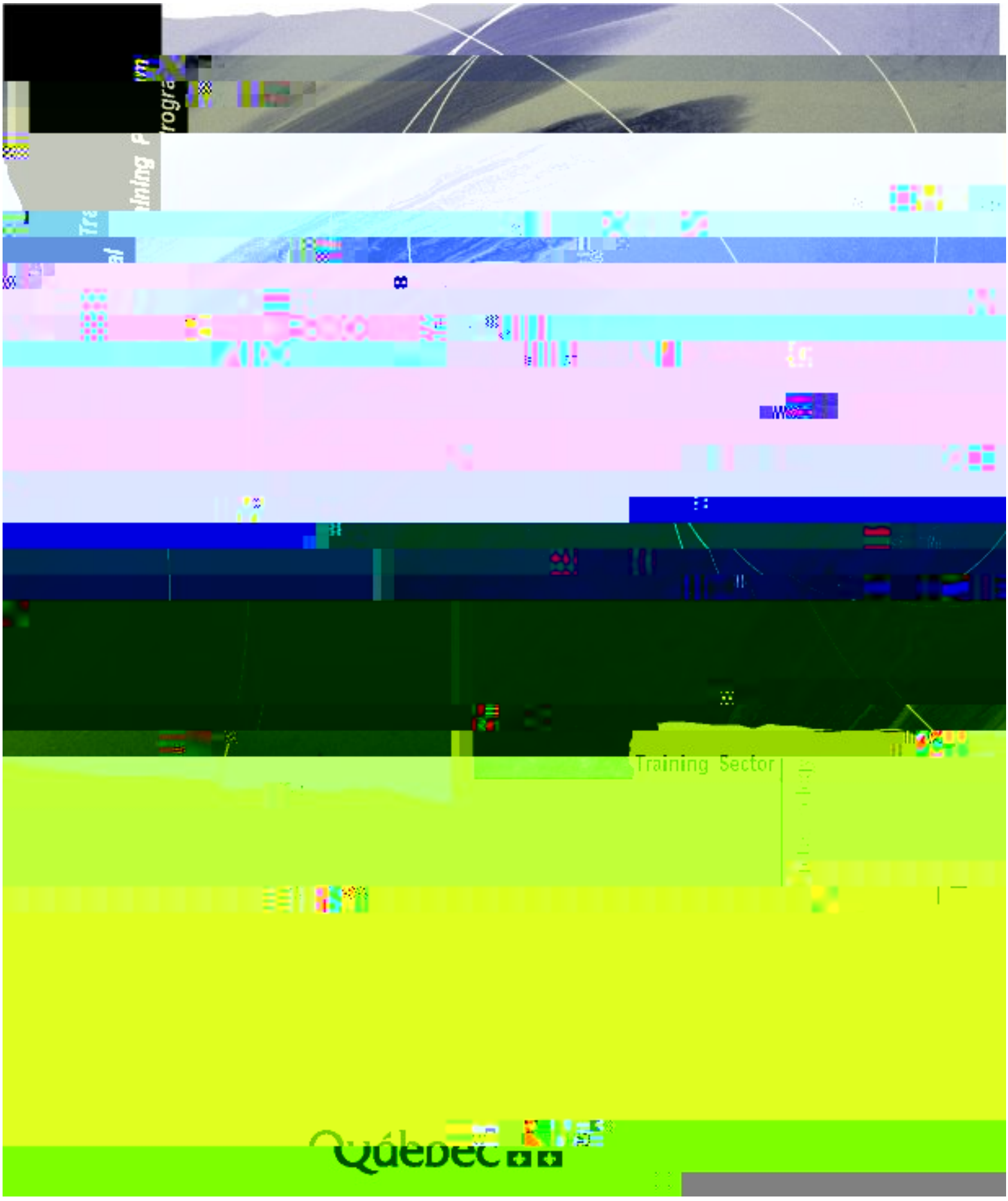
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Québec

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Jacques-André Saint-Pierre
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Cégep de Rimouski

Éric Vandal
Teacher, Telecommunications
Cégep de Jonquière

Marc Bastien
Teacher
Collège Shawinigan

Pierre Biron
Teacher
Collège de Sherbrooke

Carl Huth
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Cégep de Jonquière

Raymond Lacasse
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Cégep de l'Outaouais

Affaf Méhanni-Ayoub
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Bernard Morin
Academic dean
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Institut Teccart

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Gérald Trives
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Cégep du Vieux Montréal

Daniel Boutet
Assistant academic dean
Cégep Limoilou

Renée Cartier
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École nationale de police du Québec

Gilles Forest
Teacher, Electrotechnology–Audiovisual option
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Gaël Le Pemp
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Cégep Limoilou

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To perform activities related to the broadcast of audiovisual documents 189
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Electrotechnology

Year of approval: 2007

Certification:	Diploma of College Studies
Number of credits:	91 2/3 credits
Total duration:	Telecommunications: 2685 hours of instruction Computers and networks: 2700 hours of instruction Audiovisual: 2700 hours of instruction

General education components:	660	hours of instruction
Program-specific component:		
Telecommunications specialization:	2025	hours of instruction
Computers and network specialization:	2040	hours of instruction
Audiovisual specialization:	2040	hours of instruction

Admission Requirements:

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

- Mathematics 436
- Physical Science 436

Introduction to the Program

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

The *Electrotechnology* program includes a general education component common to all programs (16 2/3 credits), a general education component adapted to this program (6 credits), a complementary general education component (4 credits) and a program-specific component of 65 credits for each specialization.

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

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

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

0004 To analyze and produce various forms of discourse.

0005 To apply a critical approach to literary genres.

0006 To apply a critical approach to a literary theme.

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

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

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

or

000A Communiquer en français avec une certaine aisance.

or

000B Communiquer avec aisance en français.

or

000C Traiter d'un sujet culturel et littéraire.

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

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

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

General Education Component Adapted to This Program (6 credits)

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

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

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

or

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

or

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

or

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

Complementary General Education Component (4 credits)

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

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

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

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

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

0010 To communicate on familiar topics in a modern language.

0067 To communicate with relative ease in a modern language.

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

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

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

0014 To produce a work of art.

Program-Specific Component **(65 credits)**

Telecommunications specialization

041Q To process information about working in the field of electrotechnology.

041R To implement mathematical models related to electronics.

037E To diagnose an analog electronics problem.

037F To diagnose a digital electronics problem.

037C To process technical information.

041S To communicate in the workplace.

