

**AC 2008-226: DUAL DEGREE PROGRAMS WITH UNIVERSITIES IN THE  
STATE OF FLORIDA - USA AN INTERNATIONALIZATION STRATEGY OF THE  
ENGINEERING COLLEGE IN UNIVERSIDAD DEL NORTE, COLOMBIA**

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# **Dual Degree programs with universities in the State of Florida - USA an internationalization strategy of the Engineering College in Universidad del Norte, Colombia**

## **Abstract**

Universidad del Norte is a private institution located in Barranquilla, Colombia. As part of the institutional development plan, the engineering college has defined many strategies for internationalization. These strategies include impelling cooperation and exchange of faculty, promoting participation in international congresses, promoting faculty short term mobility in universities abroad and encouraging student mobility in the same way.

Establishing alliances with universities in the State of Florida to define options for dual degree program is a way to stimulate and promote mobility of students, but also it is a recognition of quality equivalencies of the engineering programs in Universidad del Norte with programs in the US. This process has not been easy. The paper will mention the difficulties we have experienced and how they were solved. It shows how the dual degree program works and explains how the students take some courses in Colombia the first four years and later they go to the US and take courses during two semesters and a summer. When the students pass their courses, Universidad del Norte give them the Engineering degree in Colombia and the Universities in Florida give them the equivalent diploma. In addition, the paper shows the advantage for the student of this kind of programs and includes student opinion about it.

## **Introduction**

Universidad del Norte is a private institution created in 1966 when a group of business leaders wrote an act which proclaimed the university as a center of higher education. Since its creation, Universidad del Norte has been leader in the Caribbean region, and one of its strengths is the engineering education program because it responds to the goals of its founders 42 years ago. When the university began, the only programs offered were business administration and engineering which were then able to offer the human resource to the regional industries.

Universidad del Norte has always had an international vocation. Its first example, was in 1994 when the University signed an agreement of academic and scientific cooperation with the University of Mainz in Germany, as well as an agreement with the University of Paris XII. These agreements were signed with the purpose of fortifying the Masters in Social Development and simultaneously obtaining the French state title in education and obtaining its accreditation at an international level. In the same year, the institution participated in the Academia Formation Project for Latin America, ALFA, created by the European Commission with the objective of promoting cooperation between higher learning institutions in Latin America and Europe. At present, the university has developed agreements and alliances with more than 50 universities abroad.

Internationalization stands out in the strategic development plan<sup>1</sup> of Universidad del Norte in a main area named International Dimension. This area is defined as a cultural process of the

university in its fundamental aspects of education, research and extension. The international dimension will be what characterizes our students, alumni, faculty, staff and graduates, and it will let us join the knowledge society in an increasingly more effective way.

The international dimension emphasizes these activities and include: the development of alliances and agreements with universities and research centers abroad; the presence in our undergraduate and graduate programs of visiting teachers, visiting and advising of academic process; exchanging teachers and researchers with academic peers of other higher education institutions; having our teachers complete their studies abroad; exchanging of undergraduate and graduate students with similar international universities by dual degree programs, exchange programs, foreign language studies, apprenticeships, research and summer courses; increasing knowledge of others cultures through exchange programs, lectures, special lectures and other multi-cultural activities.

The Universidad del Norte has a special interest in achieving international accreditation<sup>2</sup> with one of the agencies of the US. For this reason it has advanced the respective contacts and the internal preparation. Particularly in the Engineering College, the strategy of internationalization goes back to 1993, when seeking to have international projection, the college looked for the ABET accreditation (Substantially equivalent that was offered to the programs of engineering out of the US) which was achieved in 1996, and it was renewed in 1999. Unfortunately, the travel warning for Colombia mentioned by the Secretary of State in the US, has not allowed having the opportunity for international visitors to observe and for us to show our programs to the international accreditation board.

As part of the internationalization strategy<sup>2</sup>, the engineering college has expanded the alternatives for student mobility; teachers have had the opportunity to study in some important universities abroad as a way to improve their academic level while they are immersed in the international academic community; the students have had the opportunity to do their internship in companies abroad, overcoming the difficulties associated with international documents.

The engineering college has developed in the project of dual degree programs<sup>3</sup>, a central axis of activities, and it is the basic reason for writing this paper.

### **The Dual Degree Program**

The dual degree program is an academic agreement that was developed between the Universidad del Norte and universities of the state of Florida (University South of Florida and Florida International University) in which the engineering students of the Universidad del Norte study at Uninorte for four years. Then they are transferred to universities in the state of Florida where they take 32 academic credits during two semesters and a summer. This allows them to get an engineering degree at Universidad del Norte and the equivalent degree at one of the universities mentioned.

The academic agreement necessitated a review of the courses with regards to the academic credits and the subject contents that the students take in Colombia. Equivalence was established with some courses of the curriculum program of the universities at state of Florida and Uninorte.

These equivalences allowed the students of the Universidad del Norte to take 32 academic credits, including mandatory courses in the state of Florida where have to comply with the Gordon Rule and other professional courses.

With the equivalent courses and the 32 academic credits, the student completes the requirements to receive a Bachelor Degree in Engineering. In the same way, the academic credits taken in the American universities are accepted at the Universidad del Norte and therefore, the student completes with the requirements to receive a degree of Engineering from our institution.

