

SCIENCE

***PRE-UNIVERSITY PROGRAM
200.B0***

Identification du programme

Titre du programme : Sciences de la nature

Numéro du programme : 200.B0

Type de sanction : Diplôme d'études collégiales

Conditions particulières d'admission : Mathématiques 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

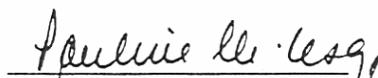
— formation spécifique : 900

Champ d'études : Sciences de la nature
Il comprend les disciplines biologie, mathématique, chimie, physique et géologie.

Recommandations


Sous-ministre adjoint

98.11.19
Date


Sous-ministre

98.11.19
Date

Approbation de la ministre



98-11-26
Date

Identification of the program

| | | |
|-----------------------------------|---|--|
| Program title | : | Science |
| Program number | : | 200.B0 |
| 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 |
| — Specific program component | : | 32 |
| Total hours of instruction | : | 1560 |
| — General education component | : | 660 |
| — Specific program component | : | 900 |
| Field of study | : | Science It includes the disciplines of biology, mathematics, chemistry, physics and geology. |

Décision relative à la modification d'un programme d'études préuniversitaires

IDENTIFICATION DU PROGRAMME

Titre et numéro du programme : Sciences de la nature (200.B0)

Type de sanction : Diplôme d'études collégiales

Nombre total d'unités allouées pour le programme : 58 2/3

Nombre d'heures-contact allouées pour le programme : 1 560

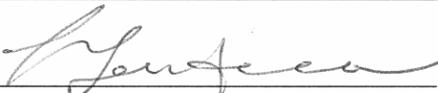
Modifications proposées :

- ajouter le tableau d'équivalences entre le programme Sciences de la nature (200.B0) et le programme Sciences, lettres et arts (700.A0);
- ajouter le tableau d'équivalences entre la formation générale complémentaire et le programme Sciences, lettres et arts (700.A0);
- ajouter le tableau d'équivalences entre la formation générale complémentaire du régime 3 et celle du régime 2.

Session et année d'entrée en vigueur : Automne 1999

APPROBATION

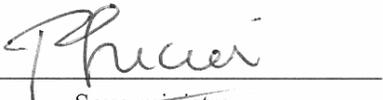
Recommandations :



Sous-ministre adjoint
Enseignement supérieur

31/10/03

Date



Sous-ministre

03.11.24

Date

Approbation du ministre :



03.11.27

Date



Ministère de l'Éducation,
du Loisir et du Sport

**Décision relative à la modification
d'un programme d'études préuniversitaires**

IDENTIFICATION DU PROGRAMME

| | |
|--|--|
| Titre et numéro du programme : | Sciences de la nature (200.B0) |
| Type de sanction : | Diplôme d'études collégiales |
| Nombre total d'unités allouées pour le programme : | 58 2/3 |
| Nombre d'heures-contact allouées pour le programme : | 1 560 |
| Modification proposée : | |
| ▪ | Mise à jour du tableau d'équivalences entre le programme <i>Sciences de la nature (200.B0)</i> et le programme <i>Sciences, lettres et arts (700.A0)</i> . |
| Session et année d'entrée en vigueur : | Automne 1999 |

APPROBATION

Recommandations :



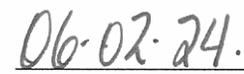
Sous-ministre adjointe
Enseignement supérieur



Date



Sous-ministre

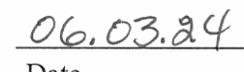


Date

Approbation du ministre :

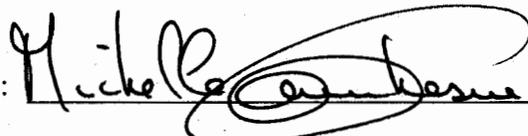


Date



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 | <u>09/12/08</u> Date |
|  Sous-ministre | <u>2008.12.29</u> Date |
| Approbation de la ministre : |  <u>2009/01/20</u> 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 General Education, the Committee for the Follow-up and Coordination of Field Testing Projects for the Science Program and the Advisory Committee for the Pre-University Science Program 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.

Members of the Advisory Committee for General Education:

Jacques Belleau, education consultant, Cégep de Lévis-Lauzon
André Carrier, teacher, Cégep de Lévis-Lauzon
Claude J. Chénier, academic dean, Heritage College
Gaston Côté, Ministère de l'Éducation
Paul Fournier, teacher, Collège André-Grasset
Pierre Harrison, academic dean, Cégep Saint-Jean-sur-Richelieu
André Lapré, academic dean, Collège André-Grasset
Yves Lewis, academic dean, Institut Teccart
Bertrand Malenfant, teacher, Cégep Marie-Victorin
Jean-Paul Michaud, academic dean, Cégep de Rivière-du-Loup
Lili Paillé, Ministère de l'Éducation
Maurice Papineau, education consultant, Collège Ahuntsic
Richard Paquet, teacher, Collège de Limoilou
Bruce Wallace, Ministère de l'Éducation

Members of the Advisory Committee for the Pre-University Science program:

Fouad Ajami, teacher, Champlain Regional College, Champlain Saint-Lambert
Pierre Cadieux, academic dean, Cégep André-Laurendeau
Réal Cantin, teacher, Cégep de Rimouski
Élaine Chapman, principal, École de réadaptation de la Faculté de médecine, Université de Montréal
Brigitte Garneau, Ministère de l'Éducation
Jacqueline T. Giard, academic dean, Champlain Regional College
Philippe Guillon, teacher, Cégep de Saint-Hyacinthe
Richard Harris, professor, Physics Department, McGill University
Claude Lafèche, Collège de Bois-de-Boulogne
Pierre Moreau, dean, School of Engineering, Université Laval
Ginette Ouellette, academic dean, Collège de Valleyfield
Lili Paillé, Ministère de l'Éducation
Jacques Richard, academic dean, Collège Jean-de-Brébeuf

HARMONIZATION

Source program : *Arts and sciences*

Target program : *Science*

A student who has achieved one or more of the objectives of the *Arts and sciences* program can obtain credit for the equivalent objective or objectives of the *Science* program after enrolling in that program.