Glossary

Program

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

Competency

In the program-specific component of a technical program: a competency is the ability to act successfully and evolve in order to adequately perform work-related tasks and activities based on an organized body of knowledge, skills in a variety of fields, perceptions, attitudes, etc. (*Élaboration des programmes*

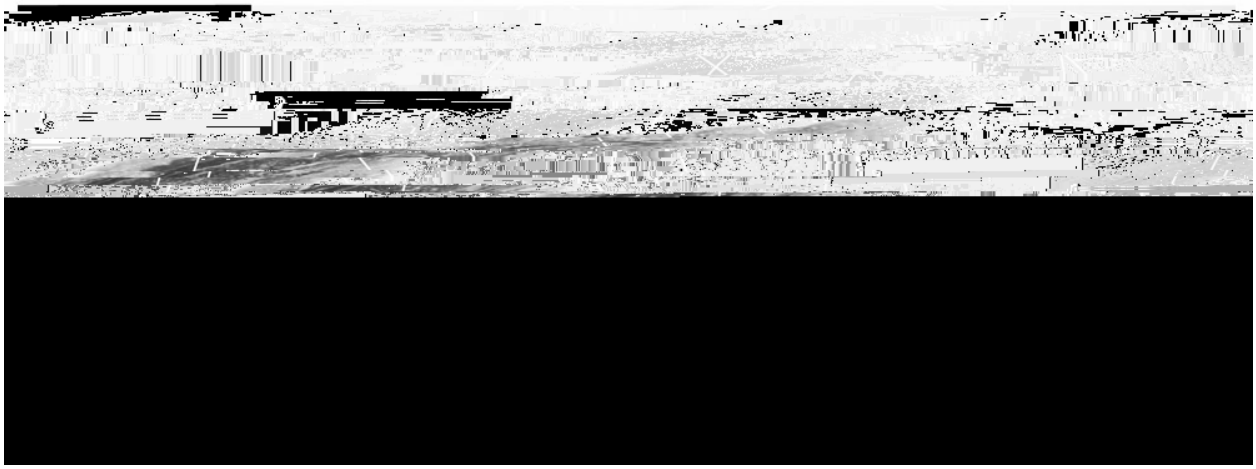
In the general education components, the performance criteria define the requirements for recognition of the attainment of the standard.

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

Learning Activities

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

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



Part I

Goals of the General Education Components

Educational Aims of the General Education Components

Objectives and Standards of the General Education Components

Goals of the General Education Components

In Québec, college is the next stage after the compulsory years of schooling in elementary and secondary school, during which students acquire basic knowledge and skills. It represents a major crossroads in that it places greater emphasis on the cultural content of education and leads directly to the job market or to university. The college system meets current needs with respect to technical and pre-university education. It allows students to further their educat

- creativity
- openness to the world

These goals apply to the three general education components:

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

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

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

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

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

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

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

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

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

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

Français, langue seconde

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

Principes

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

Résultats attendus

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

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

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

- que, sur le plan des qualités et des attitudes à développer, il ou elle :
  - fait prebesa Td[ltuan0351vel)7 rappappappaulture sos 6f0.0ion -78(En tanop rapp)62argumeniques dou (s à dsp ta

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

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

Physical Education

Physical Education is aimed at promoting the development of the whole person and encouraging students

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

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

Sequence of Objectives and Standards

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

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

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

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

Science and Technology

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

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

Modern Languages

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

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

Language of Instruction and Literature	Code: 0004

Objective — Standard

Statement of the Competency

To analyze and produce various forms of discourse.

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

Learning Activities

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

Language of Instruction and Literature	Code: 0005

Objective — Standard

Statement of the Competency

To apply a critical approach to literary genres.

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

Learning Activities

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

Language of Instruction and Literature	Code: 0006

Objective — Standard

Statement of the Competency

To apply a critical approach to a literary theme.

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

Learning Activities

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

Humanities Code: 00B2

Objective Standard

Statement of the Competency

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

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

Learning Activities

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

Humanities Code: 000G

Objective Standard

Statement of the Competency

To apply a critical thought process to world-views.

Elements of the Competency	Performance Criteria
1. To describe world-views.	• Accurate description of a society or group with a distinctive world-view • Appropriate use of terminology relevant to these

Langue seconde (niveau I)	Code: 0017

Objective

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

Standard

Elements of the Competency	Performance Criteria
1. Dégager le sens d'un message oral simple.	• Repérage précis des difficultés de compréhension du message. • Utilisation pertinente des techniques d'écoute choisies. • Distinction précise du sens général et des idées essentielles du message. • Description précise du sens général et des idées essentielles du message.
2. Émettre un message oral simple.	• Repérage précis des difficultés d'expression. • Utilisation pertinente des techniques d'expression orales choisies. • orales choisies. •

Langue seconde (niveau II) Code: 000A

Objective

Langue seconde (niveau III) Code: 000B

Objective

Langue seconde (niveau IV)	Code: 000C

Objective — Standard

Statement of the Competency

Traiter d'un sujet culturel et littéraire.

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

Learning Activities

Discipline:	Français, langue seconde
Weighting:	3-0-3
Credits:	2

Physical Education Code: 0064

Objective	Standard

Statement of the Competency

Physical Education Code: 0066

Language of Instruction and Literature	Code: 000L

Objective

Standard

Statement of the Competency

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

Elements of the Competency	Performance Criteria
1. To identify the forms of discourse appropriate to given fields of study.	•

Langue seconde (niveau I)	Code: 0018

Objective

Statement of the Competency

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

Standard

Elements of the Competency	Performance Criteria
1. Dégager le sens d'un message oral simple lié à un champ d'études.	• Repérage précis des difficultés de compréhension du message. • Distinction juste des caractéristiques du message. • Repérage juste du vocabulaire spécialisé. • Utilisation pertinente des techniques d'écoute choisies. • Distinction claire des principaux éléments du message. • Description précise du sens général et des idées essentielles du message.
2. Dégager le sens et les caractéristiques d'un texte lié à un champ d'études.	• Repérage précis des difficultés de compréhension du texte. • Distinction juste des caractéristiques du texte. • Repérage précis du vocabulaire spécialisé. • Utilisation pertinente des techniques de lectures

x

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

Learning Activities

Discipline:	Français, langue seconde

Langue seconde (niveau II) Code: 000Q

Objective

Standard

Statement of the Competency

Communiquer en français dans un champ d'études particulier.

Elements of the Competency	Performance Criteria
1. Distinguer les types de textes propres au champ d'études.	• Distinction précise des caractéristiques formelles de chacun des principaux types de textes et des conventions utilisées.
2. Interpréter des textes représentatifs du champ	

Langue seconde (niveau IV) Code: 000S

Objective	Standard
Statement of the Competency Disserter en français sur un sujet lié au champ d'études.	
Elements of the Competency	**Performance Criteria**

Social Sciences	Code: 000W

Objective

Standard

Statement of the Competency

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

Achievement Context

- Working alone
- In an essay of approximately 750 words on a topic related to human existence
- Using reference materials from one or more disciplines in the social sciences

Elements of the Competency	Performance Criteria
1. Formulate a problem using one or more social scientific approaches.	• Presentation of the background to the problem • Use of appropriate concepts and language • Brief description of individual, collective, spatiotemporal and cultural aspects of the problem
2. Deal with an issue using one or more social scientific approaches.	• Clear formulation of an issue • Selection of pertinent reference materials • Brief description of historical, experimental and survey methods
3. Draw conclusions.	• Appropriate use of the selected method • Determination of appropriate evaluation criteria • Identification of strengths and weaknesses of the conclusions • Broadening of issue studied

Learning Activities

Hours of instruction: 45
Credits: 2

Science and Technology Code: 000X

Objective	Standard
Statement of the Competency To explain the general nature of science and technology and some of the major contemporary scientific or technological issues.	**Achievement Context** • Working alone

Modern Languages	Code: 000Z

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

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

Modern Languages	Code: 0010

Objective

Standard

Statement of the Competency

To communicate on familiar topics in a modern language.