The students who are interested in applying for the dual degree program must hold a good academic level at the Universidad del Norte. Additionally, they have to take de TOEFL exam to support their ability to use and understand spoken and written English, and they have had the approved subjects that will be considered equivalent in the American university.

The Universidad del Norte has signed an agreement for dual degree program with the University South of Florida for the Industrial Engineering and Mechanical engineering programs. In the same way, an agreement is signed with Florida International University for the Industrial Engineering program.

As an example, in the following section, it is going to be shown the agreement that has been established between University South of Florida (USF) and Universidad del Norte for the Mechanical Engineering program. This agreement requires student to have taken and approved the following subjects with a grade of C or greater in order to comply with the requirements of the Bachelor Degree in Mechanical Engineering (BSME).

The following USF courses must be completed with a grade of C or better in order to graduate with a the Bachelor Degree in Mechanical Engineering (BSME):

EML 3041 Computational Methods	3	EML 3762 Kintcs & Dyn of Mach	3
EML 3303 Mech. Eng Lab I	3	EML 4302 Mech Engineering Lab II	3
EML 4220 Vibrations	3	EML 4551 Capstone Design	3
EIN 4313 Human Factors	3	ENC 3211 Comm for Engineers	3
ENC 1101 Composition I	3	ENC 1102 Composition II	3
Register and take CLAST			

Besides, the students have to register and pass the College Level Academic Skills Test (CLAST). The students of the Universidad del Norte who are interested in the dual degree program have to take the TOEFL exam and obtain a minimum of 550 Paper Based Test or 213 Computer Based Test or 79 Internet Based Test, in order to be accepted by USF.

### **The importance of the dual degree program**

The importance of the dual degree program is focused in two levels, the importance for the institution and for the student.

To the Universidad del Norte it is very important to include this type of program that in some way verifies the quality of our educational programs. The students that have completed this process in the American universities have had excellent results. Their academic achievements have been very good in general, and their adaptation to the new environment has also been positive. We could say that this program has, in some way, validated the educational process for Universidad del Norte in that its subject contents and academic courses have been found equivalent to similar courses of the partnering universities in the United States.

The second level is the importance for the student. The authors asked students about their dual degree program experience and their answers can be divided into academic and personnel aspects.

The academic aspect is important because the students had the possibility to use facilities which are not available in their origin university. We must say that in some cases the Laboratories motivate the students toward the study of science and experimentation. Also they have the opportunity to use computational tools that are not available for undergraduates, many times because of the great need for these at Master and PhD level. This attracts the young students. At the same time, the students recognize the quality of the professors, in many cases, have suggested that they have continued had studying Master or PhD studies with financial support; thus, it becomes a new opened door.

Likewise, we have consulted some students about the importance of the program and they have mentioned the greater access to Engineering and Honor societies of the United States, such as SHPE (Society of Hispanic Professional Engineers), IEE (Institute of Industrial Engineers), Golden Key International Honor Society and Tau Beta pi, among others.

On the other hand, this program had a great impact with regard to giving the new professionals the possibility of a degree that accredits them, for work in Colombia and, likewise the American degree giving them opportunities of work in the US, with the required documents of visa and professional card.

These characteristics benefit multinational companies which have investments in both countries because they can have bilingual professionals of Engineering in both countries, and besides, two universities in each country support their know-how.

The opportunities that the students have to spend a year in an American university is important for several reasons. First, the possibility of fortifying and achieving more fluency in English as second language. The students of the Universidad del Norte receive a strong education in English, but the immersion in the language allows them to have better results. In second place, the stay in the American university and living in Florida, gives the students the opportunity to get involved with other cultures and, at the same time, to relate to other students of other countries because the foreign community in these universities is also significant. Because of this, the relationship with Chinese, Indian, European and Americans, gives them the possibility to generate a global vision of the world and let them appreciate what they have in their own country. Besides, the students have a greater sense of independence and become more responsible in their own life.

## **Difficulties of the Dual Degree Program**

Some students were consulted about the difficulties they found when they started studies. The difficulties that the students presented can be grouped in two areas. In the first place, the dual degree program is new to our university and the administrative process is not easy. Thus they have found a few mistakes in them, but each student has the respective Memorandum of Understanding (MOU) needed for development of the program.

Second, the students mentioned that the costs related to transfer, living, tuition and registration fees, are high and because of it, other students limits are related by these. It is recommendable to seek external financial options to be able to achieve a high participation of students in this program.

## **Conclusions**

The double degree program is fulfilling its objectives because it is giving the students the opportunity to have an experience of study abroad, while at the same time greater it becomes in greater professional skills for their performance in Colombia. Also, it gives students the possibility to have a degree in an American university that supports them for working with companies abroad. They know the skills of an American Engineer but do not necessarily know qualifications of engineers from.

The immersion in a new culture, including the strengthening of the English as second language, is other advantage of the program that motivates the students to take it.

The numbers of students who apply to the dual degree program is low, but it is expected that with more alternatives of financial support and internal diffusion of the program, we can enlarge the number of participants in it. The same way, we expect shorting to offer more alternatives of dual degree programs is it, not just with universities in the US but additionally to extend the program to other countries. In fact, we are evaluating alternatives of dual degree programs with universities in Italy, Spain, France and we feel positive about achieving the necessary agreements with universities of the Asia.

This program is part of the important internationalization strategy of the Engineering College, which includes, the mobility of professors giving lectures in important academic and research events around the world, research stays, and training our professors at the PhD in the top universities abroad.

## **Bibliography**

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