



COURSE OUTLINE

Course identification

Name of programs – Codes:	INFORMATION TECHNOLOGY PROGRAMMER-ANALYST (LEA.3Q)
Course title:	INTERNSHIP
Course number:	420-SG4-AS
Total number of course hours:	255 Hours
Weighting:	1-16-2
Statement of the competency– Code:	Install and manage computers -00Q1 Use programming languages -00Q2 Carry out prevention operations with regard to information security -00Q8 Interact in a professional setting -00SE Evaluate software and hardware components -00SF Provide users with technical support -00SG Adapt to information technologies -00SH

Contribution of the course in the program

Course position

This course is located in fourth semester of the *Information Technology Programmer-Analyst* (LEA.3Q) program. Its duration is 255 hours divided into 15 hours of theory and 240 hours of Internship plus approximately 30 hours of homework. It shares the development of 00Q1 competency with *Computer Architecture: DOS 6.22, Hardware* (420-225-AS), given in the first semester and *Operating Systems and Networking* (420-SE2-AS) given in the second semester. It shares the development of 00Q2 competency with *Algorithms and Programming* (420-AP1-AS) given in the first semester and *Scripting Language* (420-LS3-AS) given in the third semester. It shares the development of 00Q8 competency with *Scripting Language* (420-LS3-AS) given in the third semester. It shares the development of 00SE competency with *Algorithms and Programming* (420-AP1-AS) given in the first semester and *Advanced Object Oriented Programming* (420-PA3-AS) given in the third semester. It shares the development of 00SF competency with *Algorithms and Programming* (420-AP1-AS) given in the first semester. It shares the development of 00SG competency with *Computer Architecture: DOS 6.22, Hardware* (420-225-AS) given in the first semester. Finally, it shares the development of 00SH competency with *Trends in Technology* (420-TT4-AS) given in the fourth semester.

Web Server Applications Development I (420-DW3-AS), *Advanced Object Oriented Programming* (420-PA3-AS) given in the third semester and *Information System Analysis and Modeling* (420-AS2-AS) given in the second semester are prerequisites for this Internship.

Scope of the course

During this course, students will learn to develop skills and attitudes appropriate to the profession of programmer and programmer analyst. The training must primarily allow the student to ensure his professional integration in the environment of the company by his direct involvement on the ground.

The internship lasts for 240-hours that take place in a company chosen by the student. Individual supervision of the trainee is provided by two people: a company supervisor and a teacher assigned as supervisor. The former will take the role of the coach to ensure a progression in the tasks to perform, the support necessary to achieve these tasks, the accompaniment to the integration in the working environment and a follow-up of the attitudes and achievements. The latter ensures a constant follow-up of the trainee with a logbook, telephone interviews, a visit to the internship environment if necessary and a regular contact through email. In addition, there are 15 hours of meeting with the teacher during the semester.

Upon completion of this course, the trainee must have developed a professional attitude and technical expertise acquired throughout his learnings. The following will be particularly exploited in the internship environment: to develop a professional attitude, to respect people and the environment; to ensure the quality of the productions, to communicate and to document properly and to meet deadlines.

Course components (objective and standard of the competencies)

Expected outcomes (achievement context of the competencies)

The achievement context of these competencies will reflect the conditions as they occur in the following settings: academic, professional, work, or life environment.

Achievement context of the competency: Install and manage computers -00Q1

- For different operating systems
- Based on a request
- Using computers, peripheral devices, removable internal components, etc.
- Using technical documents
- Using operating systems, applications, utilities, drivers, plug-ins, etc.

Achievement context of the competency: Use programming languages -00Q2

- For problems that are easily solved
- Using basic algorithms
- Using a debugger and a functional test plan

Achievement context of the competency: Carry out prevention operations with regard to information security -00Q8

- Using recognized security measures
- Using information security software and encryption libraries

Achievement context of the competency: Interact in a professional setting -00SE:

- In various types of work settings
- Using application programming and network management standards, methods and best practices
- Using laws, code of ethics and corporate policies

Achievement context of the competency: Evaluate software and hardware components -00SF

- Using information sources
- Based on functional specifications and architecture diagrams
- Using technical documentation

Achievement context of the competency: Provide users with technical support -00SG

- Based on an incident, problem or request
- Using documentation and a knowledge base
- Using presentation standards

Achievement context of the competency: Adapt to information technologies -00SH

- Using information sources
- Using computer applications and equipment .

