Engineering Double-Degree Programs: Universidad de Monterrey (UDEM), MEXICO and Nagaoka University of Technology (NUT), JAPAN

Demófilo Maldonado Cortés
Universidad de Monterrey (UDEM), San Pedro Garza García, NL, Mexico, demofilo.maldonado@udem.edu.mx
Elizabeth Gutiérrez de la Garza
Universidad de Monterrey (UDEM), San Pedro Garza García, NL, Mexico, egutierrez@udem.edu.mx
Thomas Martin Buntru Wenzler
Universidad de Monterrey (UDEM), San Pedro Garza García, NL, Mexico, tbuntru@udem.edu.mx
Maki Kato
Nagaoka Institute of Technology (NUT), Nagaoka, Japan, kato_maki@nzm.jrnet.ne.jp
Kanako Yamamoto
Nagaoka Institute of Technology (NUT), Nagaoka, Japan, casakana@gmail.com

ABSTRACT

This report describes the requirements, procedures, benefits and results to date in the development of a dual degree program for engineering students from the Universidad of Monterrey (UDEM) and Nagaoka University of Technology (NUT), certainly the program more successful in Mexico because of its results and peculiarities that had to be resolved. It is also an example of collaboration with regional industry as it is heavily Japanese invested.

Keywords: Double-Degree, Engineering

1. INTRODUCTION

In 2005, a Commission from UDEM visited Asia to explore possible agreements for internationalization. Among the universities that were visited was Nagaoka University of Technology (NUT).

The visit was very productive to explore the possibility of a dual degree program, NUT authorities were interested. The group leader was NUT Professor Kozo Ishizaki (Mechanics Engineering) as he had already begun such agreements with other countries such as Vietnam. Funds were also available to send teachers of Japanese Language to other countries.

NUT is a research university with a maximum of 2,000 students, of which more than half are graduate. Its research is impressive. Nagaoka is a city located 400 km North from Tokyo, accessible via fast train in minutes.

After the first trip to Japan, UDEM authorities proceeded to make a comparative analysis of curricula in NUT and UDEM. Analysis were made for careers in Mechanical Engineering Manager (IMA), Computer Science Engineer (ISC), Information Systems Engineer (ISI) and Engineer in Digital Graphic Design (IDGD).

Communication continued electronically to initiate preparations needed and in 2006, the Rector of NUT and its executives visited UDEM to sign the agreement and adjust final details.

Under the agreement, students stay in UDEM 2.5 years and then two years in NUT, after which they are awarded with both degrees. It is expected that graduates of the program work for Japanese companies in Mexico or continue graduate studies at NUT.

The first generation began in fall 2007 at UDEM. The criteria for a student to be admitted to the program include the grade point average of High School, proficiency in English (TOEFL) score of entrance exam and interview for verification of interests and explanation of honors program. Students admitted are asked to submit a letter signed by their parents where they undertake to support their children when they go to NUT, for they must pay tuition (which is very similar to UDEM´s).

Teachers of Japanese language first arrived in fall 2007 and the classes began. NUT also sent special Japanese Language computers, books, dictionaries and instrumentation for the program.

During spring 2008, NUT asked UDEM to receive two graduate students from NUT (one from the area of Information Systems and other from Mechanical Engineering) who were next to initiate their master degree soon and should work their internship having teaching experience. The period of stay in UDEM was October to March and ran continuously. UDEM obtained funds to house these teachers in the dorms. For this activity, NUT also sent special equipment for PET rocket experiments, developed technical manuals in Japanese and exciting learning activities in the area that Engineering generations of dual degree program in UDEM experienced.

NUT also sent visiting professors, one of whom was Profesor Ishizaki who taught Thermodynamics in Japanese to the students in the program and gave a public lecture about Japanese culture. Later, Professor Noboru Yamada and other teachers arrived to impart visited Chairs engineering. Each year, UDEM has received at least two teachers from NUT to provide intensive training in technical Japanese Language for the dual degree program.

UDEM also have visited NUT, two professors during March 2007 who attended the symposium for internationalization experiences that NUT organizes every two years (Demófilo Maldonado and Salvador Barrera). In 2009, Elizabeth Gutierrez also attended and discussed the dual degree program between NUT and UDEM and also discussed succesfull experiences that NUT achieved with various countries, mainly in Asia. NUT also strived to meet all areas personally. Friendly teachers were our hosts and talked to us about their research projects and laboratories where our students can learn as soon as they arrive to Nagaoka.