| Arts and sciences (700.A0) | | Science (200.B0) |
|--|--------|---|
| 01Y1 To solve problems using differential calculus. | ➔ | 00UN To apply the methods of differential calculus to the study of functions and problem solving. |
| 01Y2 To solve problems using integral calculus. | ➔ | 00UP To apply the methods of integral calculus to the study of functions and problem solving. |
| 01Y4 To solve problems using linear algebra and vector geometry. | ➔ 1 | 00UQ To apply the methods of linear algebra and vector geometry to problem solving. |
| 01Y5 To analyze the structural and functional relationships that characterize living organisms as they evolve in their environment. | ➔ 2 | 00UK To analyze the organization, functioning and diversity of living beings. |
| 01Y5 To analyze the structural and functional relationships that characterize living organisms as they evolve in their environment. | ➔ | 00XU To analyze the structure and functioning of multicelled organisms in terms of homeostasis and from an evolutionary perspective. |
| 01YJ To analyze, from an evolutionary perspective, the adaptation of multicellular organisms to their environment. | | |
| 01Y6 To solve problems associated with chemical changes in matter. | ➔ | 00UL To analyze chemical and physical changes in matter using concepts associated with the structure of atoms and molecules. |
| 01YH To analyze the mechanisms of reactions. | ➔ | 00XV To solve simple problems in organic chemistry. |
| 01Y7 To interpret natural phenomena using models from mechanical physics. | ➔ 3 | 00UR To analyze various situations and phenomena in physics using the basic principles of classical mechanics. |

¹ 01Y4 → 00UQ : Demonstration of properties omitted in 01Y4.

¹ 01Y4 → 00UQ : Complex numbers omitted in 00UQ.

² 01Y5 → 00UK : Nervous system and cell physiology omitted in 00UK.

³ 01Y7 → 00UR : Kinematics and rotational dynamics omitted in 01Y7.

Source program : *Arts and sciences*

Target program : *Complementary general education*

A student who has achieved one or more of the objectives of the *Arts and sciences* program can obtain credit for the equivalent objective or objectives of the general education component after changing programs.

| Arts and sciences (700.A0) | | Complementary general education |
|--|---|--|
| 01YM To communicate at a rudimentary level in a modern language. | ➔ | 000Z Communiquer dans une langue moderne de façon restreinte. |
| 01YN To communicate on familiar subjects in a modern language. | ➔ | 0010 Communiquer dans une langue moderne sur des sujets familiers. |
| 01YP To communicate with a certain degree of ease in a modern language. | ➔ | 0067 Communiquer avec une certaine aisance dans une langue moderne. |

Source program : General education common to all programs (Regulation 2)

Target program : General education common to all programs (Regulation 3)

A student who has achieved one or more of the objectives of the general education component under Regulation 2 can obtain credit for the equivalent objective or objectives of the general education component under Regulation 3.

| General education common to all programs (Regulation 2) | | General education common to all programs (Regulation 3) |
|---|---|---|
| 000D Traiter d'une question philosophique de façon rationnelle. | ➔ | 00B1 Traiter d'une question philosophique de façon rationnelle. |
| 000H Se situer en regard de l'activité physique. | ➔ | 0064 To establish the role that being physically active plays amongst the lifestyle behaviours which promote health. |
| 000J Pratiquer l'activité physique de façon autonome. | ➔ | 0065 To improve one's effectiveness when practicing a physical activity. |
| 000F To apply a logical analytical process to how knowledge is organized and used. | ➔ | 00B2 To apply a logical analytical process to how knowledge is organized and used. |

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INTRODUCTION TO THE PROGRAM

The Science program is a pre-university program of the Ministère de l'Éducation. It was designed in accordance with the framework for the development of pre-university programs of the Direction de l'enseignement collégial. This framework:

- provides for genuine continuity between pre-university programs and university programs
- favours a program-based approach
- aims at an education focusing on the mastery of learning, using a «competency-based» approach
- aims at an education that contributes to the development of the whole person

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

The Science program includes a component of general education that is common to all college programs (16 2/3 credits), a component of general education that is specific to the program (6 credits), a component of general education that is complementary to the specific program component (4 credits) and a specific program component (32 credits).

This document has two parts. The first part presents an overview of the program, and the second part describes the objectives and standards for general education and specific education.

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

THE AIM OF THE PROGRAM

The Science program taught at the college level is intended to provide students with a balanced education which integrates the basic components of rigorous scientific and general education and to equip students to pursue university-level studies in the pure and applied sciences or in the health sciences.

GENERAL GOALS OF THE PROGRAM

To complete the Science program, students must be able:

- to apply the experimental method;
- to take a systematic approach to problem solving;
- to use the appropriate data-processing technologies;
- to reason logically;
- to communicate effectively;
- to learn autonomously;
- to work as members of a team;
- to make connections between science, technology and social progress;
- to define their personal systems of values;
- to become familiar with the context in which scientific concepts are discovered and developed;
- to adopt attitudes that are useful for scientific work;
- to apply what they have learned to new situations.

How to accommodate the general goals of the program is up to the individual college-level institution. The general goals of programs selected by the institution for implementation may be expressed using the vocabulary and logic of the discipline. Each course may contribute to the attainment of one or more of these goals. What is important is that they all be represented in one or more courses, and that they become specific focuses of teaching and learning, because they have been recognized as essential to university science studies and the diploma of college studies (Diplôme d'études collégiales, DEC) in science must attest to their achievement.

EXPLANATION OF THE GENERAL GOALS OF THE PROGRAM

Each general goal is explained as follows:

➤ **To apply the experimental method.**

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 experimental method. 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 and gather data;
- draw inferences from data and construct hypotheses;
- set up experiments, use measuring instruments correctly and carry out experiments;
- summarize their observations, estimate their degree of certainty, draw conclusions from them and interpret and critique them.

➤ **To take a systematic approach to problem solving.**

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;
- solve a problem.

➤ **To use the appropriate data-processing technologies.**

Science students must attain a certain level of competence in the selection and use of the available technological tools. In other words, they must be able to:

- use a computer and its main peripherals;
- use the main types of data-processing software: word-processing, data-processing and graphics programs and specialized software.

It is essential that some courses take this general goal into account. In these courses, the 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, which constitute a powerful computer application 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 construction and programming of algorithms.

Each college-level institution may take into account its students' computer skills when they start college. It is not up to the Ministère de l'Éducation to define the terms and conditions, nor to favour one computer language over others. However, it does seem important to choose a language that allows structured programming and to construct the learning activities around scientific problems and applications.

➤ **To reason logically.**

In most of their university-level science studies, students will be required to construct logical arguments, demonstrations, proofs, etc. To this end, they must:

- identify a certain number of ideas related to the subject area, and compare, classify and evaluate them;
- organize relevant ideas into a logical sequence;
- construct a coherent argument, a rationale and a proof.

