1 ADMINISTRATION, COMMERCE AND COMPUTER TECHNOLOGY

COMPUTING SUPPORT

PROGRAM OF STUDY
5729

VOCATIONAL and TECHNICAL EDUCATION

Québec

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The *Computing Support* program leads to the Diploma of Vocational Studies (DVS) and prepares the student to work as a

COMPUTING SUPPORT TECHNICIAN

Direction générale de la formation professionnelle et technique

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François Legault
Minister of Education

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INTRODUCTION

The *Computing Support* program is based on the orientations for secondary school vocational education that call for the participation of experts from the workplace and the field of education.

The program of study is developed in terms of competencies, expressed as objectives. These objectives are divided into modules. Various factors were kept in mind in developing the program: training needs, the job situation, purposes, goals, and strategies and means used to attain objectives.

The program of study lists the competencies that are the minimum requirements for a Diploma of Vocational Studies (DVS) for students in both the youth and adult sectors. It also provides the basis for organizing courses, planning teaching strategies, and designing instructional and evaluation materals.

The duration of the program is 1800 hours, which includes 780 hours spent on the specific competencies required to practise the occupation and 1020 hours on general competencies. The program of study is divided into 22 modules, which vary in length from 30 to 120 hours (multiples of 15). The time allocated to the program is to be used not only for teaching but also for evaluation and remedial work.

This document contains two parts. Part I is of general interest and provides an overview of the training plan. It includes a synoptic table of basic information about the modules, a description of the program training goals, the competencies to be developed and the general objectives, and an explanation of operational objectives. Part II is designed primarily for those directly involved in implementing the program. It contains a description of the operational objectives of each module.

GLOSSARY

Program Training Goals

Statements that describe the educational aims of a program. These goals are the general goals of vocational education adapted to a specific trade or occupation.

Competency

A set of socio-affective behaviours, cognitive skills or psycho-sensori-motor skills that enable a person to correctly perform a role, function, activity or task.

General Objectives

Instructional objectives that provide an orientation for leading the students to attain one or more related objectives.

Operational Objectives

Statements of the educational aims of a program in practical terms. They serve as the basis for teaching, learning and evaluation.

Module of a Program

A component part of a program of study corresponding to an operational objective.

Credit

A unit used for expressing quantitatively the value of the modules in a program of study. One credit corresponds to 15 hours of training. Students must accumulate a set number of credits to graduate from a program.

PART I

1. SYNOPTIC TABLE

Number of modules: 22
Duration in hours: 1800
Credits: 120

Computing Support
Code: 5729

CODE		TITLE OF THE MODULE	HOURS	CREDITS*
962 012	1.	The Occupation and the Training Process	30	2
962 025	2.	Systems Analysis	75	5
962 038	3.	Older Operating Systems	120	8
962 043	4.	Problem Solving	45	3
962 052	5.	Researching Information	30	2
962 068	6.	Programming Utility Software	120	8
962 074	7.	Working Relationships	60	4
962 088	8.	Application Software	120	8
962 096	9.	Recent Operating Systems	90	6
962 106	10.	Databases	90	6
962 116	11.	Installation of Workstations	90	6
962 122	12.	Time Management	30	2
962 135	13.	Communication in French	75	5
962 148	14.	Networks: Access Management	120	8
962 157	15.	Networks: Resource Sharing	105	7
962 166	16.	Telecommunications Facilities	90	6
962 173	17.	Career Management	45	3
962 186	18.	Troubleshooting	90	6
962 194	19.	Computer Optimization	60	4
962 205	20.	Technical Support at a Telephone Help Desk	75	5
962 218	21.	Practicum: Technical Support	120	8
962 228	22.	Practicum: Service to Clients	120	8

- 15 hours = 1 credit

This program leads to a Diploma of Vocational Studies (DVS) in Computing Support.

2. PROGRAM TRAINING GOALS

The training goals of the *Computing Support* program are based on the general goals of vocational education and take into account the specific nature of the occupation. These goals are:

To develop effectiveness in the practice of an occupation.

- To teach students to perform computing support tasks and activities correctly, at an acceptable level of competence for entry into the job market.

- To prepare students to function satisfactorily on the job by fostering:
  - the intellectual skills required to make intelligent choices when carrying out tasks;
  - the analytical and problem-solving skills related to carrying out the tasks;
  - a concern for precision and speed in carrying out tasks in computing support;
  - a concern for effective communication with superiors, colleagues and clients, using good English and French as a second language;
  - a sense of professional ethics and responsibility;
  - a constant concern for occupational health and safety.

To ensure the students' integration into the job market.

- To help students learn about their rights and responsibilities as workers.
- To help students learn about the job market in general and the market for computing support technicians in particular.
- To help students learn about the occupation by acquiring experience in the workplace.

To foster the acquisition and development of occupational knowledge.

- To foster initiative, creativity, autonomy, a desire to succeed and a sense of responsibility.

- To help students develop a concern for quality in their work.

- To help students understand concepts related to the constantly developing techniques and tools of the trade.

- To help students develop effective work methods.

To ensure job mobility.

- To provide students with solid basic training.

- To help students develop positive attitudes toward technological change and new work situations.

- To help students learn how to learn and to find information and resources.

- To help students prepare for a creative job search.

3. COMPETENCIES

The competencies to be developed in the *Computing Support* program are shown in the grid of learning focuses on the following page. The grid lists general and specific competencies as well as the major steps in the work process.

General competencies involve activities common to several tasks or situations. They cover, for example, the technological or scientific principles that the students must understand to practise the trade or occupation. Specific competencies focus on tasks and activities that are of direct use in the trade or occupation. The work process includes the most important steps in carrying out the tasks and activities of the trade or occupation.

The grid of learning focuses shows the relationship between the general competencies on the horizontal axis and the specific competencies on the vertical axis. The symbol (△) indicates a correlation between a specific competency and a step in the work process. The symbol (○) indicates a correlation between a general and a specific competency.

The symbols (▲) and (●) indicate that these relationships have been taken into account in the formulation of objectives intended to develop specific competencies related to the trade or occupation.

The grid of learning focuses has been designed to take into account the orientations and goals of the program, on the basis of tasks and activities defined at the time of the workplace situation analysis. The logic used in constructing the grid influences the course sequence. Generally speaking, this sequence follows a logical progression in terms of the complexity of the learning involved and the development of the students' autonomy. The vertical axis of the grid shows the competencies directly related to the practice of a specific trade or occupation. These competencies are arranged in a relatively fixed order; therefore, the modules should be taught, insofar as possible, in the order represented on the grid. This means that some modules are prerequisite to others, while other modules are taught concurrently.