In UDEM the program is staffed by two teachers of Japanese. Every generation gets its first five semesters of the course, 10 hours per week of Japanese during 16 weeks of the semester and summer study. Also they spend a summer intensive course in NUT, until they complete 1000 hours of technical Japanese Engineering before presenting the Japanese Language exam and can be accepted by NUT.

When students visit NUT during the summer to perfect the Language, they live with host families in Nagaoka, they get to know the University and celebrate some important events such as the visit in 2009 of the Ambassador of Mexico in Japan, to celebrate the 400 year relationship between the two countries.

RESUME OF THE PROCEDURE:

1) select students interested in the program under the criteria of level of English and school grades

2) Students are selected primetime and Japanese take 2 hours daily including summers. Teachers are sent by the NUT to that effect.

3) At least you have 2 d eprofesores NUT visits to the University of Monterrey to discuss technical issues and learn about the progress of the Japanese language.

4) Additionally, an employee of NUT visit to the University of Monterrey to audit the work of Japanese teachers UDEM

5) summer before their second years in the program, students visit University of Monterrey in the summer for three weeks Nagaoka University and how to live in Japan.

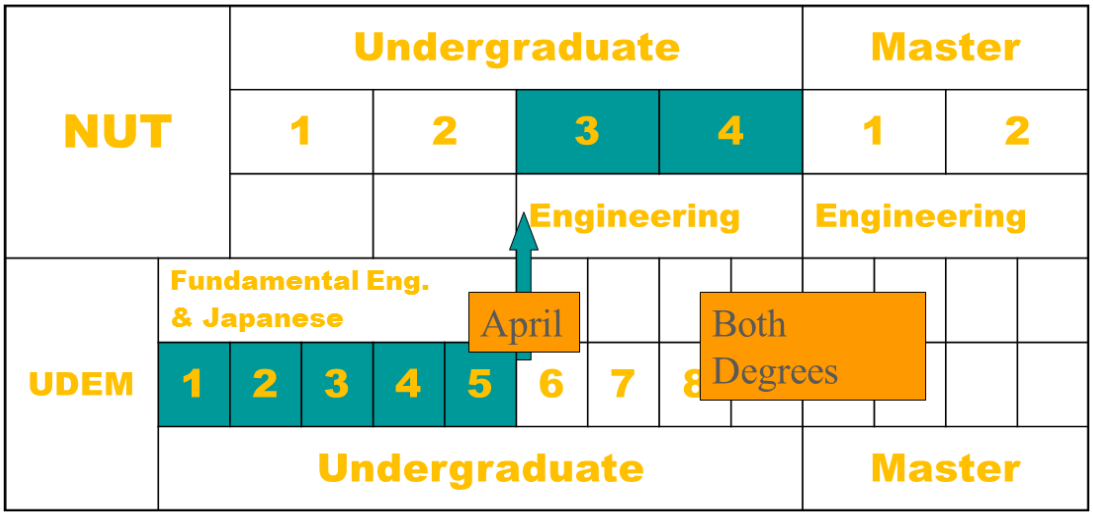
6) November before the departure in March of students, a committee of the NUT visit to the University of Monterrey to apply the test of Japanese language ability and the engineering level.

7) started in March selected two-year stay in NUT to finish his career and receive the title of NUT

8) Finally, with the title of NUT in their hands, students are awarded the degree from the University of Monterrey

The calendar of the program is shown in Table 1.

Table 1. Calendar of the Dual Program



It is important to mention that it doesn´t exist a program like this across America for undergraduate students studying engineering. The challenge is great but also its value is.

2. RESULTS

To date we have had nine graduates of the program (Figure 1), two in 2012 and seven in 2013 in addition to over 20 visiting professors and eight exchange students who came from NUT

In addition, the agreement that was initially created for one academic program has spread to seven and is well accepted by the regional Industry and by those seeking to hire our graduates.

This is an important initiative to promote global engineering as different authors support this learning objective [1] to understand, design and and solve global engineering challenges.

Figure 1: First to graduate students from UDEM at NUT in 2012.

REFERENCES

[1] Greengard Samuel (2009). "Learning goes Global", *CACM*, Vol. 52., No. 5, pp 18.

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