➤ **To communicate effectively.**

Students must acquire general competence in the area of communication. They must be able to:

- read scientific or literary texts, as well as texts on current issues;
- write scientific, literary and other types of texts;
- express themselves orally during class presentations, demonstrations or large or small group discussions.

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;
- by making proper use of the various languages (terminology, symbolism, conventions, etc.) specific to the scientific disciplines covered in the program.

➤ **To learn autonomously.**

To take up the challenges facing science students at the university level, college students also need to become independent learners: To this end, they must:

- locate, organize and use pertinent information;
- plan their own learning process, setting realistic goals and choosing appropriate means of attaining them;
- evaluate the effectiveness of their strategies, adapt to different situations and readjust their objectives and behaviour.

➤ **To work as members of a team.**

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. As members of a team, the students must:

- interact with others;
- assume various roles (leadership, collaboration, support) in disciplinary and multidisciplinary teams oriented toward the pursuit of common goals and objectives;
- understand and respect the diversity and interdependence of individuals.

➤ **To make connections between science, technology and social progress.**

Science differs from other ways of comprehending reality both in its primary objective, which is to understand the world around us, and in its ways of knowing, which are mainly observation, reasoning, experimentation and validation. Scientific findings may suggest modifications to be made to the physical or social environment or to some area of human activity. This is a challenge that **technology** can help us meet, because it enhances our ability to change the world to make it better fit our needs. Technology provides tools, equipment and processes that allow us to feed and house ourselves and ensure our safety, to extend the reach of our arms or our voices, and to develop new forms of expression. The costs and risks of such undertakings are often complex and difficult to predict. They may have completely unexpected effects for **society** as a whole or for specific groups, either immediately or in the medium or long term.

For these reasons, a science education is not complete unless students:

- confront the power and the limits of science and technology;
- discuss their implications for social progress.

This could be included in courses in specific education. General education courses may also make a contribution in this area, especially through the choice of topics and texts covered in general education specific to the program.

➤ **To define their personal systems of values.**

Science students should be encouraged to define their own systems of values and to choose the values they will promote as scientists.

To this end, the students must:

- identify and choose personal values;
- refer to ethical considerations and to their systems of values when making decisions and adopting conduct.

Courses in both general and specific education and, perhaps especially, courses in experimental disciplines in which questions related to pollution, the environment or biotechnology may arise can provide students with the knowledge and skills on which to base the positions they take.

➤ **To become familiar with the context in which scientific concepts are discovered and developed.**

As their scientific knowledge increases through the mathematics and science courses in the program, students should learn to:

- place the emergence and evolution of the concepts taught in the context of the development of human thought;
- recognize how knowledge is constructed and transformed when it is subjected to discussion and the validation of hypotheses through research.

Each course in the program can devote only a small part of the teaching time to this activity. However, if the opportunities are used to advantage, students can be introduced to the area of science involving research and the development of knowledge.

➤ **To adopt attitudes that are useful for scientific work.**

The list of attitudes and qualities science students must demonstrate is long, and no student can be expected to develop them all to a high level. However, it is desirable that they:

- demonstrate personal attitudes and qualities such as a liking for sustained effort, perseverance, curiosity, creativity, flexibility, a desire to help others and a critical spirit.

➤ **To apply what they have learned to new situations.**

On completion of the program, students must:

- see the connections among courses in the same discipline;
- establish links among the various disciplines in the program;
- integrate what they have learned and apply it to solving problems in new situations.

This general goal constitutes the end that all the teaching and learning activities of the program should aim for.

Everyone immediately recognizes the importance of the integration of learning in the program, and everyone wants the integration of learning and attitudes to be an ongoing and explicit aim in all the courses in the program—and not only in one course at the end of the program. However, the importance placed on integration by the *College Education Regulations* and the obligation to develop a comprehensive examination that tests whether

students have attained all the objectives and standards of the program constitute powerful incentives to set up a distinct activity specifically aimed at the integration of learning. Whatever organizational means are adopted, college-level institutions will have to specify how they enable their students to attain this general goal.

THE 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.

The 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 $\frac{2}{3}$ credits distributed as follows:
 - language of instruction and literature: 7 $\frac{1}{3}$ credits;
 - humanities or *philosophie*: 4 $\frac{1}{3}$ 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

00UK To analyze the organization, functioning and diversity of living beings.

00UL To analyze chemical and physical changes in matter using concepts associated with the structure of atoms and molecules.

00UM To analyze the properties of solutions and reactions in solutions.

- 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.
- 00UU To apply acquired knowledge to one or more subjects in the sciences.

OBJECTIVES AND STANDARDS TO BE CHOSEN ACCORDING TO THE PROFILE

- 00UV To apply the experimental method in a scientific field.
- 00XU To analyze the structure and functioning of multicelled organisms in terms of homeostasis and from an evolutionary perspective.
- 00XV To solve simple problems in organic chemistry.

SECOND PART :
PROGRAM OBJECTIVES AND STANDARDS

GENERAL EDUCATION COMMON TO ALL PROGRAMS

| OBJECTIVE | STANDARD |
|--|--|
| <p>Statement of the competency</p> <p>To analyze and produce various forms of discourse.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |
| <p>LEARNING ACTIVITIES</p> | |
| <p>Discipline : Weighting : Credits :</p> | <p>English 2-2-4, 1-3-4 2 2/3</p> |

| OBJECTIVE | STANDARD |
|---|---|
| <p>Statement of the competency</p> <p>To apply a critical approach to literary genres.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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

| OBJECTIVE | STANDARD |
|---|--|
| <p>Statement of the competency</p> <p>To apply a critical approach to a literary theme.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To recognize the treatment of a theme within a literary text. 2. To situate a literary text within its cultural context. 3. To detect the value system inherent in a literary text. 4. To explicate a text from a thematic perspective. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |
| <p>LEARNING ACTIVITIES</p> | |
| <p>Discipline : English</p> <p>Weighting : 2-2-3</p> <p>Credits : 2 1/3</p> | |

| GENERAL EDUCATION COMMON TO ALL PROGRAMS : HUMANITIES | | CODE : 00B2 |
|--|--|-------------|
| OBJECTIVE | STANDARD | |
| <p>Statement of the competency</p> <p>To apply a logical analytical process to how knowledge is organized and used.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | | |
| <p>Discipline :</p> <p>Weighting :</p> <p>Credits :</p> | <p>Humanities</p> <p>3-1-3</p> <p>2 1/3</p> | |

