



Medical Ultrasound Technology (142.G0) College program

SECTOR 19 – HEALTH

COLLEGE EDUCATION PROGRAM

Coordination and content

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Type of certification:	Diploma of College Studies
Number of credits:	91 2/3 credits
Number of periods of instruction:	2 925 periods of instruction

General education component:	660	periods of instruction
Program-specific component :	2 265	periods of instruction

Maximum duration allotted to clinical training:	960	periods of instruction
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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:

- Sec IV Mathematics – Cultural, Social and Technical option
- Sec IV Science and Technology or Applied Science and Technology

College-Level Programs

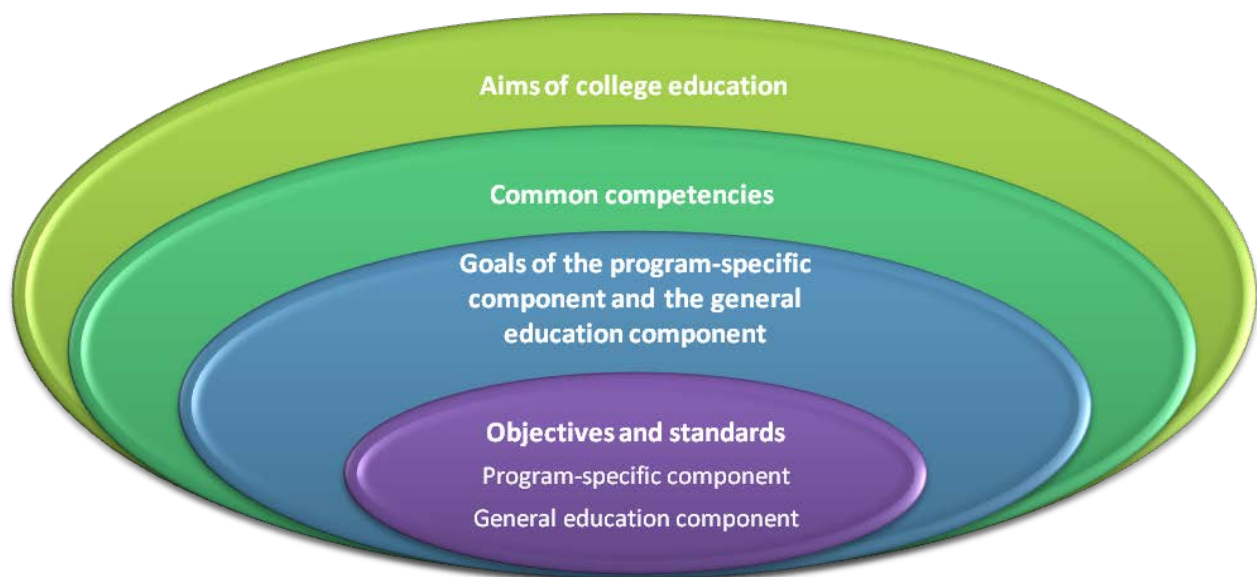
In Québec, college is the next stage after the compulsory years of schooling (elementary and secondary school). College graduates enter the job market directly or proceed to university studies. The Minister of Higher Education establishes the programs of study, while individual colleges ensure their 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 Medical Ultrasound Technology Program

The *Medical Ultrasound 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 occupation, but also a range of knowledge, skills and attitudes that will ensure their versatility.

The *Medical Ultrasound 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 $16\frac{2}{3}$ credits:
 - Language of Instruction and Literature: $7\frac{1}{3}$ credits
 - Philosophy or Humanities: $4\frac{1}{3}$ 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 *Medical Ultrasound 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 *Medical Ultrasound Technology* program:

- to make students effective in practising their profession, that is:
 - to enable them, upon entry into the job market, to perform the functions, tasks and responsibilities associated with their profession in all sub-sectors of the field of medical ultrasound
 - to enable them to evolve adequately in a work environment by promoting
 - the acquisition of intellectual skills and techniques that make it possible to make appropriate choices when performing tasks
 - the development of professional ethics
 - the development of effective communication with patients, co-workers, and healthcare personnel
 - the reinforcement of habits of vigilance and precision in their work performance
 - the development of a constant concern for occupational health and safety, environmental protection, and quality control
- to promote students' integration into professional life, that is:
 - to familiarize them with the job market in general, as well as the specific context of the profession
 - to familiarize them with their rights and responsibilities as workers
- to foster students' personal growth and continuing professional development, that is:
 - to enable them to develop their autonomy and their learning ability, as well as their ability to acquire work methods
 - to enable them to understand the principles underlying the techniques and technologies used
 - to enable them to develop their judgment and sense of initiative
 - to enable them to adopt attitudes essential to their professional success, to develop their sense of responsibility and to strive for excellence
- To promote professional mobility, that is:
 - to enable them to adopt a positive attitude towards change
 - to enable them to find the means to ensure their continuing education

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
 - Analyse 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 goal of the *Medical Ultrasound Technology* program is to train medical imaging technologists in the field of medical ultrasound technology.

Medical imaging technologists in the field of medical ultrasound technology are healthcare professionals who work in both public establishments (hospitals, university hospitals and CLSCs) and private clinics. Based on a medical prescription, technologists carry out a complete examination by using ultrasound equipment in accordance with the patients' condition and clinical history to acquire optimal medical images, videos and information that radiologists or other specialized physicians use to establish a diagnosis or a treatment plan. Through this expertise, medical imaging technologists in the field of medical ultrasound technology participate in and contribute to the delivery of the services required for patients.

Medical ultrasound technologists may practise in the following subsectors of medical ultrasound for adult and pediatric clients:

- abdominal, pelvic and surface ultrasound
- obstetrical and gynecological ultrasound
- vascular ultrasound
- cardiac ultrasound
- breast ultrasound
- musculoskeletal ultrasound

In their professional practice, medical imaging technologists in the field of medical ultrasound technology may be called upon to perform several types of examinations in all subsectors of medical ultrasound. The goal of the program of study is to enable the student to master the competencies that allow medical imaging technologists to perform a full ultrasound examination,¹ taking charge of the patient throughout the examination, within the limits of professional practice in their field. Communication and close collaboration with radiologists and other specialist physicians responsible for diagnosis, as well as with other health professionals, form an integral part of their work. These technologists may also collaborate with or assist specialist physicians in other types of examinations such as ultrasound-guided medical procedures, e.g. biopsies.

As part of their professional practice, medical imaging technologists in the field of medical ultrasound technology may be called upon to train technologists in the same field of expertise as well as other healthcare professionals. They may also conduct or collaborate in research in the field of ultrasound.

To obtain their permit to practice their profession, graduates must be members of the Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec (OTIMROEPMQ). Pursuant to the *Act respecting medical imaging technologists, radiation oncology technologists and medical electrophysiology technologists*, certain activities are reserved for members of the Ordre.

¹ In this context, the term “full examination” refers to the entire time from when the patient enters the room until they leave it.