Achievement Context

- During a conversation consisting of at least 15 sentences of dialogue
- In a written text consisting of at least 20 sentences for Latin-alphabet languages
- In a written text consisting of at least 10 sentences for non–Latin alphabet languages
- Based on:
  - situations in everyday life
  - simple topics from everyday life
- Using reference materials

Elements of the Competency	Performance Criteria
	Learning a modern language requires becoming aware of the culture of the people who use the language.
1. Understand the meaning of a verbal 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 verbally, using sentences of average complexity.	• Appropriate use of language structures in main or subordinate clauses • Appropriate application of grammar rules • Use of verbs in the present indicative • Appropriate use of enriched basic vocabulary and idiomatic expressions •

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

Learning Activities

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

Modern Languages	Code: 0067

Objective

Standard

Statement of the Competency

To communicate with relative ease in a modern language.

Achievement Context

- Working alone
- During a conversation consisting of at least 20 sentences of dialogue
- In a written text of medium length (at least 25 sentences for Latin-alphabet languages and 15 sentences for other languages)
- Given documents of a sociocultural nature
- Using reference materials for the written text

Elements of the Competency	Performance Criteria
	Learning a modern language requires being aware of the culture of the people who use the language.
1. Understand the meaning of a verbal 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 about a subject.	• Appropriate use of the structural elements of the language according to the message to be expressed • Appropriate use of everyday vocabulary • Accurate pronunciation and intonation • Normal flow in a conversation in everyday language • Coherence of the message expressed • Pertinent responses to questions
4 Write a text of average complexity.	• Appropriate use of the structural elements of the language according to the text to be written • Accurate vocabulary • Coherence of the text as a wholeral elements of the language

[redacted]

Art and Aesthetics	Code: 0014

Objective

Standard

Statement of the Competency

To produce a work of art.

Achievement Context

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

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

Learning Activities

Hours of instruction:

Part II

Goals of the Program-Specific Component

Educational Aims of the Program-Specific Component

Harmonization

Program-Specific Glossary

Specialization

Definition of the Specialization

Grid of Competencies

Objectives and Standards of the Program-Specific Component

Goals of the Program-Specific Component

The aim of the *Electrotechnology* program is to prepare students to practise the occupation of electrotechnologist specialized in telecommunications, computers and networks or audiovisual.

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

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

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

- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
  - to help students develop their autonomy and 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

The program reconciles two requirements of college education: versatility and specialization. Versatility is ensured through the acquisition of general competencies that will allow electrotechnologists to demonstrate that they can adapt to new work situations, perform tasks independently, diagnose problems, find information in French and English documentation and process technical information, communicate with their superiors, colleagues, clients and suppliers and write reports.

Specialization, which is necessary in order to integrate harmoniously into the work force, is ensured through the acquisition of specific competencies that are directly related to the tasks performed by technologists specialized in telecommunications, computers and networks or audiovisual. Specific information on each of these specializations appears in the following pages.

Educational Aims of the Program-Specific Component

Educational aims are based on important values and concerns and serve as guidelines for interactions with students. As a general rule, educational aims focus on important aspects of the students'

Harmonization

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

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

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

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

Harmonization of the *Electrotechnology* program has resulted in identifying competencies that are shared with other programs. Detailed information on the harmonization of this program and its results are presented in the document entitled *Tableaux d'harmonisation, Technologie de l'électronique.*

Program-specific glossary *

To facilitate understanding, this program includes a glossary of the terms used. In addition to these general terms, the following glossary defines more specific terms from the *Electrotechnology* program's Telecommunications, Computers and networks and Audiovisual specializations.

Adjust

To carefully fit one thing to another.

Analog

A way to represent data by means of continuously variable quantities, as well as the processes and devices that make use of such data.

Calibrate

Physically set the position of reference points (sometimes only main reference points need be done) of a measuring instrument in accordance with the corresponding values of the unit to be measured.
Note: Calibrate is not the same thing as gauge, which means to check or adjust the graduations of a device or instrument by correlating its performance with a standard.

Component

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Logic circuit

An electronic circuit that is an arrangement of switches used to calculate operations in Boolean algebra (e.g., AND, OR, NOT, NAND, NOR).

Measuring instrument

Device or tool used to compare the size of something to a referenced unit of measurement.
Note: The terms “measuring device” and “measuring instrument” are essentially synonymous.

Microprocessor

An electronic computer central processing unit (CPU) that performs arithmetic, logic and control operations (also called micro-instructions) and is made from miniaturized transistors and other circuit elements on a single semiconductor integrated circuit.
Note: A microcontroller is a dedicated microprocessor.

Network

A collection of interconnected elements or equipment, considered as a whole and represented by branches and nodes.

Program

To design, write and develop computer programs.

Sensor

A device that detects a change in a physical stimulus and turns it into a signal (usually electric) which can be measured or recorded.

System

Set of interdependent elements constituted to achieve a given objective by performing a specified function (e.g. a computer system).

Tune

To adjust a machine or mechanism for better functioning.

* These definitions are taken from or based on a number of Internet sources, including the Grand dictionnaire terminologique, produced by the Office de la langue française, and TERMIUM, the Government of Canada’s linguistic database, produced by the Translation Bureau, as well as other references.

Telecommunications Specialization

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

Competency Number		1 To process information about working in the field of electrotechnology	2 To implement mathematical models related to electronics	3 To diagnose an analog electronics problem	4 To diagnose a digital electronics problem	5 To process technical information	6 To communicate in the workplace	7 To replace electronic components	8 To draw electronic schematic diagrams	9 To diagnose a network-related problem	10 To diagnose an analog electronics problem affecting telecommunications circuits	12 To check the operation of a wired telecommunications system	13 To check the operation of a fibre-optic telecommunications system	14 To check the operation of a wireless telecommunications system
To perform telecommunications network surveillance activities	11	O	O	O	O	O	O	O	O	O	O	O	O	O
To provide quality control for the assembly and integration of a telecommunications system	15	O	O	O	O	O	O	O	O	O	O	O	O	O
To perform activities related to the installation and activation of a telecommunications system	16	O	O	O	O	O	O	O	O	O	O	O	O	O

To service a telecommunications systeme5Nt08 70jtomo0mponents To draw electronn of90electronn)))))

Code: 041Q

Objective	Standard
Statement of the Competency	**Achievement Context**
To process information about working in the field of electrotechnology.	• Using recent documentation and laws and regulations in effect
Elements of the Competency	**Performance Criteria**
1. Gather information on workplaces and the occupation.	• Selection of appropriate information sources • Reliability and diversity of the information gathered • Appropriate use of search tools
2. Analyze the information on workplaces.	• Accurate identification of the types of businesses and establishments • Identification of 1 TfrS-1(eon)5(s)-3p9nmfect

Code: 041R

Objective

Standard

Statement of the Competency

To implement mathematical models related to electronics.

Achievement Context

- For work activities associated with taking measurements, diagnosing electronic problems, making modifications, conducting tests and setting parameters
- Using reference documents, data sheets, tables and diagrams
- Using measuring instruments and a calculator

Elements of the Competency

Performance Criteria

1. Become familiar with the situation requiring the

	Code: 037F
5. Determine the cause or causes of the problem.	• Accurate interpretation of deviations observed • Correct observance of diagnostic steps • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Clarity and accuracy of information • Use of appropriate terminology

Code: 037C

Objective	Standard
Statement of the Competency To process technical information.	**Achievement Context** • Processing information related to current and new technologies • Following standards, data sheets, specifications, diagrams and manufacturers' recommendations •

Code: 041S

Objective

Standard

Statement of the Competency

To communicate in the workplace.

