Pathways from Programs at La Cité to Programs at the University of Ottawa in Engineering

Project 2015-30

Primary contacts:

Linda Pietrantonio
Associate Vice-President, Programs
University of Ottawa

and

Chantal Thiboutot
Senior Director, Institutional Planning
La Cité

March 17, 2017

List of participants

University of Ottawa

Linda Pietrantonio, Associate Vice-President of Programs

Marcel Turcotte, Vice-Dean of Undergraduate Studies, Faculty of Engineering

Maha Manoubi, Research Assistant, Faculty of Engineering

Élise Detellier, Senior Special Projects Officer

Luciana Vaduva, Senior Academic Policy Officer

Rachel Ouellette, Chief of Staff

La Cité*

Chantal Thiboutot, Senior Director, Institutional Planning

Patrice Supper, Director, Institute of Technology

Annie Chartrand, Director of support, Office of the Vice-President, Academic

Lise Frenette, Manager, Special Projects

Joseph Aghaby, Project Leader

**Translator's note: La Cité position titles are unofficial translations.*

Table of contents

EXECUTIVE SUMMARY

La Cité and the University of Ottawa decided to work together to explore ways to increase student mobility from college to university in the field of engineering. To this end, both partners conducted a detailed program analysis in four engineering disciplines: mechanical, civil, electrical and computer. They looked at the programs' general directions and approaches as well as the specific components of related courses (targeted learning outcomes, educational methods, topics covered, learning assessment methods, etc.). This analysis took into account the accreditation bodies' academic program requirements, to maintain their integrity.

This analysis identified possible course equivalencies in each program, as well as requirements and conditions for credit transfers from college to university. About thirty courses were identified in total. Work is ongoing to develop agreements in these four disciplines, and these agreements should be ready to take effect in early fall 2017.

1. Project Purpose and Goals

La Cité and the University of Ottawa have been working together for several years to increase francophone student mobility and access to French-language postsecondary programs. Through various articulation agreements, both institutions provide pathways from college to university that take into account college education. Two of these articulation agreements are in the field of engineering, one in computer engineering and the other in electrical engineering. These agreements must now be updated to reflect recent changes to the curriculum.

The primary purpose of the project was to update these two existing agreements. We also wanted to look at expanding existing pathways in other engineering disciplines (mechanical and civil). To this end, we set out to perform a detailed review of program directions, educational approaches, practical work and learning objectives assessment methods. We also analyzed curricula and course outlines to determine which programs at La Cité could qualify for transfer credits toward a program at University of Ottawa.

2. Pathway Development

2.1 Methodology

The first meeting between representatives from the University of Ottawa's Faculty of Engineering and La Cité's Institute of Technology was held in May 2016 to identify the parameters of the proposed analysis. Once these parameters were defined, the project leads from both institutions worked with program experts from the Faculty of Engineering and the Institute of Technology to perform the required analyses, with the help of one analyst.

Here is an overview of the revised timeline and main steps:

May to September 2016: Define project parameters and examine directions and educational approaches used in the Engineering programs at La Cité and the University of Ottawa.

September 2016 to March 2017: Analyze curriculum and course outlines, and compare course contents in each program; determine total or partial equivalencies based on missing elements in college courses.

March 2017: Identify possible credit transfers for each program and discuss potential pathways.

April to July 2017: Finalize discussions on possible transfers and update agreements.

August 2017: Ratify and implement agreements.

2.2 Program Comparison and Analysis

The following university and college courses were analyzed:

La Cité	University of Ottawa
Technologie du génie civil *Civil Engineering Technology*	B.Sc.A. en génie civil *B.Sc.A. in Civil Engineering*
Technologie du génie mécanique *Mechanical Engineering Technology*	B.Sc.A. en génie mécanique *B.Sc.A. in Mechanical Engineering*
Technologie du génie informatique *Computer Engineering Technology* OR Programmeur informatique *Computer Programmer* OR Techniques des systèmes *System Foundations*	B.Sc.A. en génie informatique *B.Sc.A. in Computer Engineering* B.Sc.A. en génie logiciel *B.Sc.A. in Software Engineering*
Techniques du génie électronique *Electronic Engineering Foundations* Technologie du génie électronique *Electronic Engineering Technology*	B.Sc.A en génie électrique *B.Sc.A. in Electrical Engineering*

The main sources of information used to carry out the analysis, for each program, are as follows:

- learning objectives and outcomes
- educational approaches
- course outlines
- practicum and workshops
- number of contact hours
- learning assessment methods
- detailed course contents
- professor qualifications

Course equivalencies were analyzed through quantitative and qualitative assessments of the contents. The quantitative assessment involved comparing the number of hours allocated to course lectures, laboratory sessions, readings and directed study, as well as analyzing learning assessment methods for each program (number, frequency, scope, etc.). We also looked at prerequisite breadth requirements for pathway development. In the course of the quantitative assessment, we performed a more qualitative assessment of the objectives and contents of each course.

