# Accreditation visits to TU Universities at Kaunas[1], Klaipeda[2] and Vilnus[3], March 19-23, 2012

## Introduction

This document intends to summarize the generic observations and recommendations performed by the expert team during his visits at Kaunas, Klaipeda and Vilnius (Lithuania). It has to be considered as an annex of the specific report elaborated by the principal expert of the team for every audited curriculum.

First, the expert team wishes to thank all members of the TU universities for the visit preparation, the times devoted to the discussions, their accessibility, transparence and cordiality. He adresses also special thanks to SKVC for the careful coordination and follow up of the visits.

## Main Observations and Recommendations

### *General Remarks on the Lithuanian Academic TU community*

Lithuania has a fast growing economy and is recognized to be the « tiger » of the Baltic States. This new EU member has at least three Technological Universities for a population of about 3.5 millions inhabitants; foreign and outreach students are there in a limited amount (less than 10%). In comparison, a small country such as Switzerland has only two Technological Universities for a population of 7 millions inhabitants, with a percentage of foreign and outreach students of about 30-45%. In some EU countries, the government has challenged the academic community and, after a round of careful evaluations and research projects competitions, selected a few promising TU as national centers of academic excellence with adequate funding to compete at the highest level of academic excellence. Regarding the present Lithuanian situation, *the committee does not rule out that the national authorities have to select eventually this scenario to optimize the limited resources dedicated to academic scientific research and technological higher education in Lithuania.*

In this respect, the impression of the committee is that the Lithuanian TU are still operating mostly on a regional basis ; a clear cut common strategy to put Lithuania on the map of the worldwide scientific and technological research excellence has to be developped or strengthened further ; full awareness may still be accentuated regarding the challenging international competition in technological research, with emerging new and dynamic actors such as China, Brazil and India which may, in the near future, leapfrog academic Lithuanian research and weaken its national economy and aspiration to well-being.

If this impression were confirmed by others experts groups, **it would be recommended that Lithuanian TU implement within the next three years a common strategy to develop all possible synergies and even select specific centers of academic excellence aiming to develop research projects and collaborations with top notch international institutions**. Such a regional focus and specialization on specific research topics would also have another advantage : to attribute and spend wisely, the funding dedicated to the implementation of the various « technological valleys » (such as the *Sea Valley* at Klapeida) and avoid to multiply expensive, redundant equipments and installations.

During the meetings with the TU Senior Management and the teaching staff, a translator was mostly present to facilitate the discussion. The committee believes that, in order to be fully connected

[1] Export and Sports Engineering (Bachelor), Agricultural and Management Engineering (Bachelor and Master).
[2] Process Engineering (Master).
[3] Biomechanics engineering (Bachelor and Master).

with the international leading research and academic governance, **a fair command of english for all members of the TU academic community has to be reached within the next three years.**

## Bachelor degrees

Since the visited Lithuanian TU have introduced adequate bachelor curricula of engineering and have responded successfully to the expectations of the (mostly regional) employment market, the audit committee has recommended to accredit all audited bachelor programmes for a six year period.

There are still *a couple of noticeable preoccupations* concerning the bachelor degrees examined :

a) There is a strong and general decline in the enrollment of new students (up to 66% for the last 5 years) ; main reasons appear to be :
   a. Decline of birth rate within the Lithuanian population.
   b. Emigration of freshmen to England or Scandinavian countries, where the education fees are cheaper or where the prospective students can receive fellowhips or interesting loans.
   c. Implementation of a national « voucher » system, inadequate to promote the attractiveness of engineering curricula and slowing probably the social vertical mobility of the Lithuanian society.
   d. Charging students in engineering disciplines with fees double of the cost of Humanities and Management studies, this last path leading to a multiplication of « generic » managers without real business- and product-oriented skills.
   e. Low image of the profession of engineer, compared to the expected prestigious outcomes of judicial and managerial curricula.

*This decline is a serious and most worrying issue for the economical developement of Lithuania* ; ironically, the interviewed alumni indicated that the level of unemployment for engineers was low compared to others professions and that every alumni could find a job if he was actively looking for one; some alumni indicated that companies were even actively recruiting young and talented engineers on the campus...

The audited academic members attributed the decline of the enrolment of freshmen to the above items, but no participant was able to ascertain if one (or two) of the possible causes were predominant. Since the present situation is extremely detrimental**, it is recommended to carry out a study at the national level to objectively ascertain the reasons of the freshmen diminution.**

*Moreover, this phenomenon is not specific to Lithuania, but can be observed in many EU countries (and even in North America).* **There are however intiatives and countermeasures to promote engineering careers that the committe advocates strongly** ; they need however a collaboration and careful coordination at the national level with the key stakeholders (industry, government, local communities, media and TU universities) :

- Revise the « voucher » policy.
- Suppress the unacceptable discrepancy between academic fees for humanities, managerial and engineering curricula.
- Promote strongly the profession of engineer, for instance by success stories in the media, radio, TV, etc.
- Display and communicate « exciting » scientific and engineering projects to motivate the prospective students.
- Insist on key issues such as energy, green mobility and agriculture, recycling and global sustainability, health improvements; **it is the understanding of the**

**committee, that, to receive full attention of the Lithuanian citizen, the dialogue between the scientific Lithuanian community and the population has to be strengthened and promoted.**

- **The committe recommends also to promote Master curricula —« Bologna » Master of 90 credits ECTS or Master of Advanced Studies (MAS) — in the areas of Management of Technology to allow talented engineers to catch up with the skills required in managerial activities (such as purchasing, sales and marketing of high technological products, supply chain management, innovation, R&D management, etc.).**

b) TU faculties have a high level of Seniors (> 65years old) ; careful planning for their replacement is mandatory since, within the next years, many of them will retire. The committee didn't get the feeling that the promotion of academic careers and development of young scientists was a so active preoccupation of the TU academic Senior management, but also of the Lithuanian authorities. The number of Ph.D. students was found rather low ; only a few seem to be able to obtain a postdoc in the top notch international universities. This hampers the development of Lithuanian technological and scientific academic excellence and has also an impact on the quality of the Master curricula (see below).