Objectives

Statements of the Competency

Program-Specific Component

- 00WF Analyze the work function and regulatory context.
- 00WG Prevent any adverse effects on health, safety, hygiene and sanitation, and the environment.
- 00WH Operate the equipment used in medical ultrasound practice.
- 00WJ Analyze anatomical information from medical ultrasound examinations.
- 00WK Analyze pathological findings from medical ultrasound examinations.
- 00WL Correlate information in the patient's record with the medical ultrasound examination.
- 00WM Interact in a professional context.
- 00WN Provide care as part of medical ultrasound practice.
- 00WP Carry out quality control activities.
- 00WQ Perform abdominal, pelvic and surface ultrasound examinations.
- 00WR Perform obstetrical and gynecological ultrasound examinations.
- 00WS Perform vascular ultrasound examinations.
- 00WT Perform cardiac ultrasound examinations.
- 00WU Perform breast ultrasound examinations.
- 00WV Perform musculoskeletal ultrasound examinations.
- 00WW Contribute to continuous improvement initiatives in medical ultrasound practice.

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

16½ 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 (O) 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										
MEDICAL ULTRASOUND TECHNOLOGY SPECIFIC COMPETENCIES	Competency number	GENERAL COMPETENCIES								
		Analyze the work function and regulatory context	Prevent any adverse effects on health, safety, hygiene and sanitation, and the environment	Operate the equipment used in medical ultrasound practice	Analyze anatomical information from medical ultrasound examinations	Analyze pathological findings from medical ultrasound examinations	Correlate information in the patient's record with the medical ultrasound examination	Interact in a professional context	Provide care as part of medical ultrasound practice	Carry out quality control activities
Competency number		1	2	3	4	5	6	7	8	9
Perform abdominal, pelvic and surface ultrasound examinations	10	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform obstetrical and gynecological ultrasound examinations	11	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform vascular ultrasound examinations	12	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform cardiac ultrasound examinations	13	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform breast ultrasound examinations	14	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform musculoskeletal ultrasound examinations	15	☐	☐	☐	☐	☐	☐	☐	☐	☐
Contribute to continuous improvement initiatives in medical ultrasound practice	16	☐	☐	☐	☐	☐	☐	☐	☐	☐

Program-Specific Component

Code: 00WF

Objective

Standard

Statement of the Competency	Achievement Context
Analyze the work function and regulatory context.	• By referring to the organization of the health and social services network • Based on laws, regulations, standards and codes in force • Using information on health institutions • Using recent data on the profession
Performance Criteria for the Competency as a Whole	
• Collection of relevant information • Critical analysis of information • Demonstration of interest in the profession • Realistic estimate of career possibilities and the path required to get there	
Elements of the Competency	Performance Criteria
1. Describe the structure of the health network.	• Recognition of the organization of the health network • Appropriate recognition of the various work environments (public and private) • Appropriate recognition of the role of the various stakeholders associated with the profession
2. Examine the practice of the profession and its conditions.	• Clear and complete definition of the profession • Identification of the conditions of access to the profession • Recognition of employment opportunities and prospects • Precise outline of the recognized levels of practice • Recognition of trends in the field of medical ultrasound
3. Examine the tasks and operations related to the profession, their conditions and the requirements for completion.	• Full examination of the tasks and their respective operations • Association of the achievement conditions with the requirements relating to each task

Elements of the Competency	Performance Criteria
4. Examine the skills and behaviours required for practising the profession.	• Relevance of the connections established between the skills and behaviours relating to the caregiving aspect of the profession • Relevance of the connections established between the skills and behaviours relating to the technical aspect of the profession • Realistic comparison with their own skills and behaviours
5. Examine the main sources of federal and provincial law governing the profession of imaging technologist in the field of medical ultrasound.	• Clear identification of the role, powers and responsibilities of the various bodies connected to the profession (Office des professions, professional order, etc.) • Examination of the legislative and regulatory requirements related to the practice of the profession: ○ the Canadian and Québec charters of rights and freedoms ○ the Civil Code and the Criminal Code ○ the Health Act ○ the Act respecting medical imaging technologists, radiation oncology technologists and medical electrophysiology technologists ○ the Code of Ethics ○ professional practice standards and guidelines, etc. • Recognition of the limits of professional practice with regard to: ○ the writing up of observation sheets for diagnostic purposes ○ the transmission of information to patients, accompanying persons, healthcare professionals, etc. ○ reserved activities
6. Examine the program of study and its requirements.	• Recognition of the organization of training, methods of evaluation and certification of studies, and institutional policies • Establishment of relevant connections between the competencies acquired upon obtaining the diploma, the conditions of access to the profession and the levels of professional practice
7. Assess the suitability of the profession and the program of study to their professional life plan.	• Appropriate association between the profession, the program of study and their professional life plan • Realistic assessment of motivation with regard to the planned path to professional practice

Objective**Standard**

Statement of the Competency	Achievement Context
Prevent any adverse effects on health, safety, hygiene and sanitation, and the environment.	• In everyday situations that pose risks to medical personnel, patients and the general public • In collaboration with medical personnel and other resource persons, as appropriate • Based on laws and regulations, standards, guidelines and codes in force • Based on guidelines, protocols and standard operating procedures as well as emergency plans • Using means of personal and group protection, moving equipment, materials, accessories and products • Using reference material
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with protocols and procedures • Constant vigilance for everything related to health and safety • Readiness to react based on situations • Sound decision-making in accordance with the situation • Quality of communication in accordance with their audience
Elements of the Competency	Performance Criteria
1. Recognize the risks and dangers associated with professional practice in medical ultrasound.	• Accurate evaluation of the following types of dangers: ○ chemical ○ physical ○ biological ○ ergonomic ○ psychosocial ○ safety-related • Consideration of the consequences that may arise from non-compliance in matters of health and safety

Elements of the Competency	Performance Criteria
2. Apply the regulations governing health, safety, hygiene and sanitation, and the environment within the practice of medical ultrasound.	• Finding the relevant information • Correlation between sections of laws, regulations, standards and activities carried out within the framework of professional practice • Correlation between the procedures established in the workplace and the activities carried out within the framework of professional practice • Recognition of the rights and obligations of employers and employees
3. Apply measures for preventing and controlling contagion, the transmission of infections and contamination.	• Recognition of infectious processes and risks of contamination • Effective application of the basic rules of practice and additional precautions such as: ○ the principles of asepsis ○ hand washing ○ maintenance of the work area, surfaces and equipment (stretchers, keyboards, etc.) ○ wearing protective clothing, uniforms and accessories ○ personal hygiene
4. Apply ergonomic work methods.	• Appropriate choice of work postures to limit the risk of injuries and accidents • Compliance with ergonomic principles with regard to precautions related to repetitive movements • Appropriate layout of the work environment • Rigorous application of methods for safely moving patients
5. Handle the various equipment, materials, medications, chemical, pharmaceutical and biological waste as well as compressed gases used in medical ultrasound.	• Accurate checking of the integrity of emergency equipment and materials, enhancing agents and medications • Accurate interpretation of the Workplace Hazardous Materials Information System (WHMIS) with regard to the safe use of products • Compliance with the measures for handling, storage and disposal of hazardous products • Rigorous application of safety measures regarding the safe handling and disposal of biomedical waste

Elements of the Competency	Performance Criteria
6. Adapt to the challenges inherent in professional practice.	• Recognition of stress factors related to professional practice • Appropriate use of means to increase the ability to manage stress • Recognition of intervention strategies for dealing with people who are suffering, difficult, aggressive, etc. • Identification of appropriate means to prevent burnout • Recognition of personal needs, limitations and abilities in relation to professional requirements
7. Apply protocols in emergency situations.	• Appropriate recognition of alert codes • Familiarity with emergency response and evacuation plans • Rigorous application of the specific protocol for the situation • Effective collaboration with healthcare providers and other resource persons, as appropriate