It goes without saying that the analysis took into account the strict program accreditation requirements of the Canadian Engineering Accreditation Board, as well as the need to maintain the integrity of the programs and meet relevant academic regulations, particularly the residence requirement to be eligible for a degree.

2.3 Implementation Process and Timelines

The implementation process is relatively straight forward. Once the representatives from the University of Ottawa's Faculty of Engineering and La Cité's Institute of Technology have agreed on transfer conditions and contents, these will have to be approved by the Dean of the Faculty and then by the Associate Vice-President, Programs. Once the agreements are ratified, they will be communicated to the Registrar's Office at the University, so that they can be implemented. Students coming from La Cité programs can take advantage of these agreements when they register.

Both institutions will share information pertaining to the agreements with their units and will implement mechanisms to promote pathways (via their respective websites).

Our work to develop pathways for credit transfer is ongoing. We have had to revise our initial timelines due to the analysis process taking longer than expected. We now have everything we need to create pathways and should be able to do this by the end of August 2017, at which time it will be possible for the pathway models developed over the next few months to be shared publicly.

3. Summary of Pathways Created

The University of Ottawa's Engineering Faculty already credits the equivalent of 5 courses (two in mathematics, two in sciences and one elective) to students graduating from college. This well-established practice has been ongoing for several years without requiring an agreement. During this project, we were able to identify several courses at La Cité that could qualify for transfer credits toward a program at University of Ottawa. Here is a brief summary of these courses:

- Mechanical engineering – credit transfers are possible in 13 courses in years 1, 2 and 3
- Civil engineering – credit transfers are possible in 13 courses in years 1, 2 and 3
- Electrical engineering – credit transfers are possible in 6 courses in years 1, 2 and 3
- Computer engineering and software engineering – credit transfers are possible in 10 courses in years 1, 2 and 3

The two existing agreements between the institutions, in electrical engineering and computer engineering, will be updated and new agreements will be developed in civil and mechanical engineering.

In addition to identifying these credit transfer opportunities during the project, the University of Ottawa and La Cité developed another type of partnership to enhance the experience of engineering students. While we were analyzing programs to develop mobility agreements, we launched a pilot project offering University of Ottawa students the opportunity to acquire practical experience at La Cité. La Cité created a mechanical workshop that was offered to University of Ottawa students on a voluntary basis. This workshop was called *Sous le capot de l'auto - comprendre la conception des automobiles* (Under the hood - understanding car design); here is the description in advertisements sent to University of Ottawa students:

> "During this workshop, students from various disciplines will understand how to diagnose failures caused by electric, electronic or mechanical systems, and will explain the primary sources of these failures. They will learn how to improve and integrate the component and system design of an automobile. This workshop's key concepts include:
>
> - issues arising from the integration of electric, electronic or mechanical systems;
> - physical constraints caused by reality;
> - primary causes of failures;
> - tools available to diagnose and repair automotive failures.
>
> Every student will have the opportunity to work on a motor vehicle supplied by La Cité and learn to:
>
> - diagnose a car that turns over but won't start;
> - determine the cause of a lack of power and/or an increase in gas consumption while considering all aspects that could influence this condition."

The workshop was offered to 15 students (forty or so applications were received, but space was limited) from the following engineering programs: mechanical (8); software (2); civil (2); electrical (2); biomedical (1). These students were registered in 1st year (5), 2nd year (2), 3rd year (5) and 4th year (3) at the University of Ottawa. The participants' level of satisfaction was excellent.

In our opinion, this type of activity provides an interesting avenue of collaboration between our two institutions. The complementary nature of some of our training – more practical at the college level and more theoretical at the university level – became obvious while we were reviewing the curricula. This type of collaboration can happen both ways, especially when it comes to the practical aspects of university and college education. It can enhance training provided by both institutions and give students exposure to college and university programs. This is most certainly a collaborative direction that both institutions wish to continue exploring.

4. Promising Practices and Lessons Learned

While we are satisfied with the project results, we are aware that we might have underestimated our timelines. The analysis took much longer than anticipated, which means that the project will continue beyond the initial timeline. However, we are confident that credit transfers opportunities identified in this project will be finalized through agreements over the next few months. Meetings to this effect have already been scheduled as of April.

As indicated in the previous section, we are also looking forward to possibly collaborating on practical training opportunities for students at both institutions. This type of experiential learning activity is very promising and we will keep exploring opportunities in this area.