# Radiation Oncology Technology (142.D0)

## Sector 19 – Health

College Education Program

Québec

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Ministère de l'Éducation et de l'Enseignement supérieur

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## 142.D0 Radiation Oncology Technology

| | | |
|---|---|---|
| **Type of certification:** | | Diploma of College Studies |
| **Number of credits:** | | 91 ⅔ credits |
| **Number of hours of instruction:** | 2 610 | hours of instruction |

| | | |
|---|---|---|
| General education component: | 660 | hours of instruction |
| Program-specific component: | 1 950 | hours of instruction |

| | | |
|---|---|---|
| **Maximum hours allotted to clinical training:** | 1 290 | hours of instruction |

**Admission Requirements:**

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

- Mathematics
  Secondary V, Technical and Scientific option
  Or
  Secondary V, Science option (065506)

- Secondary IV Environmental Science and Technology
  Or
  Secondary IV Science and the Environment

# College-Level Programs

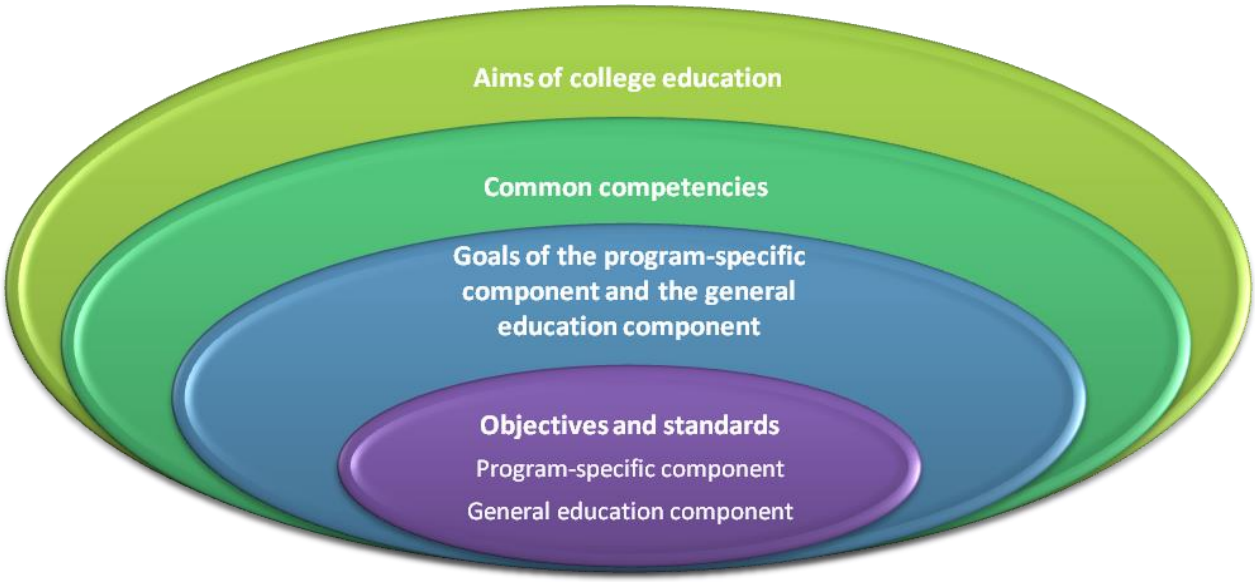
In Québec, college is the next step after the compulsory years of schooling (elementary and secondary school). College graduates enter the labour market directly or proceed to university studies. The Minister of Education, Recreation and Sports establishes the programs of study, while individual colleges ensure their implementation.

A college-level program provides the frame of reference within which the students acquire designated competencies in order to qualify for a profession or to pursue their studies. For the teachers, the program outlines learning objectives and defines the scope of their application.

The following figure illustrates the relationships among the elements of a college-level program, going from the general to the specific:

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

**Figure 1 – Elements of a College-Level Program**




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

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

## Aims of College Education

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

### To educate students to live responsibly in society

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

### To help students integrate cultural knowledge into their studies

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

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

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

## Common Competencies of College Education

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

### Solve problems

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

### Use creativity

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

### Adapt to new situations

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

### Exercise a sense of responsibility

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

### Communicate

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

## Implementation of College-Level Programs

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

# The Radiation Oncology Technology Program

The *Radiation Oncology Technology* program was designed in accordance with the framework for developing technical programs. This approach involves the participation of partners working in the occupational field and in education, and takes into account training needs, the job analysis and the general goals of technical education. The objectives and standards serve as the basis for the definition and evaluation of learning activities, for which the colleges are responsible. By successfully completing this program of study, students acquire not only the entry-level competencies required by the workplace to practise the profession, but also a range of knowledge, skills and attitudes that will ensure their versatility.

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

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

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

# Goals of the Program

## Program-Specific Component

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

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

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

- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
  - to help students develop their autonomy and the desire to learn, and acquire effective work methods
  - to help students understand the principles underlying the techniques and the technology used in the trade or occupation
  - to help students develop self-expression, creativity, initiative and entrepreneurial spirit
  - to help students adopt the attitudes required to successfully practise the trade or occupation, and instill in them a sense of responsibility and a concern for excellence

- To promote job mobility, that is:
  - to help students develop positive attitudes toward change
  - to help students develop the means to manage their careers by familiarizing them with entrepreneurship

## Educational Aims

Educational aims in the program-specific component are based on important values and concerns and serve as guidelines for interactions with students. As a general rule, educational aims focus on important aspects of the students' professional and personal development, such as attitudes, work habits and intellectual skills, which have not been explicitly formulated in the program's goals, objectives and standards.

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

The following is a description of the aims of the program-specific component of the *Radiation Oncology Technology* program:

- develop clinical judgment
- develop reflective thinking
- develop organizational skills and the ability to resolve problems and make decisions
- develop initiative and professional autonomy
- develop the commitment to upgrade and maintain their competencies

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

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

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

### English, Language of Instruction and Literature

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

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

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

## Humanities

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

- will be able to demonstrate their knowledge of the following:
  - the main concepts, limits and uses of a form of knowledge including significant historical reference points
  - the main concepts, limits and uses of a world view
  - the nature and organization of the basic elements of an ethical question
  - methods for coherent integration of concepts and the formulation and synthesis of ideas
  - the importance and practice of adequately substantiated argumentation, written and oral
- will be able to demonstrate their ability to do the following:
  - describe, explain and organize the main elements, ideas, values and implications of a world view in a coherent fashion
  - compare world views
  - recognize the basic elements in a specific example of the organization, transmission, and use of knowledge
  - recognize forms of creativity and original thought
  - define the dimensions, limits and uses of knowledge in appropriate historical contexts
  - identify, organize and synthesize the salient elements of a particular example of knowledge
  - situate important ethical and social issues in their appropriate historical and intellectual contexts
  - explain, analyze and debate ethical issues in a personal and professional context
  - utilize the multiple strategies of critical thinking
- will be encouraged to develop the following attitudes:
  - openness to diversity and pluralism
  - awareness of the limits of knowledge claims, world views and ethical perspectives
  - respect for the points of view of others
  - empathy and acceptance of others
  - concern for global issues
  - determination to continue learning

## French as a Second Language

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

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

## Physical Education

Students who have achieved the general education objectives in physical education

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

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

## Complementary General Education Component

### Social Sciences

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

### Science and Technology

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

### Modern Language

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

### Mathematics Literacy and Computer Science

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

### Art and Aesthetics

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

## Contemporary Issues

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

# Goals of the Program-Specific Component

The *Radiation Oncology Technology* program prepares students to practise the profession of radiation oncology technologist.

The only people authorized to use the title of Radiation Technologist are those who hold a licence to practice and are members of the Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec (OTIMROEPMQ). The Diploma of College Studies (DCS) in radiation oncology technology awarded by the Ministère de l'Éducation et de l'Enseignement supérieur is a prerequisite for taking the certification examination.

Radiation oncology technologists are health care professionals who work in a radiation oncology department within a hospital centre. Their role is directly linked to treating cancer and certain benign conditions following the prescription of a radiation oncologist. Their responsibilities essentially consist of planning the treatment in accordance with the prescription and administering external radiation treatments.

Managing patients who are undergoing treatment is a key component of professional practice. Radiation oncology technologists use various specialized software programs to capture, input and transmit information and images concerning patients and their treatments. Adjustments made as a result of analyzing images allow radiation oncology technologists to optimize the treatment plan. Clinical judgement is crucial to the performance of every one of their tasks.