Objective**Standard**

Statement of the Competency	Achievement Context
Operate the equipment used in medical ultrasound practice.	• Performance of ultrasound examinations and medical intervention procedures • Based on laws, regulations, standards and codes in force • Based on directives, protocols and standard operating procedures • Using ultrasound equipment and accessories, materials and products • Using manufacturers' manuals, reference material and archiving systems
	Performance Criteria for the Competency as a Whole
	• Compliance with rules and regulations • Compliance with protocols and procedures • Accurate use of medical ultrasound terminology • Accurate use of terminology with regard to the human body reference system (anatomical reference positions, reference axes, sections and views, orientation qualifiers) • Consideration of quality criteria for ultrasound images
Elements of the Competency	Performance Criteria
1. Establish connections between the nature of acoustic waves, their propagation and ultrasound equipment.	• Precise identification of the characteristics and properties of acoustic waves • Appropriate recognition of ultrasonic interaction with tissues • Precise analysis of the Doppler effect • Correct recognition of a medical ultrasound machine and its components, functions and accessories • Proper application of concepts, principles and laws to medical ultrasound machines

Elements of the Competency	Performance Criteria
2. Identify the biological effects of acoustic waves on tissues.	• Appropriate recognition of the risks associated with the use of high frequency waves • Accurate determination of the parameters that can induce biological effects as a result of the increase in thermal and mechanical indices • Accurate determination of the parameters allowing the limitation of biological effects in terms of acoustic power, sweep time, etc. • Precise identification of the anatomical regions most sensitive to acoustic energy • Accurate determination of the acquisition modes most likely to generate biological effects (pulsed Doppler mode, 3D, 4D, etc.)
3. Produce ultrasound images.	• Precise establishment of connections between the image produced and the type of probe used • Careful selection of the types of probes according to: ○ adult or pediatric patient ○ the anatomical region ○ the patient's condition ○ the pathology or information sought, etc. • Establishment of connections between the representation of the signal and the various modes of image acquisition (A, M, 2D, continuous-wave Doppler, pulsed-wave Doppler, harmonic, tissue deformation, 3D, 4D, elastography, etc.) • Proper manipulation of the probe on the person. • Orientation of the image according to the anatomical reference position and the position of the probe on the person • Precise use of pictograms, annotations and measurements from still images
4. Use ultrasound image optimization strategies.	• Appropriate choice for positioning the person in order to obtain an optimal acoustic window • Careful choice of technical parameters to apply before, during and after image processing • Limitation or enhancement of the main artefacts
5. Archive ultrasound data.	• Proper application of the procedure for transferring images and ultrasound data to the archiving system or external media (DVD, etc.) • Proper application of the process for saving, updating memory space, etc.

Elements of the Competency	Performance Criteria
6. Perform general maintenance on equipment and accessories.	• Rigorous checking of the condition of machines and accessories (probes, filters, cables, screens, etc.) • Proper recognition of deterioration of devices and accessories • Rigorous application of the recommendations of the preventive maintenance program established by the manufacturer (cleaning, disinfection) • Recording of relevant information

Objective**Standard**

Statement of the Competency	Achievement Context
Analyze anatomical information from medical ultrasound examinations.	• Performance of ultrasound examinations and medical intervention procedures • For all systems of the human body • Based on a medical prescription and patient records • Using anatomical models • Using reference documents, technological media and specialized software
Performance Criteria for the Competency as a Whole	
	• Accurate use of the etymology of medical terms • Accurate use of terminology specific to medical ultrasound • Accurate use of terminology with regard to the human body reference system (anatomical reference positions, reference axes, sections and views, orientation qualifiers) • Ability to transpose 2D images into a 3D anatomical representation or vice versa
Elements of the Competency	Performance Criteria
1. Develop an integrated vision of the human body.	• Accurate representation of the human body in space according to the anatomical reference system (sagittal, axial, coronal) • Precise location of organs and anatomical structures of the human body according to topography (cavities, regions, etc.) • Precise recognition of the structural organization of the human body by system
2. Describe the normal functioning of systems and organs associated with them.	• Precise designation of the function of the organs and anatomical structures comprising each of the systems • Appropriate recognition of the physiological characteristics of systems • Highlighting of the functional connections between the various systems

Elements of the Competency	Performance Criteria
3. Identify the connections between normal anatomy and anatomical variants.	• Identification of anatomical variants based on genetics, gender, morphology, etc. • Distinguishing between anatomical structures following a surgical intervention
4. Establish connections between anatomy and its transposition into ultrasound imaging.	• Proper designation of ultrasound characteristics: ○ echogenic ○ homogeneous ○ heterogeneous ○ anechoic ○ hypoechoic ○ hyperechoic, etc. • Precise association of ultrasound characteristics with the organ or the anatomical structure

Objective**Standard**

Statement of the Competency	Achievement Context
Analyze pathological findings from medical ultrasound examinations.	• For adult and pediatric patients • For prevalent pathologies • For all systems of the human body • In collaboration with medical personnel or other healthcare professionals • Based on a medical prescription and patient records, as well as clinical findings observed or reported • Using reference documents, ultrasound images, technological media and specialized software
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Accurate use of medical terminology specific to the pathologies • Accurate use of terminology with regard to the human body reference system (anatomical reference positions, reference axes, sections and views, orientation qualifiers) • Effective use of reference material • Association of prevalent pathologies with their transposition into ultrasound images
Elements of the Competency	Performance Criteria
1. Describe the pathological processes that lead to clinical signs.	• Accurate definition of the pathology • Recognition of the causes of a pathology (etiology) • Recognition of risk or aggravating factors of a pathology • Accurate recognition of the following processes: ○ pain ○ inflammation ○ neoplasia ○ trauma ○ tissue repair, etc.

Elements of the Competency	Performance Criteria
2. Establish connections between clinical signs and prevalent pathologies.	• Recognition of the main clinical signs related to prevalent pathologies • Relevant association of clinical signs with pathological processes for each of the human body's systems • Accurate identification of clinical signs that indicate a vital emergency (cardio-respiratory arrest, etc.)
3. Establish connections between semiology applied to medical ultrasound and the prevalent pathologies.	• Accurate association of ultrasound findings with the various pathologies • Identification of the most conclusive ultrasound findings • Consideration of anatomical variants in the identification of pathologies • Accurate recognition of ultrasound findings in accordance with the various stages of development of a pathology

Objective**Standard**

Statement of the Competency	Achievement Context
Correlate information in the patient's record with the medical ultrasound examination.	• In order to perform a medical ultrasound examination • For various medical imaging modalities such as radiography, fluoroscopy, computed tomography, magnetic resonance imaging, etc. • Based on a medical prescription and the patient record • Using reference documents, technological media and specialized software
Performance Criteria for the Competency as a Whole	
	• Accurate use of the terminology specific to the various medical imaging modalities • Establishment of relevant connections between the results of the various modalities and their impact on the ultrasound examination
Elements of the Competency	Performance Criteria
1. Describe the various medical imaging modalities other than medical ultrasound.	• Appropriate recognition of the physical principles of electromagnetic radiation waves • Appropriate consideration of the characteristics and basic operation of medical imaging equipment other than the equipment used for medical ultrasound • Accurate identification of pictorial representations of the various modalities
2. Establish connections between anatomy, pathology and their transposition into ultrasound imaging.	• Accurate association of the anatomy with its representation in accordance with the medical imaging modality • Precise localization of a pathology on images of other modalities, where applicable
3. Describe the various types of lab tests.	• Accurate identification of the values useful for performing the medical ultrasound (blood test, etc.) • Precise recognition of normal reference values • Accurate assessment of the variances between the results and normality