| GENERAL EDUCATION COMMON TO ALL PROGRAMS : HUMANITIES | | CODE : 000G |
|---|--|-------------|
| OBJECTIVE | STANDARD | |
| <p>Statement of the competency</p> <p>To apply a critical thought process to world views.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To describe world views. 2. To explain the major ideas, values, and implications of a world view. 3. To organize the ideas, values and experiences of a world view into coherent patterns. 4. To compare world views. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | | |
| <p>Discipline :</p> <p>Weighting :</p> <p>Credits :</p> | <p>Humanities</p> <p>3-0-3</p> <p>2</p> | |

| FORMATION GÉNÉRALE COMMUNE : LANGUE SECONDE (NIVEAU I) | | CODE : 0017 |
|---|--|-------------|
| OBJECTIF | STANDARD | |
| <p>Énoncé de la compétence</p> <p>Appliquer les notions de base de la communication en français courant.</p> <p>Éléments</p> <p>1. Dégager le sens d'un message oral simple.</p> <p>2. Émettre un message oral simple.</p> <p>3. Dégager le sens d'un texte.</p> <p>4. Rédiger un texte simple.</p> | <p>Critères de performance</p> <p>1.1 Repérage précis des difficultés de compréhension du message.</p> <p>1.2 Utilisation pertinente des techniques d'écoute choisies.</p> <p>1.3 Distinction précise du sens général et des idées essentielles du message.</p> <p>1.4 Description précise du sens général et des idées essentielles du message.</p> <p>2.1 Repérage précis des difficultés d'expression.</p> <p>2.2 Utilisation pertinente des techniques d'expression orales choisies.</p> <p>2.3 Emploi pertinent du vocabulaire courant.</p> <p>2.4 Expression intelligible du propos.</p> <p>3.1 Repérage précis des difficultés de compréhension du texte.</p> <p>3.2 Utilisation pertinente des techniques de lecture choisies.</p> <p>3.3 Distinction claire des principaux éléments du texte.</p> <p>3.4 Description précise du sens général et des idées essentielles d'un texte de 500 mots.</p> <p>4.1 Repérage précis des difficultés d'écriture.</p> <p>4.2 Utilisation pertinente des techniques d'écriture choisies.</p> <p>4.3 Emploi pertinent du vocabulaire courant.</p> <p>4.4 Formulation claire et cohérente d'un texte de 100 mots.</p> | |
| 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. | 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. Produire un texte oral planifié de cinq minutes en français courant. | 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. Interpréter un texte écrit en français courant. | 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. Rédiger un texte simple en français courant. | 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 | |

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

ACTIVITÉS D’APPRENTISSAGE

| | |
|---|---|
| <p>Discipline :</p> <p>Pondération :</p> <p>Unités :</p> | <p>Français, langue seconde</p> <p>2-1-3</p> <p>2</p> |
|---|---|

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

GENERAL EDUCATION COMMON TO ALL PROGRAMS : PHYSICAL EDUCATION CODE : 0064

| OBJECTIVE | STANDARD |
|--|---|
| <p>Statement of the competency</p> <p>To establish the role that being physically active plays amongst the lifestyle behaviours which promote health.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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

| | |
|--|---|
| <p>Discipline : Weighting : Credits :</p> | <p>Physical Education 1-1-1 1</p> |
|--|---|

| OBJECTIVE | STANDARD |
|---|--|
| <p>Statement of the competency</p> <p>To improve one’s effectiveness when practising a physical activity.</p> <p>Element</p> <p>1. To use a process designed to improve one’s effectiveness in the practice of a physical activity.</p> | <p>Performance criteria</p> <p>1.1 Initial assessment of one’s abilities and attitudes when practising a physical activity.</p> <p>1.2 Statement of one’s expectations and needs with respect to one’s ability to practise the activity.</p> <p>1.3 Appropriate formulation of personal objectives.</p> <p>1.4 Statement of the means to achieve one’s objectives.</p> <p>1.5 Observance of the rules involved in the physical activity, including safety guidelines.</p> <p>1.6 Periodic evaluation of one’s abilities and attitudes when practising a physical activity.</p> <p>1.7 Meaningful interpretation of the progress achieved and the difficulties experienced during the activity.</p> <p>1.8 Pertinent and periodic adjustments of objectives or action plan.</p> <p>1.9 Appreciable improvement of the motor skills required by the activity.</p> |
| <p>LEARNING ACTIVITIES</p> | |
| <p>Discipline : Weighting : Credits :</p> | <p>Physical Education 0-2-1 1</p> |

| | |
|--|-------------|
| GENERAL EDUCATION COMMON TO ALL PROGRAMS : PHYSICAL EDUCATION | CODE : 0066 |
|--|-------------|

| OBJECTIVE | STANDARD |
|--|--|
| <p>Statement of the competency</p> <p>To demonstrate one’s responsibility for being physically active in a manner which promotes health.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To combine effective practice with a health promotional approach to physical activity. 2. To manage a personal physical activity program. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |

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|----------------------------|
| LEARNING ACTIVITIES |
|----------------------------|

| | |
|--|---|
| <p>Discipline :</p> <p>Weighting :</p> <p>Credits :</p> | <p>Physical Education</p> <p>1-1-1</p> <p>1</p> |
|--|---|

GENERAL EDUCATION ADAPTED TO PROGRAMS

| OBJECTIVE | STANDARD |
|---|--|
| <p>Statement of the competency</p> <p>To communicate in the forms of discourse appropriate to one or more fields of study.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To identify the forms of discourse appropriate to given fields of study. 2. To recognize the discursive frameworks appropriate to given fields of study. 3. To formulate a discourse. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | |
| <p>Discipline :</p> <p>Total Contact Hours :</p> <p>Credits :</p> | <p>English</p> <p>60</p> <p>2</p> |

| OBJECTIVE | STANDARD |
|--|---|
| <p>Statement of the competency</p> <p>To apply a critical thought process to ethical issues relevant to the field of study.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To situate significant ethical issues, in appropriate world views and fields of knowledge. 2. To explain the major ideas, values, and social implication of ethical issues. 3. To organize the ethical questions and their implications into coherent patterns. 4. To debate the ethical issues. | <p>Performance criteria</p> <ol style="list-style-type: none"> 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 |