Throughout the course, you will engage in various learning situations/activities so that by the end of the course, you will have met the expected outcomes.

Elements and performance criteria

The elements of an objective formulated in terms of the competency specify its essential components. They include only what is necessary in order to understand and master the competency. If the competency is described as a process, the elements are the steps for execution.

The performance criteria are the specific pre-established requirements upon which you and your teacher can objectively judge your development of the targeted competency. They are part of the description of this competency. They are prescriptive.

Sometimes an element appears in more than one course. If this is the case, a number indicates its complexity level: level one (1) being the simplest, level two (2), average, and level three (3), advanced, at the ministerial level.

Below are the elements of the competency and performance criteria for this course that are to be respected:

Competency: Install and manage computers. -00Q1

General ministerial and institutional performance criteria:

- Sense of intellectual curiosity
- Sense of critical thinking
- Analysis and initiative
- Sense of Organization

Elements of the competency	Performance criteria specific to each element
1. Prepare the computer.	1.1 Accurate interpretation of the request 1.2 Accurate interpretation of the computer equipment specifications 1.3 Correct addition of removable components 1.4 Proper connection of peripheral devices 1.5 Ergonomic set-up of the computer and its peripheral devices
2. Install the operating system.	2.1 Appropriate use of file system preparation utilities 2.2 Proper installation of the operating systems and drivers 2.3 Proper configuration of the operating system and drivers 2.4 Customization of the operating system based on user needs
3. Install the applications.	3.1 Correct application of the procedure for installing the applications and plug-ins 3.2 Correct configuration of the applications and plug-ins 3.3 Customization of the applications and plug-ins based on user needs 3.4 Proper performance of the applications
4. Perform operating system management tasks.	4.1 Functional organization of the structure of files and directories 4.2 Appropriate use of archiving and compression software 4.3 Proper creation of user accounts and groups 4.4 Proper assignment of access rights 4.5 Appropriate management of processes, memory and disk space 4.6 Correct writing of scripts

Competency: Use programming languages -00Q2

General ministerial and institutional performance criteria:

- Sense of intellectual curiosity
- Sense of critical thinking
- Analysis and initiative
- Sense of Organization

Elements of the competency	Performance criteria specific to each element
1. Analyze the problem.	1.1 Correct breakdown of the problem 1.2 Proper identification of input and output data and of the nature of the processes 1.3 Appropriate choice and adaptation of the algorithm
2. Translate the algorithm into a programming language.	2.1 Appropriate choice of instructions and types of elementary data 2.2 Efficient modularization of code 2.3 Logical organization of instructions 2.4 Compliance with the language syntax 2.5 Computer code consistent with the algorithm
3. Debug the code.	3.1 Efficient use of the debugger 3.2 Identification of all errors 3.3 Astute choice of debugging strategies 3.4 Relevance of the corrective action 3.5 Clear record of solutions to the problems encountered
4. Implement the functional test plan.	4.1 Attitudes and behaviours that demonstrate thoroughness 4.2 Identification of all operational errors 4.3 Relevance of the corrective actions 4.4 Proper functioning of the program 4.5 Clear record of information concerning tests and their results

Competency: Carry out preventive measures with regard to information security -00Q8

General ministerial and institutional performance criteria:

- Sense of intellectual curiosity
- Sense of critical thinking
- Analysis and initiative
- Sense of Organization

Elements of the competency	Performance criteria specific to each element
1. Analyze information security risks.	1.1 Accurate inventory of the computing equipment and applications installed 1.2 Proper inventory of potential threats and vulnerabilities 1.3 Accurate identification of the impacts on security 1.4 Appropriate choice of security measures to be applied
2. Apply recognized security measures to protect the network.	2.1 Appropriate use of backup strategies 2.2 Appropriate use of strategies for assigning access rights 2.3 Proper configuration and customizing of anti-virus and firewall software 2.4 Appropriate use of encryption utilities
3. Apply recognized security measures to protect an application.	3.1 Appropriate use of strategies to secure data entered by users 3.2 Appropriate use of error control and exception management techniques 3.3 Appropriate use of secure authentication and authorizations mechanisms 3.4 Appropriate use of encryption libraries