GRID OF LEARNING FOCUSES

COMPUTING SUPPORT

SPECIFIC COMPETENCIES
(directly related to the practice of the specific occupation)

		OPERATIONAL OBJECTIVES	DURATION (IN HOURS)	WORK PROCESS (major steps)					GENERAL COMPETENCIES (related to technology, subjects, personal development, etc.)														TOTALS	
				Analyze the needs	Assess whether the request should be accepted	Do the work	Check the results and record the information	Make sure the client is satisfied	Determine their suitability for the occupation and the training process	Analyze the architecture and operation of computer systems	Exploit the possibilities of operating systems using older technology	Apply a problem-solving method	Research information	Develop a utility program	Interact in various work situations	Exploit the possibilities of application software	Exploit the possibilities of operating systems using recent technology	Create and use a database	Manage their time	Communicate in French	Exploit the possibilities of telecommunications facilities	Manage their careers	NUMBER OF OBJECTIVES	DURATION (IN HOURS)
MODULES	MODULES								1	2	3	4	5	6	7	8	9	10	12	13	16	17		
	OPERATIONAL OBJECTIVES								S	B	B	B	B	B	S	B	B	B	S	B	B	S	14	
	DURATION (IN HOURS)								30	75	120	45	30	120	60	120	90	90	30	75	90	45		1020
11	Install the hardware and software of a computer	B	90	▲	△	▲	▲	△	○	●	●	●	●	○	●	●	●	●	○	○	○	○		
14	Manage access to the resources of a network	B	120	▲	▲	▲	▲	▲	○	●	●	●	●	●	●	●	●	●	●	●	○	○		
15	Install the shareable resources of a network	B	105	△	△	▲	▲	△	○	●	●	●	●	○	●	●	●	●	○	●	○	○		
18	Troubleshoot a computer problem	B	90	▲	▲	▲	▲	▲	○	●	●	●	●	○	●	●	●	●	●	●	●	○		
19	Optimize the performance of a computer	B	60	▲	▲	▲	▲	▲	○	●	●	●	●	●	●	●	●	●	●	●	●	○		
20	Provide technical support at a telephone help desk	B	75	▲	▲	▲	▲	▲	○	●	●	●	●	○	●	●	●	●	●	●	●	○		
21	Ensure the proper operation of computers in the workplace	S	120	▲	△	▲	▲	△	○	●	●	●	●	●	●	●	●	●	●	●	●	●		
22	Provide service to clients in the workplace	S	120	▲	▲	▲	▲	▲	○	●	●	●	●	●	●	●	●	●	●	●	●	●		
NUMBER OF OBJECTIVES		8																					22	
DURATION (IN HOURS)			780																					1800

S: Situational objective
B: Behavioural objective

△ Correlation between a step and a specific competency
▲ Correlation to be taught and evaluated

○ Correlation between a general and a specific competency
● Correlation to be taught and evaluated

4. GENERAL OBJECTIVES

The general objectives of the *Computing Support* program are presented below, along with the major statement of each corresponding operational objective.

To develop in the students the competencies required to integrate harmoniously into the school and work environments.

- Determine their suitability for the occupation and the training process.
- Manage their careers.
- Ensure the proper operation of computers in the workplace.
- Provide service to clients in the workplace.

To develop in the students the competencies required to apply the methods essential to the practice of the occupation.

- Apply a problem-solving method.
- Research information.
- Manage their time.

To develop in the students the competencies required for the optimal use of software.

- Exploit the possibilities of operating systems using older technology.
- Exploit the possibilities of application software.
- Exploit the possibilities of operating systems using recent technology.
- Create and use a database.
- Exploit the possibilities of telecommunications facilities.

To develop in the students the competencies required to communicate in the workplace and provide service to clients.

- Interact in various work situations.
- Communicate in French.
- Provide technical support at a telephone help desk.

To develop in the students the competencies required to carry out tasks on stand-alone or networked computers.

- Analyze the architecture and operation of computer systems.
- Develop a utility program.
- Install the hardware and software of a computer.
- Manage access to the resources of a network.
- Install the shareable resources of a network.
- Troubleshoot a computer problem.
- Optimize the performance of a computer.

5. OPERATIONAL OBJECTIVES

5.1 DEFINITION

An operational objective is defined for each competency to be developed. Competencies are organized into an integrated training program designed to prepare students to practise the trade or occupation. This systematic organization of competencies produces better overall results than training by isolated objectives. More specifically, it fosters a smooth progression from one objective to the next, saves teaching time by eliminating needless repetition, and integrates and reinforces learning material.

Operational objectives are the main, compulsory teaching/learning targets and they are specifically evaluated for certification. There are two kinds of operational objectives: behavioural and situational.

- **A behavioural objective** is a relatively closed objective that describes the actions and results expected of the student by the end of a learning step. Evaluation is based on expected results.

- **A situational objective** is a relatively open-ended objective that outlines the major phases of a learning situation. It allows for output and results to vary from one student to another. Evaluation is based on the student's participation in the activities of the learning context.

Operational objectives cover the learning that the students need to develop a competency:

- The specifications or the phases of the objective determine or guide specific learning, thereby allowing the competency to be developed step by step.

- The objective as a whole (i.e. the six components and in particular the last phase of a situational objective–see Section 5.2) determines or guides the overall learning and the integration and synthesis of this learning, allowing the competency to be developed fully.

To attain the objectives, the following learning activities may be prepared:

- specific learning activities aimed at developing the required knowledge, views, skills and attitudes

- specific learning activities for the specifications or phases of the objectives

- general learning activities for the objectives

5.2 HOW TO READ OPERATIONAL OBJECTIVES

A. How to Read a Behavioural Objective

Behavioural objectives consist of six components. The first three provide an overview of the objective:

1. The **expected behaviour** states a competency in terms of the general behaviour that the students are expected to have acquired by the end of the module.

2. The **conditions for performance evaluation** define what is necessary or permissible to the students during evaluation designed to verify whether or not the students have attained the objective. This means that the conditions for evaluation are the same wherever and whenever the program is taught.

3. The **general performance criteria** define the requirements by which to judge whether or not the results obtained are generally satisfactory.

The last three components ensure that the objective is understood clearly and unequivocally:

4. The **specifications of the expected behaviour** describe the essential elements of the competency in terms of specific behaviours.

5. The **specific performance criteria** define the requirements for each of the specifications of behaviour. They ensure a more enlightened decision on the attainment of the objective.

6. The **field of application** defines the limits of the objective, where necessary. It indicates cases where the objective applies to more than one task, occupation or field.

B. How to Read a Situational Objective

Situational objectives consist of six components:

1. The **expected outcome** states a competency as an aim to be pursued throughout a module.

2. The **specifications** outline the essential aspects of the competency and ensure a better understanding of the expected outcome.

3. The **learning context** provides an outline of the learning situation designed to help the students develop the required competency. It is normally divided into three phases of learning:

   - information
   - performance, practice or involvement
   - synthesis, integration and self-evaluation

4. The **instructional guidelines** provide suggested ways and means of teaching the course to ensure that learning takes place and that the same conditions apply wherever and whenever the course is taught. These guidelines may include general principles or specific procedures.

5. The **participation criteria** describe the requirements the students must fulfil, which are usually related to each phase of the learning context. They focus on how the students take part in the activities rather than on the results obtained. Participation criteria are normally provided for each phase of the learning context.

6. **The field of application** defines the limits of the objective, where necessary. It indicates cases where the objective applies to more than one task, occupation or field.

6. HARMONIZATION

Computer technology programs have been harmonized with a view to achieving continuity between vocational and technical education. The main objective of harmonization is to encourage students to pursue their studies and to avoid needless repetition of courses. The college programs *Network Management*, *Administrative Data Processing* and *Industrial Data Processing* have been designed in harmonization with the secondary school *Computing Support* program.

Students who have acquired competencies in the secondary school *Computing Support* program will be granted recognition of the corresponding competencies in the *Network Management* program if they pursue studies at the college level.