| OBJECTIF | STANDARD |
|---|--|
| <p>Énoncé de la compétence</p> <p>Appliquer des notions fondamentales de la communication en français, liées à un champ d'études.</p> <p>Éléments</p> <p>1. Dégager le sens d'un message oral simple lié à un champ d'études.</p> <p>2. Dégager le sens et les caractéristiques d'un texte lié à un champ d'études.</p> <p>3. Émettre un message oral simple lié à un champ d'études.</p> <p>4. Rédiger un court texte lié à un champ d'études.</p> | <p>Critères de performance</p> <p>1.1 Repérage précis des difficultés de compréhension du message.</p> <p>1.2 Distinction juste des caractéristiques du message.</p> <p>1.3 Repérage juste du vocabulaire spécialisé.</p> <p>1.4 Utilisation pertinente des techniques d'écoute choisies.</p> <p>1.5 Distinction claire des principaux éléments du message.</p> <p>1.6 Description précise du sens général et des idées essentielles du message.</p> <p>2.1 Repérage précis des difficultés de compréhension du texte.</p> <p>2.2 Distinction juste des caractéristiques du texte.</p> <p>2.3 Repérage précis du vocabulaire spécialisé.</p> <p>2.4 Utilisation pertinente des techniques de lectures choisies.</p> <p>2.5 Distinction claire des principaux éléments du texte.</p> <p>2.6 Description précise du sens général et des idées essentielles du texte.</p> <p>3.1 Repérage précis des difficultés d'expression orale.</p> <p>3.2 Utilisation pertinente des techniques d'expression orale choisies.</p> <p>3.3 Utilisation pertinente du vocabulaire courant et spécialisé.</p> <p>3.4 Expression intelligible du propos.</p> <p>4.1 Repérage précis des difficultés d'écrire.</p> <p>4.2 Utilisation pertinente des techniques d'écriture choisies.</p> <p>4.3 Utilisation pertinente du vocabulaire courant et spécialisé.</p> <p>4.4 Formulation claire et cohérente du texte.</p> |
| ACTIVITÉS D'APPRENTISSAGE | |
| <p>Discipline : Français, langue seconde</p> <p>Nombre d'heures-contact : 45</p> <p>Nombre d'unités : 2</p> | |
| FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU II) CODE : 000Q | |
| OBJECTIF | STANDARD |

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| <p>Énoncé de la compétence</p> <p>Communiquer en français dans un champ d'études particulier.</p> <p>Éléments</p> <ol style="list-style-type: none"> 1. Distinguer les types de textes propres au champ d'études. 2. Interpréter des textes représentatifs du champ d'études. 3. Utiliser des techniques de production de textes appropriées au champ d'études. | <p>Critères de performance</p> <ol style="list-style-type: none"> 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. |
| <p>ACTIVITÉS D'APPRENTISSAGE</p> | |
| <p>Discipline : Français, langue seconde Nombre d'heures-contact : 45 Nombre d'unités : 2</p> | |
| <p>FORMATION GÉNÉRALE PROPRE : LANGUE SECONDE (NIVEAU III) CODE : 000R</p> | |
| <p>OBJECTIF</p> | <p>STANDARD</p> |

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

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

COMPLEMENTARY GENERAL EDUCATION

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To estimate the contribution of the social sciences to an understanding of contemporary issues.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will write an essay of approximately 750 words on the contribution of the social sciences to an understanding of contemporary issues.</p> <p>Documents and data from the field of social sciences may be used.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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 |
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| OBJECTIVE | STANDARD | |
| <p>Statement of the competency</p> <p>To analyze one of the major problems of our time using one or more social scientific approaches.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will write an essay of approximately 750 words on a topic related to human existence.</p> <p>Reference materials from the field of social sciences may be used.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | | |
| <p>Number of student-contact hours:</p> <p>Number of credits:</p> | <p>45</p> <p>2</p> | |
| COMPLEMENTARY GENERAL EDUCATION: SCIENCE AND TECHNOLOGY | | CODE: 000X |

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To explain the general nature of science and technology and some of the major contemporary scientific or technological issues.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will use a written commentary on a scientific discovery or technological development.</p> <p>They will write an essay of approximately 750 words.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | |
| <p>Number of student-contact hours: 45</p> <p>Number of credits: 2</p> | |

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| COMPLEMENTARY GENERAL EDUCATION: SCIENCE AND TECHNOLOGY | | CODE: 000Y |
| OBJECTIVE | STANDARD | |

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| <p>Statement of the competency</p> <p>To resolve a simple problem by applying the basic scientific method.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone or in groups.</p> <p>They will be given a scientific and technological problem that is not complex and that can be resolved by applying the standard scientific method.</p> <p>Common scientific instruments and reference materials (written or other) may be used.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |
| <p>LEARNING ACTIVITIES</p> | |
| <p>Number of student-contact hours: 45 Number of credits: 2</p> | |
| <p>COMPLEMENTARY GENERAL EDUCATION: CODE: 000Z MODERN LANGUAGES</p> | |
| <p>OBJECTIVE</p> | <p>STANDARD</p> |

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| <p>Statement of the competency</p> <p>To communicate with limited skill* in a modern language.</p> <p>(*This refers to the limited use of language structures, grammar and vocabulary. This limitation varies depending on the complexity of the modern language.)</p> | <p>Achievement context</p> <p>For modern languages that use the Latin alphabet, students will:</p> <ul style="list-style-type: none"> ✓ have a conversation that includes at least 8 lines of dialogue; ✓ write a text consisting of at least 8 sentences. <p>For modern languages that use a writing system other than the Latin alphabet, students will:</p> <ul style="list-style-type: none"> ✓ have a conversation that includes at least 6 lines of dialogue; ✓ write a text consisting of at least 6 sentences. <p>Students will be exposed to learning situations on familiar themes. Reference materials may be used.</p> |
| <p>Elements</p> <ol style="list-style-type: none"> 1. Understand the meaning of a verbal message. 2. Understand the meaning of a written message. 3. Express a simple message verbally. | <p>Performance criteria</p> <p>The acquisition of a modern language requires an awareness of the culture of the people who use the language.</p> <ol style="list-style-type: none"> 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. |

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| <p>4. Write a text on a given subject.</p> | <p>4.1 Appropriate use of language structures in main and coordinate clauses.</p> <p>4.2 Appropriate application of basic grammar rules.</p> <p>4.3 Use of verbs in the present indicative.</p> <p>4.4 Appropriate use of basic vocabulary and idiomatic expressions.</p> <p>4.5 Coherent sequence of simple sentences.</p> <p>4.6 Acceptable application of graphic rules for writing systems other than the Latin alphabet.</p> |
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LEARNING ACTIVITIES