Elements of the Competency	Performance Criteria
4. Describe clinical information relevant to the ultrasound examination.	• Meticulous review of major reports and results of previous examinations or procedures (patient records, ECGs, previous surgeries and procedures, biopsy results, etc.) • Establishment of relevant connections between test results, treatments, surgeries, clinical information and the pathological state

Objective**Standard**

Statement of the Competency	Achievement Context
Interact in a professional context.	• With co-workers, superiors and other healthcare professionals • With various types of patients and their friends and family • In various professional situations such as ultrasound examinations, medical interventions, professional meetings, situations involving training or information, emergencies, etc. • Based on laws and regulations pertaining to professional practice, standards of professional practice and the <i>Code of Ethics</i> • Based on the policies and procedures of the healthcare institution and on the patient record • Using observation sheets, forms and other professional documents • Using technological media, specialized software and communication methods
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Respect for the role, responsibilities and competencies of other healthcare professionals • Accurate use of medical terminology • Use of language adapted to situations • Open-mindedness and respect for different points of view • Adoption of attitudes and behaviours that promote the establishment of harmonious relationships • Tangible contribution to problem solving and decision making • Tangible solutions to defuse interpersonal conflicts

Elements of the Competency	Performance Criteria
1. Interact within a work team.	• Demonstration of concern for efficiency in planning and organizing work • Demonstration of mutual aid and solidarity with co-workers • Accurate and complete transmission of information in a timely manner
2. Establish a professional relationship with patients.	• Description of various types of patients and consequent intervention strategies • Use of a socially and culturally appropriate relational approach • Accurate perception and validation of the physical, psychological and emotional state of the patient • Use of appropriate verbal and non-verbal communication techniques • Relevance and clarity of the requests addressed to the patient or their friends or relatives • Nuanced transmission of information on examination results • Verification to ensure that the information transmitted was understood • Appropriate use of intervention strategies that take into account patient needs and their own capacity to meet them
3. Communicate in the context of an interdisciplinary team.	• Accurate identification of roles and authority levels within a team • Sound exercise of their power of influence • Affirmation of own authority when the situation requires it • Demonstration of respect and solidarity with regard to team decisions
4. Prepare professional documents.	• Precision of terminology and annotations used • Summary of the relevant elements in the observation sheets that enable a diagnosis to be established • Transmission of precise, accurate and complete information • Rigorous application of the rules of syntax and grammar • Compliance with established policies and procedures when preparing various documents

Objective**Standard**

Statement of the Competency	Achievement Context
Provide care as part of the medical ultrasound practice.	• In order to perform an ultrasound examination or a medical intervention • To ensure continuity of care • In collaboration with other stakeholders, as appropriate • Based on an individual or group medical prescription • Using the patient record • Using the regulatory framework related to the field of medical ultrasound and the <i>Code of Ethics</i> • Using established protocols, reference material, forms, records and other professional documents, as appropriate • Using medical supplies and equipment, medications, enhancing agents, etc.
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Respect for the moral and physical well-being of the patient • Compliance with rules governing health, safety, hygiene and sanitation, and the environment • Accurate interpretation of information • Demonstration of attitudes of active listening, comfort, empathy, openness, etc. • Rigour and concern for precision • Appropriate stress management • Use of an approach adapted to patients with special medical conditions and special needs (person with reduced mobility, etc.) • Constant effective communication, adapted to the situation.

Elements of the Competency	Performance Criteria
1. Provide the required care.	• Accurate assessment of the patient's needs and physical and psychological state • Clear explanation of the procedure required by the care and the collaboration expected from the patient • Maintaining of constant visual and auditory contact • Constant assessment of the patient's well-being, comfort and safety throughout the ultrasound examination or medical intervention • Rigorous application of ergonomic principles related to the safe movement and immobilization of patients, where applicable • Appropriate manipulation of related devices (oxygen, volumetric infusion pump, etc.) • Careful verification of the values obtained by monitoring vital signs • Rigorous application of the principles of hygiene and asepsis: ○ non-sterile protective clothing ○ sterile clothing ○ sterile tray and drapes ○ intervention equipment and materials ○ dressings
2. Administer medications or other substances.	• Meticulous verification of the information on the medical prescription • Accurate description of the medication or other substances, including: ○ the integrity of the medications and other substances ○ the physiological effects ○ the dosage ○ the route of administration ○ the mechanisms of absorption, biotransformation, distribution and elimination of the medication ○ undesirable, side or toxic effects ○ medication interactions, etc. • Interpretation of patient record data relating to the examination • Compliance with the principles and rules of preparation, dosage, verification and administration of medications or other substances

Elements of the Competency	Performance Criteria
3. Intervene in a vital emergency.	• Rapid detection of adverse clinical manifestations • Readiness to seek assistance from a resource person • Determination and effective application of urgent actions to be taken: ○ safe environment ○ first aid (oxygenation, hydration, CPR, etc.) ○ constant monitoring of vital functions • Appropriate use of emergency equipment and materials • Assisting the intervention team: ○ relevance of the information transmitted ○ effective collaboration ○ preparation of required equipment and materials
4. Direct the patient to other resources.	• Directing the person to the appropriate resources • Clear and complete explanations of the instructions to follow after the examination or procedure
5. Record the data in patients' records and in the relevant registers.	• Precise data indicated in the patient's record concerning: ○ the medical equipment used ○ the medications and products administered ○ relevant clinical observations, etc. • Clear and complete recording of data in the relevant registers (controlled products, incidents, etc.) • Accurate use of medical terminology

Objective**Standard**

Statement of the Competency	Achievement Context
Carry out quality control activities.	• In collaboration with those responsible for the maintenance and repair of equipment and materials • In collaboration with the medical team (coordination staff, specialized physician, etc.) • Based on regulations, healthcare institution policies and procedures, quality control protocol, manufacturers' standards, etc. • Using ultrasound machines, probes, technical equipment, anatomical parts and phantoms • Using reference documents, working papers, etc. • Using technological media and specialized software
Performance Criteria for the Competency as a Whole	
	• Effective use of reference material • Accurate use of terminology specific to medical ultrasound • Concern for rigour and precision • Demonstration of a sense of responsibility • Effective communication with those collaborating in monitoring the situation
Elements of the Competency	Performance Criteria
1. Evaluate the performance of ultrasound machines and related equipment.	• Appropriate recognition of quality indicators (image uniformity, exactness of distances, spatial resolution, etc.) • Appropriate use of measurement tools (phantoms, etc.) • Validation of observed results in accordance with quality control standards and identification of non-compliant results • Accurate comparison of the actual situation with the desired situation

