

COMPUTER SCIENCE AND MATHEMATICS

Pre-University Program 200.CO



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Pre-University Program 200.CO



Identification du programme

Titre du programme : Sciences informatiques et mathématiques
Programme expérimental

Numéro du programme : 200.C0

Type de sanction : Diplôme d'études collégiales

Conditions particulières d'admission : Mathématique 536
Physique 534
Chimie 534

Nombre d'unités : 58 ^{2/3}

— formation générale : 26 ^{2/3}

— formation spécifique : 32

Nombre d'heures-contact totales : 1 560

— formation générale : 660

— formation spécifique : 900

Champ d'études : Sciences informatiques et mathématiques
Il comprend les disciplines informatique, mathématique, chimie, physique.

Recommandations


Sous-ministre adjointe

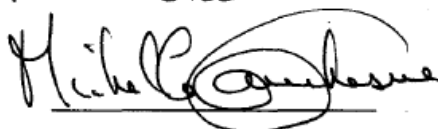
26 Sept 08
Date


Sous-ministre

2008.10.01
Date

pour MICHEL BOIVIN

Approbation de la ministre



2008-10-07
Date

Identification of the program

Program title : Computer Science and Mathematics
Experimental Program

Program code : 200.C0

Type of certification : Diploma of College Studies

Prerequisites : Mathematics 536
Physics 534
Chemistry 534

Number of credits : 58 ^{2/3}

— General education component : 26 ^{2/3}

— Program-specific component : 32

Total hours of instruction : 1 560

— General education component : 660

— Program-specific component : 900

Field of study : Computer Science and Mathematics
It includes the disciplines of computer science, mathematics, chemistry and physics.

Recommendations

Assistant-Deputy Minister

Date

Deputy Minister

Date

Approval of the Minister

Date

**Décision relative à la modification
des conditions particulières d'admission
pour certains programmes d'études préuniversitaires**

Type de sanction : Diplômes d'études collégiales

Modifications proposées : Modifier, pour les programmes concernés, les conditions particulières d'admission pour celles apparaissant à l'annexe.

Session et année d'entrée en vigueur : Automne 2010

APPROBATION DES PROGRAMMES

Recommandations :



Sous-ministre adjointe
Enseignement supérieur

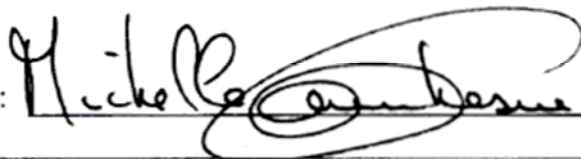
09/12/08
Date



Sous-ministre

2008.12.29
Date

Approbation de la ministre :



2009/01/20
Date

Annexe

NOUVELLES CONDITIONS PARTICULIÈRES D'ADMISSION POUR LES PROGRAMMES D'ÉTUDES PRÉUNIVERSITAIRES À COMPTER DE L'AUTOMNE 2010

No	Titre du programme	Préalable actuel	Préalable A-2010
La légende au bas de la liste donne la signification des abréviations			
200.B0	Sciences de la nature	Mathématique 536 Physique 534 Chimie 534	TS ou SN 5 ^e Physique 5 ^e Chimie 5 ^e
200.C0	Sciences informatiques et mathématiques	Mathématique 536 Physique 534 Chimie 534	TS ou SN 5 ^e Physique 5 ^e Chimie 5 ^e
300.A0	Sciences humaines	Mathématique 526 ou Mathématique 536 (pour les objectifs 022X, 022Y et 022Z)	TS ou SN 5 ^e (pour les objectifs 022X, 022Y et 022Z)
501.A0	Musique	Musique 534	Musique 5 ^e
700.A0	Sciences, lettres et arts	Mathématique 536 Physique 534 Chimie 534	TS ou SN 5 ^e Physique 5 ^e Chimie 5 ^e
700.B0	Histoire et civilisation	Mathématique 526 ou Mathématique 536 (pour les objectifs 022X, 022Y et 022Z)	TS ou SN 5 ^e (pour les objectifs 022X, 022Y et 022Z)

Signification des abréviations des nouveaux cours préalables

Mathématique

TS 5^e Mathématique, séquence Technico-sciences de la 5^e secondaire (064506)

SN 5^e Mathématique, séquence Sciences naturelles de la 5^e secondaire (065506)

Science et technologie

Chimie 5^e Chimie de la 5^e secondaire (051504)

Physique 5^e Physique de la 5^e secondaire (053504)

Arts

Musique 5^e Musique, formation obligatoire de la 5^e secondaire (169502)

ACKNOWLEDGMENTS

The development of this program was made possible by the generous cooperation of colleges and universities.

The Direction de l'enseignement collégial would like to thank the members of the Advisory Committee for the experimentation in Computer Science and Mathematics for their part in developing this program. Many people—academic deans, teachers, university representatives—have participated in the work of these committees over the past few years.

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Martin Robillard, assistant professor, School of Computer Science, McGill University

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INTRODUCTION TO THE PROGRAM

The *Computer Science and Mathematics* program is a pre-university program designed for those who wish to explore computer science and mathematics, in addition to science, and to acquire the fundamental learning and skills that such studies provide. Combining the scientific and technological approaches, it implements learning strategies that promote the establishment of connections between these fields. It also emphasizes everyone's ability to master their own learning process and to develop their autonomy, as well as their ability for formal analysis and rigorous reasoning in different situations. The program fosters the acquisition of rigorous scientific literacy, giving students the background required for university programs in the fields of engineering, computer science, science and mathematics.

This program was designed in keeping with the commitments made to the universities in the early stages of field testing and in accordance with the framework for the development of pre-university programs of the Direction de l'enseignement collégial. This framework:

- harmonizes pre-university programs with university-level programs
- encourages the program approach
- fosters a type of education centred on mastery of learning, using an approach based on objectives and standards
- fosters a type of education that contributes to the overall development of the person

This framework requires participation by partners from the colleges and universities for program development. Indeed, the development of pre-university programs in terms of objectives and standards is carried out with the cooperation of university representatives and academic deans and teachers in colleges.

The *Computer Science and Mathematics* program includes a general education component that is common to all college programs, a general education component that is adapted to the program, and a program-specific component.

This document has two parts. Part One presents an overview of the program. Part Two describes the objectives and standards of the general education component and the program-specific component.

VOCABULARY USED

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).

Aim

The aim of pre-university programs is to prepare students for university through training emphasizing the integration of general and specific education and the transfer of learning. The aim must also reflect the requirements of an educational continuum oriented toward success in university.

General Goals

The general goals of pre-university programs guide the development of each program by indicating outcomes that should result in consistency, integration and the transfer of learning. By facilitating the coordination of the educational intent of general education with that of specific education, the general goals clarify the aim of the program, which is for the students to acquire skills essential for success in university.

Competencies

In pre-university education, competencies are based on knowledge, skills, attitudes and so on, whose acquisition or mastery is necessary for success in specific fields in university.

Objectives

The objectives of pre-university programs determine the results expected of the students. It is by attaining objectives and standards that the students acquire or master the competencies specific to the college level that are necessary to pursue university studies in particular fields.

When pre-university programs are developed and presented by the Ministère, each objective is formulated in terms of a competency and includes a statement of the competency and its elements.

Statement of the competency

The statement of the competency, is the result of an analysis of the needs of general education and those of university education.

Elements

The elements of the objective, formulated in terms of a competency, specify its essential components. They include only what is necessary in order to understand and achieve the competency.

Standard

The standard is the level of performance at which an objective is considered to be achieved (*College Education Regulations*, section 1). It is by attaining objectives and standards that the students acquire or master the competencies specific to the college level that are necessary to pursue university studies in particular fields.

Performance criteria

The performance criteria define the requirements for recognition of the attainment of the objective. All the criteria must be respected for the objective to be attained.

Learning activities

The aspects of learning activities which the minister can determine in whole or in part are the field of studies, the discipline or disciplines, the course weighting, the number of contact hours, the number of course credits, and such specific indications as are deemed essential.

PART ONE: OVERVIEW

AIM OF THE PROGRAM

The *Computer Science and Mathematics* college program is intended to give students a balanced education that integrates the basic components of a rigorous scientific education in physics, chemistry, mathematics and computer science as well as in general education, thus preparing students for university programs in computer science, mathematics, engineering and most of the pure sciences programs.

GENERAL GOALS OF THE PROGRAM

The general goals of the program are to enable students to do the following:

- to situate and connect the characteristics of the subjects studied
- to assimilate concepts and work methods required to study subjects in various fields of knowledge
- to use information and communications technologies (ICT) to solve problems in a scientific context
- to communicate clearly and correctly
- to take charge of their own personal and social development
- to work as a member of a team

Each college determines the ways in which the general goals of the program are taken into consideration. Moreover, each course may contribute to the full or partial attainment of one or more of these goals. What is important is that all the goals be represented in one or more courses, and that they become specific focuses of teaching and learning, because they are recognized as essential to university studies and the Diploma of College Studies in *Computer Science and Mathematics* must attest to their achievement.