COMPUTING SUPPORT		***NETWORK MANAGEMENT***	
SESAME	**COMPETENCY**	**CODE**	**COMPETENCY**
962 038	Exploit the possibilities of operating systems using older technology.	016Q	Exploit the possibilities of an operating system on a specific computer.
962 096	Exploit the possibilities of operating systems using recent technology.	017T	Optimize the functionalities of an operating system on a computer.
962 052	Research information.		
962 166	Exploit the possibilities of telecommunications facilities.	016U	Research information.
962 068	Develop a utility program.	017Q	Use an algorithmic procedure.
		016S	Use a structured programming language.
962 074	Interact in various work situations.	016V	Interact and communicate in various work situations.
962 025	Analyze the architecture and operation of computer systems.	016R	Install hardware and software in a computer.
962 116	Install the hardware and software of a computer.		
962 148	Manage access to the resources of a network.	0183	Set up a server.
962 157	Install the shareable resources of a network.		

Students who have acquired competencies in the college *Network Management* program will be granted recognition of the corresponding competencies in the *Computing Support* program if they pursue studies at the secondary level.

NETWORK MANAGEMENT		***COMPUTING SUPPORT***	
CODE	**COMPETENCY**	**SESAME**	**COMPETENCY**
017Q 016S	Use an algorithmic procedure. Use a structured programming language.	962 068	Develop a utility program.
016Q 017T	Exploit the possibilities of an operating system on a specific computer. Optimize the functionalities of an operating system on a computer.	962 038 962 096	Exploit the possibilities of operating systems using older technology. Exploit the possibilities of operating systems using recent technology.
016R	Install hardware and software in a computer.	962 025 962 116	Analyze the architecture and operation of computer systems. Install the hardware and software of a computer.
017Y	Manage their time and ensure the quality of their work.	962 122	Manage their time.
016U	Research information.	962 052	Research information.
016V	Interact and communicate in various work situations.	962 074	Interact in various work situations.
0183	Set up a server.	962 148 962 157	Manage access to the resources of a network. Install the shareable resources of a network.

Students who have acquired competencies in the secondary school *Computing Support* program will be granted recognition of the corresponding competencies in the *Administrative Data Processing* program if they pursue studies at the college level.

COMPUTING SUPPORT		***ADMINISTRATIVE DATA PROCESSING***	
SESAME	**COMPETENCY**	**CODE**	**COMPETENCY**
962 038 962 096	Exploit the possibilities of operating systems using older technology. Exploit the possibilities of operating systems using recent technology.	016Q	Exploit the possibilities of an operating system on a specific computer.
962 052 962 166	Research information. Exploit the possibilities of telecommunications facilities.	016U	Research information.
962 068	Develop a utility program.	016W 016S	Produce algorithms. Use a structured programming language.
962 074	Interact in various work situations.	016V	Interact and communicate in various work situations.
962 025 962 116	Analyze the architecture and operation of computer systems. Install the hardware and software of a computer.	016R	Install hardware and software in a computer.
962 122	Manage their time.	016Y	Plan and manage work activities.
962 186 962 205	Troubleshoot a computer problem. Provide technical support at a telephone help desk.	0179	Provide technical support and training to users.

Students who have acquired competencies in the college *Administrative Data Processing* program will be granted recognition of the corresponding competencies in the *Computing Support* program if they pursue studies at the secondary level.

ADMINISTRATIVE DATA PROCESSING		***COMPUTING SUPPORT***	
CODE	**COMPETENCY**	**SESAME**	**COMPETENCY**
016W 016S	Produce algorithms. Use a structured programming language.	962 068	Develop a utility program.
016Q	Exploit the possibilities of an operating system on a specific computer.	962 038 962 096	Exploit the possibilities of operating systems using older technology. Exploit the possibilities of operating systems using recent technology.
016R	Install hardware and software in a computer.	962 025 962 116	Analyze the architecture and operation of computer systems. Install the hardware and software of a computer.
016Y	Plan and manage work activities.	962 122	Manage their time.
016U	Research information.	962 052	Research information.
016V	Interact and communicate in various work situations.	962 074	Interact in various work situations.
0175	Create and use databases.	962 106	Create and use a database.
0174	Exploit the possibilities of a networked computing environment.	962 148	Manage access to the resources of a network.
0179	Provide technical support and training to users.	962 186 962 205	Troubleshoot a computer problem. Provide technical support at a telephone help desk.

Students who have acquired competencies in the secondary school *Computing Support* program will be granted recognition of the corresponding competencies in the *Industrial Data Processing* program if they pursue studies at the college level.

COMPUTING SUPPORT		***INDUSTRIAL DATA PROCESSING***	
SESAME	**COMPETENCY**	**CODE**	**COMPETENCY**
962 038 962 096	Exploit the possibilities of operating systems using older technology. Exploit the possibilities of operating systems using recent technology.	016Q	Exploit the possibilities of an operating system on a specific computer.
962 052 962 166	Research information. Exploit the possibilities of telecommunications facilities.	016U	Research information.
962 068	Develop a utility program.	016W 016S	Produce algorithms. Use a structured programming language.
962 074	Interact in various work situations.	016V	Interact and communicate in various work situations.
962 025 962 116	Analyze the architecture and operation of computer systems. Install the hardware and software of a computer.	016R	Install hardware and software in a computer.
962 122	Manage their time.	016Y	Plan and manage work activities.

Students who have acquired competencies in the college *Industrial Data Processing* program will be granted recognition of the corresponding competencies in the *Computing Support* program if they pursue studies at the secondary level.

INDUSTRIAL DATA PROCESSING		***COMPUTING SUPPORT***	
CODE	**COMPETENCY**	**SESAME**	**COMPETENCY**
016Q	Exploit the possibilities of an operating system on a specific computer.	962 038 962 096	Exploit the possibilities of operating systems using older technology. Exploit the possibilities of operating systems using recent technology.
016U	Research information.	962 052	Research information.
016W 016S	Produce algorithms. Use a structured programming language.	962 068	Develop a utility program.
016V	Interact and communicate in various work situations.	962 074	Interact in various work situations.
016R	Install hardware and software in a computer.	962 025 962 116	Analyze the architecture and operation of computer systems. Install the hardware and software of a computer.
016Y	Plan and manage work activities.	962 122	Manage their time.

PART II

MODULE 1 : THE OCCUPATION AND THE TRAINING PROCESS

Code: 962 012 **Duration: 30 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
determine their suitability for the occupation and the training process.

SPECIFICATIONS

At the end of this module, the students will:

- Be familiar with the nature of the occupation.
- Understand the training program.
- Confirm their career choice.

LEARNING CONTEXT

PHASE 1: Information on the Occupation

- Learning about the job market in computing support: types of businesses, employment prospects, remuneration, possibilities for advancement or transfer, selection criteria and process.
- Learning about the nature and the requirements of the job by meeting with employers, reading written material, etc.
- Looking at the possibility of starting their own business or being self-employed.
- Learning about health and safety risks and ways of preventing work accidents and occupational diseases.
- Learning about the rights and responsibilities of workers and employers.
- Presenting the information gathered and discussing their views on the occupation.

SITUATIONAL OBJECTIVE

PHASE 2: Information on and Participation in the Training Program

- Listing the skills, aptitudes, attitudes and knowledge required to practise the occupation.
- Learning about the training program.
- Discussing the relevance of the program to the work situation in computing support.
- Discussing their initial reactions to the occupation and the training program.

PHASE 3: Evaluation and Confirmation of Career Choice

- Stating their preferences, aptitudes, areas of interest and personal qualities.
- Comparing their preferences, aptitudes, areas of interest and personal qualities with the requirements of work in computing support.
- Recognizing their strengths in relation to the work and the weaknesses they need to correct.
- Presenting the reasons for their choice to continue or withdraw from the program.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Create a climate that is conducive to personal growth and to the students' integration into the field.
- Encourage all the students to engage in discussions and to express themselves.
- Motivate the students to take part in the suggested activities.
- Help the students to acquire an accurate perception of the occupation.
- Provide the students with the means of assessing their career choice honestly and objectively.
- Organize field trips to companies that are representative of the main work environments in computing support.
- Make available all pertinent documentation on the occupation, information on training programs, guides, etc.
- Organize a meeting with specialists in the field.

SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

PHASE 1:
- Gather information on most of the topics to be dealt with.
- Express their views on the occupation, relating them to the information they have gathered.

PHASE 2:
- Give their opinions on some of the requirements that they will have to meet in order to practise the occupation.
- Seriously study the material provided.
- Listen carefully to explanations given.
- Express their views on the training program.
- Clearly express their reactions.

PHASE 3:
- Sum up their preferences, areas of interest, aptitudes and personal qualities.
- Explain their decision on whether or not to continue in the training program.

MODULE 2: SYSTEMS ANALYSIS

Code: 962 025 **Duration: 75 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
analyze the architecture and operation of computer systems
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - diagrams and technical data
  - hardware and software of computer systems based on different technologies
  - reference materials
- Without using a calculator

GENERAL PERFORMANCE CRITERIA

- Use of appropriate terminology
- Effective use of reference materials
- Careful handling of components

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Distinguish the internal and external components of computer systems.	- Accurate location of components - Identification of functions of components - Accurate identification of types of connections between components - Identification of operating systems and programs according to their applications and functions - Identification of types of technologies and their compatibility
B. Analyze data processing by systems.	- Identification of performance characteristics of components - Identification of links established between components: • when the computer is turned on • when programs are loaded • when data are being processed • when the computer is turned off
C. Analyze the organization of data in systems.	- Accurate interpretation of data according to their: • internal representation mode • visual representation - Accurate evaluation of capacities of storage media - Identification of data organization methods used on storage media such as diskettes, hard disks, magnetic tape and CD-ROMs

MODULE 3: OLDER OPERATING SYSTEMS

Code: 962 038 **Duration: 120 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
exploit the possibilities of operating systems using older technology
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- **Using:**
  - a computer and English and French versions of an appropriate operating system
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Proper use of commands
- Effective use of reference materials
- Accurate interpretation of messages on the screen
- Correct positioning of fingers on keyboard
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Install and uninstall operating systems.	- Proper partitioning and formatting of hard disk - Correct use of installation procedures: • standard installation • customized installation - Determination of appropriate parameters - Correct use of uninstallation procedures
B. Adapt systems according to specific needs.	- Correct configuration of files needed for initialization of operating systems in terms of: • memory management • installation of drivers, keyboards, etc. - Observance of criteria regarding customization of the environment - Proper compression and defragmentation of hard disk
C. Perform basic operations.	- Correct formatting of magnetic media - Proper file and directory management techniques used in operations such as creating, deleting, copying, moving and compressing files and/or directories - Starting of programs according to their place in the directory structure - Effective use of help functions and utility programs of operating systems
D. Protect data.	- Correct installation of antivirus software - Proper disinfection of magnetic media - Creation of back-ups - Correct recovery of back-up files
E. Automate tasks.	- Correct creation and use of batch files - Creation of utility menus according to the needs - Proper modification of existing batch files - Proper use of debugging techniques

MODULE 4: PROBLEM SOLVING

Code: 962 043 **Duration: 45 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
apply a problem-solving method
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - case studies of various problems
  - pertinent reference materials
  - appropriate equipment

GENERAL PERFORMANCE CRITERIA

- Perseverance, autonomy and an open mind
- Variety of ideas
- Accurate, complete report of problem-solving process

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Define the problem.	- Complete description of anomalies observed - Pertinent questions concerning the source, frequency and variables of the problem - Pertinent, ordered notes - Accurate appraisal of the consequences of the problem - Clear, consise formulation of the problem
B. Examine the problem.	- Correct decision on elements to be tested - Use of appropriate tests - Logical order of elements tested - Effective use of reference materials - Elimination of unlikely causes - Establishment of appropriate connections between the problem analyzed and similar situations previously experienced
C. Formulate and test hypotheses concerning the causes of the problem.	- Clear, concise formulation of hypotheses - Pertinent hypotheses - Use of a rigorous, logical testing procedure - Determination of the exact cause of the problem
D. Choose and apply a solution.	- Proposal of pertinent, feasible solutions - Choice of the most appropriate solution in terms of cost, time, etc. - Correct application of the solution
E. Verify the results.	- Use of a rigorous, logical verification procedure - Appropriate judgement

MODULE 5: RESEARCHING INFORMATION

Code: 962 052 **Duration: 30 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
research information
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of common needs in a computing support department
- Using:
  - information sources such as manuals, guides, databases, the Internet, etc.
  - a computer and appropriate software
- In English and in French

GENERAL PERFORMANCE CRITERIA

- Effective use of information sources
- Accurate interpretation of English and French terminology
- Autonomy and initiative
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Define the purpose of the research.	- Clear formulation of the goal of the research - Determination of the aspects to be considered in the research
B. Select and consult reference materials.	- Selection of appropriate sources - Variety of sources selected - Rapid location of pertinent information
C. Extract the information.	- Accurate interpretation of the information - Pertinent information - Methodical note-taking
D. Write up the results of the research.	- Consideration of the goal and limits set for the research - Clear, concise writing - Use of appropriate terminology - Keyboarding speed of ten words per minute - Methodical recording of information

MODULE 6: PROGRAMMING UTILITY SOFTWARE

Code: 962 068 **Duration: 120 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
develop a utility program
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - a computer
  - an object-oriented programming language
  - reference materials
- On the basis of a case study describing specific needs

GENERAL PERFORMANCE CRITERIA

- Rigorous testing of work
- Proper functioning of the program
- Attention to detail
- Proper saving of data

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the needs with regard to the development of the utility program.	- Gathering of appropriate data concerning the needs, type of computer and environment - Definition of the purposes and functions of the program - Identification of the type of data to be processed by the program and the processing to be done - Accurate appraisal of the possibility of meeting the request
B. Create the algorithm.	- Precise, structured algorithmic solution - Correct representation of the preliminary version of the program in pseudo-code and /or programming flow charts - Algorithm in conformity with needs analysis
C. Code the algorithm, using a graphical development environment.	- Observance of rules concerning structured programming and object-oriented programming - Accurate coding of the algorithm - Clear, concise comments on program functioning
D. Test the program.	- Use of a methodical procedure - Detection of all errors in syntax, logic and execution - Proper correction of errors
E. Distribute the utility program.	- Compilation of the source program - Proper preparation of installation diskettes - Full, accurate instructions for installation and use of the program

MODULE 7: WORKING RELATIONSHIPS

Code: 962 074 **Duration: 60 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
interact in various work situations.

SPECIFICATIONS

At the end of this module, the students will:

- Understand the importance of communication in their work.
- Recognize the importance of establishing a relationship of trust with clients.
- Understand their role in relation to the rules of professional ethics.
- Be familiar with the functioning of a work team.
- Be aware of the effects of stress on working relationships.

LEARNING CONTEXT

PHASE 1: Information on Work Situations Encountered in Computing Support

- Developing an awareness of the main difficulties encountered in working relationships in computing support.
- Discussing the importance of good communication skills in establishing good working relationships.
- Examining how they interact with others in situations in their personal or working life.

PHASE 2: Familiarization with Service to Clients

- Learning about the types of clientele encountered in computing support.
- Discussing the importance of being aware of clients' anxieties and needs.
- Learning about ways of alleviating clients' stress.
- Discussing the attitudes and behaviour computing support personnel should adopt with clients.
- Trying out approaches for providing courteous service to clients.