Elements of the Competency	Performance Criteria
2. Analyze the quality of the images.	• Complete analysis of the image produced with regard to the expected quality criteria • Changing of parameters to optimize image quality • Verification of the transfer of data to the archiving system
3. Check the conformity of disinfectants, medical equipment and emergency medical equipment.	• Accurate recognition of the manufacturer's recommendations, in particular with regard to: ○ storage conditions ○ shelf life ○ expiry date ○ preparation protocols ○ integrity, etc. • Functional verification of medical equipment (suction device, oxygen device, tensiometer, etc.)
4. Check the conformity of the information recorded in various documents.	• Recognition of the main documents used in medical ultrasound (registers, forms, observation sheets, etc.) • Recognition of the completeness of the information necessary for record keeping (patient identification, substances or medications administered, evolution of the patient's condition, etc.). • Checking the relevance of the information depending on the document
5. Communicate the results of quality control testing.	• Accurate description of any anomalies observed • Rigorous recording of relevant results in the appropriate register • Clear and precise transmission of information to the competent authority, where applicable

Objective**Standard**

Statement of the Competency	Achievement Context
Perform abdominal, pelvic and surface ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For the following abdominal structures: pancreas, aorta and other arteries, inferior vena cava and other veins, spleen, liver, gallbladder and bile ducts, kidneys, ureters and adrenal glands, gastrointestinal tract, pleural cul-de-sac and diaphragmatic domes, etc. • Using a transvesical approach for the following pelvic structures: bladder, uterus, uterine cervix, endometrium, adnexa, ovaries, appendix, peritoneal and retroperitoneal spaces, etc. • Using a transvesical or transrectal approach for the following pelvic structures: prostate and seminal vesicles • For the following surface structures: groin, testes, thyroid, parathyroids, neck, salivary glands, superficial tissues and abdominal wall, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Based on the regulatory framework related to the field of medical ultrasound as well as the policies and procedures of the health institution • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.

Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the clinical condition of the patient • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of the cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to the requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out

Elements of the Competency	Performance Criteria
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history, clinical findings, etc.
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust

Elements of the Competency	Performance Criteria
5. Investigate the anatomical region.	• Search for optimal acoustic windows • Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of all organs and structures in the region of interest • Accurate recognition of ultrasound findings • Perseverance in looking for the pathology when the patient's physical habitus results in limited visualization • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Recognition of normal and abnormal hemodynamic tracings (pulsed Doppler) • Recognition of normal and abnormal colour fills (colour Doppler, energy Doppler, etc.) • Correlation of clinical findings with ultrasound findings and by palpation of the area, where applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Precise execution of dynamic manoeuvres, as needed • Acquisition of additional data resulting from the use of other modes (elastography, etc.) • Rigorous critique of quality when selecting images
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations

Elements of the Competency	Performance Criteria
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting of relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Perform obstetrical and gynecological ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For transabdominal or endocavitary evaluation of the following fetal characteristics and structures: gestational sac, yolk sac, vertebral column, head, face, neck, lungs, thorax, heart, abdomen, pelvis, skin, skeleton, placenta/chorionic villi, fetal count, amniotic fluid, cord insertion, fetal age determination, biophysical profile, fetal position and presentation, etc. • For endocavitary evaluation of the following characteristics and structures: uterus, uterine cervix, endometrium, adnexa, ovaries, bladder, vagina, Douglas cul-de-sac, uterine vessels, bowel loops, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Based on the regulatory framework related to the field of medical ultrasound as well as the policies and procedures of the health institution • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.

Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the patient's clinical condition • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out

Elements of the Competency	Performance Criteria
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history, clinical findings
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust

Elements of the Competency	Performance Criteria
5. Investigate the anatomical region.	• Search for optimal acoustic windows • Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of all organs and structures in the region of interest • Accurate understanding of ultrasound findings • Perseverance in looking for the pathology when the physical habitus of the patient results in limited visualization • Persistence in seeking an optimal visualization of the organs and anatomical structures of the fetus despite its movements • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Recognition of normal and abnormal hemodynamic tracings (pulsed Doppler) • Recognition of normal and abnormal colour fills (colour Doppler, energy Doppler, etc.) • Correlation of clinical findings with ultrasound findings and by palpation of the area, where applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Precise execution of dynamic manoeuvres, as needed • Acquisition of additional data resulting from the use of other modes (3D, 4D, elastography, etc.), where applicable • Rigorous critique of quality when selecting images

Elements of the Competency	Performance Criteria
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (3D, 4D, elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Perform vascular ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For the following structures: abdominal vessels, extracranial and intracranial arteries, brain structures (transfontanellar approach), peripheral veins of the upper and lower extremities, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Based on the regulatory framework related to the field of medical ultrasound as well as the policies and procedures of the health institution • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the clinical condition of the patient • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of the cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to the requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history and clinical findings

Elements of the Competency	Performance Criteria
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust
5. Investigate the anatomical region.	• Search for optimal acoustic windows • Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of the structures in the region of interest • Accurate recognition of ultrasound findings • Perseverance in looking for the pathology when the patient's physical habitus induces/results in limited visualization • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Recognition of normal and abnormal hemodynamic tracings (pulsed Doppler) • Recognition of normal and abnormal colour fills (colour Doppler, energy Doppler, etc.) • Correlation of clinical findings with ultrasound findings and by palpation of the area, if applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Precise execution of dynamic manoeuvres, as needed • Acquisition of additional data resulting from the use of other modes (3D, etc.) • Rigorous critique of quality when selecting images

Elements of the Competency	Performance Criteria
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting of relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (3D, 4D, elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Perform cardiac ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For performing ultrasound examinations at rest or with physical effort • For a transthoracic approach with regard to the following characteristics and structures: ○ thoracic aorta, cardiac cavities, ejection tract, pulmonary arteries and veins, septa, valves, inferior and superior vena cava, tunics and segments of the wall, position of the heart, lungs, thorax, appendages, coronary vessels, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.
	Performance Criteria for the Competency as a Whole
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the clinical condition of the patient • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of the cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to the requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history and clinical findings

Elements of the Competency	Performance Criteria
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust
5. Investigate the anatomical region.	• Search for optimal acoustic windows • Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of the organ and structures in the region of interest • Accurate recognition of ultrasound findings • Perseverance in looking for the pathology when the patient's physical habitus results in limited visualization • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Recognition of normal and abnormal hemodynamic tracings (pulsed Doppler) • Recognition of normal and abnormal colour fills (colour Doppler, energy Doppler, etc.) • Correlation of clinical findings with ultrasound findings, where applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Precise execution of dynamic manoeuvres, as needed • Acquisition of additional data resulting from the use of other modes (3D, 4D, elastography, etc.), where applicable • Rigorous critique of the quality when selecting images

Elements of the Competency	Performance Criteria
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting of relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (3D, 4D, elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Perform breast ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For the following structures: breasts, surrounding lymph nodes, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Based on the regulatory framework related to the field of medical ultrasound as well as the policies and procedures of the health institution • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.
Performance Criteria for the Competency as a Whole	
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the clinical condition of the patient • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of the cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to the requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history and clinical findings

Elements of the Competency	Performance Criteria
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust
5. Investigate the anatomical region.	• Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of the organ and structures in the region of interest • Accurate recognition of ultrasound findings • Perseverance in looking for the pathology when the patient's physical habitus results in limited visualization • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Correlation of clinical findings with ultrasound findings and by palpation of the area, if applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Acquisition of additional data resulting from the use of other modes (3D, elastography, etc.), where applicable • Rigorous critique of quality when selecting images