# Objectives

## Statements of the Competency

### Program-Specific Component

06EN Analyze the profession

06EP Apply health, safety, protective and environmental measures

06EQ Ensure that materials, equipment, apparatuses and accessories are accessible and work properly

06ER Characterize a malignancy in terms of biomedical information and therapeutic modalities

06ES Use radiation therapy treatment equipment

06ET Use radiation oncology imaging apparatuses and systems

06EU Optimize the quality of images captured by imaging technologies

06EV Work on a team

06EW Interact with a radiation oncology patient

06EX Provide care to a radiation oncology patient

06F6 Characterize a brachytherapy treatment

06EY Resolve a technical problem related to a radiation oncology treatment plan or treatment

06EZ Make specific radiation oncology treatment accessories

06F0 Analyze a radiation oncology treatment plan

06F1 Administer an external radiation therapy treatment

06F2 Carry out a radiation oncology treatment plan

06F3 Perform a dosimetry

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

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

### English, Language of Instruction and Literature

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

### Humanities

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

### French as a Second Language

One objective to be met from the following:

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

One objective to be met from the following:

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

### Physical Education

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

## Complementary General Education Component

### 4 credits, 90 periods of instruction

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

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

## Grid of Competencies

The grid of competencies provides an overview of a technical program. It brings together all of the components of a program and shows the relationship among the competencies.

The grid of competencies includes:

- the general competencies of the program-specific component, which deal with work-related activities common to various tasks or situations
- the specific competencies, which deal with tasks directly related to the practice of the trade or occupation

The grid of competencies shows the relationship between the general competencies on the horizontal axis and the specific competencies on the vertical axis. The symbol (○) indicates a correlation between a general and a specific competency.

The order in which the competencies are presented reflects the program's design; it does not dictate the course sequence. The grid of competencies is provided for information purposes only.

## GRID OF COMPETENCIES

***RADIATION ONCOLOGY TECHNOLOGY***

| SPECIFIC COMPETENCIES | Competency Number | GENERAL COMPETENCIES | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Analyze the profession | Apply health, safety, protective and environmental measures | Ensure that materials, equipment, apparatuses and accessories are available and work properly | Characterize a malignancy in terms of biomedical information and therapeutic modalities | Use radiation therapy treatment equipment | Use radiation oncology imaging apparatuses and systems | Optimize the quality of images captured by imaging technologies | Work on a team | Interact with a radiation oncology patient | Provide care to a radiation oncology patient | Characterize a brachytherapy treatment | Resolve a technical problem related to a radiation oncology plan or treatment | Analyze a radiation oncology treatment plan |
| **Competency Number** | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 |
| Make specific radiation oncology treatment accessories | 13 | | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ | ○ | | |
| Administer an external radiation therapy treatment | 15 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ○ |
| Carry out a radiation oncology treatment plan | 16 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Perform a dosimetry | 17 | ○ | ○ | ○ | ○ | | | | ○ | | | | ○ | ○ |

## Program-Specific Component

Code: 06EN

| *Objective* | *Standard* |
|---|---|

| **Statement of the Competency** | **Achievement Context** |
|---|---|
| Analyze the profession. | • Using recent data on the practice of the profession<br>• Referring to the current organization of the health and social services system.<br>• Based on the laws and standards of practice that regulate the profession of radiation oncology technologist. |

| **Elements of the Competency** | **Performance Criteria** |
|---|---|
| 1. Characterize the profession and the conditions under which it is practised. | • Relevance of the information gathered<br>• Thorough examination of the characteristics of the profession and the conditions under which it is practised<br>• Accurate understanding of the roles of practitioners associated with the profession<br>• Accurate understanding of the opportunities for practice and career options |
| 2. Examine the tasks and activities associated with the profession. | • Careful examination of the tasks and activities, the conditions under which they are carried out and the applicable requirements<br>• Appropriate consideration of the relative importance of different tasks<br>• Correct relation of the steps in the work procedure to the tasks<br>• Appropriate consideration of the main work organization structures |
| 3. Examine the skills and behaviours needed to practise the profession. | • Relevance of links established between the skills and behaviours as well as their link with the different tasks associated with the profession.<br>• Recognition of appropriate behaviors in different work situations |
| 4. Examine the rules and standards of practice that govern the profession of radiation oncology technologist. | • Detailed examination of the requirements in the areas of ethics and professional conduct as well as standards of practice<br>• Accurate understanding of the limits within the scope of practice of the profession |
| 5. Examine the set of federal and provincial laws and regulations that govern the practice of the profession of radiation oncology technologist. | • Detailed examination of legal and regulatory requirements related to practicing the profession. |

Code : 06EP

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Apply health, safety, protective and environmental measures. | • In everyday situations that involve risks for technologists, their colleagues, the patient, the patient's family and friends, and the public<br>• Using protective devices, moving equipment, measuring equipment and other appropriate accessories<br>• By referring to technical manuals, established protocols and reference materials<br>• In compliance with current laws, regulations, standards and codes |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Use techniques and measures to protect the technologist, the patient and the patient's family and friends, the staff and the public from radiation. | • Strict application of the principles of radiation protection<br>• Correct application of work methods that reduce the patient's exposure to radiation<br>• Careful use of shielding materials and apparatuses<br>• Constant compliance with the rules and standards of radiation protection |
| 2. Provide information on the techniques and measures used for radiation protection to the patient, the patient's family and friends, the staff and the public. | • Clear explanation of the standards and regulations related to radiation protection<br>• Clear explanation of radiation protection measures<br>• Use of an adapted communication strategy |
| 3. Apply the instructions and regulations regarding the use of different sources of radiation and other forms of energy. | • Strict compliance with the applicable instructions and regulations concerning the use of X-rays, radionuclides, magnetic resonance and ultrasound equipment<br>• Accurate interpretation of dosimetric reports |
| 4. Handle biomedical, chemical and pharmaceutical materials and wastes, electrical apparatuses and compressed gases used in radiation oncology. | • Accurate identification of hazardous materials<br>• Strict application of safety measures with regard to handling chemical or biological materials and wastes<br>• Safe handling of electrical apparatuses and compressed gas canisters<br>• Proper storage and disposal of chemical or biological wastes<br>• Strict compliance with instructions and regulations with regard to the disposal of biomedical, chemical or pharmaceutical wastes and hazardous or radioactive materials |
| 5. Check the quality of contrast agents and other medications. | • Thorough check of the expiry dates and the integrity of contrast agents and other medications |

| Elements of the Competency | Performance Criteria |
|---|---|
| 6. Adopt ergonomic work postures and methods. | • Use of work postures that limit the risk of injury and accidents<br>• Correct application of techniques for safely moving patients, heavy objects and equipment on wheels<br>• Safe delimitation of work spaces where there is equipment that moves<br>• Appropriate use of mobile equipment |
| 7. Organize their work area ergonomically and safely. | • Accurate assessment of risks posed by the work station from the point of view of ergonomics<br>• Strict compliance with the principles for arranging a work station ergonomically and safely |
| 8. Apply measures designed to prevent and control the risk of contagions and biological contamination for the technologist, the patient, the staff and the public. | • Accurate recognition of the risk of contagions and contamination<br>• Sound choice of preventative measures appropriate to the identified risk<br>• Effective application of general and specific protective measures<br>• Effective use of personal decontamination measures<br>• Correct execution of decontamination methods for apparatuses and instruments |

Code : 06EQ

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Ensure that materials, equipment, apparatuses and accessories are accessible and work properly. | • In preparation for a treatment plan, a treatment or quality control<br>• Using different imaging and measuring apparatuses, specialized software, accessory apparatuses, phantoms and any other appropriate materials, equipment and accessories<br>• Using a logbook and procedures for assessing apparatus quality assurance performance<br>• Using reference documents related to manufacturers' standards and standards of practice |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Verify the operation, reliability and performance of radiation therapy planning and treatment apparatuses. | • Strict compliance with the verification and preventive maintenance program, the methods for carrying out verifications and the frequency of the verifications to be carried out<br>• Proper consideration of the type of apparatus and the assessment criteria to be applied<br>• Strict application of the start-up procedure for the treatment plan and treatment apparatuses<br>• Thorough verification of the soundness of the treatment plan and treatment apparatuses<br>• Thorough verification of safety apparatuses and accessories<br>• Strict respect for the input parameters and for the equipment and materials required for assessing the performance of apparatuses in accordance with the established procedure<br>• Thorough verification of the exactness of the geometric parameters of the apparatuses and tables<br>• Accurate analysis of the results observed<br>• Accurate detection of deviations from the reference values or of irregularities, and appropriate follow-up, if applicable |
| 2. Verify the operation of monitoring and communication systems. | • Strict compliance with the quality control program<br>• Thorough verification of the operation of monitoring and communication systems<br>• Immediate detection of irregularities and appropriate follow-up, if applicable |