EXPLANATION OF THE GENERAL GOALS OF THE PROGRAM

Each general goal is explained as follows:

To situate and connect the characteristics of the subjects studied

As they construct the scientific knowledge which is the focus of the program's courses in computer science, mathematics and science, students must not only know but also be able to do the following:

- establish links among the theories, approaches and methodologies specific to the various subjects in science and technology by situating them in the context of an evolving society
- understand the scope and limits of the scientific approach as a way of constructing knowledge
- recognize the contributions of science, mathematics and technology to the development of society

Science differs from other ways of understanding reality due as much to its first objective, which is to understand the world we live in, as to its ways of knowing, which are primarily through observation, reasoning, experimentation and validation. The ways of constructing and transforming knowledge are thus presented for discussion and validation in the form of research hypotheses. A scientific result may suggest a desirable change that could be made to the physical or social environment, or even to the sphere of human activity. We are therefore placed before a challenge that we can overcome with the help of **technology**.

In each course of the program, the choice of learning activities must reflect a constant concern for opening the way to other fields of knowledge. General education courses can also make a contribution, particularly by the choice of subjects or texts to be covered in the general education courses adapted to the specific program.

To integrate concepts and work methods required to study subjects in the various fields of knowledge

Integration must take place in the context of analysis, research, creation, discussion, verification, criticism and stocktaking with respect to the works, phenomena and problems dealt with in the program. All of the courses must focus on this goal, to enable students to do the following:

- discuss questions and themes spanning several subjects
- analyze and criticize texts, theses, solutions and theories
- reason logically
- apply the scientific method
- take a systematic approach to problem solving
- analyze phenomena using approaches from different disciplines
- represent, conduct research and carry out projects pertaining to situations, problems or issues by drawing on several fields of knowledge

Using the knowledge they have acquired in the particular field of study of the program, students must be able to carry out the various steps in the scientific method, both experimental and comparative. At the college level, they are not asked to be scientists or to produce new findings but, more realistically, to confirm previously established results or to verify propositions. To this end, they must observe, gather data, draw inferences based on data, formulate hypotheses, set up experiments, use measuring instruments correctly and carry out experiments, summarize their observations, estimate their degree of uncertainty, draw conclusions from them and interpret and critique them.

In the general meaning of the term, that is, in a context much broader than that of exercises designed to teach students to use techniques or apply algorithms, students must be able to frame a problem and construct a representation of it, analyze a problem, identifying its elements and the relationships among them and their structure and organization, and solve a problem.

To use information and communications technologies (ICT) to solve problems in a scientific context

The students must acquire the ability to choose and use the technological resources placed at their disposal, namely:

- use a computer and its main peripherals and networks for purposes of gathering data, for documentation and for communication
 - use the main types of data-processing software: e.g. word-processing, data-processing and graphics programs, specialized software
- develop computer-based solutions to solve scientific problems

It is essential that the different courses take this general goal into account, even if students are already enrolled in specialized computer training. Students may be introduced to the use of data-processing programs in science. Educational software may also be used to allow the students to acquire and develop problem-solving skills or to familiarize them with simulations and modelling, which constitute powerful computer applications in science and mathematics.

In addition, it is important that students, especially those who will later study applied sciences or engineering, receive an introduction to the development of algorithms and the use of a programming language.

To communicate clearly and correctly

Mastery of written and spoken language is essential for the clear expression of ideas. With respect to second language studies, the emphasis will be on the development of reading skills. All the courses in the program must contribute to the development of the following abilities:

- to read scientific or literary texts, as well as texts on current events
- to present an argument, analysis, commentary, process or result in the appropriate form
- to draft literary, scientific or other types of texts
- to express themselves effectively in presentations or discussions in small or large groups

Students must perform these tasks by correctly using the language of instruction and the second language. The requirements in the latter case should be realistic, with learning activities focused mainly on reading, making proper use of the various languages (terminology, symbolism, conventions, etc.) specific to the scientific disciplines covered in the program.

To take charge of their own personal and social development

Aside from strictly academic learning, the program must provide students with concrete opportunities to participate in their own education and to become personally involved in their development. Throughout their studies, they must do the following:

- express their interest in culture, science, mathematics and computer science
- be concerned with the ethical impact of science and technology on individuals and societies
- make physical activity a part of their lifestyle in order to stay healthy
- demonstrate autonomy and a commitment to the successful pursuit of university studies
- use intellectual work methods and study techniques

To ensure that students master the work methods required to pursue university studies, the program must focus explicitly on the development of a certain number of practical skills. The work methods used must contribute to the integration of the various fields of knowledge and to the establishment of links among them. For these reasons, students must learn to manage their time, develop good note-taking habits, apply effective reading techniques, apply summarizing techniques, carry out documentary research and adopt good science- or computer-lab-work practices.

To take up the challenges facing science students at the university level, college students also need to become independent learners by locating, organizing and using pertinent information, by planning their own learning process, setting realistic goals and choosing appropriate means of attaining them, by evaluating the effectiveness of their strategies, adapting to different situations and readjusting their objectives and behaviour.

To work as members of a team

College and university students are not isolated. They are surrounded by professors, students, technicians and many others, not to mention the scientific community that they will gradually become part of over the years.

Students must learn to work effectively with others, while improving the quality of their interactions with their peers and establishing true cooperation based on confidence, motivation, responsiveness and team spirit. More specifically, they will do the following:

- assume various roles (leadership, collaboration, support) in disciplinary and multidisciplinary teams oriented toward the pursuit of specific goals and common objectives
- understand and respect the diversity and interdependence of individual team members

Whereas in the past teams were more homogenous, the modern trend is for team members to have different abilities and skills in order to improve their effectiveness at problem-solving. The composition of the team may be permanent, occasional, temporary or even virtual. The use of teamwork aims to promote knowledge networking by relying on members with diverse interests and abilities.

GOALS OF GENERAL EDUCATION

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

Each college program features a general education component that is common to all programs, one that is adapted to the specific field of study, and one that is complementary. The goals of general education are to provide students with a common cultural core, to help them learn and develop generic skills, and to foster desirable attitudes. The desired outcomes are to educate students, to prepare them for their role as responsible members of society and to enable them to share in the common cultural heritage.

Common cultural core

Transmission of the common cultural core is aimed at allowing students to develop or acquire the following:

- mastery of the language of instruction as a tool for communication and reflection, and mastery of the basic rules of rational thought, discourse and argumentation;
- the ability to communicate in other languages, primarily French or English;
- openness to the world and to cultural diversity;
- appreciation of the riches of their cultural heritage through familiarization with the accomplishments of human civilization;
- the ability to situate themselves with respect to the major schools of thought;
- the ability to think critically, independently and reflectively;
- personal and social ethics;
- mastery of knowledge relevant to the development of physical and intellectual well-being;
- awareness of the need to develop habits conducive to good health.

Generic skills

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

- conceptualization, analysis and synthesis;
- coherent reasoning;
- critical judgment;
- articulate expression;
- the ability to apply what they have learned in analyzing situations;
- the ability to apply what they have learned in determining appropriate action;
- mastery of work methods;
- the ability to reflect on what they have learned.

Desirable attitudes

Cultural literacy and generic skills help students to acquire and develop the following attitudes:

- autonomy;
- a critical sense;
- awareness of their responsibilities toward themselves and others;
- openmindedness;
- creativity;
- openness to the world.

These outcomes apply to the three general education components, more specifically:

- General education 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 adapted to programs, which introduces tasks or learning situations that are relevant to the field of study. 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, which allows students to complete their training with learning activities chosen with a view to achieving balance and complementarity in relation to the program-specific component. Students may choose courses for a total of 4 credits in the following areas:
 - social sciences;
 - science and technology;
 - modern languages;
 - mathematics literacy and computer science;
 - art and aesthetics.

The general and the specific education components are designed to contribute to students' education in an integrative fashion. In other words, the knowledge and skills transmitted in one component are reinforced and, whenever possible, reapplied in the other.

Each college-level institution must provide such general education through learning activities that are consistent with its educational project, within the framework of the stated outcomes, the given subject areas and ministerial guidelines.

All the sets of objectives and standards in the general education component are developed in keeping with the provisions of the *College Education Regulations* (R.S.Q., c. C-29, s. 18; 1993, c. 25, s. 11). Revised Edition, August 1998.

EDUCATIONAL INTENTIONS OF GENERAL EDUCATION

The educational intentions explain in detail the contribution of each field of studies included in the three components of general education (common to all programs, adapted to programmes or complementary) to the achievement of the goals of general education. For the first two components, the educational intentions include a general statement of the role of each field of studies, the principles which underlie this role, the contribution of each field, in the form of outcome objectives, to the achievement of the goals of general education in terms of knowledge, abilities and attitudes, and an explanation of the sequence of objectives and standards.

The full text of the educational intentions may be found at the end of this document.

LIST OF PROGRAM OBJECTIVES

GENERAL EDUCATION 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.
ou
- 000A Communiquer en français avec une certaine aisance.
ou
- 000B Communiquer avec aisance en français.
ou
- 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 ADAPTED TO PROGRAMS: 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.
ou
- 000Q Communiquer en français dans un champ d'études particulier.
ou

- 000R Communiquer avec aisance en français dans un champ d'études particulier.
ou
000S Dissserter en français sur un sujet lié au champ d'études.

COMPLEMENTARY GENERAL EDUCATION: 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.

SPECIFIC EDUCATION: 32 credits

Objectives and standards common to all students

- 00UL To analyze chemical and physical changes in matter using concepts associated with the structure of atoms and molecules.
- 00UN To apply the methods of differential calculus to the study of functions and problem solving.
- 00UP To apply the methods of integral calculus to the study of functions and problem solving.