Achievement Context

- Acting in various situations where an individual must provide explanations, advise clients, train users, negotiate with suppliers, converse and discuss (meetings and teamwork)
- Using specific methods

Elements of the Competency	Performance Criteria
1. Ensure that the environment is conducive to communication.	• Proper identification of any obstacles to communication • Determination of methods for overcoming the chief obstacles to communication
2. Receive information.	• Accurate interpretation of verbal and nonverbal messages • Active listening skills • Proper application of reflecting and restating techniques • Demonstration of appropriate attitudes: – empathy – patience – attention – respect for others
3. Transmit information.	• Clear expression of ideas • Appropriate selection and use of communication methods • Use of appropriate French and English terminology • Appropriate explanation of technical information in everyday terms • Check of the other person's understanding • Demonstration of appropriate attitudes: – empathy – patience – courtesy – diplomacy – positive outlook – respect for others
4. Assess the quality of their communications.	• Critical analysis of their strengths and weaknesses • Identification of methods for improving their communication skills

Code: 041T

Code: 041U

Objective

To draw electronic schematic diagrams.

Standard

Achievement Context

- Following standards and manufacturers' recommendations
- Using appropriate French and English technical documentation, catalogues and parts libraries, a networked computer and drafting software

Elements of the Competency	Performance Criteria
1. Gather the information.	• Accurate interpretation of request • Appropriate use of: – technical documentation – catalogues and parts libraries – dimensional measuring instruments • Proper sorting of information
2. Produce a rough sketch.	• Appropriate layout • Observance of drawing conventions and symbols • Appropriate selection of presentation methods • Clarity and accuracy of the presentation • Appropriate use of drafting software
3. Produce final drawings.	• Relevance of the layout • Clarity and accuracy of the presentation • Cleanliness of schematic diagrams • Appropriate use of drafting software
4. Transmit the information.	• Careful presentation of schematic diagrams • Relevance and clarity of explanatory notes • Detailed report of information related to schematic diagrams

	Code: 041V
5. Determine the cause or causes of the problem.	• Accurate interpretation of the problem or problems • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Clarity and accuracy of information • Use of appropriate terminology

Code:	041W

	Code: 041W
5. Determine the causes of the problem.	• Accurate analysis of all results • Accurate interpretation of deviations observed • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology

Code: 041X

Objective

To perform telecommunications network surveillance activities.

Standard

Achievement Context

- With standards, priority codes, surveillance routines, statistical data and plans and documents related to telecommunications network topology
- Using test and simulation equipment, measuring instruments, surveillance equipment, and data organization and representation software

Elements of the Competency	Performance Criteria
1. Gather the necessary information.	• Accurate interpretation of: – standards – priority codes – surveillance routines – needs – statistics • Accurate identification of network characteristics with regard to: – transmission modes – modulation types – multiplexing types – topology • Identification and sorting of performance indicators and anomalies
2. Conduct tests.	• Appropriate selection of tests • Appropriate selection and use of measuring instruments • Determination and application of a test scenario • Observance of response times • Recording of results
3. Analyze the data gathered.	• Appropriate organization and representation of data • Accurate interpretation of: – data – deviations • Accuracy of trends and anomalies identified
4. Determine the measures to take.	• Relevance of measures, considering the results • Observance of standards and needs

Code: 041Y

Objective

To check the operation of a wired telecommunications system.

Standard

Achievement Context

- Working with surveillance and automatic switching systems and telephone network systems, as well as cable television and digital data transmission networks, standards and specifications, plans and regulations in effect
- Using test equipment, measuring instruments and service manuals

Elements of the Competency	Performance Criteria
1. Gather the necessary information.	• Accurate interpretation of: – standards and specifications – plans – regulations • Accurate identification of: – equipment characteristics – components to check
2. Plan the inspection.	• Precise identification of subassemblies, parts and components to be checked • Appropriate selection of check method • Appropriate selection of tests to conduct
3. Take measurements.	• Observance of occupational health and safety rules • Appropriate selection and use of measuring instruments • Appropriate selection of test points • Accuracy of measurements, considering the effects of the instruments • Observance of response times • Recording of results
4. Analyze the data gathered.	• Accurate interpretation of: – data – deviations in relation to specifications • Accuracy of anomalies identified
5. Write an inspection report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology • Review of the plausibility and significance of the results, given the tests' repeatability and margin of error

Code: 041Z

Objective

Standard

Statement of the Competency

To check the operation of a fibre-optic telecommunications system.

Achievement Context

- Working with fibre-optic systems or networks, standards and specifications, plans and regulations in effect
- Using test equipment, measuring instruments and service manuals

Elements of the Competency	Performance Criteria
1. Gather the necessary information.	• Accurate interpretation of: – standards and specifications – plans – regulations • Accurate identification of: – equipment characteristics – components to check
2. Plan the inspection.	• Precise identification of subassemblies, parts and components to be checked • Appropriate selection of check method • Appropriate selection of tests to conduct
3. Take measurements.	• Observance of occupational health and safety rules • Appropriate selection and use of measuring instruments • Appropriate selection of test points • Accuracy of measurements, considering the effects of the instruments • Observance of response times • Recording of results
4. Analyze the data gathered.	• Accurate interpretation of: – data – deviations in relation to specifications • Accurate identification of anomalies
5. Write an inspection report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology • Review of the plausibility and significance of the results, given the tests' repeatability and margin of error

Code: 0421

Objective

To check the operation of a wireless telecommunications system.

Standard

Achievement Context

- Working with wireless and satellite telecommunications networks and wireless equipment for local area networks, standards and specifications, plans and regulations in effect
- Using test equipment, measuring instruments and service manuals

Elements of the Competency	Performance Criteria
1. Gather the necessary information.	• Accurate interpretation of: – standards and specifications – plans – regulations • Accurate identification of: – equipment characteristics – components to check
2. Plan the inspection.	• Precise identification of subassemblies, parts and components to be checked • Appropriate selection of check method • Appropriate selection of tests to conduct
3. Take measurements.	• Observance of occupational health and safety rules • Appropriate selection and use of measuring instruments • Appropriate selection of test points • Accuracy of measurements, considering the effects of the instruments • Observance of response times • Recording of results
4. Analyze the data gathered.	• Accurate interpretation of: – data – deviations in relation to specifications • Accuracy of anomalies identified
5. Write an inspection report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology • Review of the plausibility and significance of the results, given the tests' repeatability and margin of error

Code: 0422

Objective

To provide quality control for the assembly and integration of a telecommunications system.