| Elements of the Competency | Performance Criteria |
|---|---|
| 3. Verify the operation, reliability and performance of medical imaging apparatuses and systems. | • Strict compliance with the quality control program and the methods for carrying out the required verifications<br>• Thorough verification of the operation of imaging apparatuses and systems<br>• Precise calibration of imaging apparatuses and systems in accordance with the established protocols<br>• Accurate analysis of the results observed<br>• Accurate detection of deviations from the reference values or of irregularities, and appropriate follow-up, if applicable |
| 4. Verify the operation of alignment and immobilizing accessories as well as the related apparatuses. | • Strict compliance with the quality control program and the methods for carrying out the required verifications<br>• Proper consideration of the type of accessory or apparatus and the assessment criteria to be applied<br>• Thorough verification of the soundness and operation of accessories and apparatuses<br>• Accurate detection of malfunctions or irregularities, and appropriate follow-up, if applicable |
| 5. Verify the functioning of measuring materials and equipment. | • Strict compliance with the quality control program and the methods for carrying out the required verifications<br>• Proper consideration of the type of material or equipment and the assessment criteria to be applied<br>• Thorough verification of the soundness and operation of materials and equipment<br>• Accurate detection of malfunctions or irregularities, and appropriate follow-up, if applicable |
| 6. Follow up. | • Proper recording of the results of the verification<br>• Relevance of the information recorded<br>• Accurate and concise wording of the results.<br>• Thorough rerun of verification tests, if applicable<br>• Careful verification of corrective measures, if applicable<br>• Proper transmission of information to everyone concerned |
| 7. Participate in managing materials, equipment, apparatuses and accessories. | • Appropriate participation in needs analyses<br>• Appropriate collaboration with resource people<br>• Appropriate participation in the materials ordering process |

Code : 06ER

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Characterize a malignancy in terms of biomedical information and therapeutic modalities. | • Using images and clinical data in the patient's radiation oncology, radiology and medical files<br>• With the help of the prescription<br>• By referring to technical manuals and reference documents |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Interpret the clinical data in the patient's radiation oncology, radiology and medical files. | • Identification of relevant medical information<br>• Accurate interpretation of the prescription<br>• Accurate recognition and location of relevant anatomical structures<br>• Accurate recognition of etiological factors<br>• Careful search for contraindications with regard to the treatment plan or treatment process<br>• Sound consideration of the side effects of radiation<br>• Thorough examination of the medical information that could have an impact on the treatment plan or treatment<br>• Correct assessment of the impact of previous radiation oncology treatments |
| 2. Situate a malignancy in terms of the overall anatomy, relational anatomy and physiology of the human body. | • Accurate assessment of the anatomical, physiological and physiopathological characteristics of the system or organ affected by the cancer<br>• Accurate recognition of the characteristics of a normal cell, the cell cycle and unusual cell growth associated with the likely development of a cancer<br>• Accurate differentiation of basic tissues as part of the process of classifying tumours<br>• Accurate understanding of the process by which the different malignancies spread<br>• Accurate understanding of the lymphatic drainage route towards the lymphatic trunks associated with different organs affected by the cancer |
| 3. Connect a malignancy with the therapeutic modalities. | • Proper consideration of the various therapeutic modalities<br>• Proper consideration of the side effects with regard to various therapeutic modalities and combinations of modalities<br>• Proper consideration of the main medications used in oncology and radiation oncology<br>• Relevant establishment of links between the information and the clinical data |

Code : 06ES

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Use radiation therapy treatment equipment. | • In situations that require the use of an external radiation therapy treatment apparatus<br>• Using specialized software, radiation protection devices, beam measurement and verification apparatuses, and any other appropriate materials, equipment or accessories<br>• Using the supplier's manuals and reference documents<br>• In compliance with current laws, regulations, standards and codes<br>• Following the applicable rules of health, safety and radioprotection |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Differentiate the radiation therapy treatment apparatuses. | • Proper distinction of the principles of the production of radiation and other sources of energy<br>• Accurate distinction of the different treatment apparatuses used in external radiation therapy and in brachytherapy<br>• Proper distinction of the structure and operation of treatment apparatuses used in external radiation therapy and in brachytherapy<br>• Accurate differentiation between clinical applications in external radiation therapy and brachytherapy |
| 2. Characterize the effect of radiation on the human body. | • Accurate assessment of the risks and effects of the received dose of radiation on the human body<br>• Correct establishment of links between the received dose and the early, late, certain and uncertain effects<br>• Accurate application of the principle of fractionation of the prescribed dose for a radiation therapy treatment<br>• Accurate distinction of the effects of radiation on healthy and neoplastic tissues<br>• Accurate distinction of the tolerance doses for different tissues and organs as well as the consequences of overexposure<br>• Accurate differentiation of tissues in accordance with their radiosensitivity |

| Elements of the Competency | Performance Criteria |
|---|---|
| 3. Apply the procedures and protocols for using apparatuses. | • Strict application of the principles of radiation protection<br>• Sound choice of technical parameters to reduce the patient's exposure to radiation<br>• Careful use of work methods to reduce the patient's exposure to radiation<br>• Strict application of emergency measures with regard to radiation therapy apparatuses, if needed |
| 4. Establish the responsibilities of the radiation oncology technologist in relation to radiation protection. | • Proper consideration of the type of the radiation associated with the apparatus used<br>• Strict consideration of the rules associated with the use of radiation therapy treatment apparatuses |
| 5. Stay informed of the technological evolution of treatment apparatuses used in radiation oncology. | • Accurate assessment of the limitations and advantages associated with the use of new technologies in the field of radiation therapy<br>• Correct assimilation of concepts related to new technologies in the field of radiation therapy |

Code : 06ET

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Use radiation oncology imaging apparatuses and systems. | • In situations requiring the use of a medical imaging apparatus or system<br>• Using imaging equipment and systems, treatment apparatuses coupled with treatment equipment with incorporated image processing software, radioprotective devices and any other appropriate materials, equipment or accessories<br>• Using the supplier's manuals and reference documents<br>• In compliance with current laws, regulations, standards and codes<br>• Following the applicable rules of health, safety and protection |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Differentiate the imaging apparatuses and systems used in radiation oncology. | • Proper distinction of the principles of image production by the different imaging apparatuses and systems used in radiation oncology<br>• Accurate differentiation of the different types of imaging apparatuses and systems used in radiation oncology<br>• Proper distinction of the structure and operation of imaging apparatuses and systems used in radiation oncology |
| 2. Distinguish the types of radiation and sources of energy used to capture images. | • Proper consideration of the type of radiation or sources of energy generated by the imaging apparatuses and systems used in radiation oncology<br>• Accurate assessment of the risks associated with using X-rays, ultrasounds and MRIs in radiation oncology |
| 3. Ensure that imaging apparatuses and systems operate correctly. | • Thorough verification of the state of imaging apparatuses and systems<br>• Satisfactory adjustment of imaging apparatuses and systems<br>• Precise calibration of imaging apparatuses and systems<br>• Strict adherence to established procedures |
| 4. Differentiate the clinical applications related to the capturing of images for the treatment plan and treatment. | • Proper consideration of the characteristics of imaging apparatuses and systems<br>• Careful consideration of the information sought<br>• Proper consideration of the alignment and immobilizing accessories used<br>• Accurate distinction of the fundamental principles and radiation therapy planning and treatment techniques requiring the capture of images |

| Elements of the Competency | Performance Criteria |
|---|---|
| 5. Apply the principles and protocols for the use of medical imaging. | • Strict application of radiation protection principles<br>• Strict application of procedures for capturing and reconstructing images<br>• Careful use of work methods to reduce the patient's exposure to radiation<br>• Strict application of procedures and techniques for resetting and fusion of images, if required<br>• Thorough verification and appropriate adjustment of the treatment plan and treatment images<br>• Correct application of procedures for transferring and archiving images and data |
| 6. Situate the responsibilities of the radiation oncology technologist with regard to the use of imaging apparatuses and systems. | • Proper consideration of the type of radiation generated by the imaging apparatus or system used<br>• Strict consideration of the rules associated with the use of imaging apparatuses and systems in radiation oncology |
| 7. Stay informed of the technological evolution of imaging apparatuses and systems used in radiation oncology. | • Accurate assessment of the limitations and advantages associated with the use of new imaging technologies in the field of radiation therapy<br>• Correct assimilation of concepts related to new imaging technologies in radiation therapy |