Elements of the Competency	Performance Criteria
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting of relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (3D, elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Perform musculoskeletal ultrasound examinations.	• For adult and pediatric patients • With or without supervision • For the following joint structures: shoulder, knee, etc. • In collaboration with medical personnel or other healthcare professionals • Based on work lists, a medical prescription, the patient record and images from various medical imaging modalities • Based on the regulatory framework related to the field of medical ultrasound as well as the policies and procedures of the health institution • Using ultrasound machines, medical equipment, emergency medical equipment, medications, products, etc. • Using technological media, specialized software, forms, reference documents, etc.
	Performance Criteria for the Competency as a Whole
	• Compliance with rules and regulations • Compliance with the <i>Code of Ethics</i> • Compliance with protocols and procedures • Respect for the moral and physical well-being of the patient • Careful and constant monitoring of the clinical condition of the patient • Constant communication with the patient, adapted to the person • Quality of communication in accordance with their audience • Accurate use of medical terminology • Rigour and concern for precision • Optimal quality of the ultrasound examination

Elements of the Competency	Performance Criteria
1. Plan the work to be done.	• Careful consultation of the work schedule • Accurate determination of priorities in accordance with the type of examination, the urgency of the cases, the availability of patients, etc. • Appropriate communication with caregiving staff, where applicable • Verification of the safe operation of equipment and accessories • Proper execution of daily general maintenance operations for equipment and accessories • Verification of the availability of medical equipment, emergency medical equipment, medications, products, etc.
2. Correlate information with regard to the requested ultrasound examination.	• Allocation of the medical prescription to the corresponding patient record • Relevant interpretation of: ○ medical prescription data ○ the patient record ○ images from the various imaging modalities • Realistic estimate of the investigation to be carried out
3. Plan the ultrasound examination investigation.	• Appropriate preparation of: ○ the examination room ○ ultrasound machines ○ medical equipment and emergency medical equipment ○ products, etc. • Rigorous application of the measures relating to health, safety, hygiene and sanitation, environmental protection and ergonomics • Choice of the appropriate examination protocol(s) • Planning the addition of images and videos appropriate to the examination protocol in correlation with the medical history and clinical findings

Elements of the Competency	Performance Criteria
4. Take charge of the patient.	• Proper application of the reception procedure (introduction, questioning, information and instructions related to the exam, etc.) • Accurate analysis of the patient's condition • Proper verification of patient readiness • Appropriate positioning of the patient • Obtaining informed consent from the patient • Consideration of the condition and needs of the patient • Rigorous application of the care necessary to perform the examination • Establishment of a climate of trust
5. Investigate the anatomical region.	• Optimization and constant adjustment of technical parameters for optimal visualization • Methodical sweep of the structures in the region of interest • Accurate recognition of ultrasound findings • Perseverance in looking for the pathology when the patient's physical habitus results in limited visualization • Adaptation of the course of the examination in accordance with the patient's condition • Recognition of normal structures, anatomical variants and abnormal structures • Correlation of clinical findings with ultrasound findings and by palpation of the area, if applicable • Accuracy of annotations, pictograms and measurements added to images • Wise use of Doppler mode (colour, pulsed, energy, etc.) to evaluate a region of interest, a lesion, etc. • Precise execution of dynamic manoeuvres, as needed • Acquisition of additional data resulting from the use of other modes (3D, elastography, etc.), where applicable • Rigorous critique of quality when selecting images

Elements of the Competency	Performance Criteria
6. Participate in a medical intervention procedure.	• Preparation of forms in accordance with procedures (biomedical, consent, etc.) • Conscientious preparation of the patient for the intervention • Rigorous preparation of the equipment and material required in accordance with the nature of the intervention • Precise production of ultrasound images during the intervention • Rigorous handling of specimens to preserve their integrity (pot, coverslip, etc.) • Correct identification of specimens • Rigorous application of post-operative care • Routing of specimens to designated locations
7. Document the ultrasound examination.	• Distinguish between information from: ○ the investigation ○ selected images ○ clinical information ○ the medical history, etc. • Precise, concise and relevant description of the observations on the observation sheet • Recognition of ultrasound findings indicative of a medical emergency • Appropriate discussion with the specialized physician, where applicable
8. Complete the ultrasound examination.	• Clear and complete transmission of post-examination instructions to the patient • Releasing the patient and arranging for their movement to the appropriate department, as required • Noting of relevant information in the ultrasound record • Reconstruction of additional data from the use of other modes (3D, elastography, etc.), where applicable • Proper archiving of ultrasound examination data (videos, images, etc.) in the clinical information system (PACS, etc.) • Orderly set-up of the room and replacement of materials and products, as needed • Rigorous application of hygiene, sanitation and asepsis measures

Objective**Standard**

Statement of the Competency	Achievement Context
Contribute to continuous improvement initiatives in medical ultrasound practice.	• Taking into account the evolution of the profession • With a view to continuous professional development • In collaboration with medical personnel or other healthcare professionals • With target audiences • Based on the regulatory framework related to the field of medical ultrasound • Based on case analyses and patient records • Using educational materials, reference documents, anatomical parts, information technology, etc. • Using technological media and specialized software
Performance Criteria for the Competency as a Whole	
• Accurate use of medical terminology • Demonstration of analytical and synthetical abilities • Critical analysis of publications in the field • Quality of verbal communication • Quality of written communication • Respect for intellectual property • Recognition of the importance of continuous professional development • Concern for making a significant contribution to the field of medical ultrasound	
Elements of the Competency	Performance Criteria
1. Contribute to the improvement of working documents.	• Identification of specific needs in terms of shortcomings, updating of documents, new procedures, etc. • Effective consultation with resource persons • Proposal of relevant means to improve working documents.

Elements of the Competency	Performance Criteria
2. Organize training activities.	• Selection of relevant content based on needs • Proper preparation of training activities (literature review, case analysis, etc.) • Proper use of communication techniques • Objective evaluation of the training offered
3. Participate in public awareness activities for target audiences.	• Demonstration of openness to the sharing of knowledge • Use of an approach adapted to the targeted audience • Transmission of accurate and relevant information • Promotion of the field of medical ultrasound
4. Ensure their own continuous professional learning.	• Realistic determination of their abilities and limitations regarding their practical and theoretical knowledge • Collection of relevant information with regard to: ○ publications in the medical field ○ training activities offered by various bodies in the field of medical ultrasound • Critical analysis of the means to improve their professional practice • Active participation in colloquia, seminars, professional development workshops, etc.
5. Describe the parameters of a medical ultrasound research protocol.	• Identification of the main sources of funding available (granting organizations) • Recognition of previous studies through a review of the literature • Recognition of the methodology by taking into account: ○ the research system (experimentation, observation, etc.) ○ the type of participants ○ sampling and recruitment procedures (methods) ○ data collection procedures ○ variables and measuring instruments ○ sample size ○ statistical analyses (main statistical operations), etc. • Consideration of ethical dimensions (respect for the well-being of participants, consent, confidentiality) • Recognition of the various methods of disseminating research results (report, review, publication, etc.)

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

English, Language of Instruction and Literature

Code: 4EA0

Objective

Standard

Statement of the Competency

Analyze and produce various forms of discourse.

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

Learning Activities

Discipline: English, Language of Instruction and Literature
 Weighting: 2-2-4 or 1-3-4
 Credits: 2½

Objective**Standard****Statement of the Competency**

Apply an analytical approach to literary genres.