Number of student-contact hours: 45
Number of credits: 2

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To communicate on familiar topics in a modern language.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. Understand the meaning of a verbal message. 2. Understand the meaning of a written message. 3. Express a simple message verbally, using sentences of average complexity. | <p>Achievement context</p> <p>Students will have a conversation that includes at least 15 lines of dialogue.</p> <p>They will write a text consisting of at least 20 sentences for Latin-alphabet languages.</p> <p>They will write a text consisting of at least 10 sentences for languages not using the Latin alphabet.</p> <p>Students will be exposed to:</p> <ul style="list-style-type: none"> ✓ common situations in everyday life; ✓ simple topics from everyday life. <p>Reference materials may be used.</p> <p>Performance criteria</p> <p>The acquisition of a modern language requires an awareness of the culture of the people who use the language.</p> <ol style="list-style-type: none"> 1.1 Accurate identification of words and idiomatic expressions. 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. 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. |

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

Number of student-contact hours: 45
Number of credits: 2

COMPLEMENTARY GENERAL EDUCATION:
 MODERN LANGUAGES

CODE: 0067

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To communicate with relative ease in a modern language.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will have a conversation that includes at least 20 lines of dialogue.</p> <p>They will write a text of medium length (at least 25 sentences for Latin-alphabet languages and 15 sentences for other languages).</p> <p>They will use documents of a sociocultural nature. Reference materials for the written text may be used.</p> <p>Performance criteria</p> <p>The acquisition of a modern language requires an awareness of the culture of the people who use the language.</p> <ol style="list-style-type: none"> 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 |
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| <p>Statement of the competency</p> <p>To recognize the role of mathematics or informatics in contemporary society.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will write an essay of approximately 750 words, using numerous concrete examples that they themselves will have selected.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | |
| <p>Number of student-contact hours: 45</p> <p>Number of credits: 2</p> | |
| <p>COMPLEMENTARY GENERAL EDUCATION: CODE: 0012</p> <p>MATHEMATICS LITERACY AND COMPUTER SCIENCE</p> | |
| OBJECTIVE | STANDARD |

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| <p>Statement of the competency</p> <p>To use various mathematical or computer concepts, procedures and tools for common tasks.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will carry out a task or solve a problem based on everyday needs.</p> <p>Familiar tools and reference materials may be used.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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 | |
| <p>Number of student-contact hours: 45</p> <p>Number of credits: 2</p> | |
| <p>COMPLEMENTARY GENERAL EDUCATION: CODE: 0013</p> <p>ART AND AESTHETICS</p> | |
| OBJECTIVE | STANDARD |

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| <p>Statement of the competency</p> <p>To consider various forms of art produced by aesthetic practices.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. Develop an appreciation for the dynamics of the imagination in art. 2. Describe art movements. 3. Give a commentary on a work of art. | <p>Achievement context</p> <p>Students will work alone.</p> <p>They will use a specified work of art and write a commentary of approximately 750 words.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |
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LEARNING ACTIVITIES

Number of student-contact hours: 45
Number of credits: 2

COMPLEMENTARY GENERAL EDUCATION:
ART AND AESTHETICS

CODE: 0014

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| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To produce a work of art.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. Recognize the primary forms of expression of an artistic medium. 2. Use the medium. | <p>Achievement context</p> <p>Students will work alone.</p> <p>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.</p> <p>Performance criteria</p> <ol style="list-style-type: none"> 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. |
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LEARNING ACTIVITIES

Number of student-contact hours: 45
Number of credits: 2

SPECIFIC EDUCATION

***OBJECTIVES AND STANDARDS
COMMON TO ALL STUDENTS***

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To analyze the organization, functioning and diversity of living beings.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To recognize the relationships between the structures and functions of certain levels of organization of living beings. 2. To analyze the mechanisms that are responsible for the genetic variation of living beings.. 3. To evaluate the action of the mechanisms of evolution on the diversity and the levels of complexity of living beings. 4. To analyze the integration of living beings with their environment. 5. To explain the processes of transformation of matter and energy. | <p>Performance criteria</p> <p>Proper use of concepts and terminology.</p> <p>Clear description of the principal steps of a biological process.</p> <p>Accurate description of structures and their functions.</p> <p>Description of the correlations between structures and functions.</p> <p>Appropriate use of the dictionary of the genetic code.</p> <p>Appropriate use of the laws of genetics and the chromosome theory of heredity.</p> <p>Clear description of the factors that cause or maintain genetic variation.</p> <p>Account of the main adaptations of organisms to their environment.</p> <p>Presentation of the conditions for balance in an ecosystem.</p> <p>Statement of the main environmental problems.</p> <p>Justified interpretations of the structural, functional and evolutionary links of the levels of complexity of living beings.</p> <p>Observance of the experimental method and, where applicable, the experimental procedure.</p> <p>Adherence to safety and environmental protection regulations.</p> <p>Appropriate use of techniques of observation and experimentation.</p> |
| LEARNING ACTIVITIES | |
| <p>Field of study : Science</p> <p>Discipline: Biology</p> <p>Weighting: 3-2-3</p> <p>Number of credits: 2 2/3</p> <p>Specific Indications</p> <p>Structural and functional characteristics of macromolecules, cells and ecosystems.</p> <p>DNA and the regulation of gene expression, protein synthesis, mutations.</p> <p>Mendel's laws and their generalization, sex-linked genes and heredity, chromosomal abnormalities.</p> <p>The origin of life, theories of evolution, the evolution of populations, speciation, characteristics of the five kingdoms of living organisms.</p> <p>Biogeochemical cycles, energy flow and productivity in an ecosystem.</p> | |

| OBJECTIVE | | STANDARD |
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| <p>Statement of the competency</p> <p>To analyze chemical and physical changes in matter using concepts associated with the structure of atoms and molecules.</p> <p>Elements</p> <ol style="list-style-type: none"> To apply the probabilistic model of the atom in analyzing the properties of the elements. To solve problems pertaining to the structure and states of matter using modern theories of chemistry. To apply the laws of stoichiometry to the study of chemical phenomena. To verify experimentally a number of physical and chemical properties of matter. | | <p>Performance criteria</p> <p>Proper use of concepts, laws and principles.</p> <p>Use of appropriate terminology.</p> <p>Representation in conformity with the probabilistic model.</p> <p>Adequate representation of situations presented.</p> <p>Correct application of experimental procedures and techniques.</p> <p>Adherence to safety and environmental protection regulations.</p> <p>Accuracy of calculations.</p> <p>Laboratory report in line with established standards.</p> |
| LEARNING ACTIVITIES | | |
| <p>Field of study :</p> <p>Discipline:</p> <p>Weighting:</p> <p>Number of credits:</p> | <p>Science</p> <p>Chemistry</p> <p>3-2-3</p> <p>2 2/3</p> | |
| <p>Specific Indications</p> <p>Orbitals and probability of presence of electrons, quantum numbers.</p> <p>Elements : periodic table, normal physical state, periodic properties of elements, oxidization numbers.</p> <p>Terminology of elements and inorganic compounds.</p> <p>Energy in the formation of chemical bonds.</p> <p>Intermolecular bonds.</p> <p>Prediction of molecular structures.</p> <p>Intermolecular bonds and states of matter.</p> <p>Basic experimental techniques in chemistry.</p> | | |