SITUATIONAL OBJECTIVE

PHASE 3: Application of the Rules of Professional Ethics

- Learning about the standards and rules that apply to work situations.
- Discussing the role of the person in charge of computing support in applying standards and rules.
- Examining procedures to prevent abuse of equipment, pirating of software and violation of copyright.
- Preparing an activity to educate clients to observe standards and rules.
- Discussing ways of dealing with clients who fail to observe standards and rules.

PHASE 4: Participation in a Work Team

- Observing the functioning of work teams and recognizing the impact of communication on the quality of teamwork.
- Practising situations involving relationships with colleagues and superiors in which they must:
  - participate in forming a team and dividing tasks among team members
  - give their opinions
  - defuse tense situations
- Discussing attitudes and behaviour that contribute to the effective functioning of a work team.

PHASE 5: Evaluation of their Interaction in Various Work Situations

- Assessing the strengths and weaknesses in their ways of interacting with clients and communicating with colleagues and superiors.
- Indicating how they could improve with respect to service to clients and teamwork.
- Discussing the way they act in tense situations and methods of managing stress.
- Assessing the skills they have acquired in this module.

SITUATIONAL OBJECTIVE

INSTRUCTIONAL GUIDELINES

The teacher should:

- Make extensive use of role-plays and simulated situations that are representative of the workplace.
- Emphasize work in small groups, making sure that all students have opportunities both to participate and to observe.
- Provide checklists for use in observing and analyzing the simulated situations.
- Encourage the students to try out new behaviours.
- Show appreciation for all the students' contributions to discussions.
- Make appropriate use of audio-visual materials.
- Organize a meeting with an expert in computing support who can describe his or her experience in the areas dealt with in this module.
- Guide the students' evaluation process by providing appropriate tools (questionnaires or checklists).

PARTICIPATION CRITERIA

PHASE 1:
- Give their opinions in discussions.
- Describe their style of interacting with others.

PHASE 2:
- Follow the instructions for trying out an approach for providing courteous service to clients.

PHASE 3:
- Gather and organize data on the standards and rules that apply to the use of computers.
- Prepare an activity in which the rules of professional ethics are applied.

PHASE 4:
- Follow the instructions for trying out working in a team.
- State the attitudes and behaviour that contribute to the effective functioning of a work team.

PHASE 5:
- State their strengths and weaknesses in dealing with clients and participating in a work team.
- Discuss their reaction to stress and ways of managing it.

MODULE 8: APPLICATION SOFTWARE

Code: 962 088 **Duration: 120 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
exploit the possibilities of application software
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of a case study
- Using:
  - English and French versions of application software belonging to different families
  - a computer that is prepared for the installation of application software
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Methodical work
- Effective navigation in user interfaces
- Optimal use of software help functions and other reference materials
- Accurate interpretation of messages on screen
- Keyboarding speed of 20 words per minute
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Examine the capabilities of computer programs.	- Identification of similar functions: • in programs in the same families • in programs from different families • in different versions of programs - Demonstration of the specific features of each program - Selection of the most appropriate program for a specific task
B. Install and uninstall software.	- Accurate interpretation of information on the minimum configuration required for the installation - Complete verification of elements of the computer system to ensure they comply with installation requirements - Proper use of procedures for standard, complete and customized installation - Consideration of the needs involved - Efficient solution of conflicts - Proper use of uninstallation procedures
C. Research and propose procedures for using programs.	- Selection of pertinent information - Proper use of functions - Conversion of files from one program to another - Preparation of clear, concise instructions for using functions
D. Automate tasks.	- Creation of macros based on user needs - Proper recording and running of macros - Detection and correction of errors
E. Customize program interfaces.	- Proper setting of preferences and print manager - Adaptation of menus and toolbars to user needs

MODULE 9: RECENT OPERATING SYSTEMS

Code: 962 096 **Duration: 90 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
exploit the possibilities of operating systems using recent technology
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - a computer and English and French versions of an appropriate operating system
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Proper use of commands
- Effective use of reference materials
- Accurate interpretation of messages on the screen
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Install and uninstall operating systems.	- Proper partitioning and formatting of hard disk - Correct use of installation procedures: • standard installation • customized installation - Determination of appropriate parameters - Correct use of uninstallation procedures
B. Adapt systems according to specific needs.	- Correct configuration of files needed for initialization of operating systems in terms of: • memory management • installation of drivers, keyboards, etc. - Observance of criteria regarding customization of the environment - Detection and effective solution of conflicts - Proper compression and defragmentation of hard disk
C. Perform basic operations.	- Correct formatting of magnetic media - Proper file and directory management techniques used in operations such as creating, deleting, copying, moving and compressing files and/or directories - Starting of programs according to their place in the directory tree - Effective use of help functions and utility programs of operating systems
D. Protect data.	- Correct installation of antivirus software - Implementation of system strategies to protect the computer's configuration - Proper disinfection of magnetic media - Creation of back-ups - Correct recovery from back-up files

BEHAVIOURAL OBJECTIVE	
SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	**SPECIFIC PERFORMANCE CRITERIA**
E. Automate tasks.	- Correct creation and use of batch files - Creation of utility menus according to the needs - Proper modification of existing batch files - Proper use of debugging techniques

MODULE 10: DATABASES

Code: 962 106 **Duration: 90 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
create and use a database
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of a case study
- Using:
  - a computer and English and French versions of a database program
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Methodical work
- Proper use of commands
- Optimal use of program help functions and other reference materials
- Accurate interpretation of messages on the screen
- Proper saving of data
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the needs.	- Definition of the purposes and functions of the database - Recognition of the nature of the data to be handled - Proper collection of data for inputting
B. Design the database.	- Standardization of data - Design of a functional structure - Proper creation of • tables • forms and queries • reports - Testing of proper functioning of database - Implementation of security measures appropriate to the needs
C. Process the data.	- Optimal use of possibilities for: • display of data • consultation • querying • sorting • indexing • extraction - Proper use of calculation and statistics functions - Proper production of reports on screen and on paper - Addition, deletion and modification of data as required - Proper importing and exporting of data - Creation of functional macros appropriate to the needs - Keyboarding speed of 30 words per minute
D. Adapt the structure of the database to new needs.	- Data integrity - Testing of proper functioning of database - Optimization of functioning of database - Proper customization of user interface - Modification of elements as required

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
E. Document the database.	- Preparation of complete system specifications - Writing of complete, accurate instructions for use of the database - Use of appropriate terminology

MODULE 11: INSTALLATION OF WORKSTATIONS

Code: 962 116 **Duration: 90 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
install the hardware and software of a computer
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of a case study and an inventory of software and equipment for computer systems using different technologies
- Using:
  - a database on computing support
  - reference materials and data sheets on components
  - a database program and appropriate tools

GENERAL PERFORMANCE CRITERIA

- Proper functioning of workstation
- Methodical work
- Effective use of reference materials
- Observance of professional ethics
- Observance of schedule targets

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Plan the work.	- Accurate assessment of needs - Correct selection of components - Logical assembly sequence
B. Assemble the hardware components of the computer and connect the peripherals.	- Correct assembly sequence - Assembly of appropriate components - Correct placement of components - Solid assembly - Correct configuration of components and peripherals - Careful handling of parts - Use of appropriate tools - Methodical organization of work space - Observance of safety rules
C. Install the operating systems.	- Proper partitioning and formatting of hard disk - Installation procedures as per manufacturers' instructions - Proper installation and tuning of drivers - Solution of conflicts between components - Configuration and customization of systems as needed
D. Install application software.	- Installation procedures as per manufacturers' instructions - Configuration and customization of software as needed
E. Test the results and save data on work done.	- Proper testing of functioning of workstation - Updating of inventory - Full, accurate entry in knowledge bank of: • details of the installation • problems encountered • solutions applied - Use of correct English and computer terminology

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
F. Make recommendations concerning the use of the equipment.	- Pertinent, clear, simple recommendations - Use of correct English and computer terminology

MODULE 12: TIME MANAGEMENT

Code: 962 122 **Duration: 30 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
manage their time.