Competency: Interact in a professional setting. -00SE

General ministerial and institutional performance criteria:

- Sense of organization
- Respect of the code of ethics
- Communication skills
- Quality of analysis and implementation

Elements of the competency	Performance criteria specific to each element
1. Establish professional relationships with users and clients.	1.1 Attitudes and behaviours that demonstrate the ability to listen 1.2 Adaptation of the level of language to the situation

	<p>1.3 Observance of rules of politeness and common courtesy</p> <p>1.4 Observance of the client-based approach</p>
2. Work within a multidisciplinary team.	<p>2.1 Attitudes and behaviours that demonstrate respect, openness and a collaborative spirit</p> <p>2.2 Effective communication with all team members</p> <p>2.3 Proper performance of assigned tasks</p> <p>2.4 Compliance with rules for optimal team function</p> <p>2.5 Respect for the corporate culture</p> <p>2.6 Compliance with application programming and network management standards, methods and best practices</p> <p>2.7 Observance of the limits of the scope of professional intervention and respect for the expertise of team members in other occupations</p> <p>2.8 Adherence to deadlines</p>
3. Become familiar with the legal obligations and rules of professional ethics.	<p>3.1 Accurate listing of the main offences and criminal acts in information technology</p> <p>3.2 Accurate listing of the main breaches of intellectual property rights in information technology</p> <p>3.3 Accurate assessment of the consequences of offences, criminal acts and breaches of intellectual property.</p> <p>3.4 Determination of the measures appropriate to the situation</p> <p>3.5 Compliance with laws, codes of ethics and corporate policies</p>

<p>Competency: Evaluate software and hardware components. -00SF</p> <p>General ministerial and institutional performance criteria:</p> <ul style="list-style-type: none"> - Sense of organization - Respect of the code of ethics - Communication skills - Quality of analysis and implementation 	
Elements of the competency	Performance criteria specific to each element
1. Pinpoint the technical requirements of a development or deployment project.	<p>1.1 Accurate analysis of functional specifications</p> <p>1.2 Accurate analysis of the software architecture and the computer network architecture</p> <p>1.3 Identification of all technical requirements for the project</p>

2. Research software and hardware components.	2.1 Appropriate choice of information sources 2.2 Accurate inventory of the available software and hardware components
3. Provide advice on software and hardware components.	3.1 Accurate analysis of the features of the platforms, applications and programming tools 3.2 Accurate analysis of the features of the computing devices, interconnection devices and peripheral devices 3.3 Accurate analysis of the features of the wired and wireless communications protocols 3.4 Relevance of advice on component compatibility 3.5 Relevance of advice on component longevity, efficiency and maintainability

Competency: Provide users with technical support. -00SG	
General ministerial and institutional performance criteria:	
<ul style="list-style-type: none"> - Sense of organization - Respect of the code of ethics - Communication skills - Quality of analysis and implementation 	
Elements of the competency	Performance criteria specific to each element
1. Identify user needs.	1.1 Accurate analysis of the incident, problem or request 1.2 Appropriate consultation of the knowledge base 1.3 Accurate identification of the level of priority 1.4 Apt choice of action to perform or forwarding of information to the appropriate person or service 1.5 Observance of the limits of the scope of professional intervention
2. Assist users in the operation of a computer and software.	2.1 Attitudes and behaviours that promote a relationship of trust 2.2 Identification of key actions taken by the users 2.3 Suitability of recommendations 2.4 Relevance and effectiveness of demonstrations 2.5 Use of an appropriate level of language 2.6 Attitudes and behaviours that demonstrate patience
3. Prepare user support documents.	3.1 Accurate analysis of the existing documentation 3.2 Accurate identification of the users' level of knowledge