Standard

Achievement Context

- Following telecommunications quality standards, manufacturers' recommendations and occupational health and safety rules
- Using test equipment, measuring instruments, test procedures, equipment specifications and general applications

Elements of the Competency	Performance Criteria
1. Become familiar with the specifications.	• Accurate interpretation of: – quality standards – occupational health and safety rules – test procedures – equipment specifications
2. Conduct compliance testing.	• Rigorous application of test procedures • Appropriate use of measuring instruments • Accuracy of measurements • Observance of execution delays • Recording of results and decisions
3. Take corrective action.	• Relevance of adjustments, modifications or repairs, considering test procedures and equipment specifications • Rigorous application of occupational health and safety rules • Observance of company methods • Meticulousness of final inspection
4. Write a quality control report.	• Observance of writing standards • Clarity and accuracy of information • Appropriate selection of transmission method and report recipients

Code: 0423

Objective	Standard
Statement of the Competency	**Achievement Context**
To perform activities related to the installation and activation of a telecommunications system.	• Following standards, safety rules, client needs, plans and diagrams and manufacturers' recommendations • Using test equipment, measuring instruments, installation methods and specialized software for system configuration and set-up
Elements of the Competency	**Performance Criteria**
1. Understand the request correctly.	• Accurate interpretation of: – standards – occupational health and safety rules – installation procedures – plans and diagrams – (ins(uipmram)8(s)-2( ))]and)6.06 0.96 retT0 1 Tf0.-t8 0 Td[

	Code: 0423
4. Plan the activation.	• Accurate identification of: – system parameters – the desired configuration – hardware and software compliance tests to be done on the equipment •

	Code: 0424
4. Take the necessary corrective actions.	• Appropriate selection of corrective actions • Appropriate repair or replacement of the defective device or component • Observance of the recalibration procedure
5. Check the system's operation.	• Observance of the restart procedure • Accurate check of the system's operating parameters • Accurate interpretation of results • Thorough check of client's level of satisfaction
6. Write a maintenance report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology

	Code: 0425
3. Apply a troubleshooting method.	• Observance of troubleshooting and maintenance methods • Appropriate visual inspection • Appropriate selection and use of measuring instruments • Appropriate selection of test points • Accuracy of measurements, considering the effects of the instruments • Recording of results • Accurate interpretation of: – data – deviations from specifications • Accurate identification of the origin of the problem
4. Take the necessary corrective actions.	• Appropriate selection of corrective actions • Appropriate repair or replacement of the defective device or component • Observance of calibration procedures
5. Check the system's operation.	• Observance of the restart procedure • Accurate check of the system's operating parameters • Accurate interpretation of results • Thorough check of client's level of satisfaction
6. Write a maintenance report.	• Observance of report writing standards • Clarity and accuracy of information • Use of appropriate terminology

Code: 0426

Code:	0427

	Code: 0427
4. Produce technical documentation.	• Use of appropriate terminology • Accuracy and clarity of information in the documentation • Clarity and precision of drawings and diagrams • Observance of writing standards
5. Transmit technical information.	• Appropriate preparation of the communication or demonstration • Appropriate explanation of data in everyday terms • Clarity of the data transmission • Check of the effectiveness of the communication or demonstration

Computers and Networks Specialization

Definition of Computers and Networks Specialization

The goal of the *Electrotechnology* program's Computers and networks specialization is to train technologists specialized in electronic computer hardware.

The principal tasks performed by computer and network technologists regarding electronics are the following: the installation, servicing, maintenance, repair and modification of electronic and computer equipment.

Regarding computers: the installation of hardware and software, servicing, maintenance, repair and customer service.

Regarding networks: the installation, servicing, maintenance and functional activity of networks and their facilities.

More specifically, computer and network technologists may perform some or all of the following tasks:

- install, maintain, repair and recondition hardware
- install, maintain and repair a computer network
- put together or assemble components or equipment
- help design or modify equipment
- install and configure operating systems and software programs
- inspect and test electronic hardware, components and assemblies using multimeters, circuit testers, oscilloscopes, logic probes and other devices, tools and electronic measuring equipment
- troubleshoot breakdowns and identify the defective circuit, component or equipment
- adjust, align, replace or repair electronic hardware, assemblies or components using manuals, schematic diagrams and hand or power tools
- perform quality control
- advise clients and offer training in equipment operations
- train and supervise other technicians, as needed
- analyze problems related to computer science and networking
- follow up on data

In the practice of their occupation, computer and network technologists must write technical documents and reports. They are also asked to manage their inventory and update their skills and knowledge.

These computer and network specialists can work for businesses providing computer services, institutions, public organizations or industries.

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

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To process information about working in the field of electrotechnology

Code: 041Q

Code: 041R

Objective

Statement of the Competency

To implement mathematical models related to electronics.

Standard

Achievement Context

- For work activities associated with taking measurements, diagnosing electronic problems, making modifications, conducting tests and setting parameters
- Using reference documents, data sheets, tables and diagrams
- Using measuring instruments and a calculator

Elements of the Competency	Performance Criteria
1. Become familiar with the situation requiring the implementation of a model.	• Accurate interpretation of the: – situation – goals to achieve – documentation
2. Select the model.	

Code: 037E

Objective

Statement of the Competency

To diagnose an analog electronics problem.

Standard

Achievement Context

- Working with various analog circuits, analog circuit diagrams and equipment with an analog defect
- Following procedures
- Using appropriate French and English technical documentation, measuring instruments and tools, antistatic equipment, a networked computer, diagnostic tools and simulation software
- In conformity with occupational health and safety rules

Elements of the Competency	Performance Criteria
1. Become familiar with the problem and	

Code: 037F

Objective

Standard

Statement of the Competency

To diagnose a digital electronics problem.

Achievement Context

- Working with various digital circuits, storage devices and data acquisition systems, digital circuit diagrams and equipment with a digital defect
- Following procedures
- Using appropriate French and English technical documentation, measuring instruments and tools, antistatic equipment, a networked computer, diagnostic tools and simulation software
- In conformity with occupational health and safety rules

Elements of the Competency	Performance Criteria
1. Become familiar with the problem and specifications.	• Accurate interpretation of the problem to be diagnosed • Accurate interpretation of the: – circuits and their schematic diagrams – standards – check methods
2. Identify anomalies.	• Systematic check of components' conformity with schematic diagrams • Visual inspection of all components • Proper recording of inspection results
3. Take measurements.	• Appropriate selection and use of measuring instruments • Correct observance of the procedure • Accuracy of measurements, considering the effects of the instruments • Proper recording of results
4. Analyze the results.	• Accurate interpretation of check results •

	Code: 037F
5. Determine the cause or causes of the problem.	• Accurate interpretation of deviations observed • Correct observance of diagnostic steps • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Clarity and accuracy of information • Use of appropriate terminology

Code:	037C 037C

Code: 041T

Objective

Standard

Statement of the Competency

To replace electronic components.

Achievement Context

- Following standards and manufacturers' recommendations
- Using appropriate French and English technical documentation, replacement circuits and components, equipment used for replacing components in various media, antistatic equipment and measuring instruments

Elements of the Competency	Performance Criteria
1. Interpret the request.	• Clarity of communication • Accurate interpretation of: – French and English terminology – safety and protective measures – standards – diagrams and assembly drawings – manufacturer's recommendations
2. Plan the work.	• Accurate determination of techniques to use in accordance with the request • Accurate identification of components to be replaced • Appropriate selection of: – equipment and accessories – replacement components – products to be used • Accurate determination of operations to perform • Meticulous preparation of equipment and measuring instruuGq5candards Tf-0.00022s2 0 0 10.02 78 624.

5. Check the work.

Code: 041U

Objective

To draw electronic schematic diagrams.