| OBJECTIVE | STANDARD |
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| <p>Statement of the competency</p> <p>To analyze the properties of solutions and reactions in solutions.</p> <p>Elements</p> <ol style="list-style-type: none"> To analyze the colligative properties of solutions. To solve problems pertaining to the kinetics of reactions in solutions. To solve problems pertaining to chemical equilibrium. To verify experimentally a number of properties of solutions. To determine experimentally a number of characteristics of reactions in solutions. | <p>Performance criteria</p> <p>Proper use of concepts, laws and principles.</p> <p>Use of appropriate terminology.</p> <p>Adequate representation of situations.</p> <p>Rigour and consistency of the problem-solving procedure.</p> <p>Validity of required approximations.</p> <p>Correct application of the experimental procedure.</p> <p>Adherence to safety and environmental protection regulations.</p> <p>Validity of the content of the laboratory report.</p> <p>Logical processing of results.</p> <p>Estimation of uncertainties.</p> <p>Quality of the presentation of experimental data.</p> |
| LEARNING ACTIVITIES | |
| <p>Field of studies : Science</p> <p>Discipline: Chemistry</p> <p>Weighting : 3-2-3</p> <p>Number of credits: 2 2/3</p> <p>Specific Indications</p> <p>Phenomenon of solvation (qualitative study). Concentration units. Colligative properties : boiling and freezing temperatures, osmotic pressure, Raoult's Law. Kinetics of reactions : qualitative aspect, reaction rate equation and integral reaction rate equation applied to first and second order reactions, energy in reactions, rate constants, half reaction time. Le Chatelier's principle. Equilibrium in aqueous solutions (qualitative and quantitative aspects) : acid-base reactions, oxide reduction reactions, solubility.</p> | |
| CODE: 00UN | |
| OBJECTIVE | STANDARD |

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| <p>Statement of the competency</p> <p>To apply the methods of differential calculus to the study of functions and problem solving.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <p>Proper use of concepts.</p> <p>Representation of a situation as a function.</p> <p>Accurate graphic representation of a function.</p> <p>Correct choice and application of differentiation techniques.</p> <p>Algebraic operations in conformity with rules.</p> <p>Accuracy of calculations.</p> <p>Correct interpretation of results.</p> <p>Explanation of steps in problem-resolution procedure.</p> <p>Use of appropriate terminology.</p> |
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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

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| <p>Statement of the competency</p> <p>To apply the methods of integral calculus to the study of functions and problem solving.</p> <p>Elements</p> <ol style="list-style-type: none"> To determine the indefinite integral of a function. To calculate the limits of indeterminate forms. To calculate the definite integral and the improper integral of a function on an interval. To express concrete problems as differential equations and solve simple differential equations. To calculate volumes, areas and lengths and draw two- and three-dimensional representations. To analyze the convergence of infinite series. | <p>Performance criteria</p> <p>Proper use of concepts.</p> <p>Adequate two- and three-dimensional representations of surfaces and solids of revolution.</p> <p>Algebraic operations in conformity with rules.</p> <p>Correct choice and application of rules and techniques of integration.</p> <p>Accuracy of calculations.</p> <p>Justification of steps in the solution.</p> <p>Correct interpretation of results.</p> <p>Use of appropriate terminology.</p> |
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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 |
|---|----------|
| <p>Statement of the competency</p> | |

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|---|--|
| <p>To apply the methods of linear algebra and vector geometry to problem solving.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <p>Proper use of concepts.</p> <p>Representation of situations in terms of vectors and matrices.</p> <p>Correct application of algorithms.</p> <p>Correct solution of systems of linear equations.</p> <p>Adequate representation of loci.</p> <p>Justification of the steps in the solution.</p> <p>Algebraic operations in conformity with rules.</p> <p>Accuracy of calculations.</p> <p>Correct interpretation of results.</p> <p>Use of appropriate terminology.</p> |
|---|--|

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 | |

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|---|--|
| <p>To analyze various situations and phenomena in physics using the basic principles of classical mechanics.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <p>Proper use of concepts, laws and principles.</p> <p>Adequate representation of situations in physics.</p> <p>Use of appropriate terminology.</p> <p>Graphic and mathematical representations adapted to the nature of the problem.</p> <p>Justification of steps in the analysis of situations.</p> <p>Rigorous application of Newton's laws and the principles of conservation.</p> <p>Critical evaluation of results.</p> <p>Interpretation of the limits of the models.</p> <p>Meticulous experimentation.</p> <p>Laboratory report in line with established standards.</p> |
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LEARNING ACTIVITIES

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|---------------------------|---------|
| 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 |
|---|----------|
| <p>Statement of the competency</p> <p>To analyze various situations and phenomena in physics using the</p> | |

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| <p>basic laws of electricity and magnetism.</p> <p>Elements</p> <ol style="list-style-type: none"> 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. | <p>Performance criteria</p> <p>Proper use of concepts, principles and laws.</p> <p>Adequate representation of situations in physics.</p> <p>Graphic and mathematical representations adapted to the nature of the problem.</p> <p>Justification of steps in the analysis of situations.</p> <p>Rigorous application of the laws of electricity and magnetism.</p> <p>Critical evaluation of results.</p> <p>Interpretation of the limits of the models.</p> <p>Meticulous experimentation.</p> <p>Appropriate use of measuring instruments.</p> <p>Laboratory report in line with established standards.</p> |
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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 |
|--|----------|
| <p>Statement of the competency</p> <p>To analyze various situations or phenomena associated with waves, optics and modern physics using basic principles.</p> | |

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| <p>Elements</p> <ol style="list-style-type: none"> To apply the basic principles of physics to the description of vibrations and waves and their transmission. To apply the laws of geometric optics. To apply the characteristics of waves to light phenomena. To analyze a number of situations using concepts of modern physics. To verify experimentally a number of laws and principles associated with waves, optics and modern physics. | <p>Performance criteria</p> <p>Proper use of concepts, principles and laws.</p> <p>Adequate representation of situations in physics.</p> <p>Graphic and mathematical representations adapted to the nature of the problem.</p> <p>Justification of steps in the analysis of situations.</p> <p>Rigorous application of the main models.</p> <p>Critical evaluation of results.</p> <p>Interpretation of the limits of the models.</p> <p>Meticulous experimentation.</p> <p>Laboratory report in line with established standards.</p> |
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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.