Elements of the Competency**Performance Criteria**

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

Learning Activities

Discipline: English, Language of Instruction and Literature
 Weighting: 2-2-3
 Credits: 2½

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. | <ul style="list-style-type: none"> • Clear recognition of elements within the text, which define and reinforce a theme and its development • Adequate demonstration of the effects of significant literary and rhetorical devices |
| 2. Situate a literary text within its cultural context. | <ul style="list-style-type: none"> • Appropriate recognition of a text as an expression of cultural context • Adequate demonstration of the effects of significant literary and rhetorical devices |
| 3. Detect the value system inherent in a literary text. | <ul style="list-style-type: none"> • Appropriate identification of expression (explicit / implicit) of a value system in a text |
| 4. Write an analysis on a literary theme. | <ul style="list-style-type: none"> • Selective use of appropriate terminology • Effective presentation of a 1000-word coherent response to a literary text |
| 5. Revise the work. | <ul style="list-style-type: none"> • Appropriate use of revision strategies • Appropriate revision of form and content |

Learning Activities

Discipline: English, Language of Instruction and Literature
 Weighting: 2-2-3
 Credits: 2½

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

Discipline: Humanities
 Weighting: 3-1-3
 Credits: 2½

Objective**Standard****Statement of the Competency**

Apply a critical thought process to world views.

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

Discipline:	Humanities
Periods of instruction:	45
Credits:	2

Objective**Standard****Statement of the Competency**

Apply basic concepts for communicating in standard French.

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

Communicate in standard French with some ease.

Elements of the Competency**Performance Criteria**

1. Write and revise a simple text.

- Writing of a text of about 350 words
- Respect for grammar and spelling rules
- Appropriate use of the main elements of the corpus
- Clear, coherent formulation of sentences
- Coherent organization of paragraphs
- Appropriate use of revision strategies
- Satisfactory correction of spelling and grammatical errors

2. Interpret a written text.

- Appropriate recognition of the main ideas and structure of a text of 700 to 1 000 words
- Appropriate recognition of the main elements of the text
- Accurate explanation of the meaning of the words of the text

3. Produce a planned oral text.

- Clear and coherent formulation of an oral presentation of at least five minutes
- Appropriate use of standard vocabulary
- Respect for the level of language and rules of grammar and pronunciation

4. Interpret a simple oral text.

- Appropriate recognition of the main elements of an oral text of at least five minutes
- Appropriate recognition of the ideas and subjects dealt with in the text
- Accurate explanation of the meaning of the words of the text

Learning Activities

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

Objective**Standard****Statement of the Competency**

Communicate with ease in standard French.

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

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. | <ul style="list-style-type: none"> • Clear and coherent formulation of a text of about 550 words • Respect for the topic • Respect for grammar and spelling rules • Adaptation to the intended audience • Appropriate use of the main elements of the corpus • Clear articulation of a personal point of view |
| 2. Revise and correct a text on a cultural or literary topic. | <ul style="list-style-type: none"> • Appropriate use of revision strategies • Appropriate revision of the text |
| 3. Analyze a cultural or literary text. | <ul style="list-style-type: none"> • Personal formulation of the main elements of the text • Identification of the main themes • Identification of clues that help situate the text in its sociocultural and historical context • Appropriate recognition of the values expressed • Appropriate recognition of the structure of the text • Clear articulation of a personal point of view |

Learning Activities

Discipline: French as a Second Language

Weighting: 3-0-3

Credits: 2

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

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

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. | <ul style="list-style-type: none"> • Appropriate use of specialized vocabulary and of conventions specific to different types of texts • Respect for the level of language and rules of grammar and spelling • Clear and coherent formulation of the text • Appropriate use of writing techniques |
| 2. Revise and correct a text on a topic related to the student's field of study. | <ul style="list-style-type: none"> • Appropriate use of revision strategies • Satisfactory correction of spelling and grammatical errors |
| 3. Differentiate the types of texts specific to the student's field of study. | <ul style="list-style-type: none"> • Appropriate recognition 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. | <ul style="list-style-type: none"> • Appropriate recognition of the main elements of the text • Accurate interpretation of specialized vocabulary • Appropriate recognition of the ideas and subjects dealt with • Appropriate use of reading and listening techniques |

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

Elements of the Competency**Performance Criteria**

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

Learning Activities

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

Objective**Standard****Statement of the Competency**

Improve one's effectiveness when practising a physical activity.

Elements of the Competency**Performance Criteria**

1. Plan an approach to improve one's effectiveness when practising a physical activity.

- Initial assessment of one's abilities and attitudes when practising a physical activity
- Statement of one's expectations and needs with respect to the ability to practise the activity
- Appropriate formulation of personal objectives
- Appropriate choice of the means to achieve one's objectives
- Use of clear reasoning to explain the choice of physical activity

2. Use a planned approach to improve one's effectiveness when practising a physical activity.

- Respect for the rules and regulations of the physical activity
- Respect for codes of ethics, safety rules and regulations when being physically active
- Appropriate use of strategies for the quantitative and qualitative evaluation of one's motor skills
- Periodic assessment of one's abilities and attitudes when practising a physical activity
- Meaningful interpretation of progress made and the difficulties encountered in the practice of physical activity
- Pertinent, periodic and proper adjustments of one's objectives or means
- Appreciable improvement in one's motor skills, techniques or complex strategies required by the physical activity

Learning Activities

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

Objective**Standard****Statement of the Competency**

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

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

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

Complementary General Education Component

Social Sciences

Code: 000V

Objective

Standard

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

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

Learning Activities

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

Objective**Standard**

Statement of the Competency	Achievement Context
Analyze one of the major problems of our time using one or more social scientific approaches.	• Working alone • In an essay of approximately 750 words on a topic related to human existence • Using reference materials from the field of social sciences
Elements of the Competency	Performance Criteria
1. Formulate a problem using one or more social scientific approaches.	• Presentation of the background to the problem • Use of appropriate concepts and language • Brief description of individual, collective, spatio-temporal and cultural aspects of the problem
2. Address an issue using one or more social scientific approaches.	• Clear formulation of an issue • Selection of pertinent reference materials • Brief description of historical, experimental and survey methods
3. Draw conclusions.	• Appropriate use of the selected method • Determination of appropriate evaluation criteria • Identification of strengths and weaknesses of the conclusions • Broadening of the issue analyzed
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 300 or 400 series of codes (except codes 300 and 360) to link a course to objective 000W. Use code 305 for a multidisciplinary course. Codes 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Objective**Standard**

Statement of the Competency	Achievement Context
Explain the general nature of science and technology and some of the major contemporary scientific or technological issues.	• Working alone • Using a written commentary on a scientific discovery or technological development • In an essay of approximately 750 words
Elements of the Competency	Performance Criteria
1. Describe scientific thinking and the standard scientific method.	• Brief description of the essential characteristics of scientific thinking, including quantification and demonstration • Ordered list and brief description of the essential characteristics of the main steps in the standard scientific method
2. Demonstrate how science and technology are complementary.	• Definition of terms and description of the primary ways in which science and technology are interrelated: logical and temporal connections, and mutual contributions
3. Explain the context and the stages related to several scientific and technological discoveries.	• Pertinent and coherent explanation of the relationship between the determining contexts related to several scientific and technological discoveries • Listing of the main stages of scientific and technological discoveries
4. Deduce different consequences and questions resulting from certain recent scientific and technological developments.	• Brief description of important consequences (of different types) and the current major challenges resulting from several scientific and technological discoveries • Formulation of relevant questions and credibility of responses to the questions formulated
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 100 or 200 series of codes to link a course to objective 000X. Use code 105 for a multidisciplinary course. Codes 109, 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Objective**Standard**