Code : 06EU

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Optimize the quality of images captured by imaging technologies. | • In situations related to a radiation oncology treatment plan or treatment<br>• Based on a prescription<br>• Using images captured from various imaging processes such as magnetic resonance, computer tomography (CT) scan, imaging unit with a linear accelerator, positron emission tomography, portal imaging or other emerging technologies<br>• Using the patient's radiation oncology, radiology and medical files<br>• Using specialized software and embedded operating systems<br>• Using technical manuals and reference documents<br>• In compliance with standards of practice and established protocols |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Analyze the relevant data in the patient's radiation oncology file. | • Correct interpretation of the prescription and the clinical information included in it<br>• Thorough identification and relevant establishment of links between the information, images and data in the patient's file<br>• Meticulous validation of the consistency and conformity of the prescription |
| 2. Identify the anatomical structures concerned by the treatment plan or the treatment. | • Relevant use of internal anatomical reference points visible in the images<br>• Accurate recognition of anatomical structures present when the images were captured or processed<br>• Proper consideration of normal anatomical variants and abnormal structures |
| 3. Process the images for use in carrying out a treatment plan. | • Accurate analysis of the properties of the images captured for the plan<br>• Correct adjustment of the parameters for capturing, processing and posting of images as well as the quantification of data, if applicable<br>• Precise matching when resetting images in accordance with the treatment technique<br>• Correct analysis of the quality of the processed images<br>• Relevant decision with regard to the need for retakes<br>• Correct presentation of processed images and data |

| Elements of the Competency | Performance Criteria |
|---|---|
| 4. Process images for the purposes of doing a treatment and reset them, if applicable. | • Accurate analysis of the quality of images for validating alignment and reference images captured<br>• Correct adjustment of the parameters for the processing and posting of images as well as the quantification of data, if applicable<br>• Precise matching when resetting images in accordance with the treatment technique<br>• Correct analysis of the quality of the processed images<br>• Relevant decision making with regard to the need for retakes<br>• Correct presentation of processed images and data |
| 5. Follow up on images. | • Accuracy of data recorded<br>• Satisfactory transmission of images<br>• Correct archiving of images |

Code : 06EV

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Work on a team. | • In situations requiring team work and coordination<br>• Using the patient's radiation oncology, radiology and medical files<br>• Using administrative forms and information transmission tools<br>• In compliance with current laws, regulations, standards and codes |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Communicate with colleagues in a work situation. | • Satisfactory demonstration of attitudes and behaviours that facilitate teamwork and coordination<br>• Clear and concise transmission of clinical information |
| 2. Perform tasks with a colleague. | • Predetermined division of operations to be carried out<br>• Efficient sharing of information<br>• Smooth coordination of actions and movements<br>• Demonstration of cooperative attitudes and behaviours<br>• Joint responsibility for actions taken |
| 3. Work in collaboration. | • Effective communication with colleagues or other professionals<br>• Proper respect for the scope of practice of other professionals<br>• Clear affirmation of own scope of practice and professional autonomy<br>• Demonstration of open-mindedness and respect with regard to the different points of view expressed<br>• Positive contribution to activities and decisions<br>• Proper respect for decisions made by the team<br>• Appropriate use of medical terminology |

| Elements of the Competency | Performance Criteria |
|---|---|
| 4. Interact in conflict situations. | • Accurate reading of a conflict situation<br>• Critical self-examination of reactions to the situation<br>• Critical examination of colleagues' reactions to the situation<br>• Critical examination of the relevant elements of the situation<br>• Clear and respectful affirmation of own point of view<br>• Demonstration of willingness to listen to other points of view<br>• Search for an appropriate resolution of the situation<br>• Implementation of the chosen solution |
| 5. Coach trainees. | • Accurate recognition of the trainee's knowledge, skill and performance levels<br>• Appropriate support and guidance of the trainee in the performance of different tasks and the demonstration of desired behaviours<br>• Creation and maintenance of an atmosphere conducive to learning<br>• Informed participation in the trainee's evaluation process<br>• Sound assessment of own ability to train another person |
| 6. Adapt to different work situations. | • Demonstration of open-mindedness and flexibility<br>• Appropriate management of the stress inherent in practicing the profession<br>• Accurate assessment of the nature of the proposed change and its impacts on the practice of the profession<br>• Application of an appropriate adaptation strategy |
| 7. Participate in professional development activities. | • Demonstration of openness to sharing information and knowledge<br>• Demonstration of openness and respect for the different points of view expressed<br>• Positive contribution to the department's activities |

Code : 06EW

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Interact with a radiation oncology patient. | • In various work situations<br>• Using the clinical data from the patient's radiation oncology, radiology and medical files<br>• In accordance with the current rules of professional conduct |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Establish a quality relationship with a patient suffering from cancer. | • Appropriate consideration of the patient's physical, psychological, emotional and sociocultural characteristics<br>• Accurate assessment of the patient's physical, psychological and emotional state<br>• Accurate perception of the patient's needs in the area of information and of the patient's expectations<br>• Humane approach adapted to the patient<br>• Demonstration of attitudes consistent with rules of professional conduct<br>• Communication of instructions and information adapted to the patient<br>• Appropriate use of verbal and non-verbal communication techniques<br>• Demonstration of a willingness to listen to the patient and be empathetic<br>• Demonstration of active and respectful listening with the patient |
| 2. Situate oneself within the relationship with the patient. | • Accurate recognition of professional situations that carry great emotional weight<br>• Critical examination of one's reactions and personal attitudes to the patient<br>• Appropriate consideration of the limits of the scope of practice of the profession<br>• Accurate assessment of the quality of the relationship established<br>• Realistic identification of ways to improve the quality of the relationship with the patient |
| 3. Do the required follow-up. | • Appropriate direction of the patient to the professional that the situation requires, if applicable<br>• Accurate recording of notes in the patient's file<br>• Appropriate use of medical terminology |

Code : 06EX

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Provide care to a radiation oncology patient. | • Based on an individual or group prescription<br>• Alone or as a member of a team<br>• In situations involving examinations, treatment plans or treatments using teletherapy, brachytherapy or a combination of brachytherapy and teletherapy<br>• Using medications, contrast agents and any other appropriate materials or equipment<br>• Using the patient's radiation oncology, radiology and medical files<br>• By consulting technical manuals, established protocols and reference works.<br>• In compliance with current laws, regulations, standards and codes |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Assess the patient's overall condition. | • Relevant establishment of the interconnection of all the elements of the clinical situation<br>• Effective and adapted communication in order to check the patient's overall condition<br>• Appropriate verification of the patient's physical and psychological condition |
| 2. Identify the patient's needs. | • Accurate recognition of clinical signs associated with changes in the patient's overall condition or signs of patient distress<br>• Accurate identification of the actions to be taken |
| 3. Provide basic and comfort care. | • Meticulous preparation of the required materials and equipment<br>• Effective organization of the required materials and equipment<br>• Strict application of appropriate care protocols and procedures<br>• Strict application of ergonomic principles associated with the safe moving of patients as well as principles of hygiene and asepsis<br>• Humane approach adapted to the patient |

| Elements of the Competency | Performance Criteria |
|---|---|
| 4. Provide prescribed clinical care. | • Strict compliance with the prescription<br>• Meticulous preparation of the required materials and equipment<br>• Effective organization of the required materials and equipment<br>• Satisfactory administration of medications and other substances orally, intravenously or rectally, if applicable<br>• Satisfactory administration of oxygen, if applicable<br>• Strict application of appropriate care protocols and procedures<br>• Strict application of principles of hygiene and asepsis<br>• Careful monitoring of abnormal clinical signs and adverse reactions following the administration of contrast agents or any other medication, if applicable<br>• Humane approach adapted to the patient |
| 5. Monitor the evolution of the patient's overall condition. | • Maintenance of constant visual and auditory contact with the patient<br>• Appropriate reaction with respect to the evolution of the patient's overall condition |
| 6. Take action in a medical emergency. | • Immediate detection of abnormal clinical signs<br>• Organization of a safety perimeter and environment<br>• Effective use of materials and medications required by the emergency<br>• Correct execution of the cardiopulmonary resuscitation technique, if applicable<br>• Correct execution of required first aid techniques |
| 7. Respect the patient's moral and physical integrity. | • Consideration of the patient's sociocultural characteristics<br>• Accurate recognition of the ethical and moral aspect of the work situation<br>• Strict compliance with the rules of professional conduct and respect for the patient's rights |
| 8. Safeguard the confidentiality of the patient's file. | • Accurate recognition of work situations that require safeguarding the confidentiality of the patient's file<br>• Strict compliance with the rules of professional conduct and respect for the patient's rights |
| 9. Direct the patient to other resources or practitioners, if applicable. | • Relevant referral of the patient to appropriate resources or practitioners<br>• Satisfactory transmission of information to practitioners |
| 10. Record the clinical data, observations and monitoring of side effects in the patient's file. | • Relevance of the information recorded<br>• Accurate recording of clinical data in the patient's file<br>• Appropriate use of medical terminology |