- 00UQ To apply the methods of linear algebra and vector geometry to problem solving.
- 00UR To analyze various situations and phenomena in physics using the basic principles of classical mechanics.
- 00US To analyze various situations and phenomena in physics using the basic laws of electricity and magnetism.
- 00UT To analyze various situations or phenomena associated with waves, optics and modern physics using basic principles.
- 020V To apply basic concepts in discrete mathematics to problem solving.
- 020W To develop programs to solve simple problems.
- 020X To organize and manipulate data.
- 020Y To design and develop programs in a graphic environment.
- 020Z To demonstrate their integration of the learning in the *Computer Science and Mathematics* program.

SECOND PART: PROGRAM OBJECTIVES AND STANDARDS

GENERAL EDUCATION COMMON TO ALL PROGRAM

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
LANGUAGE OF INSTRUCTION AND LITERATURE

CODE: 0004

OBJECTIVE	STANDARD
Statement of the competency To analyze and produce various forms of discourse. Elements 1. To identify the characteristics and functions of the components of discourse. 2. To determine the organization of facts and arguments of a given discourse. 3. To prepare ideas and strategies for a projected discourse. 4. To formulate a discourse. 5. To edit the discourse.	Performance criteria 1.1 Accurate explanation of the denotation of words. 1.2 Adequate recognition of the appropriate connotation of words. 1.3 Accurate definition of the characteristics and function of each component. 2.1 Clear and accurate recognition of the main idea and structure. 2.2 Clear presentation of the strategies employed to develop an argument or thesis. 3.1 Appropriate identification of topics and ideas. 3.2 Adequate gathering of pertinent information. 3.3 Clear formulation of a thesis. 3.4 Coherent ordering of supporting material. 4.1 Appropriate choice of tone and diction. 4.2 Correct development of sentences. 4.3 Clear and coherent development of paragraphs. 4.4 Formulation of a 750-word discourse. 5.1 Thorough revision of form and content.
LEARNING ACTIVITIES	
Discipline: English Weighting: 2-2-4, 1-3-4 Credits: 2 2/3	

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
LANGUAGE OF INSTRUCTION AND LITERATURE

CODE: 0005

OBJECTIVE	STANDARD
Statement of the competency To apply a critical approach to literary genres. Elements 1. To distinguish genres of literary discourse. 2. To recognize the use of literary conventions within a specific genre. 3. To situate a discourse within its historical and literary period. 4. To explicate a discourse representative of a literary genre.	Performance criteria 1.1 Clear recognition of the formal characteristics of a literary genre. 2.1 Accurate recognition of the figurative communication of meaning. 2.2 Adequate explanation of the effects of significant literary and rhetorical devices. 3.1 Appropriate recognition of the relationship of a text to its period. 4.1 Selective use of appropriate terminology. 4.2 Effective presentation of a 1000-word integrated response to a text.

LEARNING ACTIVITIES

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

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
LANGUAGE OF INSTRUCTION AND LITERATURE

CODE: 0006

OBJECTIVE	STANDARD
Statement of the competency To apply a critical approach to a literary theme. Elements 1. To recognize the treatment of a theme within a literary text. 2. To situate a literary text within its cultural context. 3. To detect the value system inherent in a literary text. 4. To explicate a text from a thematic perspective.	Performance criteria 1.1 Clear recognition of elements within the text which define and reinforce a theme and its development. 1.2 Adequate demonstration of the effects of significant literary and rhetorical devices. 2.1 Appropriate recognition of a text as an expression of cultural context. 2.2 Adequate demonstration of the effects of significant literary and rhetorical devices. 3.1 Appropriate identification of expression (explicit/implicit) of a value system in a text. 4.1 Selective use of an appropriate terminology. 4.2 Effective presentation of a 1000-word integrated response to a text.
LEARNING ACTIVITIES	
Discipline: English Weighting: 2-2-3 Credits: 2 1/3	

GENERAL EDUCATION COMMON TO ALL PROGRAMS: HUMANITIES CODE: 00B2	
OBJECTIVE	STANDARD
Statement of the competency To apply a logical analytical process to how knowledge is organized and used. Elements 1. To recognize the basic elements of a field of knowledge. 2. To define the modes of organization and utilization of a field of knowledge. 3. To situate a field of knowledge within its historical context. 4. To organize the main components into coherent patterns. 5. To produce a synthesis of the main components.	Performance criteria 1.1 Appropriate description of the basic elements. 1.2 Appropriate use of terminology relevant to fields of knowledge. 2.1 Adequate definition of the dimensions, limits, and uses of fields of knowledge. 3.1 Accurate identification of the main components in the historical development of fields of knowledge. 3.2 Accurate description of the effects of historical development and societal milieu on the limitations and uses of a field of knowledge. 4.1 Coherent organization of the main components. 5.1 Appropriate analysis of the components. 5.2 Coherent synthesis of the main components. 5.3 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	

GENERAL EDUCATION COMMON TO ALL PROGRAMS: HUMANITIES CODE: 000G	
OBJECTIVE	STANDARD
Statement of the competency To apply a critical thought process to world views. Elements - To describe world views. - To explain the major ideas, values, and implications of a world view. - To organize the ideas, values and experiences of a world view into coherent patterns. - To compare world views.	Performance criteria 1.1 Accurate description of a society or group with a distinctive world view. 1.2 Appropriate use of terminology relevant to these societies or groups. 2.1 Adequate explanation of the salient components of a world view. 3.1 Coherent organization of ideas about a world view. 3.2 Appropriate expression, including a significant individual written component, of an analysis of the context, importance, and implications of world views. 4.1 Comparative analysis of these world views. 4.2 Appropriate inclusion of central elements, relationships, and organizational principles of the societies or groups in the analysis.
LEARNING ACTIVITIES	
Discipline: Humanities Weighting: 3-0-3 Credits: 2	

FORMATION GÉNÉRALE COMMUNE : LANGUE SECONDE (NIVEAU I) CODE°: 0017	
OBJECTIF	STANDARD
Énoncé de la compétence Appliquer les notions de base de la communication en français courant. Éléments - Dégager le sens d'un message oral simple. - Émettre un message oral simple. - Dégager le sens d'un texte. - Rédiger un texte simple.	Critères de performance - 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. - Repérage précis des difficultés d'expression. - Utilisation pertinente des techniques d'expression orales choisies. - Emploi pertinent du vocabulaire courant. - Expression intelligible du propos. - Repérage précis des difficultés de compréhension du texte. - Utilisation pertinente des techniques de lecture choisies. - Distinction claire des principaux éléments du texte. - Description précise du sens général et des idées essentielles d'un texte de 500 mots. - Repérage précis des difficultés d'écriture. - Utilisation pertinente des techniques d'écriture choisies. - Emploi pertinent du vocabulaire courant. - Formulation claire et cohérente d'un texte de 100 mots.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Pondération : 2-1-3 Unités : 2	

FORMATION GÉNÉRALE COMMUNE : LANGUE SECONDE (NIVEAU II) CODE°: 000A	
OBJECTIF	STANDARD
Énoncé de la compétence Communiquer en français avec une certaine aisance. Éléments 1. Interpréter un texte oral simple de trois minutes en français courant. 2. Produire un texte oral planifié de cinq minutes en français courant. 3. Interpréter un texte écrit en français courant. 4. Rédiger un texte simple en français courant.	Critères de performance 1.1 Distinction claire des principaux éléments du texte oral. 1.2 Explication précise du sens des mots dans le texte. 1.3 Repérage précis des idées et des sujets traités dans le texte. 2.1 Emploi pertinent du vocabulaire courant. 2.2 Respect du niveau de langue, du code grammatical et des règles de la prononciation. 2.3 Formulation claire et cohérente du propos. 3.1 Distinction claire des principaux éléments du texte. 3.2 Explication précise du sens des mots dans le texte. 3.3 Repérage précis des idées principales et de la structure d'un texte de 700 à 1000 mots. 4.1 Respect du code grammatical et orthographique. 4.2 Utilisation judicieuse des principaux éléments du corpus. 4.3 Formulation claire et cohérente des phrases. 4.4 Articulation cohérente des paragraphes. 4.5 Rédaction d'un texte de 200 mots.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Pondération : 2-1-3 Unités : 2	

FORMATION GÉNÉRALE COMMUNE : LANGUE SECONDE (NIVEAU III) CODE°: 000B

OBJECTIF	STANDARD
Énoncé de la compétence Communiquer avec aisance en français. Éléments 1. Produire un texte oral planifié de cinq minutes de complexité moyenne. 2. Commenter un texte écrit de complexité moyenne. 3. Rédiger un texte de complexité moyenne.	Critères de performance 1.1 Emploi pertinent du vocabulaire courant. 1.2 Adaptation à l’interlocuteur ou à l’interlocutrice. 1.3 Respect du niveau de langue, du code grammatical et des règles de la prononciation. 1.4 Formulation claire et cohérente du propos. 1.5 Agencement pertinent des idées. 2.1 Distinction claire des principaux éléments d’un texte comprenant entre 2 500 et 3 000 mots. 2.2 Explication précise du sens des mots dans le texte. 2.3 Distinction précise des idées principales et secondaires, des faits et des opinions. 2.4 Formulation d’éléments implicites. 3.1 Respect du code grammatical et orthographique. 3.2 Adaptation au lecteur ou à la lectrice. 3.3 Utilisation judicieuse des principaux éléments du corpus. 3.4 Formulation claire et cohérente des phrases, dont au moins trois sont complexes. 3.5 Articulation cohérente des paragraphes. 3.6 Rédaction d’un texte de 350 mots.
ACTIVITÉS D’APPRENTISSAGE	
Discipline : Français, langue seconde Pondération : 2-1-3 Unités : 2	