SPECIFICATIONS

At the end of this module, the students will:

- Understand how important it is for computing support personnel to use their time effectively.
- Adopt ways of managing their time effectively.
- Be aware of their strengths and weaknesses in managing their time.

LEARNING CONTEXT

PHASE 1: Information on the Principles of Time Management

- Learning about the value of time.
- Learning about the behaviour and the factors responsible for difficulties in time management.
- Learning about methods and tools for effective time management.
- Thinking about the benefits of effective time management.
- Recognizing the consequences of poor time management.

PHASE 2: Examination of Their Current Use of Time

- Making a list of their main personal activities.
- Assessing the usefulness of these activities or their satisfaction with them in relation to the time and energy devoted to them.
- Thinking about their ability to manage their use of time.

SITUATIONAL OBJECTIVE

PHASE 3: Examination of How Computing Support Personnel Use Their Time

- Making a list of the main activities in computing support.
- Learning about the most time-consuming activities and their effect on time planning.
- Discussing the main obstacles encountered in carrying out the activities and ways to overcome them.

PHASE 4: Familiarization with Methods and Tools for Time Management

- Determining the level of priority of the activities involved in computing support.
- Determining the activities that may be carried out by other people.
- Planning activities, using time management tools.

PHASE 5: Evaluation of Methods for Time Management

- Thinking about their ability to assess the importance of a situation.
- Recognizing the extent and the limits of their responsibilities.
- Assessing their strengths and weaknesses in managing their time.
- Finding ways to manage their time more effectively.
- Thinking about the effect the material in this module may have on the practice of their occupation in the job market.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Use case studies and hypothetical situations representative of the work environment.
- Provide the students with case studies and hypothetical situations whose complexity is appropriate to their knowledge.
- Provide checklists to facilitate analysis of the case studies and hypothetical situations.
- Encourage the exchange of opinions, participation and group discussion.
- Make available time management tools used in business: time management software, electronic agendas, etc.

SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

PHASE 1:
- Gather information, using sources made available.
- Describe at least three advantages of effective time management.

PHASE 2:
- Evaluate their satisfaction with their main personal activities.

PHASE 3:
- Give their opinions on ways to manage their tasks in computing support.

PHASE 4:
- Participate seriously in the activities.
- Use the tools provided.

PHASE 5:
- Assess their ways of managing time.
- Propose realistic ways to manage their time more effectively.

MODULE 13: COMMUNICATION IN FRENCH

Code: 962 135 **Duration: 75 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
communicate in French
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - the French version of a word processing program
  - technical documents and a French knowledge base
  - dictionaries and grammar books
  - a telephone and the Internet

GENERAL PERFORMANCE CRITERIA

- Effective use of reference materials
- Use of appropriate terminology

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Handle requests from clients: • in person • on the telephone	- Accurate interpretation of requests - Clear, pertinent questions concerning details of the work needed - Clear, concise, coherent explanations - Level of language appropriate to the client - Proper verification of client's understanding - Appropriate language and manner - Proper telephone procedure - Clear speech
B. Write documents related to computing support: • notes and instructions for clients • reports	- Clear, concise, coherent writing - Level of language appropriate to the client - Use of appropriate key words in knowledge base - Correct spelling and grammar - Keyboarding speed of 30 words per minute
C. Obtain information from suppliers and manufacturers.	- Clear requests to suppliers - Accurate interpretation of suppliers' answers - Respect for the proprieties - Clear speech - Accurate interpretation of technical documentation

MODULE 14: NETWORKS: ACCESS MANAGEMENT

Code: 962 148 **Duration: 120 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
manage access to the resources of a network
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of:
  - requests from clients
  - a diagram representing a company's directory services
  - instructions for creating accounts and groups
- Using:
  - a network and shareable programs and peripherals installed on it
  - a database for recording the details of work done
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Observance of instructions
- Methodical and successful research
- Effective use of commands and utilities of the operating system
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Describe the characteristics of the network.	- Identification of the type of organization of the network and the specific features of the operating system - Precise location of the hardware and software of the network - Recognition of the limits of the network
B. Plan their work.	- Accurate assessment of the needs - Proper verification of the validity of the request - Realistic estimate of the time required for the work - Correct placement of accounts and user groups to be created in the company's directory services - Planning of a methodical procedure for: • creating directories and groups • providing user rights - Observance of directives and security standards concerning data sharing
C. Create accounts and user groups.	- Meaningful names used for groups and accounts - Observance of directives concerning security parameters such as: • passwords • access periods • user rights - appropriate customization of the work environment of users or groups, using scripts

BEHAVIOURAL OBJECTIVE	
SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	**SPECIFIC PERFORMANCE CRITERIA**
D. Test access to the resources.	- Testing of the configuration of the workstations: • physical components and links • communication protocols • client software - Proper connection to the network - Intelligent choice of tests to carry out - Testing of the operation of the main application software - Effective problem solving
E. Record information on the work done.	- Accurate, complete record of details of work done on the database - Use of correct English and computer terminology
F. Inform clients concerning access to the network.	- Clear, exhaustive information concerning: • the resources available • how to use these resources • rules to be observed - Pertinent information according to user group - Understandable information given in English and French - Courtesy with clients - Verification of client satisfaction

MODULE 15: NETWORKS: RESOURCE SHARING

Code: 962 157 **Duration: 105 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
install the shareable resources of a network
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- On the basis of:
  - a plan of the architecture of a network and instructions on the equipment and software to be installed
  - a diagram representing a company's internal communications
- Using:
  - copies of the software to be installed
  - a computer that is ready for installation of the network operating system and a computer workstation
  - a database for recording the details of work done
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Conformity with the plan of the network architecture and the instructions
- Methodical work
- Effective use of reference materials
- Observance of professional ethics
- Careful handling of equipment
- Effective use of the commands and utilities of the operating system
- Effective problem solving

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Plan their work.	- Accurate interpretation of instructions and data sheets for components - Testing of hardware components and software to ensure they are in conformity with instructions - Establishment of a logical assembly sequence
B. Install the network operating system.	- Correct installation and configuration of the network card - Proper preparation of the hard disk: • creation of partitions • management of volumes • installation of file systems • formatting - Observance of instructions on creating company directory services - Observance of installation procedures provided by the manufacturer - Configuration in conformity with instructions
C. Install the client software on the workstations.	- Correct installation and configuration of network card - Installation and configuration of client software and terminal emulation according to the operating system on the workstation - Observance of communication protocols
D. Establish communication between components.	- Correct preparation and installation of cabling - Placement of repeaters or amplifiers depending on the type of cabling - Proper testing of communication between the components

BEHAVIOURAL OBJECTIVE	
SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	**SPECIFIC PERFORMANCE CRITERIA**
E. Install shareable resources.	- Correct installation and configuration of application software, services and peripherals - Proper functioning of peripherals using application software
F. Ensure data integrity.	- Correct installation of the hardware and software needed for data safety - Setting up of procedures to ensure data safety
G. Test the results and record the data concerning the work.	- Proper testing of the accessibility of the resources installed - Accurate, complete entry of details of the work in the database - Use of correct English and French terminology