Code : 06F6

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Characterize a brachytherapy treatment. | • Based on the prescription<br>• Using the images and clinical data in the patient's radiation oncology, radiology and medical files<br>• Using technical manuals and reference documents<br>• In compliance with current laws, regulations, standards and codes |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Distinguish the implants used in brachytherapy. | • Differentiation of the types of permanent and temporary implants<br>• Characterization of the radioactive sources that make up the implants<br>• Precise association between an implant and a dose rate<br>• Consideration of the principles of radiation protection when transporting or preparing implants |
| 2. Distinguish the types of brachytherapy. | • Accurate identification of the indications and contraindications for the different types of brachytherapy<br>• Proper association of the types of brachytherapy and the applicators needed<br>• Establishment of connections between the types of brachytherapy and the clinical procedures required<br>• Recognition of the care to be given depending on the type of brachytherapy<br>• Application of the principles for cleaning, disinfecting and sterilizing materials and equipment |
| 3. Establish connections between the treatment and the information to be given to the patient. | • Consideration of the patient's condition and needs<br>• Accuracy and clarity of the information to be given to the patient in preparation for the treatment<br>• Accuracy and clarity of the instructions to be given to the patient during the clinical procedure<br>• Accuracy and clarity of the recommendations to be made to the patient following the treatment<br>• Establishment of connections between the type of brachytherapy and the side effects |

Code : 06EY

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Resolve a technical problem related to a radiation oncology treatment plan or treatment. | • In response to a specific request, situation or need<br>• Under the supervision of the chief technologist<br>• In collaboration with the radiation oncologist, the coordinator, the physician and other radiation oncology technologists in the department<br>• Using radiation protection devices, treatment plan and treatment equipment, measuring instruments, specialized software and any other appropriate materials or equipment<br>• Using technical manuals, protocols, monographs, apparatus operating manuals and any other reference document or reference work |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Examine the need to be addressed or the problem to be resolved. | • Thorough consideration of all the data related to the clinical situation<br>• Correct identification of the problematic elements in the clinical situation<br>• Consideration of all relevant information<br>• Appropriate exchange of information with the team of professionals, if necessary |
| 2. Characterize the situation or problem. | • Careful consultation of biomedical, radiological and technical data related to the situation or problem<br>• Appropriate consideration of established standards and protocols<br>• Thorough analysis of constraints linked to the necessary resources<br>• Precise description of the problem with regard to the appropriate technological field |
| 3. Propose a solution. | • Sharing of appropriate information with the team of professionals, if necessary<br>• Correct choice of modifications to be made to the technique used for the plan or the treatment<br>• Technical specifications of elements of the proposed solution |
| 4. Validate the solution with the team of professionals. | • Operational presentation of the proposed solution<br>• Operational participation in applying the proposed solution<br>• Operational participation in evaluating the proposed solution |

Code : 06EZ

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Make specific radiation oncology treatment accessories. | • Based on a prescription, form, verbal or written instructions from the supervisor or from the radiation oncologist, etc.<br>• Using the patient's radiation oncology, radiology and medical files<br>• Using specialized software, tools, protective devices, equipment alignment and immobilizing accessories, and any other appropriate equipment or accessories<br>• By referring to technical manuals, apparatus operating manuals and established protocols<br>• In compliance with current laws, regulations, standards and codes<br>• Following the applicable rules of health, safety and protection |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Analyze the patient's radiation oncology, radiology and medical files. | • Meticulous gathering of all relevant data concerning the accessories to be made<br>• Accurate interpretation of the prescription and the clinical data written on it<br>• Meticulous validation of the consistency and conformity of the prescription<br>• Relevant establishment of links between the data |
| 2. Carry out preparatory activities. | • Satisfactory preparation of the room used for moulding, treatment plan or treatment<br>• Appropriate verification that the equipment and accessories are working properly, if applicable<br>• Careful verification of the availability of emergency equipment and materials |

| Elements of the Competency | Performance Criteria |
|---|---|
| 3. Take charge of the patient. | • Appropriate greeting and correct identification of the patient<br>• Accurate assessment of the patient's overall condition<br>• Humane approach adapted to the patient<br>• Demonstration of attitudes that are consistent with the code of professional conduct<br>• Communication of complete instructions and information adapted to the patient's treatment and to the accessories to be made<br>• Appropriate preparation of the patient<br>• Correct carrying out of the required care<br>• Correct installation of related apparatuses, if appropriate<br>• Careful monitoring of the patient's overall condition and appropriate reactions, if applicable<br>• Careful monitoring of related apparatuses, and appropriate reactions |
| 4. Choose the positioning of the patient, the immobilization accessories and the beam modifiers, if applicable. | • Informed consideration of the patient's physical limits<br>• Informed consideration of the mechanical limits of the apparatuses<br>• Strict application of principles related safe patient transfers<br>• Sound choice of the positioning of the patient and accessories in accordance with the area to be immobilized and the reproducibility of the position<br>• Correct use of anatomical guidelines and positioning laser systems for the clinical alignment of the patient<br>• Correct installation of standard accessories, if applicable<br>• Gaining of the patient's trust<br>• Constant concern for the patient's safety and comfort<br>• Communication of clear information adapted to the patient in order to obtain his or her cooperation |

| Elements of the Competency | Performance Criteria |
|---|---|
| 5. Make positioning and immobilization accessories adapted to the patient. | • Precise moulding of the immobilization mask, if applicable<br>• Precise moulding of the immobilization cushion, if applicable<br>• Precise making of the mouth spreader or tongue depressor, if applicable<br>• Strict following of the steps of the established procedure<br>• Accurate assessment of the technical quality of the accessory made<br>• Relevant decision with regard to the need to remake the accessory<br>• Precise adjustment of the accessory, if applicable<br>• Correct marking of the accessory |
| 6. Make beam modification accessories. | • Precise making of the bolus, if applicable<br>• Precise making of the electron mask, if applicable<br>• Strict following of the steps of the established procedure<br>• Accurate assessment of the technical quality of the accessory made<br>• Relevant decision with regard to the need to remake the accessory<br>• Precise adjustment of the accessory, if applicable<br>• Correct marking of the accessory |
| 7. Complete the procedure. | • Precise tracing of external guidelines on the patient's skin, if applicable<br>• Careful use of required care techniques<br>• Safe disconnection of the patient from the accessories<br>• Accuracy, clarity and relevance of the information transmitted to the patient following the procedure<br>• Relevance of the information recorded<br>• Accurate and concise recording of clinical and technical data in the patient's file<br>• Appropriate use of medical terminology<br>• Proper transfer of accessories to the room used for the treatment plan or the treatment<br>• Meticulous verification of the completion of the procedure |

Code : 06F0

## *Objective*

## *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Analyze a radiation oncology treatment plan. | • In situations related to the planning of a treatment and the associated techniques<br>• Using the patient's radiation oncology, radiology and medical files<br>• Using specialized software and embedded operating systems<br>• Using technical manuals and reference documents<br>• In compliance with standards of practice and established protocols |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Verify the conformity of the patient's radiation oncology file. | • Meticulous verification of the conformity of the prescription<br>• Meticulous verification of the concordance and consistency between the data in the treatment plan and those in the radiation oncology file<br>• Careful verification of the conformity of the images in the patient's file<br>• Accurate identification and interpretation of nonconformities and appropriate follow-up, if applicable |
| 2. Differentiate the specifics of the clinical situation. | • Thorough examination of all the medical data, prescription data and planning data<br>• Thorough review of the treatment parameters to be respected<br>• Accurate identification and interpretation of nonconformities and appropriate follow-up, if applicable |
| 3. On the radiology images, locate the anatomical structures to treat and to protect. | • Precise identification of the volumes to treat and to protect<br>• Precise identification of relevant anatomical structures<br>• Careful consideration of anatomical structures that cannot be seen on radiology images<br>• Precise location of structures in relation to each other |

| Elements of the Competency | Performance Criteria |
|---|---|
| 4. Interpret the dosimetry plan. | • Critical examination of the dosimetric parameters<br>• Appropriate request for verification of the prescribed dose<br>• Appropriate comparison of the plan with the specific characteristics of the patient<br>• Appropriate comparison of the plan with the specific characteristics of the equipment to be used<br>• Accurate identification and interpretation of nonconformities and appropriate follow-up, if applicable |
| 5. Participate in identifying the elements required to begin treating the patient. | • Clear expression of understanding of the treatment plan<br>• Effective contribution to the identification of the risks associated with the treatment<br>• Effective contribution to the planning of tasks related to positioning, accessories, and the adjustment of geometrical and physical parameters<br>• Effective communication within the team of technologists responsible for the treatment.<br>• Effective communication with the radiation oncology team |