Standard

Achievement Context

- Following standards and manufacturers' recommendations
- Using appropriate French and English technical documentation, catalogues and parts libraries, a networked computer and drafting software

Elements of the Competency	Performance Criteria
1. Gather the information.	• Accurate interpretation of request • Appropriate use of: – technical documentation – catalogues and parts libraries – dimensional measuring instruments • Proper sorting of information
2. Produce a rough sketch.	• Appropriate layout • Correct observance of drawing conventions and symbols • Appropriate selection of presentation methods • Clarity and accuracy of the presentation • Appropriate use of drafting software
3. Produce final drawings.	• Relevance of the layout • Clarity and accuracy of the rendering • Cleanliness of schematic diagrams • Appropriate use of drafting software
4. Transmit the information.	• Careful presentation of schematic diagrams • Relevance and clarity of explanatory notes • Detailed report of information related to schematic diagrams

Code: 041V

	Code: 041V
5. Determine the cause or causes of the problem.	• Accurate interpretation of the problem or problems • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Clarity and accuracy of information • Use of appropriate terminology

Code: 0428

Objective	Standard
-B2161 TmgBsB	

Code: 0429

Objective

To install a piece of computer hardware.

Standard

Achievement Context

- In shop and at a client's place of business, internally and externally
- Following instructions from a supervisor or at the request of a client
- Using appropriate French and English technical documentation, floor plans, with a piece of computer hardware, a networked computer and software, cables and measuring instruments and tools
- In conformity with occupational health and safety rules, rules for blocking the effects of static electricity and standards in effect
- Working independently and demonstrating a sense of professional ethics

Elements of the Competency	Performance Criteria
1. Interpret the request.	• Clarity of communications with a supervisor or client • Accurate interpretation of installation instructions
2. Plan the work.	• Accurate assessment of the environment's resources and limitations • Accurate determination of the sequence of steps to take • Accurate assessment of the completion time and cost • Appropriate selection of measuring instruments and tools • Proper check of hardware: – condition – quantities
3. Assemble the hardware.	• Careful handling of the hardware • Proper installation and wiring of any internal peripherals

	Code: 0429
4. Position the hardware and start it up.	• Proper installation of all cables • Proper set-up of all connectors • Appropriate placement of hardware • Proper configuration of the BIOS, if necessary • Proper configuration of peripherals • Functional installation of the operating system • Proper installation of all drivers • Proper operational check of hardware
5. Establish network connections.	• Proper configuration of network's communication parameters • Proper operational check of the user account • Accurate diagnosis of network problems
6. Install application software.	• Observance of software installation procedures
7. Ensure the security of the hardware.	• Set-up of effective security measures, considering the type of installation
8. Provide follow-up.	• Clear transmission of information concerning: – inventory – the work done – any problems detected • Thorough, accurate activity report • Use of appropriate terminology

Code: 042A

Objective

To service a piece of computer hardware.

Standard

Achievement Context

- In shop and at a client's place of business, internally and externally
- Following instructions from a supervisor or at the request of a client
- Using appropriate French and English technical documentation, spare parts and equipment, a networked computer, diagnostic and test software, cables, measuring instruments and tools and cleaning products
- In conformity with occupational health and safety rules, rules for blocking the effects of static electricity and standards in effect
- Working independently and demonstrating a sense of professional ethics

Elements of the Competency	Performance Criteria
1. Interpret the request.	• Accurate interpretation of needs or problem: – relevance of questions – active listening skills • Accurate interpretation of information concerning measures to protect and safeguard the hardware
2. Plan the work.	• Accurate determination of the sequence of steps to take • Accurate assessment of the completion time and cost • Appropriate selection of: – measuring instruments and tools – diagnostic software – replacement components – cables – products to use • Proper check of hardware: – condition – quantities
3. Back up the data.	• Proper decision with regard to data security • Observance of methods for ensuring data security • Proper archiving of data • Observance of data confidentiality

Code: 042A

4. Service the hardware.

- Accurate interpretation of material safety data

Code: 042B

Objective	Standard
Statement of the Competency To modify a piece of computer hardware.	**Achievement Context** • In shop and at a client's place of business, internally and externally • Following instructions from a supervisor or at the request of a client • Using appropriate French and English technical documentation; working with a piece of computer hardware, a networked computer, diagnostic and drawing software, cables and measuring instruments and tools • In conformity with occupational health and safety rules, rules for blocking the effects of static electricity and standards in effect • Working independently and demonstrating a sense of professional ethics

Elements of the Competency otcrnally and externally

•

Code: 042D

Objective	Standard
Statement of the Competency	**Achievement Context**
To service a local network.	• In shop and at a client's place of business, internally and externally • Following instructions from a supervisor or at the request of a client • Using appropriate French and English technical documentation, layout plans, network plans, building plans, manufacturer's recommendations, diagnostic and surveillance software and measuring instruments and tools • With spare components and circuits and replacement hardware • With various network topologies, technologies and applications • In conformity with occupational health and safety rules and standards in effect • Working with resource people within the company or outside
Elements of the Competency	**Performance Criteria**
1. Interpret the request.	• Accurate interpretation of needs or problem: – relevance of questions – active listening skills
2. Plan the work.	• Accurate perception of the effects of a network shutdown • Accurate determination of the sequence of steps to take • Software and replacement hnd surveillance •

Code:	042D

Code:

Code: 042F

Objective

To provide technical assistance.

Standard

Achievement Context

- For a client, either in-house or outside, or for a colleague
- Following a request
- Using appropriate French and English technical documentation, computer and network hardware, troubleshooting software and writing tools

Elements of the Competency	Performance Criteria
1. Advise clients.	• Active listening skills • Accurate interpretation of needs • Proper advice regarding the selection and use of hardware and software • Proper explanation of concepts in everyday terms • Patience, courtesy and diplomacy
2. Train users.	• Proper preparation of training • Accurate assessment of duration of training • Clear demonstration of how hardware and software operate • Clarity of explanations • Appropriate use of terminology • Check to ensure other people have understood • Patience, courtesy and diplomacy
3. Provide technical support by telephone.	• Accurate interpretation of problems • Rigorous analysis of problems • Realistic solutions • Proper application of solutions • Clarity of communications • Observance of telephone protocol • Appropriate stress management • Appropriate consultation of resource people

Code:	042F

Audiovisual **Specialization**

Definition of *Audiovisual* Specialization

Audiovisual technologists specialize in audiovisual production and the installation and maintenance of audiovisual equipment. However, their training does not prepare them to create television productions.

Their duties, tasks and working conditions do not exist in a uniform

Code:	041Q

Code: 041R

Objective

Code: 037E

Code:

Code: 037F

Objective

Standard

Statement of the Competency

To diagnose a digital electronics problem.

Achievement Context

- Working with various digital circuits, storage devices and data acquisition systems, digital circuit diagrams and equipment with a digital defect
- Following procedures
- Using appropriate French and English technical documentation, measuring instruments and tools, antistatic equipment, a networked computer, diagnostic tools and simulation software
- In conformity with occupational health and safety rules

Elements of the Competency	Performance Criteria
1. Become familiar with the problem and specifications.	• Accurate interpretation of the problem to be diagnosed • Accurate interpretation of the: – circuits and their schematic diagrams – standards – check methods
2. Identify anomalies.	• Systematic check of components' conformity with schematic diagrams • Visual inspection of all components • Proper recording of inspection results
3. Take measurements.	• Appropriate selection and use of measuring instruments • Correct observance of the procedure • Accuracy of measurements, considering the effects of the instruments • Proper recording of results
4. Analyze the results.	• Accurate interpretation of check results • Accurate determination of calculations to be made in accordance with: – applicable laws, concepts and theorems – circuits • Accuracy of calculations • Logical processing of results

	Code: 037F
5. Determine the cause or causes of the problem.	• Accurate interpretation of deviations observed • Correct observance of diagnostic steps • Relevance of hypotheses • Accuracy of diagnosis
6. Write a report.	• Clarity and accuracy of information • Use of appropriate terminology

Code: 037C

Objective	Standard

Code: 041S

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

Code: 042G

Objective

To practise health and safety techniques related to audiovisual technology.