*c)* The committee observed mostly that the Faculty teaching load is so heavy that the professors and teachers may not be able to catch up effciently with the latest state of the art in technology. Moreover, an « unwritten » rule seems to specify that the teaching staff has to produce numerous technical and scientific course documentation in Lithuanian. *This supplementary work could be reduced if all the pedagogical support was in English after, let's say, the first or second year of bachelor studies.*

d) More uptodate equipments and labs would be welcome to give the students the possibility to deepen their « hands-on » and practical skills.

On a short term (3-4 years) perspective, the situation may be still considered as fair for the bachelor curricula if the Lithuanian TU main mission is to operate at a regional or a national level.

## *Master curricula*

For the master curricula, the committee considers that there are challenging issues if an adequate Master training has to be provided according to the requirements of the Bologna process :

a) According to our findings, the faculty devotes about 30% of his time to the research, including the effort devoted to the technical R&D support to the industry ; only 15% of residual activity seems to be available for academic research. With these present conditions, it is impossible to develop and sustain an academic research of international level.
b) The number of Ph.D. students being low, only a meager support is at disposal to support the professor in their pedagogical duties, but also, for instance, in the follow up of master thesis.
c) Moreover, if the faculty members participate actively to national (and regional) congresses, their possibilities to join international symposiums is strongly limited due to insufficient institutional funding. Consequently, the Lithunanian researchers may encounter difficulties to set up future international and outreach academic contacts (for joint research projects for instance) or even grasp the latest trends and hot themes of their academic field.
d) This unwelcome situation has an impact on the quality of the Lithuanian master programmes, since, according to the Bologna process, the Master degree is directly linked to the academic research and is « fed » by its activity and output (a top-down approach).

Consequently, present Lithuanian master curricula aim mainly to complement the existing professional skills.

e) Lithuanian masters examined correspond to 120 ECTS credits. However, the master students are already mostly employed on a full time basis by the public and private economy. Consequently, they devote only their free times (nights and week ends) to master studies, and the teachings are delivered on an evening basis. Since 30 ECTS per semester are dedicated, **it is impossible for a student to comply with this workload**.

f) This situation has three consequences :
   a. The drop out of the students is very high.
   b. The students number attending the curriculum is too low (5 for instance) in regard with the running costs and the supplementary teaching duties supported by the faculty.
   c. The student achieved learning outcomes cannot reach the level expected for a Bologna Master of 120 credits.

***The committee felt that this situation is not acceptable and has to be corrected***. During its debriefing, the audit committee discussed the length of the period needed to finalize the adjustments needed ; all members agree that a period exceeding three years was needed. However, aiming to provide a strong signal of change,the committee decided to accreditate the Master programmes for three years only and provide the following recommendations :

1. Reduce the examined master programmes to a maximum of 90 ECTS on a 2[4] years basis.
2. Give the possibility for the academic institutions to deliver Master of Advanced Studies (MAS), Diploma of Advanced studies (DAS), Certificate of advanced studies (CAS)[5], more suited to a professionnal education carried out in parallel with an employment (a SKVC decision ?).
3. Develop distance learning, video teaching and provide courses and pedagogical supports within a virtual environment (such as Moodle for instance).
4. Eliminate progressively the master programme with less than 15 students enrolled and replace it with MAS, DAS or CAS.
5. Develop an international level of research in selected fields :
   a. By reducing significantly the faculty teaching load ;
   b. By providing sufficient institutional funding to travel abroad ;
   c. By giving the possibility to the faculty to spend longer periods of visits in *top notch* TU universities.
   d. By increasing the number of Ph.D. students.

## Observation for SKVC- obtention of the EUR-ACE label

Since Lithuania has integrated recently UE, SKVC may consider to join the EUR-ACE community, which delivers a specific european label for engineering curricula according to the Framework

[4] This is equivalent to 22/23 ECTS per semester, just slightly more than the 20 ECTS that currently applies for part-time programmes.

[5] University continuing education may be embarked on at different levels of certification :
•*MAS – Master of Advanced Studies* ; An MAS (Master of Advanced Studies) is awarded upon completion of a programme lasting at least one year, a written examination and a dissertation.It generally results in 60 ECTS credits.
•*DAS – Diploma of Advanced Studies* ; A DAS (Diploma of Advanced Studies) is awarded upon completion of a programme comprising at least 300 contact hours, a written examination and, in the majority of cases, a dissertation.It may result in between 30 and 59 ECTS credits.
•*CAS – Certificate of Advanced Studies* ; A CAS (Certificate of Advanced Studies) is awarded upon completion of a programme comprising at least 150 contact hours, a written examination and, in certain cases, dissertation. It may result in between 10 and 29 ECTS credits. A CAS can in certain cases comprise part of an MAS or a DAS.

Standards for the Accreditation of Engineering Programmes, aiming to facilitate the professional mobility of UE engineers. The label and framework are provided by ENAEE[6] (European Network for Accreditation of Engineering Education).

[6] http://www.enaee.eu/