MODULE 16: TELECOMMUNICATIONS FACILITIES

Code: 962 166 **Duration: 90 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
exploit the possibilities of telecommunications facilities
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - hypothetical situations
  - telecommunications and computer facilities connected to the Internet
  - English and French versions of specialized software and appropriate utilities
  - reference materials

GENERAL PERFORMANCE CRITERIA

- Mastery of software programs
- Effective use of help functions
- Correct interpretation and use of terminology
- Observance of professional ethics
- Concern for the quality of language

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Install hardware and software of telecommunications facilities.	- Choice of appropriate cables for type of work - Correct installation and configuration of: • internal and external modems • communication software, software for creating hypermedia documents, and browsers • remote control, compression and decompression software - Proper testing of the establishment of communication - Effective problem solving
B. Manage the sending and reception of faxes and e-mail.	- Correct retrieval of faxes and e-mail messages - Correct procedure used to: • create e-mail messages and faxes • send e-mail messages and faxes to individuals and groups - Effective management of in-box and address book - Proper compression and decompression of files attached to e-mail messages and faxes - Use of appropriate security measures
C. Search for information on the electronic highway.	- Correct use of search engines - Precise search criteria - Selection of pertinent information - Appropriate organization of addresses of sites used - Effective use of discussion groups

BEHAVIOURAL OBJECTIVE	
SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	**SPECIFIC PERFORMANCE CRITERIA**
D. Create a hypermedia document.	- Accurate analysis of the needs - Selection of appropriate content - Logical structure - Establishment of effective and pertinent links among elements - Pleasing and user-friendly layout - Consideration of the needs - Testing of proper functioning of document - Proper uploading of document onto server - Correct use of programming language
E. Use remote control.	- Proper start-up procedure for the session - Effective use of functions for managing the work session - Correct file transfer

MODULE 17: CAREER MANAGEMENT

Code: 962 173 **Duration: 45 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
manage their careers.

SPECIFICATIONS

At the end of this module, the students will:

- Understand the impact of technological change on work in the field.
- Undertake a job search.
- Consider the possibility of creating their own business or freelancing.

LEARNING CONTEXT

PHASE 1: Reflection on the Impact of Technological Change

- Learning about new technology being used in companies and foreseeable changes.
- Discussing the impact new technology may have on occupational tasks.
- Assessing their ability to adapt to change.
- Listing ways to update their knowledge and skills once they have joined the work force.

PHASE 2: Preparation and Application of a Job Search Plan

- Preparing a personal assessment of their interests, values, aptitudes, weaknesses, etc.
- Learning about organizations and information sources to consult in a job search.
- Making a list of potential employers.
- Writing a resumé and covering letter.
- Preparing for and undergoing a job interview.
- Planning the steps in their job search.

SITUATIONAL OBJECTIVE

PHASE 3: Learning about Entrepreneurship and Freelancing

- Learning about personal qualities related to entrepreneurship: character traits, strengths, attitudes, interests, sources of motivation, etc.
- Learning about the requirements of freelancing.
- Assessing their entrepreneurial aptitudes and ability to work as freelancers.

PHASE 4: Evaluation and Follow-up of Their Job Search

- In a group meeting, discussing the pertinence of the documents used and the effectiveness of their job search activities.
- Adjusting their job search plans.
- Assessing the effect the material in this module could have on their progress in the job market.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Provide the students with resources and examples to use in the work.
- Explain to the students how to use the reference materials.
- Put the students in touch with a firm that recruits information technology personnel.
- Provide time and resources for the students to try out their job search plan.
- Promote discussion and cooperation among the students.
- Organize visits to high-tech companies.
- Organize information meetings with entrepreneurs.
- Lead discussions on the students' job search activities and their thoughts about them.
- Guide the students' evaluation process by providing them with tools (such as a list of questions).

SITUATIONAL OBJECTIVE

PARTICIPATION CRITERIA

PHASE 1:
- Gather information using the sources provided.
- Give their opinions in discussions.

PHASE 2:
- Present detailed job search plans.
- Write an appropriate covering letter and a resumé in keeping with the rules of presentation and containing information on their work experience, education and skills as well as personal data.

PHASE 3:
- Explain why they do, or do not, plan to start their own business or work as freelancers.

PHASE 4:
- Discuss their assessment of their job search activities.
- Make realistic adjustments to their job search plan.

MODULE 18: TROUBLESHOOTING

Code: 962 186 **Duration: 90 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
troubleshoot a computer problem
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - a defective computer (either stand-alone or part of a network), in which the problem may be related to the physical or logic components
  - a knowledge bank on computing support
  - an inventory of hardware and software
  - tools and dedicated utilities for computing support
  - reference materials
- In the presence of the client

GENERAL PERFORMANCE CRITERIA

- Speed of the work
- Proper problem-solving procedure
- Effective use of reference materials
- Concern for the quality of English
- Acceptable use of French
- Appropriate level of language for clients
- Autonomy, perseverance and self-control
- Patience and courtesy with client

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the client's needs.	- Precise questioning of client on the source, frequency and variables of the problem - Pertinent, concise notes - Attentive listening to client - Accurate assessment of whether the request should be accepted and of its priority
B. Examine the computer.	- Examination of the configuration of the computer, taking into account the client's preferences - Recognition of the type of system - Appropriate tests - Logical order of testing of various points - Observance of safety rules
C. Analyze the data on the problem.	- Accurate interpretation of test results - Elimination of improbable causes - Clear formulation of the problem - Accurate assessment of the consequences of the problem
D. Determine the cause of the problem.	- Pertinent hypotheses - Proper testing of hypotheses - Determination of the exact cause of the problem - Effective use of diagnostic tools

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
E. Correct the problem.	- Effective consultation of knowledge bank - Quick decision making - Acceptable temporary solutions - Selection of the most appropriate permanent solution - Application of measures to save data and ensure its integrity - Proper use of tools - Careful handling of equipment - Restoration of the configuration of the computer, taking into account the client's preferences - Proper functioning of the computer - Observance of safety rules
F. Finish the work.	- Updating of inventory and knowledge bank - Clear, pertinent, simple recommendations for avoiding a recurrence of the problem - Accurate assessment of client's satisfaction

Field of Application: Computers with older or more recent multi-user operating systems.

MODULE 19: COMPUTER OPTIMIZATION

Code: 962 194 **Duration: 60 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
optimize the performance of a computer
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Using:
  - a working computer (either stand-alone or part of a network) that needs improvements in the hardware and software
  - a knowledge bank on computing support
  - an inventory of hardware and software
  - tools and utilities for computing support
  - reference materials
- In the presence of the client

GENERAL PERFORMANCE CRITERIA

- Speed of the work
- Methodical work
- Effective use of reference materials
- Acceptable use of French
- Appropriate level of language for clients
- Patience and courtesy with client

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Analyze the client's needs.	- Precise questioning of client on the improvements expected - Respect for client and client's request - Pertinent, concise notes - Accurate assessment of whether the request should be accepted - Appropriate proposals for improvements
B. Examine the computer.	- Recognition of the type of system - Appropriate tests - Examination of the configuration of the computer, taking into account the client's preferences - Appropriate decision on work to be done - Quick decision making - Accurate information given to client regarding: • the consequences of the change • the time required for the work
C. Make the change.	- Choice of appropriate equipment and tools - Use of measures to save data and ensure its integrity - Careful handling of equipment - Proper use of procedures for: • uninstalling components • installing and configuring new hardware and software • modifying components that are already installed • updating operating systems and programs • improving performance of existing macros - Effective problem solving - Improvement of computer's performance - Consideration of needs expressed at the outset - Observance of safety rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
D. Finish the work.	- Updating of inventory and knowledge bank - Clear, pertinent, simple recommendations for use of the computer - Accurate assessment of client's satisfaction

Field of Application: Computers with older or more recent multi-user operating systems.