	3.3 Production of documents aligned with user needs 3.4 Use of appropriate vocabulary 3.5 Compliance with documentation standards 3.6 Compliance with spelling and grammar rules
4. Follow up on the support provided.	4.1 Appropriate verification of user satisfaction 4.2 Proper identification of the extent to which the action meets the need 4.3 Clear formulation of recommendations to prevent the recurrence of malfunctions 4.4 Clear recording of the action taken in the knowledge base

Competency: Adapt to information technologies. -00SH

General ministerial and institutional performance criteria:

- Sense of organization
- Respect of the code of ethics
- Communication skills
- Quality of analysis and implementation

Elements of the competency	Performance criteria specific to each element
1. Monitor technological developments.	1.1 Effective search for information sources 1.2 Appropriate use of monitoring tools 1.3 Accurate analysis of the information collected 1.4 Accurate identification of the technologies to test
2. Test software and hardware technology.	2.1 Proper connection of computer equipment and the necessary peripheral devices 2.2 Proper installation of the necessary programming applications or tools 2.3 Adequate testing of the technology 2.4 Attitudes and behaviours that demonstrate self-reliance and open-mindedness
3. Draw up technological opinions.	3.1 Active participation in discussions 3.2 Satisfactory justification of the technology's potential

Course content/main themes

Listed below is the **essential** content to be covered in this course:

1. Internship documentation

2. Career choices
 3. Internship search
 4. Resume writing
 5. Cover letter, thank-you letter and any other document related to the internship
 6. Portfolio to complete their CVs
 7. Internship search process
-

Learning activities

Provided below are examples of learning activities that correspond to the competency for this course. The learning activities are found in the course calendar that complements this course outline.

- Documented search (the Internet, library, etc.)
 - Writing internship report
 - Internship Oral Presentation
 - Peer exchange
-

Terms for Evaluating Learning

The evaluation of your learning is based on two inseparable methods: formative evaluation and summative evaluation. These two evaluation types are formal. Detailed information on the evaluation schedule is found in the course calendar, under the “Formative and summative evaluation schedule” column.

Formative evaluation

Following a learning activity or learning period, time is set aside for introspection. You will determine what has been understood and achieved and seek to identify the nature and origin of weak areas. These designated periods consist of simple means: short tests, association games, logbooks, a portfolio, questions, creating of samples, etc.

*Formative evaluation is frequent and covers as many aspects as possible. It takes place in class, individually or in groups, and leads to immediate decisions. **You are the one who assumes the bulk of the work during individual or group corrections, adjustments and other self-evaluation tasks. The purpose is not to determine grades.***

If you take the results of the formative evaluations seriously throughout the course, you will ensure preparedness for the summative evaluations. You will be able to make the necessary progress to acquire the targeted competency at the required level, according to the achievement context and pre-established performance criteria.

Below are some examples of formative evaluation methods that correspond to the targeted competency for this course:

- Group discussion
- Interview simulation
- Correction of the writings (CV, cover letter, internship report, etc...)
- Submission of the follow-up of internship search

Summative evaluation

Summative evaluations are less frequent. They take place later on, towards the middle and end of the semester. This gives you the time to integrate your learning and to learn how to apply it to situations related to the targeted competency. The summative evaluation material is prepared by your teacher according to the description of the course's targeted competency: its elements, achievement context and performance criteria.

The work completed in summative evaluations is graded. The purpose is to determine what you have learned.

Below is the information on the summative evaluation schedule and details for this course, as well as the weighting of marks:

Evaluations	Weighting
Final Stage Report	30 %
Technical Demonstration of the Internship project	30 %
Enterprise Evaluation	20 %
Internship supervisor Evaluation	20%
Total	100%

Institutional requirements

Student's commitment

By registering for this course, you commit to:

- *obtain the necessary course materials at the start of the semester;*
- *respect the copyright;*
- *participate in the learning activities, formative and summative evaluation activities outlined in the course calendar;*
- *complete the work assigned to you;*
- *submit the work on time.*

Teacher's commitment

Your teacher commits to:

- *create varied learning situations that enable you to put into practice the knowledge, actions and professional behaviour of the targeted competency;*
- *plan sufficient and appropriate formative evaluation activities, involving correction and improvement, that provide frequent feedback, allowing you to be well informed of your progress;*
- *provide summative evaluations that correspond to the course's targeted competency;*
- *evaluate work according to the applicable criteria, in a fair and equitable manner within a reasonable time.*

The Institutional Policy on Evaluating Learning (IPEL) is applied to all institutional programs. Listed below are a few of its clauses:

Written language (article 5.7)

The teacher is responsible for identifying spelling and grammar errors and for allocating the corresponding number of marks for any given summative evaluation.

Below is the % – based on language requirements – that can be attributed to each summative evaluation:

- *Up to 20%*

Class attendance (article 5.12)

Attendance and participation in classes and evaluations are mandatory for all students.

The teacher has the responsibility of monitoring attendance and of evaluating the reasons justifying student absences from classes.

A student whose absences exceed the allowable number for the course could be denied access to the final exam for that course.

Plagiarism and fraud (article 5.16)

Plagiarism, attempted plagiarism or complicity in plagiarism during an assignment or any evaluated task contravenes the rules. This includes (but is not limited to):

- *the whole or partial presentation (reference, paraphrase, summary, translation, insertion) of the work of another (text, illustration, film, music, etc. on paper or online) as one's own, or failing to cite a source;*
- *the use of another student's exam during an exam;*
- *the use of an assignment done for another course or a project already submitted in the past, which is passed off as an original work.*

Fraud, attempted fraud or complicity in fraud constitutes an infraction.

This includes (but is not limited to):

- *the possession or use of any unauthorized document, material or equipment during an exam, including the use of technological tools;*
- *the execution of an evaluated task by another person;*
- *the substitution for another person during an exam, assignment or any evaluated task;*
- *the possession of the questions or answers of the exam;*
- *the obtainment of any aid not authorized in advance by the teacher.*

Plagiarism, attempts at plagiarism or fraud, or collaboration in plagiarism or fraud are prohibited and considered serious offences. Thus, any instances of plagiarism or fraud will lead to a grade of '0' for the assignment in question. In addition, a note will be made in the student's file and the student will receive a written notice from his or her Program Directorate to that effect.

In the case of recidivism, in the same course or in another course, the student will be given a grade of '0' for the course in question. A second note is made in the student's file and the student will receive a summons from his or her Program Directorate. For a third offence, he or she may be expelled from the College.

Submission of work and tests (article 5.8)

All assignments must be submitted in class at the time designated by the teacher. Any late submissions result in a grade of zero (0).

Upon presentation of an official supporting document or valid reason for the absence, the student may request an extension from the teacher, who may accept or refuse the student's work and apply a penalty for the lateness.

Program Directorates do not accept student work. Assignments must be submitted directly to the teacher.

Rules and regulations to follow

Late arrivals

The teacher may refuse to admit to the classroom any student arriving late. A late arrival is considered an absence for that period.

Note: Students arriving late must recognize that the information they missed will not be repeated. Late students are therefore responsible for asking their peers about the material they missed. Arriving after the break, as well as leaving before the end of the class, may result in one or more hours of absence.

Eating and drinking in class

Eating and drinking are prohibited in the classrooms, locker rooms and Documentation Centre. Food may only be eaten in the cafeteria, vending machine areas and student lounges.

Mandatory course material

- Laptop with specifications mentioned on the college's website.

Bibliography for this course

All notes and documents related to the course will be uploaded to Omnivox throughout the semester.

Emploi-Québec: Your complete job search guide

< http://emploiquebec.gouv.qc.ca/fileadmin/fichiers/pdf/Publications/00_emp_guide-recherche-emploi_en.pdf >

Job offer search - Emploi-Québec

< <http://placement.emploiquebec.net/mbe/ut/rechroffr/erechroffr.asp?CL=english> >

Online Placement

< <http://placement.emploiquebec.gouv.qc.ca/mbe/login/portail/portcherc.asp?CL=english> >

Academic Studies Directorate approval: *Signature and date of approval*