FORMATION GÉNÉRALE COMMUNE : LANGUE SECONDE (NIVEAU IV) CODE°: 000C	
OBJECTIF	STANDARD
Énoncé de la compétence Traiter d'un sujet culturel et littéraire. Éléments 1. Analyser un texte culturel ou littéraire. 2. Rédiger un texte sur un sujet culturel ou littéraire.	Critères de performance 1.1 Formulation personnelle des éléments principaux du texte. 1.2 Inventaire des thèmes principaux. 1.3 Relevé d'indices qui permettent de situer le texte dans son contexte socioculturel et historique. 1.4 Repérage des valeurs véhiculées. 1.5 Repérage juste de la structure du texte. 1.6 Articulation claire d'un point de vue personnel. 2.1 Respect du sujet. 2.2 Respect du code grammatical et orthographique. 2.3 Adaptation au lecteur ou à la lectrice. 2.4 Utilisation judicieuse des principaux éléments du corpus. 2.5 Formulation claire et cohérente d'un texte de 500 mots. 2.6 Articulation claire d'un point de vue personnel.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Pondération : 3-0-3 Unités : 2	

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
PHYSICAL EDUCATION

CODE: 0064

OBJECTIVE	STANDARD
Statement of the competency To establish the role that being physically active plays amongst the lifestyle behaviours which promote health. Elements 1. To establish the relationship between one's lifestyle and one's health. 2. To be physically active in a manner which promotes health. 3. To recognize one's needs, abilities, and motivational factors with respect to being physically active on a regular basis. 4. To propose physical activities which promote health.	Performance criteria 1.1 Proper use of documentation. 1.2 Appropriate relationships between the main lifestyle behaviours and their impact on health. 2.1 Observance of the rules involved in the physical activity, including safety guidelines. 2.2 Respect of one's abilities when practising physical activities. 3.1 Appropriate use of the physical quantitative and qualitative data. 3.2 Statement of one's main physical needs and abilities. 3.3 Statement of one's main motivational factors with respect to being physically active on a regular basis. 4.1 Appropriate and justified choice of physical activities according to one's needs, abilities, and motivational factors.
LEARNING ACTIVITIES	
Discipline: Physical Education Weighting: 1-1-1 Credits: 1	

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
PHYSICAL EDUCATION

CODE: 0065

OBJECTIVE	STANDARD
Statement of the competency To improve one's effectiveness when practising a physical activity. Element 1. To use a process designed to improve one's effectiveness in the practice of a physical activity.	Performance criteria 1.1 Initial assessment of one's abilities and attitudes when practising a physical activity. 1.2 Statement of one's expectations and needs with respect to one's ability to practise the activity. 1.3 Appropriate formulation of personal objectives. 1.4 Statement of the means to achieve one's objectives. 1.5 Observance of the rules involved in the physical activity, including safety guidelines. 1.6 Periodic evaluation of one's abilities and attitudes when practising a physical activity. 1.7 Meaningful interpretation of the progress achieved and the difficulties experienced during the activity. 1.8 Pertinent and periodic adjustments of objectives or action plan. 1.9 Appreciable improvement of the motor skills required by the activity.

LEARNING ACTIVITIES

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

GENERAL EDUCATION COMMON TO ALL PROGRAMS:
PHYSICAL EDUCATION

CODE: 0066

OBJECTIVE	STANDARD
Statement of the competency To demonstrate one's responsibility for being physically active in a manner which promotes health. Elements 1. To combine effective practice with a health promotional approach to physical activity. 2. To manage a personal physical activity program.	Performance criteria 1.1 Integration of effective practice with factors which promote health in the practice of a physical activity. 2.1 Statement of one's priorities according to the needs abilities, and motivational factors with respect to being active on a regular basis. 2.2 Proper formulation of objectives to achieve in one's personal program. 2.3 Appropriate choice of activity or activities for one's personal program. 2.4 Appropriate planning of how the activity or activities in the personal program are carried out. 2.5 Appropriate choice of criteria to measure program objective attainment. 2.6 Periodic statement of the time invested and the activities carried out during the program. 2.7 Meaningful interpretation of the progress achieved and difficulties experienced during the activity. 2.8 Appropriate and periodic adjustment of objectives or action plan.
LEARNING ACTIVITIES	
Discipline: Physical Education Weighting: 1-1-1 Credits: 1	

GENERAL EDUCATION ADAPTED TO PROGRAMS

GENERAL EDUCATION ADAPTED TO PROGRAMS:
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 1. To identify the forms of discourse appropriate to given fields of study. 2. To recognize the discursive frameworks appropriate to given fields of study. 3. To formulate a discourse.	Performance criteria 1.1 Accurate recognition of specialized vocabulary and conventions. 1.2 Accurate recognition of the characteristics of the form of discourse. 2.1 Clear and accurate recognition of the main ideas and structure. 2.2 Appropriate distinction between fact and argument. 3.1 Appropriate choice of tone and diction. 3.2 Correctly developed sentences. 3.3 Clearly and coherently developed paragraphs. 3.4 Appropriate use of program-related communication strategies. 3.5 Formulation of a 1000-word discourse. 3.6 Thorough revision of form and content.
LEARNING ACTIVITIES	
Discipline: English Total Contact Hours: 60 Credits: 2	

GENERAL EDUCATION ADAPTED TO PROGRAMS: HUMANITIES		CODE: 000U
OBJECTIVE	STANDARD	
Statement of the competency To apply a critical thought process to ethical issues relevant to the field of study. Elements 1. To situate significant ethical issues, in appropriate world views and fields of knowledge. 2. To explain the major ideas, values, and social implication of ethical issues. 3. To organize the ethical questions and their implications into coherent patterns. 4. To debate the ethical issues.	Performance criteria 1.1 Accurate recognition of the basic elements of ethical issues. 1.2 Appropriate use of relevant terminology. 1.3 Adequate identification of the main linkages with world views and fields of knowledge. 2.1 Adequate description of the salient components of the issues. 3.1 Coherent organization of the ethical questions and their implications. 3.2 Appropriate expression, including a significant individual written component, of an analysis of the context, importance and implications of the issues. 4.1 Adequate development of substantiated argumentation including context and diverse points of view. 4.2 Clear articulation of an individual point of view.	
LEARNING ACTIVITIES		
Discipline:	Humanities	
Total Contact Hours:	45	
Credits:	2	

FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU I) CODE : 0018	
OBJECTIF	STANDARD
Énoncé de la compétence Appliquer des notions fondamentales de la communication en français, liées à un champ d'études. Éléments - Dégager le sens d'un message oral simple lié à un champ d'études. - Dégager le sens et les caractéristiques d'un texte lié à un champ d'études. - Émettre un message oral simple lié à un champ d'études. - Rédiger un court texte lié à un champ d'études.	Critères de performance - 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. - Repérage précis des difficultés de compréhension du texte. - Distinction juste des caractéristiques du texte. - Repérage précis du vocabulaire spécialisé. - Utilisation pertinente des techniques de lectures choisies. - Distinction claire des principaux éléments du texte. - Description précise du sens général et des idées essentielles du texte. - Repérage précis des difficultés d'expression orale. - Utilisation pertinente des techniques d'expression orale choisies. - Utilisation pertinente du vocabulaire courant et spécialisé. - Expression intelligible du propos. - Repérage précis des difficultés d'écriture. - Utilisation pertinente des techniques d'écriture choisies. - Utilisation pertinente du vocabulaire courant et spécialisé. - Formulation claire et cohérente du texte.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Nombre d'heures-contact : 45 Nombre d'unités : 2	

FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU II) CODE°: 000Q	
OBJECTIF	STANDARD
Énoncé de la compétence Communiquer en français dans un champ d'études particulier. Éléments 1. Distinguer les types de textes propres au champ d'études. 2. Interpréter des textes représentatifs du champ d'études. 3. Utiliser des techniques de production de textes appropriées au champ d'études.	Critères de performance 1.1 Distinction précise des caractéristiques formelles de chacun des principaux types de textes et des conventions utilisées. 2.1 Distinction claire des principaux éléments du texte. 2.2 Interprétation claire du vocabulaire spécialisé. 2.3 Repérage précis des idées et des sujets traités. 2.4 Utilisation pertinente des techniques de lecture et d'écoute. 3.1 Emploi pertinent du vocabulaire spécialisé et des conventions. 3.2 Respect du niveau de langue et du code grammatical. 3.3 Formulation claire et cohérente du propos. 3.4 Utilisation pertinente des techniques d'expression.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Nombre d'heures-contact : 45 Nombre d'unités : 2	

FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU III) CODE°: 000R	
OBJECTIF	STANDARD
Énoncé de la compétence Communiquer avec aisance en français dans un champ d'études particulier. Éléments 1. Commenter des textes propres au champ d'études. 2. Produire un texte sur un sujet lié au champ d'études.	Critères de performance 1.1 Distinction précise des caractéristiques formelles des principaux types de textes et des conventions utilisées. 1.2 Explication précise du sens des mots dans le texte. 1.3 Repérage précis de la structure du texte. 1.4 Reformulation juste des idées principales et secondaires, des faits et des opinions. 1.5 Emploi juste du vocabulaire spécialisé. 2.1 Respect du sujet. 2.2 Emploi pertinent du vocabulaire spécialisé et des conventions. 2.3 Respect du niveau de langue et du code grammatical. 2.4 Formulation claire et cohérente du propos. 2.5 Agencement pertinent des idées. 2.6 Adéquation entre forme et fond.
ACTIVITÉS D'APPRENTISSAGE	
Discipline°: Français, langue seconde Nombre d'heures-contact : 45 Nombre d'unités°: 2	

FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU IV) CODE°: 000S	
OBJECTIF	STANDARD
Énoncé de la compétence Dissserter en français sur un sujet lié au champ d'études. Éléments 1. Analyser un texte lié au champ d'études. 2. Rédiger un texte sur un sujet lié au champ d'études.	Critères de performance 1.1 Distinction précise des caractéristiques formelles des types particuliers de textes. 1.2 Formulation personnelle des éléments principaux. 1.3 Inventaire des thèmes principaux. 1.4 Repérage juste de la structure du texte. 1.5 Relevé d'indices qui permettent de situer le texte dans son contexte. 1.6 Articulation claire d'un point de vue personnel, s'il y a lieu. 1.7 Association juste des éléments du texte au sujet traité. 2.1 Respect du sujet. 2.2 Emploi pertinent du vocabulaire spécialisé et des conventions. 2.3 Choix judicieux des principaux éléments du corpus en fonction du type de texte. 2.4 Formulation claire et cohérente du texte. 2.5 Respect du code grammatical et orthographique. 2.6 Articulation claire d'un point de vue personnel, s'il y a lieu.
ACTIVITÉS D'APPRENTISSAGE	
Discipline : Français, langue seconde Nombre d'heures-contact : 45 Nombre d'unités : 2	

COMPLEMENTARY GENERAL EDUCATION

COMPLEMENTARY GENERAL EDUCATION: SOCIAL SCIENCES		CODE: 000V
OBJECTIVE	STANDARD	
Statement of the competency To estimate the contribution of the social sciences to an understanding of contemporary issues. Elements 1. Recognize the focus of one or more of the social sciences and their main approaches. 2. Identify some of the issues currently under study in the social sciences. 3. Demonstrate the contribution of one or more of the social sciences to an understanding of contemporary issues.	Achievement context Students will work alone. They will write an essay of approximately 750 words on the contribution of the social sciences to an understanding of contemporary issues. Documents and data from the field of social sciences may be used. Performance criteria 1.1 Formulation of the focus specific to one or more of the social sciences. 1.2 Description of the main approaches used in the social sciences. 2.1 Association of issues with the pertinent areas of research in the social sciences. 3.1 Presentation of contemporary issues by emphasizing the interpretation of the social sciences. 3.2 Illustration of the interaction between certain social changes and the contribution of the social sciences.	
LEARNING ACTIVITIES		
Number of student-contact hours: 45 Number of credits: 2		

COMPLEMENTARY GENERAL EDUCATION: 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. Elements 1. Formulate a problem using one or more social scientific approaches. 2. Deal with an issue using one or more social scientific approaches. 3. Draw conclusions.	Achievement context Students will work alone. They will write an essay of approximately 750 words on a topic related to human existence. Reference materials from the field of social sciences may be used. Performance criteria 1.1 Presentation of the background to the problem. 1.2 Use of appropriate concepts and language. 1.3 Brief description of individual, collective, spatio-temporal and cultural aspects of the problem. 2.1 Clear formulation of an issue. 2.2 Selection of pertinent reference materials. 2.3 Brief description of historical, experimental and survey methods. 3.1 Appropriate use of the selected method. 3.2 Determination of appropriate evaluation criteria. 3.3 Identification of strengths and weaknesses of the conclusions. 3.4 Broadening of the issue analyzed.	
LEARNING ACTIVITIES		
Number of student-contact hours: 45 Number of credits: 2		

COMPLEMENTARY GENERAL EDUCATION:
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. Elements 1. Describe the standard scientific mode of thought and method. 2. Demonstrate how science and technology are complementary. 3. Explain the context and the stages related to several scientific and technological discoveries. 4. Deduce different consequences and questions resulting from certain recent scientific and technological developments.	Achievement context Students will work alone. They will use a written commentary on a scientific discovery or technological development. They will write an essay of approximately 750 words. Performance criteria 1.1 Brief description of the essential characteristics of the scientific mode of thought, including quantification and demonstration. 1.2 Organized list and brief description of the essential characteristics of the main steps in the standard scientific method. 2.1 Definition of terms and description of the primary ways in which science, techniques and technology are interrelated: logical and temporal connections, and mutual contributions. 1.1 Pertinent and coherent explanation of the relationship between the determining contexts related to several scientific and technological discoveries. 1.2 List of the main stages of scientific and technological discoveries. 4.1 Brief description of important consequences (of different types) and the current major challenges resulting from several scientific and technological discoveries. 4.2 Formulation of relevant questions and credibility of responses to the questions formulated.

LEARNING ACTIVITIES

Number of student-contact hours: 45

Number of credits: 2

COMPLEMENTARY GENERAL EDUCATION:
SCIENCE AND TECHNOLOGY

CODE: 000Y

OBJECTIVE	STANDARD
Statement of the competency To resolve a simple problem by applying the basic scientific method. Elements 1. Describe the main steps of the standard scientific method. 2. Formulate a hypothesis designed to solve a simple scientific and technological problem. 3. Verify a hypothesis by applying the fundamental principles of the basic experimental method.	Achievement context Students will work alone or in groups. They will be given a scientific and technological problem that is not complex and that can be resolved by applying the standard scientific method. Common scientific instruments and reference materials (written or other) may be used. Performance criteria 1.1 Organized list and brief description of the characteristics of the steps of the standard scientific method. 1.1 Clear, precise description of the problem. 1.2 Observance of the principles for formulating a hypothesis (observable and measurable nature of data, credibility, etc.). 3.1 Pertinence, reliability and validity of the experimental method used. 3.2 Observance of established experimental method. 3.3 Appropriate choice and use of instruments. 3.4 Clear, satisfactory presentation of results. 1.3 Validity of the connections established between the hypothesis, the verification and the conclusion.

LEARNING ACTIVITIES

Number of student-contact hours: 45

Number of credits: 2

COMPLEMENTARY GENERAL EDUCATION: MODERN LANGUAGES		CODE: 000Z
OBJECTIVE	STANDARD	
Statement of the competency To communicate with limited skill* in a modern language. (*This refers to the limited use of language structures, grammar and vocabulary. This limitation varies depending on the complexity of the modern language.) Elements 1. Understand the meaning of a verbal message. 2. Understand the meaning of a written message. 3. Express a simple message verbally.	Achievement context For modern languages that use the Latin alphabet, students will: ✓ have a conversation that includes at least 8 lines of dialogue; ✓ write a text consisting of at least 8 sentences. For modern languages that use a writing system other than the Latin alphabet, students will: ✓ have a conversation that includes at least 6 lines of dialogue; ✓ write a text consisting of at least 6 sentences. Students will be exposed to learning situations on familiar themes. Reference materials may be used. Performance criteria The acquisition of a modern language requires an awareness of the culture of the people who use the language. 1.1 Accurate identification of words and idiomatic expressions. 1.2 Clear recognition of the general meaning of simple messages. 1.3 Logical connection between the various elements of the message. 2.1 Accurate identification of words and idiomatic expressions. 2.2 Clear recognition of the general meaning of simple messages. 1.3 Logical connection between the various elements of the message. 3.1 Appropriate use of language structures in main and coordinate clauses. 3.2 Appropriate application of grammar rules. 3.3 Use of verbs in the present indicative. 3.4 Appropriate use of basic vocabulary and idiomatic expressions. 3.5 Understandable pronunciation. 3.6 Coherent sequence of simple sentences. 3.7 Spontaneous and coherent sequence of sentences during a conversation.	

4. Write a text on a given subject.	4.1 Appropriate use of language structures in main and coordinate clauses. 4.2 Appropriate application of basic grammar rules. 4.3 Use of verbs in the present indicative. 4.4 Appropriate use of basic vocabulary and idiomatic expressions. 4.5 Coherent sequence of simple sentences. 4.6 Acceptable application of graphic rules for writing systems other than the Latin alphabet.
LEARNING ACTIVITIES	
Number of student-contact hours: 45 Number of credits: 2	

COMPLEMENTARY GENERAL EDUCATION: MODERN LANGUAGES		CODE: 0010
OBJECTIVE	STANDARD	
Statement of the competency	Achievement context	
To communicate on familiar topics in a modern language.	Students will have a conversation that includes at least 15 lines of dialogue.	
	They will write a text consisting of at least 20 sentences for Latin-alphabet languages.	
	They will write a text consisting of at least 10 sentences for languages not using the Latin alphabet.	
	Students will be exposed to: ✓ common situations in everyday life; ✓ simple topics from everyday life.	
Elements	Reference materials may be used.	
	Performance criteria	
1. Understand the meaning of a verbal message.	The acquisition of a modern language requires an awareness of the culture of the people who use the language.	
	1.1 Accurate identification of words and idiomatic expressions.	
2. Understand the meaning of a written message.	1.2 Clear recognition of the general meaning and essential ideas of messages of average complexity.	
	1.3 Logical connection between the various elements of the message.	
3. Express a simple message verbally, using sentences of average complexity.	2.1 Accurate identification of words and idiomatic expressions.	
	2.2 Clear recognition of the general meaning and essential ideas of messages of average complexity.	
	2.3 Logical connection between the various elements of the message.	
	3.1 Appropriate use of language structures in main or subordinate clauses.	
	3.2 Appropriate application of grammar rules.	
	3.3 Use of verbs in the present indicative.	
	3.4 Appropriate use of enriched basic vocabulary and idiomatic expressions.	
	3.5 Understandable pronunciation.	
	3.6 Coherent sequence of sentences of average complexity.	
	3.7 Conversation.	