Code : 06F1

## *Objective* *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Administer an external radiation therapy treatment. | • Based on a prescription<br>• With another radiation oncology technologist<br>• Using linear accelerators, multimodal treatment apparatuses, conventional and multimodal imaging apparatuses, specialized software, embedded operating systems, associated apparatuses and any other appropriate materials, accessories or instruments<br>• Using the patient's radiation oncology, radiology and medical files<br>• By referring to technical manuals, standards of practice and established protocols<br>• In compliance with current laws, regulations, standards and codes<br>• Following the applicable rules of health, safety and protection |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Analyze the patient's radiation oncology file. | • Thorough consideration of all the data related to the patient's treatment plan<br>• Accurate interpretation of the prescription and the clinical data written on it<br>• Meticulous validation of the consistency and conformity of the prescription<br>• Meticulous verification of the concordance between the clinical data in the file and those in the treatment plan<br>• Relevant establishment of links between the data |
| 2. Carry out preparatory activities. | • Meticulous gathering of the relevant data with regard to the treatment to be carried out<br>• Satisfactory preparation of the treatment room, equipment, materials, accessories and all the other associated apparatuses required<br>• Preventive verification of the availability of emergency equipment and materials |
| 3. Take charge of the patient. | • Appropriate greeting and correct identification of the patient<br>• Accurate assessment of the patient's overall condition<br>• Proper communication of information concerning the treatment process to the patient or the accompanying person<br>• Satisfactory verification of the prior preparation or appropriate preparation of the patient<br>• Establishment of an appropriate climate of trust |

| Elements of the Competency | Performance Criteria |
|---|---|
| 4. Align the patient with the external guidelines and immobilization accessories, if applicable. | • Strict application of principles related to moving patients safely<br>• Correct use of anatomical guidelines and positioning laser systems for the clinical alignment of the patient<br>• Precise use of external guidelines on the patient's skin<br>• Strict observance of the positioning and accessories indicated on the treatment plan<br>• Correct positioning of the patient<br>• Correct installation of accessories, if applicable<br>• Gaining of the patient's trust<br>• Constant concern for the patient's safety and comfort |
| 5. Position the treatment apparatus and the beam modifiers, if applicable. | • Strict observance of the positioning parameters of the treatment apparatus and beam modifiers, if applicable<br>• Constant vigilance when the apparatus is moving<br>• Careful taking and verification of the required measurements<br>• Correct installation of accessories, if applicable<br>• Gaining of the patient's trust |
| 6. Check the positioning of the patient and the isocentre using imaging systems. | • Careful use of conventional and multimodal imaging apparatuses<br>• Careful use of the images and data in the treatment plan<br>• Correct taking of images<br>• Appropriate adjustment of the positioning<br>• Precise tracing of external guidelines on the patient's skin, if applicable<br>• Careful monitoring of the patient's overall condition and movements, and appropriate reactions, if applicable<br>• Gaining of the patient's trust |
| 7. Check for discrepancies between the treatment parameters and the treatment plan parameters. | • Immediate detection of discrepancies and appropriate correction, if applicable<br>• Accurate recording of the discrepancy in the patient's file |
| 8. Administer the radiation treatment. | • Strict compliance with the treatment sequence<br>• Careful monitoring of the irradiation treatment process<br>• Careful monitoring of the patient's overall condition and movements, and appropriate reactions, if applicable<br>• Careful monitoring of the associated apparatuses and taking of appropriate action, if applicable<br>• Accurate recording of the dose and the monitor units (MU) in the file.<br>• Constant vigilance when the apparatus is moving |

| Elements of the Competency | Performance Criteria |
|---|---|
| 9. Complete the treatment. | • Thorough application of required care techniques<br>• Safe disconnection of the patient from the equipment<br>• Accuracy, clarity and relevance of the information transmitted to the patient following the treatment<br>• Proper recording of clinical and technical data in the patient's file<br>• Appropriate use of medical terminology<br>• Proper transfer and filing of images and data<br>• Proper follow-up of verification images<br>• Meticulous verification of the completion of the procedure |

Code : 06F2

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Carry out a radiation oncology treatment plan. | • Based on a prescription<br>• With another radiation oncology technologist<br>• Using a CT scan or any other apparatus for planning<br>• Using contrast agents, specialized software, embedded operating systems, associated apparatuses and any other appropriate materials, accessories or instruments<br>• Using the patient's radiation oncology, radiology and medical files<br>• By referring to technical manuals and established protocols<br>• In compliance with current laws, regulations, standards and codes<br>• Following the applicable rules of health, safety and protection |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Analyze the patient's radiation oncology, radiology and medical files. | • Thorough consideration of all the data related to the plan to be carried out<br>• Accurate interpretation of the prescription and the clinical data it provides<br>• Meticulous validation of the consistency and conformity of the prescription<br>• Careful verification of previous files, if applicable<br>• Relevant establishment of links between the data |
| 2. Carry out preparatory activities. | • Meticulous gathering of relevant data for the plan to be carried out<br>• Proper preparation of the examination room, materials, equipment, accessories, contrast agent and medications, if applicable, as well as all other associated apparatus required<br>• Preventive verification of the availability of emergency equipment and materials<br>• Proper choice of examination protocol and technical parameters |

| Elements of the Competency | Performance Criteria |
|---|---|
| 3. Take charge of the patient. | • Appropriate greeting and correct identification of the patient<br>• Accurate assessment of the patient's overall condition<br>• Humane approach adapted to the patient<br>• Proper communication of information regarding the treatment plan process to the patient or accompanying person<br>• Satisfactory verification of the prior preparation or appropriate preparation of the patient<br>• Careful gathering of the information required for the treatment plan process<br>• Meticulous verification of contraindications with respect to the administration of the contrast agent<br>• Thorough application of required care techniques |
| 4. Position the patient. | • Strict application of principles related to moving patients safely<br>• Appropriate choice of the positioning of the patient<br>• Appropriate choice of accessories<br>• Strict application of techniques for making accessories, if applicable<br>• Correct use of anatomical guidelines and positioning laser systems for the clinical alignment of the patient<br>• Correct placement and immobilization of the patient<br>• Correct placement of accessories and associated apparatuses, if applicable<br>• Correct placement of markers on the patient, if applicable<br>• Constant concern for the patient's safety and comfort |
| 5. Administer the contrast agents and medications, if applicable. | • Appropriate choice of the method, site and moment for administration as well as the infusion rate for the medication and the contrast agent<br>• Strict application of techniques for administering contrast agents and medications<br>• Watching closely for abnormal clinical manifestations and adverse reactions following the administration of the contrast agent and, if applicable, taking of appropriate action |

| Elements of the Competency | Performance Criteria |
|---|---|
| 6. Collect anatomical data while the patient is in the treatment position. | • Correct adjustment of technical parameters in accordance with the type of treatment plan and the patient's physical characteristics<br>• Strict compliance with the sequence of procedures in the treatment plan protocol<br>• Proper communication of verbal instructions regarding the treatment plan process to the patient<br>• Careful monitoring of the patient's overall condition and movements, and appropriate reaction, if applicable<br>• Careful monitoring of the associated apparatuses, and appropriate reaction, if applicable |
| 7. Assess the quality of the examination. | • Correct analysis of the quality of the captured images<br>• Relevant decision with regard to the need to retake images<br>• Detection and appropriate reporting of software problems<br>• Correct validation of the positioning of the patient<br>• Correct check of the positioning and immobilization accessories, if applicable |
| 8. Complete the examination. | • Precise tracing of external guidelines on the patient's skin and taking of photographs, if applicable<br>• Thorough application of required care techniques<br>• Safe disconnection of the patient from the equipment<br>• Accuracy, clarity and relevance of the information given to the patient following the treatment plan process<br>• Relevance of the data recorded<br>• Accurate and concise recording of clinical data in the patient's file<br>• Appropriate use of medical terminology<br>• Proper transfer and filing of images and data<br>• Meticulous verification of the completion of the plan<br>• Satisfactory preliminary processing of images for use in dosimetric planning, if applicable |

Code : 06F3

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Perform a dosimetry. | • Based on a prescription<br>• In collaboration with the radiation oncology team of professionals<br>• In situations involving treatment plans using teletherapy, brachytherapy or a combination of brachytherapy and teletherapy<br>• By referring to the patient's radiation oncology, radiology and medical files<br>• Using specialized software and embedded operating systems<br>• Using calibration parameters, isodose curves and reference tables<br>• Using technical manuals and reference documents<br>• In compliance with established practice standards and protocols<br>• By referring to the usual responsibilities of entry-level radiation oncology technologists |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Select the physical and geometric elements required for the treatment. | • Appropriate choice of reference point<br>• Appropriate choice of physical parameters<br>• Appropriate choice of geometric parameters |
| 2. Determine the elements required to obtain an optimal dose distribution. | • Meticulous verification of the exactness of the data collected that corresponds to the clinical, geometric and technical parameters of a situation<br>• Accurate correction of data in accordance with the entry surface irregularities, the heterogeneity of the irradiated tissues and the irregularity of the fields (teletherapy)<br>• Precise calculation of doses, times or monitor units<br>• Full analysis of the parameters that influence the distribution of the radiation<br>• Appropriate selection of various methods for adjusting the influence of different parameters on the distribution of the dose<br>• Meticulous validation of the volumes to be treated and to be protected<br>• Meticulous verification of the conformity of the distribution of doses |

| Elements of the Competency | Performance Criteria |
|---|---|
| 3. Analyze the dosimetry produced before transferring the data. | • Appropriate detection and reporting of software problems<br>• Meticulous verification of tolerated dosage deviations in accordance with the treatment protocols<br>• Informed decision as to the procedure to follow |
| 4. Complete the examination. | • Meticulous cross-verification of the dose to administer<br>• Compliance with the protocol for transmitting a dosimetric plan for the treatment. |