CODE: 00UU

OBJECTIVE

STANDARD

Statement of the competency

To apply acquired knowledge to one or more subjects in the sciences.

| Elements | Performance criteria |
|---|---|
| <ol style="list-style-type: none"> 1. To recognize the contribution of more than one scientific discipline to certain situations. 2. To apply the experimental method. 3. To solve problems. 4. To use data-processing technologies. 5. To reason logically. 6. To communicate effectively. 7. To show evidence of independent learning in their choice of documentation or laboratory instruments. 8. To work as members of a team. 9. To make connections between science, technology and social progress. | <p>Use of an interdisciplinary approach.</p> <p>Consistency and rigour in problem-solving, and justification of the approach used.</p> <p>Observance of the experimental method and, where applicable, the experimental procedure.</p> <p>Clarity and precision in oral and written communication.</p> <p>Correct use of the appropriate data-processing technology.</p> <p>Appropriate choice of documents or laboratory instruments.</p> <p>Significant contribution to the team.</p> <p>Appropriate connections between science, technology and social progress.</p> |

LEARNING ACTIVITIES

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|--------------------------|-----------------------------|
| Field of studies: | Science |
| Discipline: | To be chosen by the college |

***OBJECTIVES AND STANDARDS
TO BE CHOSEN ACCORDING TO THE PROFILE***

| OBJECTIVE | STANDARD |
|---|---|
| <p>Statement of the competency</p> <p>To apply the experimental method in a scientific field.</p> <p>Elements</p> <ol style="list-style-type: none"> 1. To represent various situations, drawing upon relevant concepts, laws and principles of science. 2. To solve problems using a method proper to science. 3. To apply techniques of experimentation or validation specific to science. | <p>Performance criteria</p> <p>Proper use of concepts, laws and principles.</p> <p>Rigorous application of concepts, laws and principles.</p> <p>Appropriate use of terminology.</p> <p>Correct representation in a drawing or graph or in mathematical form.</p> <p>Consistency and rigour in problem solving, and justification of the approach used.</p> <p>Observance of the experimental method and, where applicable, the experimental procedure.</p> <p>Justification of the approach used.</p> <p>Assessment of the plausibility of the results.</p> |
| LEARNING ACTIVITIES | |
| <p>Field of studies :</p> <p>Discipline :</p> | <p>Science</p> <p>One of the sciences or computer studies</p> |

| OBJECTIVE | STANDARD |
|--|--|
| <p>Statement of the competency</p> <p>To analyze the structure and functioning of multicelled organisms in terms of homeostasis and from an evolutionary perspective.</p> <p>Elements</p> <ol style="list-style-type: none"> To analyze the relationship between structure and function in multicelled organisms. To apply the concept of homeostasis to the study of systems in plants and animals. To explain the functions of conservation, regulation and reproduction in multicellend organisms. | <p>Performance criteria</p> <p>Proper use of concepts and terminology.</p> <p>Clear description of the main stages in a biological process.</p> <p>Explanation of phenomena associated with membrane transport.</p> <p>Accurate description of structures and their functions.</p> <p>Description of the relationships between structures and functions.</p> <p>Description of cellular processes of transformation of matter and energy.</p> <p>Clear description of the factors that influence the transformation of matter and energy.</p> <p>Clear explanation of the contribution of various systems to homeostasis.</p> <p>Accurate identification of the components of various mechanisms that regulate homeostasis as applied to various systems.</p> <p>Analysis of the integration of various systems in animals or plants.</p> <p>Justified interpretations of the structural, functional and evolutionary relationships between organs or systems.</p> <p>Use of techniques of observation or experimentation.</p> <p>Observance of the experimental method and, where applicable, the experimental procedure.</p> <p>Adherence to safety and environmental protection regulations.</p> |
| LEARNING ACTIVITIES | |
| <p>Field of studies :</p> <p>Discipline :</p> | <p>Science</p> <p>Biology</p> |
| CODE: 00XV | |

| OBJECTIVE | STANDARD |
|--|---|
| <p>Statement of the competency</p> <p>To solve simple problems in organic chemistry.</p> <p>Elements</p> <ol style="list-style-type: none"> To apply the rules of nomenclature to simple organic compounds. To represent the three-dimensional structure of organic compounds using their two-dimensional structural formula. To distinguish the different types of isomerism: structural, geometric (cis-trans, E/Z) and optical (molecules containing an asymmetric carbon atom, chirality, enantiomers, R/S). To recognize the different types of reagents: electrophiles, nucleophiles, free radicals, Lewis acids and bases. To determine the reactivity of simple organic functional groups (alkanes, alkenes, alkynes, organomagnesiums, halogenated compounds, alcohols) using the main types of reaction mechanisms (S_N1, S_N2, E1, E2). To theoretically conceive methods for synthesizing simple organic compounds on the basis of given products. To describe the main functional groups that are useful in biology and biochemistry: amines, carboxylic acids and their derivatives, lipids, amino acids, proteins, carbohydrates. To prepare, separate and identify simple organic compounds. | <p>Performance criteria</p> <p>Use of systematic and traditional nomenclature for organic compounds.</p> <p>Exact three-dimensional representation of organic compounds.</p> <p>Explanation of the main electronic effects on the important types of reaction mechanisms.</p> <p>Analysis of addition, elimination and substitution reactions.</p> <p>Justification of the mechanism proposed to explain a simple new reaction.</p> <p>Ability to identify the main reactions of simple compounds according to their functional groups.</p> <p>Brief description of the nature, the common name and the role of functional groups in biology and biochemistry.</p> <p>Adherence to safety and environmental protection regulations in the laboratory.</p> <p>Ability to make connections between an experimental procedure and theoretical chemistry.</p> <p>Quality of the experimental set-up and procedure.</p> <p>Quality of the laboratory report: use of a computer, working hypotheses, coherent presentation, analysis and discussion of the results, clarity and quality of the language, bibliography.</p> |
| LEARNING ACTIVITIES | |
| <p>Field of studies :</p> <p>Discipline :</p> | <p>Science</p> <p>Chemistry</p> |