4. Write a text on a given subject, using sentences of average complexity.	4.1 Appropriate use of language structures in main or subordinate clauses. 4.2 Appropriate application of grammar rules. 4.3 Use of verbs in the present and past indicative. 4.4 Appropriate use of enriched basic vocabulary and idiomatic expressions. 4.5 Coherent sequence of sentences of average complexity. 4.6 Acceptable application of graphic rules for writing systems other than the Latin alphabet.
LEARNING ACTIVITIES	
Number of student-contact hours: 45 Number of credits: 2	

COMPLEMENTARY GENERAL EDUCATION: MODERN LANGUAGES		CODE: 0067
OBJECTIVE	STANDARD	
Statement of the competency To communicate with relative ease in a modern language.	Achievement context Students will work alone. They will have a conversation that includes at least 20 lines of dialogue. They will write a text of medium length (at least 25 sentences for Latin-alphabet languages and 15 sentences for other languages). They will use documents of a sociocultural nature. Reference materials for the written text may be used.	
Elements 1. Understand the meaning of a verbal message in everyday language. 2. Understand the meaning of a text of average complexity. 3. Have a conversation on a subject. 4. Write a text of average complexity.	Performance criteria The acquisition of a modern language requires an awareness of the culture of the people who use the language. 1.1 Accurate explanation of the general meaning and essential ideas of the message. 1.2 Clear identification of structural elements of the language. 2.1 Accurate explanation of the general meaning and essential ideas of the text. 2.2 Clear identification of structural elements of the language. 3.1 Appropriate use of the structural elements of the language according to the message to be expressed. 3.2 Appropriate use of everyday vocabulary. 3.3 Accurate pronunciation and intonation. 3.4 Normal flow in a conversation in everyday language. 3.5 Coherence of the message expressed. 3.6 Pertinent responses to questions. 4.1 Appropriate use of the structural elements of the language according to the text to be written. 4.2 Accurate vocabulary. 4.3 Coherence of the text as a whole. 4.4 Observance of presentation and writing rules applicable to the text.	
LEARNING ACTIVITIES		
Number of student-contact hours: 45 Number of credits: 2		

COMPLEMENTARY GENERAL EDUCATION:
MATHEMATICS LITERACY AND COMPUTER SCIENCE

CODE: 0011

OBJECTIVE	STANDARD
Statement of the competency To recognize the role of mathematics or informatics in contemporary society. Elements 1. Demonstrate the acquisition of basic general knowledge of mathematics or informatics. 2. Describe the evolution of mathematics or informatics. 3. Recognize the contribution of mathematics or informatics to the development of other areas of knowledge. 4. Illustrate the diversity of mathematical or informatics applications. 5. Evaluate the impact of mathematics or informatics on individuals and organizations.	Achievement context Students will work alone. They will write an essay of approximately 750 words, using numerous concrete examples that they themselves will have selected. Performance criteria 1.1 Identification of basic notions and concepts. 1.2 Identification of main branches of mathematics or informatics. 1.3 Appropriate use of terminology. 2.1 Descriptive summary of several major phases. 3.1 Demonstration of the existence of important contributions, using concrete examples. 4.1 Presentation of a range of applications in various areas of human activity, using concrete examples. 5.1 Identification of several major influences. 5.2 Explanation of the way in which mathematics or informatics have changed certain human and organizational realities. 5.3 Recognition of the advantages and disadvantages of these influences.
LEARNING ACTIVITIES	
Number of student-contact hours: 45 Number of credits: 2	

COMPLEMENTARY GENERAL EDUCATION:
MATHEMATICS LITERACY AND COMPUTER SCIENCE

CODE: 0012

OBJECTIVE	STANDARD
Statement of the competency To use various mathematical or computer concepts, procedures and tools for common tasks. Elements 1. Demonstrate the acquisition of basic functional knowledge in mathematics or informatics. 2. Select mathematical or computer tools and procedures on the basis of specific needs. 3. Use mathematical or computer tools and procedures to carry out tasks and solve problems. 4. Interpret the quantitative data or results obtained using mathematical or computer tools and procedures.	Achievement context Students will work alone. They will carry out a task or solve a problem based on everyday needs. Familiar tools and reference materials may be used. Performance criteria 1.1 Brief definition of concepts. 1.2 Correct execution of basic operations. 1.3 Appropriate use of terminology. 2.1 List of numerous possibilities available with mathematical and computer tools and procedures. 2.2 Analysis of concrete situations and recognition of the usefulness of mathematical or computer tools and procedures. 2.3 Appropriate choice according to needs. 3.1 Planned, methodical process. 3.2 Correct use of tools and procedures. 3.3 Satisfactory results, given the context. 3.4 Appropriate use of terminology specific to a tool or procedure. 4.1 Accurate interpretation, given the context. 4.2 Clear, precise formulation of the interpretation.
LEARNING ACTIVITIES	
Number of student-contact hours: 45 Number of credits: 2	

COMPLEMENTARY GENERAL EDUCATION: ART AND AESTHETICS		CODE: 0013
OBJECTIVE	STANDARD	
Statement of the competency To consider various forms of art produced by aesthetic practices. Elements 1. Develop an appreciation for the dynamics of the imagination in art. 2. Describe art movements. 3. Give a commentary on a work of art.	Achievement context Students will work alone. They will use a specified work of art and write a commentary of approximately 750 words. Performance criteria 1.1 Precise explanation of a creative process connected to the construction of an imaginary universe. 2.1 Descriptive list of the main characteristics of three art movements from different eras, including a modern movement. 3.1 Coherent organization of observations, including identification of four fundamental elements of form and structure related to the language used as well as a justified description of the meaning of the work of art.	
LEARNING ACTIVITIES		
Number of student-contact hours: 45 Number of credits: 2		

COMPLEMENTARY GENERAL EDUCATION: ART AND AESTHETICS		CODE: 0014
OBJECTIVE	STANDARD	
Statement of the competency To produce a work of art. Elements 1. Recognize the primary forms of expression of an artistic medium. 2. Use the medium.	Achievement context Students will work alone. This is a practical exercise in creation or interpretation in which students will use the basic elements of the language and techniques specific to the medium selected. Performance criteria 1.1 Identification of specific features: originality, essential qualities, means of communication, styles, genres. 2.1 Personal, coherent use of elements of language. 2.2 Satisfactory application of artistic techniques. 2.3 Observance of the requirements of the method of production.	
LEARNING ACTIVITIES		
Number of student-contact hours: 45 Number of credits: 2		

SPECIFIC EDUCATION

**Objectives and standards common to the
SCIENCE (200.B0) program**

CODE: 00UL	
OBJECTIVE	STANDARD
Statement of the competency To analyze chemical and physical changes in matter using concepts associated with the structure of atoms and molecules. Elements 1. To apply the probabilistic model of the atom in analyzing the properties of the elements. 2. To solve problems pertaining to the structure and states of matter using modern theories of chemistry. 3. To apply the laws of stoichiometry to the study of chemical phenomena. 4. To verify experimentally a number of physical and chemical properties of matter.	Performance criteria Proper use of concepts, laws and principles. Use of appropriate terminology. Representation in conformity with the probabilistic model. Adequate representation of situations presented. Correct application of experimental procedures and techniques. Adherence to safety and environmental protection regulations. Accuracy of calculations. Laboratory report in line with established standards.
LEARNING ACTIVITIES	
Field of study: Science Discipline: Chemistry Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Orbitals and probability of presence of electrons, quantum numbers. Elements : periodic table, normal physical state, periodic properties of elements, oxidization numbers. Terminology of elements and inorganic compounds. Energy in the formation of chemical bonds. Intermolecular bonds. Prediction of molecular structures. Intermolecular bonds and states of matter. Basic experimental techniques in chemistry.	

CODE: 00UN	
OBJECTIVE	STANDARD
Statement of the competency To apply the methods of differential calculus to the study of functions and problem solving. Elements 1. To recognize and describe the characteristics of a function expressed in symbolic or graphic form. 2. To determine whether a function has a limit or is continuous or has a derivative at a point or on an interval. 3. To apply the rules and techniques of differentiation. 4. To use the derivative and related concepts to analyze the variations of a function and graph it. 5. To solve optimization and rate of change problems.	Performance criteria Proper use of concepts. Representation of a situation as a function. Accurate graphic representation of a function. Correct choice and application of differentiation techniques. Algebraic operations in conformity with rules. Accuracy of calculations. Correct interpretation of results. Explanation of steps in problem-resolution procedure. Use of appropriate terminology.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Mathematics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Functions : algebraic, exponential, logarithmic, trigonometric and inverse trigonometric. Limit : intuitive approach, definition, properties, calculation of limits. Continuity : definition and properties. Derivative : geometric interpretation, definition, standard rules and techniques. Applications : study of curves, optimization problems, rates of change.	