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

| English, Language of Instruction and Literature | Code: 4EA0 |
|---|---|

***Objective*** ***Standard***

| **Statement of the Competency** |
|---|
| Analyze and produce various forms of discourse. |

| **Elements of the Competency** | **Performance Criteria** |
|---|---|
| 1. Identify the characteristics and functions of the components of literary texts. | • Accurate explanation of the denotation of words<br>• Adequate recognition of the appropriate connotation of words<br>• Accurate definition of the characteristics and function of each component |
| 2. Determine the organization of facts and arguments of a given literary text. | • Clear and accurate recognition of the main idea and structure<br>• Clear presentation of the strategies employed to develop an argument or thesis |
| 3. Prepare ideas and strategies for a projected discourse. | • Appropriate identification of topics and ideas<br>• Adequate gathering of pertinent information<br>• Clear formulation of a thesis<br>• Coherent ordering of supporting material |
| 4. Formulate a discourse. | • Appropriate choice of tone and diction<br>• Correct development of sentences<br>• Clear and coherent development of paragraphs<br>• Formulation of a 750-word discourse |
| 5. Revise the work. | • Appropriate use of revision strategies<br>• Appropriate revision of form and content |

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

| English, Language of Instruction and Literature | Code: 4EA1 |
|---|---|

***Objective*** ***Standard***

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

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

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

| English, Language of Instruction and Literature | Code: 4EA2 |
|---|---|

***Objective*** ***Standard***

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

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

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

| English, Language of Instruction and Literature | Code: 4EAP |
|---|---|

***Objective*** ***Standard***

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

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

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

| Humanities | Code: 4HU0 |
|---|---|

***Objective*** ***Standard***

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

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

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

| Humanities | Code: 4HU1 |
|---|---|

***Objective*** ***Standard***

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

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

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

| Humanities | Code: 4HUP |
|---|---|

***Objective*** ***Standard***

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

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

| **Learning Activities** | |
|---|---|
| Discipline: | Humanities |
| Periods of instruction: | 45 |
| Credits: | 2 |

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

***Objective*** ***Standard***

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

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

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

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

***Objective*** ***Standard***

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

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

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

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

***Objective*** ***Standard***

| **Statement of the Competency** |
|---|
| Communicate with ease in standard French. |

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

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

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

***Objective*** ***Standard***

| **Statement of the Competency** |
|---|
| Explore a cultural and literary topic. |

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

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

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

***Objective*** ***Standard***

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

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

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

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

***Objective*** ***Standard***

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

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

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

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

***Objective*** ***Standard***

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

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

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

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

***Objective*** ***Standard***

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

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

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

| Physical Education | Code: 4EP0 |
|---|---|

***Objective*** ***Standard***

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

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

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

| Physical Education | Code: 4EP1 |
|---|---|

***Objective*** ***Standard***

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

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

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

| Physical Education | Code: 4EP2 |
|---|---|

***Objective*** ***Standard***

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

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

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

## Complementary General Education Component

| Social Sciences | Code: 000V |
|---|---|

### *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Estimate the contribution of the social sciences to an understanding of contemporary issues. | • Working alone<br>• In an essay of approximately 750 words on the contribution of the social sciences to an understanding of contemporary issues<br>• Using documents and data from the field of social sciences |

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

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

| Social Sciences | Code: 000W |
|---|---|

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Analyze one of the major problems of our time using one or more social scientific approaches. | • Working alone<br>• In an essay of approximately 750 words on a topic related to human existence<br>• Using reference materials from the field of social sciences |

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

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

| Science and Technology | Code: 000X |
|---|---|

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Explain the general nature of science and technology and some of the major contemporary scientific or technological issues. | • Working alone<br>• Using a written commentary on a scientific discovery or technological development<br>• In an essay of approximately 750 words |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Describe scientific thinking and the standard scientific method. | • Brief description of the essential characteristics of scientific thinking, including quantification and demonstration<br>• Ordered list and brief description of the essential characteristics of the main steps in the standard scientific method |
| 2. Demonstrate how science and technology are complementary. | • Definition of terms and description of the primary ways in which science and technology are interrelated: logical and temporal connections, and mutual contributions |
| 3. Explain the context and the stages related to several scientific and technological discoveries. | • Pertinent and coherent explanation of the relationship between the determining contexts related to several scientific and technological discoveries<br>• Listing of the main stages of scientific and technological discoveries |
| 4. Deduce different consequences and questions resulting from certain recent scientific and technological developments. | • Brief description of important consequences (of different types) and the current major challenges resulting from several scientific and technological discoveries<br>• Formulation of relevant questions and credibility of responses to the questions formulated |

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

| Science and Technology | Code: 000Y |
|---|---|

## *Objective* — *Standard*

| **Statement of the Competency** | **Achievement Context** |
|---|---|
| Resolve a simple problem by applying the basic scientific method. | • Working alone or in groups<br>• Applying the standard scientific method to a given, simple scientific and technological problem<br>• Using common scientific instruments and reference materials (written or other) |

| **Elements of the Competency** | **Performance Criteria** |
|---|---|
| 1. Describe the main steps of the standard scientific method. | • Ordered list and brief description of the characteristics of the steps of the standard scientific method |
| 2. Formulate a hypothesis designed to resolve a simple scientific and technological problem. | • Clear, precise description of the problem<br>• Observance of the principles for formulating a hypothesis (observable and measurable nature of data, credibility, etc.) |
| 3. Verify a hypothesis by applying the fundamental principles of the basic experimental method. | • Pertinence, reliability and validity of the experimental method used<br>• Observance of established experimental method<br>• Appropriate choice and use of instruments<br>• Clear, satisfactory presentation of results<br>• Validity of the connections established between the hypothesis, the verification and the conclusion |

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

| Modern Language | Code: 000Z |
|---|---|

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Communicate with limited skill in a modern language. | • For modern Latin-alphabet languages:<br>  ○ during a conversation consisting of at least eight lines of dialogue<br>  ○ in a written text consisting of at least eight sentences<br>• For modern non–Latin-alphabet languages:<br>  ○ during a conversation consisting of at least six lines of dialogue<br>  ○ in a written text consisting of at least six sentences<br>• Based on learning situations on familiar themes<br>• Using reference materials |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Understand the meaning of an oral message. | • Accurate identification of words and idiomatic expressions<br>• Clear recognition of the general meaning of simple messages<br>• Logical connection between the various elements of the message |
| 2. Understand the meaning of a written message. | • Accurate identification of words and idiomatic expressions<br>• Clear recognition of the general meaning of simple messages<br>• Logical connection between the various elements of the message |
| 3. Express a simple message orally. | • Appropriate use of language structures in main and coordinate clauses<br>• Appropriate application of grammar rules<br>• Use of verbs in the present indicative<br>• Appropriate use of basic vocabulary and idiomatic expressions<br>• Clear pronunciation<br>• Coherent sequencing of simple sentences<br>• Spontaneous and coherent sequencing of sentences in a conversation |
| 4. Write a text on a given subject. | • Appropriate use of language structures in main and coordinate clauses<br>• Appropriate application of basic grammar rules<br>• Use of verbs in the present indicative<br>• Appropriate use of basic vocabulary and idiomatic expressions<br>• Coherent sequencing of simple sentences<br>• Acceptable application of graphic rules for writing systems that do not use the Latin alphabet |

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

| Modern Language | Code: 0010 |
|---|---|

## *Objective*

## *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Communicate on familiar topics in a modern language. | • During a conversation that includes at least 15 lines of dialogue<br>• In a written text consisting of at least 20 sentences for Latin-alphabet languages<br>• In a written text consisting of at least 10 sentences for non–Latin-alphabet languages<br>• Based on:<br>  ○ common situations in everyday life<br>  ○ simple topics from everyday life<br>• Using reference materials |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Understand the meaning of an oral message. | • Accurate identification of words and idiomatic expressions<br>• Clear recognition of the general meaning and essential ideas of messages of average complexity<br>• Logical connection between the various elements of the message |
| 2. Understand the meaning of a written message. | • Accurate identification of words and idiomatic expressions<br>• Clear recognition of the general meaning and essential ideas of messages of average complexity<br>• Logical connection between the various elements of the message |
| 3. Express a simple message orally, using sentences of average complexity. | • Appropriate use of language structures in main or subordinate clauses<br>• Appropriate application of grammar rules<br>• Use of verbs in the present indicative<br>• Appropriate use of enriched basic vocabulary and idiomatic expressions<br>• Clear pronunciation<br>• Coherent sequencing of sentences<br>• Dialogue |
| 4. Write a text on a given subject, using sentences of average complexity. | • Appropriate use of language structures in main or subordinate clauses<br>• Appropriate application of grammar rules<br>• Use of verbs in the present and past indicative<br>• Appropriate use of enriched basic vocabulary and idiomatic expressions<br>• Coherent sequencing of sentences of average complexity<br>• Acceptable application of graphic rules for writing systems that do not use the Latin alphabet |