Standard

Achievement Context

- Using safety equipment, the Act respecting occupational health and safety and the Workplace Hazardous Materials Information System (WHMIS)
- Demonstrating their ability to observe and enforce occupational health and safety rules

Elements of the Competency	Performance Criteria
1. Evaluate the risks of an accident.	• Detailed study of the work environment • Soundness of judgment regarding potentially hazardous situations • Clear transmission of information regarding potential hazard

Code: 042H

Objective

Standard

Statement of the Competency

To ensure the distribution of electrical power.

Achievement Context

- For temporary installations, inside halls and on outdoor stages
- Using electrical equipment such as junction boxes, cables, connectors, batteries, generators, measuring instruments and tools, ladders, platforms and scaffolding and computers and software
- In conformity with laws and regulations (the Québec Electrical Code), the Building Code and codes of other countries, occupational health and safety rules and legal and regulatory constraints on practice

Elements of the Competency	Performance Criteria
1. Assess the needs.	• Detailed list of electrical hardware required by the request • Consideration of the environment's constraints

Code: 042J

	Code: 042J

5. Put away materials and clean the area.	• Careful storage of tools • Appropriate cleaning of the area
6. Provide follow-up.	• Clear transmission of information concerning: – inventory – test results – the work done – problems detected

Code: 042K

Objective	Standard
Statement of the Competency	**Achievement Context**
To provide lighting.	•

Code: 042L

Objective

To fit a hall or stage with a public address (PA) system.

Standard

Achievement Context

- For a small or medium-size production
- For a temporary installation and a permanent installation
- In various settings and in accordance with various schedules
- Under various weather conditions
- Working alone and in a team
- Following instructions from the technical director or director, a production project and technical specifications
- Using appropriate French and English technical documentation, PA and supervision equipment and measuring instruments and tools
- In conformity with occupational health and safety rules, standards in effect and legal and regulatory constraints on practice

Elements of the Competency	Performance Criteria
1. Create a sound plan.	• Accurate interpretation of the production director's needs • Accurate determination of: – the placement of devices, the control room and wiring – scaffolding – anchoring and coupling points – the equipment needed, given the budget • Detailed drawing of sound plan • Meticulous drafting of the cue sheet • Demonstration of artistic capability
2. Prepare and check the equipment.	• Proper operational check of equipment • Accurate calibration of all sound equipment and devices • Proper modification of the equipment selected, given availability and performance tests

Code:	042L

3. Install the PA system.	• Safe moving of equipment • Secure installation of speakers and safety system • Methodical placement and connection of equipment in accordance with plans • Observance of the Québec Electrical Code when connecting equipment • Proper installation of intercom system
4. Balance the sound.	• Accurate check of the position and direction of the speakers in accordance with the acoustics of the site • Proper operational check of the system for: – providing sound to the hall – monitors and wired and wireless headphones • Interactive balancing of all sound sources • Clear, precise communications with other people
5. Operate the equipment.	• Appropriate sequencing of sound recording • Proper adaptation of the cue sheet • Optimal equipment operation • Appropriate resolution of technical problems
6. Dismantle the PA system.	• Safe disconnection of equipment • Correct observance of sequence for dismantling the equipment • Proper coiling of cables • Careful storage of equipment in boxes • Meticulous labelling of defective equipment
7. Maintain the sound equipment.	• Appropriate cleaning and adjustment of equipment • Appropriate use of measuring instruments and tools • Accurate detection of potential problems • Accurate determination of maintenance needs

	Code: 042M
4. Check the network's operation.	• Correct observance of procedures for conducting compliance testing • Proper operational check of communications • Appropriate resolution of any hardware or software problems
5. Provide follow-up.	• Clear recording of results • Proper transmission of information

Code: 042N

Objective

To activate audiovisual control systems.

Standard

Achievement Context

- Using appropriate French and English technical documentation, installation specifications, measuring instruments and tools, software, computers, transmission media, time-code generators or electronic slates, audiovisual equipment and control systems
- In conformity with occupational health and safety rules and norms and standards in effect

Elements of the Competency	Performance Criteria
1. Install and configure parallel or serial control systems.	• Accurate interpretation of connection diagrams • Proper installation of wiring, jack fields and terminal blocks • Standardized drawing of wiring diagrams • Proper installation of software programs • Appropriate configuration of control systems • Proper synchronization of machine-to-machine systems • Proper management of communication protocols • Proper operational check of control systems
2. Install and configure control systems with multiple interfaces and protocols.	• Accurate interpretation of connection diagrams • Proper installation of wiring, jack fields and terminal blocks • Standardized drawing of wiring diagrams • Proper installation of software programs • Proper synchronization of sound and image • Proper configuration of control systems • Proper use of universal remotes • Proper operational check of control systems
3. Install and configure transcoders and converters.	• Accurate interpretation of connection diagrams • Standardized drawing of wiring diagrams • Proper installation of cables and software • Proper configuration or programming of transcoders and converters • Appropriate adaptation of detectors of motion, heat, humidity and other conditions • Proper operational check of control systems

	Code: 042P
4. Operate the devices.	• Optimal operation of presentation devices • Proper synchronization of events • Critical assessment of the presentation’s quality •

Code: 042Q

Objective

	Code: 042Q
4. Record sound sources.	• Proper operation of the mixing console • Proper recording of a reference signal • Accurate synchronization of time code • Appropriate processing of audio signals • Proper recording of the various sound sources onto analog or digital media • Proper distribution of audio signals to monitors or for broadcast • Critical assessment of the sound signals' quality • Clear, precise communications with directors, technical staff, performers, lecturers, etc. • Speedy resolution of technical problems
5. Assess the quality of the sound recordings with the client.	• Proper presentation of recording results • Soundness of judgment with regard to recording quality • Meticulous reproduction of originals onto various media • Clear, precise communications with other people
6. Dismantle the sound recording system.	• Correct observance of the sequence for dismantling the installation • Proper storage of equipment • Meticulous labelling of devices deemed nonperforming
7. Archive the recordings.	• Accurate labelling of recording media • Proper cataloguing of sound recordings • Safe storage of originals
8. Maintain the sound recording equipment.	• Appropriate cleaning and adjustment of equipment • Appropriate use of measuring instruments and tools • Accurate detection of potential problems • Accurate determination of maintenance needs