CODE: 00UP	
OBJECTIVE	STANDARD
Statement of the competency To apply the methods of integral calculus to the study of functions and problem solving. Elements 1. To determine the indefinite integral of a function. 2. To calculate the limits of indeterminate forms. 3. To calculate the definite integral and the improper integral of a function on an interval. 4. To express concrete problems as differential equations and solve simple differential equations. 5. To calculate volumes, areas and lengths and draw two- and three-dimensional representations. 6. To analyze the convergence of infinite series.	Performance criteria Proper use of concepts. Adequate two- and three-dimensional representations of surfaces and solids of revolution. Algebraic operations in conformity with rules. Correct choice and application of rules and techniques of integration. Accuracy of calculations. Justification of steps in the solution. Correct interpretation of results. Use of appropriate terminology.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Mathematics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Limit : indeterminate forms, l'Hospital's rule. Standard rules and techniques of integration. Properties of the indefinite integral and the definite integral. Calculation of lengths, areas and volumes. The Fundamental Theorem of Calculus. Differential equations in separable variables. The Taylor and MacLaurin series.	

CODE: 00UQ	
OBJECTIVE	STANDARD
Statement of the competency To apply the methods of linear algebra and vector geometry to problem solving. Elements 1. To express concrete problems as linear equations. 2. To solve systems of linear equations using matrices. 3. To establish connections between geometry and algebra. 4. To determine the equation of geometric loci (straight lines and planes) and find their intersections. 5. To calculate angles, lengths, areas and volumes. 6. To demonstrate propositions. 7. To make two - and three - dimensional drawings of loci.	Performance criteria Proper use of concepts. Representation of situations in terms of vectors and matrices. Correct application of algorithms. Correct solution of systems of linear equations. Adequate representation of loci. Justification of the steps in the solution. Algebraic operations in conformity with rules. Accuracy of calculations. Correct interpretation of results. Use of appropriate terminology.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Mathematics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Matrix and determinant : definitions, properties, operations, applications. The Gauss-Jordan and inverse matrix methods of solving systems of linear equations. Geometric and algebraic vectors: definition, representation, properties, operations, applications. Products of vectors : dot, cross and scalar triple product. Vector space: coordinate system, basis, dimension, linear combination, linear independence. Geometric applications : straight lines and planes, intersections of loci, calculations of angles and distances.	

CODE: 00UR	
OBJECTIVE	STANDARD
Statement of the competency To analyze various situations and phenomena in physics using the basic principles of classical mechanics. Elements 1. To describe the translation and rotation motions of bodies. 2. To apply the concepts and laws of dynamics to the analysis of the motion of bodies. 3. To measure the amount of work and energy involved in simple situations. 4. To apply the principles of conservation in mechanics. 5. To verify experimentally a number of laws and principles in mechanics.	Performance criteria Proper use of concepts, laws and principles. Adequate representation of situations in physics. Use of appropriate terminology. Graphic and mathematical representations adapted to the nature of the problem. Justification of steps in the analysis of situations. Rigorous application of Newton's laws and the principles of conservation. Critical evaluation of results. Interpretation of the limits of the models. Meticulous experimentation. Laboratory report in line with established standards.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Physics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Scalar and vector quantities : units and dimensions. Kinematics of the various aspects of rotation and translation : position, displacement, linear and angular velocity, acceleration. Force, dynamics of translation and rotation. Energy and mechanical work. Principles of conservation of energy and quantity of motion.	

CODE: 00US	
OBJECTIVE	STANDARD
Statement of the competency To analyze various situations and phenomena in physics using the basic laws of electricity and magnetism. Elements 1. To analyze situations in physics associated with static electric charge and electric current. 2. To analyze situations in physics associated with magnetism and magnetic induction. 3. To apply the laws of electricity and magnetism. 4. To verify experimentally a number of laws of electricity and magnetism.	Performance criteria Proper use of concepts, principles and laws. Adequate representation of situations in physics. Graphic and mathematical representations adapted to the nature of the problem. Justification of steps in the analysis of situations. Rigorous application of the laws of electricity and magnetism. Critical evaluation of results. Interpretation of the limits of the models. Meticulous experimentation. Appropriate use of measuring instruments. Laboratory report in line with established standards.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Physics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Electrostatics : charge, field, potential, energy. Electro-kinematics : current, circuit, energy, power. Magnetism : magnet, force, magnetic field. Electromagnetic induction : induced current, alternating current.	

CODE: 00UT	
OBJECTIVE	STANDARD
Statement of the competency To analyze various situations or phenomena associated with waves, optics and modern physics using basic principles. Elements 1. To apply the basic principles of physics to the description of vibrations and waves and their transmission. 2. To apply the laws of geometric optics. 3. To apply the characteristics of waves to light phenomena. 4. To analyze a number of situations using concepts of modern physics. 5. To verify experimentally a number of laws and principles associated with waves, optics and modern physics.	Performance criteria Proper use of concepts, principles and laws. Adequate representation of situations in physics. Graphic and mathematical representations adapted to the nature of the problem. Justification of steps in the analysis of situations. Rigorous application of the main models. Critical evaluation of results. Interpretation of the limits of the models. Meticulous experimentation. Laboratory report in line with established standards.
LEARNING ACTIVITIES	
Field of studies: Science Discipline: Physics Weighting: 3-2-3 Number of credits: 2 2/3 Specific Indications Kinematics and dynamics of vibrations. Longitudinal and transverse waves. Progressive and stationary waves, resonance. Sound waves. Elements of modern physics. Geometric and physical optics.	

**Objectives and standards of the
COMPUTER SCIENCE AND MATHEMATICS
(200.C0) program**

CODE: 020V	
OBJECTIVE	STANDARD
Statement of the competency To apply concepts of discrete mathematics to problem solving. Elements of the competency To apply concepts of set theory and logic. To develop the steps of a simple mathematical proof. To apply the rules and concepts of modular arithmetic and number systems. To use the elementary principles of enumeration. To define a recursive function. To find the solution of a function defined by a second order linear recurrence equation. To recognize the different types of graphs. To draw graphs to represent a situation.	Performance criteria Appropriate use of concepts Appropriate use of Boolean algebra to design a logical circuit Correct choice and application of proof techniques Correct use of Euclid's algorithm and modular arithmetic Accurate use of counting formulas for problem solving Correct conversion of integers between different bases Accurate solution of a second order linear recurrence equation Appropriate knowledge of graph-related terminology Correct determination and use of a graph's adjacency matrix
LEARNING ACTIVITIES	
Discipline: Mathematics Hours of instruction: 75 Number of credits: 2 2/3 Specific indications: Terminology of set theory, universal quantifiers, truth tables, equivalence operations (if-and-only-if) Direct and indirect proofs, recursive proof (mathematical induction), ad absurdum proof Integer division Greatest common divisor Principles of cryptography Injective, bijective, surjective functions Combinations, arrangements, permutations, pigeonhole principle binomial theorem, Pascal's triangle Graphs (simple, directed, nondirected, Hamiltonian, Eulerian, weighted) Euclid's theorem	

CODE: 020W	
OBJECTIVE	STANDARD
Statement of the competency To develop programs for solving simple problems. Elements of the competency To use a computer work station in a network environment. To develop algorithmic solutions to simple problems. To use a programming language.	Performance criteria Accurate identification of the characteristics and functions of computer components and how they are interrelated Appropriate recognition of the characteristics and functions of the basic components of a network Correct and secure use of the basic functions of an operating system Accurate analysis of the situation with respect to available data, the desired results and the processing required Development of an effective algorithm Accurate comprehension of the basic concepts of object-oriented programming: class, object, method, attribute Correct algorithm translation Strict application of programming standards Effective use of the development environment's functions in searching for and correcting compilation errors Proper preparation of tests needed to check the program's operation Appropriate debugging of the program according to the algorithm
LEARNING ACTIVITIES	
Discipline: Computer Science Hours of instruction: 75 Number of credits: 2 2/3	

CODE: 020X	
OBJECTIVE	STANDARD
Statement of the competency To organize and manipulate data. Elements of the competency To organize the data logically. To manipulate data in memory. To manipulate data in files.	Achievement context For programs to be developed or already developed Performance criteria Correct analysis of the context for using the data Sound comparison of the possibilities offered by different data structures Choice suited to the context of the data structures Correct implementation of chosen data structures Rigorous application of object-oriented programming principles and techniques: encapsulation, inheritance, abstract class, interfaces Correct use of updating, sorting and search techniques with data in memory Correct use of basic file data storage techniques: reading and writing
LEARNING ACTIVITIES	
Discipline: Computer Science Hours of instruction: 75 Number of credits: 2 2/3	

CODE: 020Y	
OBJECTIVE	STANDARD
Statement of the competency To design and develop programs in a graphic environment. Elements of the competency To establish the program functions. To design the program. To develop the program.	Achievement context In an object-oriented environment. Performance criteria Clarification of the basic goal of the program Appropriate determination of the program's functional requirements Appropriate determination of the user interface requirements Design of a functional and user-friendly interface Appropriate organization of data for implementing the program functions Correct determination of processing required for implementing the program functions Appropriate use of tools for creating the interface elements Appropriate use of program libraries Appropriate programming of modules Correct validation of proper program operation
LEARNING ACTIVITIES	
Discipline: Computer Science Hours of instruction: 75 Number of credits: 2 2/3	