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

| Modern Language | Code: 0067 |
|---|---|

## *Objective* — *Standard*

| Statement of the Competency | Achievement Context |
|---|---|
| Communicate with relative ease in a modern language. | • Working alone<br>• During a conversation consisting of at least 20 lines of dialogue<br>• In a written text of medium length (at least 25 sentences for Latin-alphabet languages and 15 sentences for other languages)<br>• Given documents of a sociocultural nature<br>• Using reference materials for the written text |

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Understand the meaning of an oral message in everyday language. | • Accurate explanation of the general meaning and essential ideas of the message<br>• Clear identification of structural elements of the language |
| 2. Understand the meaning of a text of average complexity. | • Accurate explanation of the general meaning and essential ideas of the text<br>• Clear identification of structural elements of the language |
| 3. Have a conversation on a subject. | • Appropriate use of the structural elements of the language according to the message to be expressed<br>• Appropriate use of everyday vocabulary<br>• Accurate pronunciation and intonation<br>• Normal flow in a conversation in everyday language<br>• Coherence of the message expressed<br>• Pertinent responses to questions |
| 4. Write a text of average complexity. | • Appropriate use of the structural elements of the language according to the text to be written<br>• Accurate vocabulary<br>• Coherence of the text as a whole<br>• Observance of presentation and writing rules applicable to the text |

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

| Mathematics Literacy and Computer Science | Code: 0011 |
|---|---|

## *Objective* — *Standard*

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

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

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

| Mathematics Literacy and Computer Science | Code: 0012 |
|---|---|

## *Objective*

## *Standard*

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

| Elements of the Competency | Performance Criteria |
|---|---|
| 1. Demonstrate the acquisition of basic functional knowledge in mathematics or computer science. | • Brief definition of concepts<br>• Correct execution of basic operations<br>• Appropriate use of terminology |
| 2. Select mathematical or computing tools and procedures on the basis of specific needs. | • Listing of numerous possibilities available through the use of mathematical and computing tools and procedures<br>• Analysis of concrete situations and recognition of the usefulness of mathematical or computing tools and procedures<br>• Appropriate choice according to needs |
| 3. Use mathematical or computing tools and procedures to carry out tasks and resolve problems. | • Use of a planned and methodical process<br>• Correct use of tools and procedures<br>• Satisfactory results, given the context<br>• Appropriate use of terminology specific to a tool or procedure |
| 4. Interpret the quantitative data or results obtained using mathematical or computing tools and procedures. | • Accurate interpretation, given the context<br>• Clear, precise formulation of the interpretation |

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

| Art and Aesthetics | Code: 0013 |
|---|---|

## *Objective* — *Standard*

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

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

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

| Art and Aesthetics | Code: 0014 |
|---|---|

## *Objective* — *Standard*

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

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

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

| Contemporary Issues | Code: 021L |
|---|---|

## *Objective* — *Standard*

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

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

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

| Contemporary Issues | Code: 021M |
|---|---|

## *Objective* — *Standard*

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

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

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

# Additional Information

## Vocabulary Used in Technical Programs

### Program

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

### Competency

In the program-specific component of a technical program, a competency is defined as the ability to act, succeed and evolve in order to adequately perform tasks or work-related activities, based on an organized body of knowledge (including elements of knowledge, skills in a variety of fields, perceptions, attitudes, etc.) (*Élaboration des programmes d'études techniques*, *Cadre général – Cadre technique 2002*, p. 15).

### Objective

An objective is defined as the competency, skills or knowledge to be acquired or mastered (*College Education Regulations,* s. 1). Each objective is formulated in terms of a competency and includes a statement of the competency and its elements. The achievement of objectives and respect for the standards ensure the acquisition or mastery of the college-level general education competencies.

### Statement of the Competency

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

### Elements of the Competency

In the program-specific component of a technical program, the elements of the competency include only what is necessary in order to understand and master the competency. They refer to the major steps involved in performing a task or to the main components of the competency.

In the general education components, the elements of an objective, formulated in terms of a competency, specify the main aspects of the competency.

### Standard

A standard is defined as the level of performance at which an objective is considered to be achieved (*College Education Regulations,* s. 1). In the program-specific component of a technical program, it is composed of an achievement context and performance criteria.

## Performance Criteria

In the program-specific component of a technical program, the performance criteria define requirements by which to judge the attainment of each element of the competency and consequently of the competency itself. The performance criteria are based on the requirements at entry level on the job market. Each element of the competency requires at least one performance criterion.

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

In both components, all the criteria must be respected for the objective to be recognized as having been attained.

## Achievement Context

In the program-specific component of a technical program, the achievement context corresponds to the situation in which the competency is exercised at entry-level on the job market. The achievement context does not specify the context for learning or evaluation.

## Learning Activities

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

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

## Harmonization

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

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

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

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

Harmonization of the *Radiation Oncology Technology* program has resulted in identifying competencies that are shared with other programs. Detailed information on the harmonization of this program and its results are presented in the document entitled *Tableaux d'harmonisation, Technologie de radio-oncologie.*

## Occupational Health and Safety Hazards

This section expands on the risks associated with the competencies in the *Radiation Oncology Technology* program.

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

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

- Chemical hazards or dangers:
  - Form of substance (solid, liquid, aerosol, gas, etc.) and exposure (inhalation, absorption through the skin, ingestion, etc.).

- Physical hazards or dangers:
  - Electrical hazards
  - Thermal hazards
  - Noise
  - Vibration
  - Other physical hazards

- Biological hazards or dangers:
  - Form of substance (dust, mist, fluid, etc.) and exposure (inhalation, absorption through the skin, ingestion, cuts, etc.).

- Ergonomic hazards or dangers:
  - Constrained postures
  - Excessive effort
  - Repetitive movements

- Safety hazards or dangers:
  - Hazards related to general mechanical phenomena
  - Hazards related to moving parts, tools or vehicles
  - Risk of falling (workers and objects)
  - Hazards linked to confined spaces
  - Fire or explosion hazards
  - Violence in the workplace

- Psychosocial hazards or dangers:
  - Factors associated with the nature of the work
  - Factors related to the organization of the work
  - Social factors

| TABLE: SOURCES AND RISK LEVELS FOR EACH COMPETENCY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| COMPETENCY NUMBER | ***RADIATION ONCOLOGY TECHNOLOGY*** | **Sources of risk** | | | | | | |
| | | Chemical hazards or dangers | Physical hazards or dangers | Biological hazards or dangers | Ergonomic hazards or dangers | Safety hazards or dangers | Psychosocial hazards or dangers |
| | STATEMENT OF THE COMPETENCY | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Analyze the profession. | | | | | | |
| 2 | Apply health, safety, protective and environmental measures. | ○ | ● | ○ | ○ | | |
| 3 | Ensure that materials, equipment, apparatuses and accessories are available and work properly. | | ○ | | ○ | ○ | |
| 4 | Characterize a malignancy in terms of biomedical information and therapeutic modalities. | | | | | | |
| 5 | Use radiation therapy treatment equipment. | | ● | | ○ | ○ | |
| 6 | Use radiation oncology imaging apparatuses and systems. | | ● | | ○ | ○ | |
| 7 | Optimize the quality of images captured by imaging technologies. | | | | ● | | |
| 8 | Work on a team. | | | | | | ● |
| 9 | Interact with a radiation oncology patient. | | | ○ | | | ● |
| 10 | Provide care to a radiation oncology patient. | ○ | | ● | ○ | ● | ● |
| 11 | Characterize a brachytherapy treatment. | | | | | | |
| 12 | Resolve a technical problem related to a radiation oncology plan or treatment. | | ○ | ○ | ○ | ○ | ○ |
| 13 | Make specific radiation oncology accessories. | | | | ○ | ○ | |
| 14 | Analyze a radiation oncology treatment plan. | | | | | | |
| 15 | Administer an external radiation therapy treatment. | ○ | ● | ○ | ● | ○ | ● |
| 16 | Carry out a radiation oncology treatment plan. | ○ | ● | ○ | ● | ○ | ● |
| 17 | Perform a dosimetry. | | | | ● | | |

## Risk levels

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

Low risk: ○ High risk: ●

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