Code:	042R

3. Install the video recording equipment.	• Appropriate installation of cables and tripods • Stable positioning of the camera on the tripod • Ergonomic adjustment and accurate balancing of the camera • Standard white balance • Standard adjustments in accordance with the type of camera: – back focus – height and level (outside and jib arm) – time code – sound levels • Proper installation of intercom system
4. Adjust the camera's control unit.	• Appropriate selection of optical filter • Standard adjustments of: – cable lengths – horizontal synchronization – colour phase – black levels – white balance • Relevant use of audiovisual electronic cross-connect system
5. Make video recordings.	• Proper insertion of colour bars on the cassette • Careful execution of camera movements and framing, in accordance with instructions and image composition principles • Accurate adjusting of the iris and focal length, given the desired image composition • Proper recording of images • Speedy resolution of technical problems
6. Assess the quality of the video recordings with the client.	• Proper presentation of recording results • Relevance of judgment with regard to recording quality • Meticulous check of copies • Clear, precise communications with other people
7. Dismantle the cameras and their accessories.	• Safe disconnection of cameras • Correct observance of the sequence for dismantling the cameras • Proper rolling of cables • Organized storage of cameras in boxes • Meticulous labelling of devices deemed nonperforming

	Code: 042R
8. Archive the recordings.	• Clear labelling of recording media • Proper cataloguing of all video • Systematic storage of both analog and digital media

Code: 042S

Objective	Standard
Statement of the Competency	**Achievement Context**
To edit audio or video documents.	•

	Code: 042S
3. Produce the master of the edited sound track.	• Appropriate transfer of original sources to analog or digital media • Proper adjustment of the audio passband • Proper conversion of sounds, considering the desired effects • Assignment of various sources to different tracks • Proper balancing of various tracks • Precise synchronization of the various tracks • Dramatic or comic effects that conform to the artistic vision • Correct observance of instructions included on the cue sheet • Meticulous check of work quality
4. Produce a low-resolution original document.	• Proper selection of sequences to be used • Meticulous integration of various documents involving: – titles – superimposed images – special effects – 2D or 3D apertures – credits • Appropriate insertion of sound sources • Correct observance of the edit decision list • Proper use of file server • Exact synchronization between various sourceProper selection o

	Code: 042S
9. Maintain the editing equipment.	• Appropriate cleaning and adjustment of equipment • Appropriate use of measuring instruments and tools • Accurate detection of potential problems • Accurate determination of maintenance needs

Code: 042T

Objective

Standard

Statement of the Competency

To perform activities related to the broadcast of audiovisual documents.

Achievement Context

- In various audiovisual production control rooms: master control room, transmission booth, mobile control room, etc.
- For live or taped broadcast, on various types of media: radio, television, Internet, intranet, video conference, etc.
- Following instructions from the technical director or director
- Using appropriate French and English technical documentation, control room equipment, measuring instruments and tools and a computer and specialized software
- In conformity with occupational health and safety rules, norms and standards in effect and deadlines

Elements of the Competency	Performance Criteria
1. Switch among audiovisual sources.	• Precise establishment of connection diagram • Proper check of switcher inputs • Proper performance of cuts, mixes, special effects, etc. • Correct observance of temporal synchronization with network • Continuous check of electronic signal quality • Clarity of communications with members of the production team • Rapid transmission of information about problems
2. Manage the broadcast.	• Thorough gathering of: – originals and copies – credits, subtitles and logos – sound elements – special effects – commercials • Proper organization of connections in accordance with needs • Proper check of signal quality, given the characteristics of the communication media • Proper reservation of air time, bandwidth or supplier services • Rapid transmission of information about problems

	Code: 042T
3. Broadcast audiovisual documents.	• Proper coordination of services with suppliers • Precise technical checks of: – inputs and outputs – remote monitoring of transmitters – events on the computer network – the list of events • Correct observance of cue sheet • Rapid resolution of technical problems • Proper archiving of documents broadcast: – continuous recording – meticulous labelling – safe storage • Rapid transmission of information about problems

Code: 042U

Objective

Statement of the Competency

To service audiovisual equipment.

Standard

Achievement Context

- In a repair shop and on-site at a client's workplace
- In accordance with various schedules
- Following instructions from a supervisor, and according to a preventive maintenance schedule and a worksheet or work order
- Using appropriate French and English technical

	Code: 042U
3. Provide preventive maintenance.	• Regular consultation of preventive maintenance schedule • Correct observance of maintenance procedure • Meticulous cleaning of all devices • Proper adjustments of devices • Proper execution of performance tests • Accurate detection of potential problems
4. Write a report.	• Meticulous recording of corrective actions taken and problems found • Accuracy of information recorded on the: – work order or service requests – worksheet – invoice • Clear, precise communications with supervisors, colleagues and clients • Specific information regarding: – corrective actions taken – optimal use of devices – suggested modifications

Code: 042V

Objective	Standard
Statement of the Competency	**Achievement Context**
To modify audiovisual systems.	•

Code: 042W

Objective

Standard

Statement of the Competency

To provide technical support for a production.

Achievement Context

- During preproduction, production and postproduction
- With the client in attendance or not
- Using appropriate French and English technical documentation, audiovisual equipment and measuring instruments and tools
- Demonstrating a sense of ethics
- In conformity with occupational health and safety rules and norms and standards in effect

Elements of the Competency	Performance Criteria
1. Provide an opinion on the technical aspects of an audiovisual project.	• Accurate interpretation of scenario or project specifications • Detailed study of the hardware and software characteristics • Clear expression of their opinion with regard to project feasibility and potential hardware and software problems
2. Advise people on their choice of hardware and software.	• Clear explanation of available options, given needs expressed
3. Provide information on the operation of audiovisual equipment.	• Active listening to needs • Careful preparation of documentation and equipment • Clear, precise explanations • Organized delivery of demonstrations • Real concern regarding the other person's understanding
4. Help people adjust and use equipment and systems.	• Proper application of the client-centred approach • Clear, precise explanations
5. Resolve technical problems during production.	• Accurate diagnosis of problems • Proper application of optimal solutions

	Code: 042W
6. Write procedure books.	• Accurate interpretation of objectives targeted by procedures: – equipment use – optimized equipment operation – equipment replacement • Proper determination of procedure steps, given the client • Use of appropriate terminology • Observance of spelling, grammar and punctuation rules • Observance of technical writing standards • Relevance and coherence of ideas • Careful presentation
7. Provide follow-up to clients.	• Proper communication with others in French and English.

Code: 042X

Objective

Standard

Statement of the Competency

To provide technical direction for an audiovisual project.

Achievement Context

- For a small or medium-size production
- During preproduction, production and postproduction
- Following scenarios and storyboards
- Using appropriate French and English technical documentation, communication equipment and plans
- Demonstrating a sense of ethics and aesthetics
- In conformity with occupational health and safety rules, norms and standards in effect and legal and regulatory constraints on practice

Elements of the Competency	Performance Criteria
1. Meet the client.	• Accurate interpretation of client's needs • Gathering of all technical, artistic and budget information
2. Plan the project.	• Clear establishment of schedule • Proper distribution of costs among budget allowances • Clear transmission of plans to client • Appropriate selection of team leaders • Efficient logistics
3. Hold technical meetings.	• Detailed presentation of project • Appropriate technical indexing • Appropriate selection of technical personnel
4. Determine where equipment will be placed throughout the site.	• Clear establishment of plans and specifications
5. Make sure that the equipment is available.	• Appropriate selection of audiovisual and security equipment • Regular communications with suppliers
6. Supervise the production.	• Rigorous control over production quality • Effective coordination between technical personnel and other people • Proper management of personnel • Effective management of conflicts • Observance of schedule and budget • Calm and diplomacy

	Code: 042X
7. Provide follow-up.	• Systematic check when equipment is returned • Proper check of invoice payments • Accuracy of balance sheet • Organization of technical evaluation meeting

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