CODE: 020Z	
OBJECTIVE	STANDARD
Statement of the competency To demonstrate their integration of the learning in the Computer Science and Mathematics program.	Achievement context Through a team project Through an oral presentation and a written production
Elements of the competency To recognize the contribution of all subject areas to their education. To apply the knowledge they have acquired to new or complex situations. To develop a scientific computer application that integrates the knowledge they have acquired. To evaluate the integration procedure used.	Performance criteria Meaningful summary of what they have learned Suitable justification of the relevance of their learning Adequate integration of at least two science subjects, including computer science Appropriate use of the knowledge they have acquired Appropriate demonstration of the novelty or complexity of the situation Establishment of the comprehensive general framework of the team project Precise definition of the problem to be solved Accurate description of the solution Appropriate implementation of the solution Appropriate validation of results obtained Clear communication of the results of the procedure, orally and in writing Precise description of the procedure used in their integration project Explicit reference to the learning that is considered important for solving the problems encountered in carrying out this project Appropriate analysis of the strengths and weaknesses of the project Relevant indication of repercussions of the project Suitable evaluation of their contribution to the team effort
LEARNING ACTIVITIES	
Discipline: Hours of instruction: Number of credits:	Computer Science 75 2 2/3

APPENDIX: EDUCATIONAL INTENTIONS OF GENERAL EDUCATION

EDUCATIONAL INTENTIONS OF GENERAL EDUCATION

GENERAL EDUCATION COMMON TO ALL PROGRAMS AND GENERAL EDUCATION ADAPTED TO PROGRAMS

English, Language of Instruction and Literature

General Education Common to All Programs

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

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

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

General Education Adapted to Programs

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

Outcome Objectives

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

- Demonstrate a college level of proficiency in the areas of reading, writing, listening and speaking.
- Develop their own ideas into arguments and theses, organize them and edit their work.
- Understand basic vocabulary and terminology used when discussing literature.
- Analyze literary works.

Humanities

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

Principles

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

Outcome Objectives

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

- Describe, explain and organize main elements, ideas, values and implications of a world view in a coherent fashion.
- Compare world views.
- Recognize the basic elements in a specific example of the organization, transmission, and use of knowledge.

- Define the dimensions, limits, and uses of knowledge in appropriate historical contexts.
- Identify, organize and synthesize the salient elements of a particular example of knowledge.
- Situate important ethical and social issues in their appropriate historical and intellectual contexts.
- Explain, analyze and debate ethical issues in a personal and professional context.

Sequence of Objectives and Standards

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

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

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

The third set, which is part of the general education component adapted to programs is aimed at deepening and reinforcing the critical thinking skills developed in the first two sets. It is, therefore, sequenced so that students can build on the critical skills, knowledge and insights developed in the first two sets. By situating these issues in their appropriate world view and knowledge contexts, students develop a critical and autonomous approach to ethical values in general and to the values involved in their own fields of interest in particular. This final set also provides students with an opportunity to consolidate personal and social values.

Français, langue seconde

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

Principes

- 1) La maîtrise du français, langue seconde, est essentielle pour quiconque veut participer pleinement à la vie de la société québécoise, dont le français est la langue officielle. En conséquence, la formation générale en français, langue seconde, a pour finalité de rendre les étudiants et les étudiantes aptes à utiliser de

façon efficace les moyens dont dispose la langue pour communiquer en société. À cette fin, ils devront acquérir des connaissances en vue de les déployer dans les formes de discours qu'il leur faudra pratiquer.

- 2) À leur arrivée au collégial, les étudiants et les étudiantes ont déjà acquis des compétences dans les quatre habiletés langagières, à savoir : parler, lire, écouter et écrire, mais sont, de façon générale, plus compétents en matière d'expression orale. En conséquence, la formation porte sur le développement des quatre habiletés langagières tout en mettant l'accent sur la lecture et l'écriture.
- 3) En tant que partie intégrante de la formation générale, le français, langue seconde, contribue au développement de la pensée critique et de l'expression structurée.

Résultats attendus

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

- sur le plan des connaissances, qu'il ou elle :
 - sait faire une présentation orale structurée;
 - connaît les différentes formes du discours;
 - connaît les différentes techniques de lecture et d'écriture;
- sur le plan des habiletés, qu'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;
- sur le plan des attitudes, qu'il ou elle :
 - fait preuve d'ouverture par rapport aux différents aspects de la culture québécoise;
 - a conscience des différences et des similitudes entre sa culture d'origine et la culture québécoise francophone;
 - a la préparation voulue pour s'insérer dans la vie sociale et économique.

Séquence des objectifs et des standards

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

La formation générale en français, langue seconde, comporte deux ensembles prévus en séquence. Le premier, qui fait partie de la formation générale commune à tous les programmes, a pour objet de consolider les connaissances linguistiques déjà acquises et de les développer pour amener les étudiants et les étudiantes à communiquer de façon plus précise sur le plan tant du vocabulaire et de la syntaxe que de l'organisation textuelle.

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

Physical Education

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

Principles

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

Outcome Objectives

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

- their knowledge of :
 - The relationship between physical activity, lifestyle and health based on the findings of scientific research.
 - The scientific principles for improving or maintaining one's fitness.
 - Ways to assess their abilities and needs with respect to activities which can enhance their health.
 - The rules, techniques and conditions involved in different types of physical activity.
 - A method for setting goals.
 - The factors which facilitate making physical activity part of one's lifestyle.
- their ability to :
 - Choose physical activities on the basis of their motivation, abilities and needs.
 - Establish relationships between lifestyle and health.
 - Apply the rules, techniques and conditions involved in different types of physical activity.
 - Set goals that are realistic, measurable, challenging, and situated within a specific time frame.
 - Improve their mastery of the basic techniques, tactics and strategies associated with sports, outdoor and expression-oriented activities.
 - Use their creative and communication skills, particularly in group activities.
 - Evaluate their skills, their attitudes and their progress with respect to different forms of physical activity.
 - Maintain or increase their physical activity level and fitness level on their own.
 - Manage a personal physical activity program and assume responsibility in the organization of physical activities.
- their capacity to (i.e., their attitudes):
 - Recognize the importance of taking charge of their health.
 - Be aware of the need to evaluate and respect their abilities and how the activity is to be carried out, before initiating the activity.
 - Foster self-confidence, self-control, respect for others and cooperation, through the 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 good 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 promotion. This enables them to make an appropriate and justified choice of physical activities.

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

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

COMPLEMENTARY GENERAL EDUCATION

Social Sciences

In the field of Social Sciences, students meet the two sets of objectives and standards by learning to view the social sciences as a specific approach to the study of human existence.

The first set of objectives and standards gives rise to learning activities designed to enable students to assess the contribution of one or more of the social sciences to our understanding of major contemporary issues: the focus of the social sciences, the contribution of the social sciences to an understanding of contemporary issues, future questions which the social sciences will be called upon to examine.

The second set of objectives and standards gives rise to learning activities designed to enable students to rigorously analyze one of the major problems of our time using one or more social scientific approaches.

Science and Technology

In the field of Science and Technology, the educational goal is to present science and technology as a specific approach to the study of reality, by introducing students to this area of knowledge. This general goal may cover various aspects of this field, primarily experimentation with methodological instruments and the study of 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 experimentation with the scientific method.

Modern Languages

Students meet the three sets of objectives and standards for Modern Languages by learning the basic structures and vocabulary of a third language, while becoming sensitized to the culture of the people who speak this language.

Some modern languages use different structures and different writing systems. The three sets of objectives and standards have been developed to take this into account. The degree of competency acquired therefore varies, depending on how far removed these languages are from our own language structure and thought process. Awareness of the culture of the people who speak a modern language is not considered an element of the competency because learning a modern language necessitates awareness of the culture.

Mathematics Literacy and Computer Science

In the field of Mathematics Literacy and Computer Science, the two sets of objectives and standards are based on the educational goal of developing a mathematics and informatics culture.

Students meet the first set of objectives and standards by studying the place, role and evolution of mathematics and informatics and their tools in our society and by describing their different applications. This is a general approach to mathematics literacy and informatics and is not geared to providing students with specific training.

Students meet the second set of objectives and standards by developing their capacity to understand and use mathematics and informatics in order to perform common tasks. More specifically, this set covers related concepts and tools and the general applications of mathematics and informatics in everyday life.

The general approach to the objectives and standards makes it possible to define numerous learning activities intended to promote the development of a mathematics- or informatics-based competency, or a combination of these two areas.

Art and Aesthetics

In Art and Aesthetics, the educational goal is to provide students with a general knowledge by exploring various forms of art, in one or more artistic fields. This basic education allows students to develop aesthetic awareness through exposure to works and experimentation with an artistic medium. In addition, students acquire the basic elements of artistic language and the ability to establish connections between the elements of this language.

Students meet the first set of objectives and standards by studying works of contemporary art and art from other eras. In so doing, they learn to develop an appreciation for the dynamics of the imagination in art and become familiar with the methods of analyzing works of art.

Students meet the second set of objectives and standards by undertaking creative or interpretative activities that involve using an artistic medium. Students also come into contact with works created through this medium so as to learn to recognize the main forms of expression.