Statement of the Competency	Achievement Context
Resolve a simple problem by applying the basic scientific method.	• Working alone or in groups • Applying the standard scientific method to a given, simple scientific and technological problem • Using common scientific instruments and reference materials (written or other)
Elements of the Competency	Performance Criteria
1. Describe the main steps of the standard scientific method.	• Ordered list and brief description of the characteristics of the steps of the standard scientific method
2. Formulate a hypothesis designed to solve a simple scientific and technological problem.	• Clear, precise description of the problem • Observance of the principles for formulating a hypothesis (observable and measurable nature of data, credibility, etc.)
3. Verify a hypothesis by applying the fundamental principles of the basic experimental method.	• Pertinence, reliability and validity of the experimental method used • Observance of established experimental method • Appropriate choice and use of instruments • Clear, satisfactory presentation of results • Validity of the connections established between the hypothesis, the verification and the conclusion
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 100 or 200 series of codes to link a course to objective 000Y. Use code 105 for a multidisciplinary course. Codes 109, 340 and 345 may be used, provided the courses are not related to the objectives of common or specific general education.

Objective**Standard**

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

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

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

Objective**Standard**

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

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

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

Objective**Standard**

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

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

Learning Activities

Periods of instruction: 45

Credits: 2

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

Objective**Standard**

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

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

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

Objective**Standard**

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

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

Learning Activities

Periods of instruction: 45

Credits: 2

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

Objective**Standard**

Statement of the Competency	Achievement Context
Consider various forms of art produced according to aesthetic practices.	• Working alone • Given a specified work of art • In a written commentary of approximately 750 words
Elements of the Competency	Performance Criteria
1. Develop an appreciation for the dynamics of the imagination in art.	• Precise explanation of a creative process connected to the construction of an imaginary universe
2. Describe art movements.	• Descriptive list of the main characteristics of three art movements from different eras, including a modern movement
3. Give a commentary on a work of art.	• Coherent organization of observations, including identification of four fundamental elements of form and structure related to the language used as well as a reasoned description of the meaning of the work of art
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 500 series of codes (except 502) to link a course to objective 0013. Use code 504 for a multidisciplinary course. Codes 340, 345, 601, 602, 603 and 604 may be used, provided the courses are not related to the objectives of common or specific general education.

Objective**Standard**

Statement of the Competency	Achievement Context
Produce a work of art.	• Working alone • During a practical exercise • In the context of creating or interpreting a work of art • Using the basic elements of the language and techniques specific to the medium selected
Elements of the Competency	Performance Criteria
1. Recognize the primary forms of expression of an artistic medium.	• Identification of specific features: originality, essential qualities, means of communication, styles, genres
2. Use the medium.	• Personal, coherent use of elements of language • Satisfactory application of artistic techniques • Compliance with the requirements of the method of production
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	Use the 500 series of codes to link a course to objective 0014, with the exception of code 502. Use code 504 for a multidisciplinary course. Codes 340, 345, 601, 602, 603 and 604 may be used, provided the courses are not related to the objectives of common or specific general education.

Objective**Standard**

Statement of the Competency	Achievement Context
Consider contemporary issues from a transdisciplinary perspective.	• Individually or in groups • Drawing on different fields of knowledge • Using documents and data from various disciplines
Elements of the Competency	Performance Criteria
1. Identify major contemporary issues.	• Exploration of various contemporary issues • Description of the main perspectives concerning these issues • Clear formulation of objects to study related to these issues
2. Recognize the specific role of several disciplines in the understanding of an issue.	• Identification of some of the theories used in analyzing the issue • Clear description of the concepts and methods used
3. Demonstrate the contribution of several disciplines to the understanding of an issue.	• Clear formulation of the perspectives of the issue • Precise description of the main contributions of the disciplines • Pertinent explanation of the interaction among various disciplines • Appropriate use of language and concepts from the disciplines
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	This objective lends itself to teaching by one or more teachers. Use code 365 to link a course to objective 021L in order to maintain the transdisciplinary nature of the competency.

Objective**Standard**

Statement of the Competency	Achievement Context
Explore a contemporary issue from a transdisciplinary perspective.	• Individually or in groups • Drawing on different fields of knowledge • Using documents and data from various disciplines
Elements of the Competency	Performance Criteria
1. Present a research problem.	• Justification of the choice of research problem • Brief description of the main issues involved in the problem • Clear formulation of the main dimensions of the problem • Appropriate use of language and concepts from the disciplines • Clear formulation of the research question
2. Analyze the research problem.	• Relevant description of a research approach or method • Appropriate selection of research data • Proper application of the approach or method used • Appropriate use of an analytical framework
3. Propose solutions.	• Clear description of the main contributions from the disciplines • Pertinent explanation of the interaction among various disciplines • Justification of solutions proposed • Assessment of the strengths and weaknesses of the proposed solutions
Learning Activities	
Periods of instruction:	45
Credits:	2
Note:	This objective lends itself to teaching by one or more teachers. Use code 365 to link a course to objective 021M in order to maintain the transdisciplinary nature of the competency.

Additional Information

Vocabulary Used in Technical Programs

Program

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

Competency

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

Objective

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

Statement of the Competency

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

Elements of the Competency

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

Standard

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

Performance Criteria

In the program-specific component of a technical program, the performance criteria define the requirements for determining if a student has acquired each of the elements of the competency and, consequently, the competency itself. The performance criteria are based on entry-level requirements in the job market. Each competency element has at least one performance criterion attached to it.

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

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

Achievement Context

In the program-specific component of a technical program, the achievement context corresponds to implementation of the competency upon entry into the job market. The context defines neither the learning situation nor the evaluation situation.

Learning Activities

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

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

Harmonization

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

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

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

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

Harmonization of the *Medical Ultrasound 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 l'échographie médicale*.

Occupational Health and Safety Hazards

This section expands on the risks associated with the competencies in the *Medical Ultrasound 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	MEDICAL ULTRASOUND 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 work function and regulatory context						
2	Prevent any adverse effects on health, safety, hygiene and sanitation, and the environment	○		●	●	●	●
3	Operate the equipment used in medical ultrasound practice		○		●		
4	Analyze anatomical information from medical ultrasound examinations						
5	Analyze pathological findings from medical ultrasound examinations						
6	Correlate information in the patient's record with the medical ultrasound examination						
7	Interact in a professional context					●	●
8	Provide care as part of medical ultrasound practice	○		●	○	●	●
9	Carry out quality control activities				○		
10	Perform abdominal, pelvic and surface ultrasound examinations	○		●	●	●	●
11	Perform obstetrical and gynecological ultrasound examinations	○		●	●	●	●
12	Perform vascular ultrasound examinations	○		●	●	●	●
13	Perform cardiac ultrasound examinations	○		●	●	●	●
14	Perform breast ultrasound examinations	○		●	●	●	●
15	Perform musculoskeletal ultrasound examinations	○		●	●	●	●
16	Contribute to continuous improvement initiatives in medical ultrasound practice						

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: ●