MODULE 20: TECHNICAL SUPPORT AT A TELEPHONE HELP DESK

Code: 962 205 **Duration: 75 hours**

BEHAVIOURAL OBJECTIVE

EXPECTED BEHAVIOUR

To demonstrate the required competency, the students must
provide technical support at a telephone help desk
in accordance with the following conditions, criteria and specifications.

CONDITIONS FOR PERFORMANCE EVALUATION

- Based on a call for service
- Using:
  - a workstation equipped with a call management system, remote control software and an electronic mail system
  - a knowledge bank
  - procedures manuals and reference materials
  - resources for second-level support

GENERAL PERFORMANCE CRITERIA

- Effective use of telecommunications facilities
- Effective use of reference materials
- Correct problem-solving procedure
- Quick decision making
- Simple, precise instructions given to client
- Concern for quality of English
- Acceptable use of French
- Clear enunciation
- Patience and courtesy with client
- Keyboarding speed of 40 words per minute
- Observance of ergonomic rules

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
A. Receive and analyze the request.	- Correct use of greeting procedure - Checking as to whether the request can be accepted - Precise questioning of client on: • the type of system • the source, frequency and variables of the problem - Pertinent, concise notes entered in the system - Establishment of a relationship of trust with the client
B. Diagnose the problem.	- Accurate assessment of the consequences of the problem and of its priority - Formulation of pertinent hypotheses - Accurate assessment of the client's skill level with regard to computers - Proper use of the "step by step" procedure with the client in order to test the hypotheses - Accurate interpretation of client's answers - Effective use of the remote control software - Determination of the exact cause of the problem
C. Solve the problem.	- Proposal of acceptable temporary solutions - Selection of the most appropriate solution using the following methods: • "step by step" with the client • taking control of the remote computer - Proper use of the procedure for situations requiring action at another level: • choice of a resource person • transmission of the data on the problem • follow-up of the work - Effective solution of the problem - Proper testing of the results

BEHAVIOURAL OBJECTIVE

SPECIFICATIONS OF THE EXPECTED BEHAVIOUR	SPECIFIC PERFORMANCE CRITERIA
D. Finish the work.	- Accurate assessment of client's satisfaction - Updating of knowledge bank - Clear, pertinent, simple recommendations for avoiding a recurrence of the problem

MODULE 21: PRACTICUM: TECHNICAL SUPPORT

Code: 962 218 **Duration: 120 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
ensure the proper operation of computers in the workplace.

SPECIFICATIONS

At the end of this module, the students will:
- Integrate into a team in a workplace.
- Perform tasks on workstations.
- Show autonomy and initiative.
- Assess their technical skills in working with computers.

LEARNING CONTEXT

PHASE 1: Preparation for the Practicum

- Learning about the organization of the company and the computer equipment used.
- Communicating with the person in charge of the practicum in the company to find out about the tasks to be accomplished and the conditions under which they will be carried out.
- Informing the person in charge of the practicum of their interests and skills in the field of computing support.
- Setting objectives in computing support to be reached during the practicum.

PHASE 2: Observing and Carrying Out Work on Computer Equipment

- Observing the work environment.
- Performing tasks such as assembling and optimizing computers.
- Solving or helping solve computer problems.
- Assessing the satisfaction of the person in charge of the practicum with the work done.

SITUATIONAL OBJECTIVE

PHASE 3: Evaluating Their Experience in the Workplace

- Relating their observations on the work environment and the tasks they carried out in the company.
- Making an evaluation of:
  - the quality of the work they did on the computers
  - their collaboration with the personnel of the company
  - their ability to work autonomously
- Making a list of skills and knowledge to acquire in order to improve their work in computing support.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Provide the students with opportunities to carry out a variety of tasks on computer equipment by establishing an agreement with the company representative.
- Ensure the supervision of the students by a qualified person in the company (supervisor).
- Encourage the students' initiatives while respecting the agreement on the tasks to be carried out.
- Provide the students with regular supervision and support.
- Intervene when problems or difficulties arise.
- Guide the students' evaluation process by providing tools such as lists of questions or checklists.

PARTICIPATION CRITERIA

PHASE 1:
- Gather information on the company and the tasks to be carried out as trainees.
- Prepare a document describing their interests, skills and objectives in computing support.

PHASE 2:
- Carry out the tasks according to instructions and regularly check the quality of their work.
- Show interest in the work by taking initiative and asking questions.

PHASE 3:
- Describe their experience as trainees.
- State their strengths and weaknesses in computing support work.

MODULE 22: PRACTICUM: SERVICE TO CLIENTS

Code: 962 228 **Duration: 120 hours**

SITUATIONAL OBJECTIVE

EXPECTED OUTCOME

By participating in the required activities of the learning context according to the indicated criteria, the students will be able to
provide service to clients in the workplace.

SPECIFICATIONS

At the end of this module, the students will:

- Serve clients in a workplace on site or remotely.
- Help solve the clients' problems.
- Use their communication skills.
- Handle stress.
- Assess their skills in providing service to clients.

LEARNING CONTEXT

PHASE 1: Preparation for the Practicum

- Learning about the organization of the company's operations in providing service to clients, and the policies and procedures to be observed.
- Learning about the clients and the equipment and software used.
- Informing the person in charge of the practicum in the company of their interests and skills in providing service to clients.
- Learning about the services they will provide as trainees and the conditions under which they will provide them.
- Setting objectives for the practicum in providing service to clients.

SITUATIONAL OBJECTIVE

PHASE 2: Observing and Providing Service to Clients

- Observing the work environment.
- Receiving and fulfilling requests from clients.
- Transmitting complex requests to the appropriate resource persons.
- Ensuring that the work is done and assessing the satisfaction of clients.
- Using strategies or techniques to control stress.
- Assessing the satisfaction of the person in charge of the practicum with the service provided to clients.

PHASE 3: Evaluating Their Experience in Working with Clients

- Relating their observations on the work environment and the tasks carried out in providing service to clients in the company.
- Making an evaluation of:
  - the quality of the service provided to clients
  - their ability to communicate with clients and colleagues
  - their ability to work in difficult or tense situations
- Making a list of skills and knowledge to acquire in order to improve their work in providing service to clients.

INSTRUCTIONAL GUIDELINES

The teacher should:

- Establish an agreement with a company representative to allow the students to gradually fulfill clients' requests.
- Ensure the supervision of the students by a qualified person in the company (supervisor).
- Provide the students with regular supervision and support.
- Intervene when problems or difficulties arise.
- Guide the students' evaluation process by providing tools such as lists of questions or checklists.

PARTICIPATION CRITERIA

PHASE 1:
- Gather information on the company and the tasks to be carried out as trainees.
- Prepare a document describing their interests, skills and objectives in providing service to clients.

SITUATIONAL OBJECTIVE

PHASE 2:
- Apply the policies and procedures of the company and regularly assess client satisfaction.
- Adapt their behaviour and attitudes according to the situation.

PHASE 3:
- Describe their experience as trainees.
- State their strengths and weaknesses in providing service to clients.

Éducation

Québec

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