

INTERNATIONAL EDUCATION AT BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

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Abstract— *BUTE (Budapest University of Technology and Economics, founded in 1782) is one of the largest and most reputed technical higher educational and research institutions in Central-Europe. BUTE provides different educational forms (from 2 years short cycle engineer-assistant training to 8 years doctoral programs) for a total number of about 15.000 students. 10-15 years ago related to the general worldwide globalization procedure, and especially to the political and economic changes in Central-Eastern Europe BUTE created engineering education in 4 foreign languages (English, French, German, Russian). At this moment about 1.000 students are involved into the foreign language training forms from all over the world. The paper will discuss the accreditation, the development of international education at BUTE. A special emphasis will be given to the lately quickly increasing international academic exchanges and practical placements, their evaluation. The author is the director of one of these foreign educational forms (French Filial - Filière Francophone), and he is active in strengthening enterprise - university relations type activities as well.*

Index Terms $\frac{3}{4}$ Academic exchanges, practical placements, training of engineers in foreign languages.

HIGHER EDUCATION IN HUNGARY

Following the democratic revolutions of 1990-es in Eastern and Central Europe there were important changes on the level of higher education as well. The main elements related to Hungary can be summarized:

- **1990-95:** Adaptation of best western (mainly European) practice supported by several programs, especially EU Phare. Autonomy of higher educational institutions (guaranteed by the law). Start of the increase of the number of students (at the beginning it was about 10-15 % of the corresponding population).
- **1995-2002:** Following the international development (introduction of the ECTS system, signature by the Hungarian Ministry of Education of the "Bologna declaration", Hungary is an eligible participant of EU Socrates, Leonardo programs etc.). Integration of the Hungarian higher education (on January 1, 2000 the number of independent higher educational institutions was reduced). Continuation of the increase of the students enrolled into the higher education (at this moment it is about 30-35 % of the corresponding

population). Diversification of training (4 levels: bac+2 /accredited higher level vocational training/; bac+3 /college/; bac+5 /university/; bac+8 /Ph.D./). Norm based budgeting (depending on the number of students and their training form). See more about these topics on the homepage of the Hungarian Ministry of Education (www.om.hu).

- **2002-2010 (plans):** Hungary would like to join the European Educational area. It requires important steps (e.g. reorganization of higher education, introduction of 2-level, B.Sc, M.Sc training). Achievement of the final goal (50% of the corresponding population) related to the number of students.

Quality. Both higher educational institutions and their different programs must be accredited by the "Hungarian Accreditation Committee". The recruitment procedure, the salary of staff is regulated in detail by different (national, university level) rules. The responsibilities of teachers are less defined, they are based mainly on local traditions. Different feedback systems try to guarantee the stable quality of education.

Strategic plans. The higher educational institutions are requested to prepare their future strategic plans. The state will co-finance the activities of the accepted plans.

BUTE

Budapest University of Technology and Economics was founded in 1782 by Austrian emperor Joseph II. Nowadays BUTE functions under the supervision of the Hungarian Ministry of Education. It is one of the largest Hungarian higher education institution, the numbers of students and professors are about 15.000 and 1.000 correspondingly. Several Nobel Prize laureates have been associated with the university: Dennis Gábor (physics), George Hevesy (chemistry), Eugene Wigner (physics), György Oláh (chemistry) and János Harsányi (economics). Other notable personalities have also studied or taught at BUTE: John von Neumann (computer), Edward Teller (nuclear physics), Leo Szilárd (nuclear chain reaction), Marcell Breuer (architect), Theodore von Kármán (aerodynamics), Erno Rubik (inventor of the famous cube), Donát Bánki, (co-inventor of the carburetor), Károly Zipernowszky (one of the inventors of the transformer), Dénes Mihály (one of the inventors of television). For more information www.bme.hu. The Budapest University of Technology and Economics has declared in its Strategic Plan the willingness to become an

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international higher education institution. BUTE offers educational training of different types: an international secondary grammar school (the language of training is English), pre-engineering courses, 2, 3, 5 years undergraduate, 3 years PhD programs, life long, open and distance learning. Most of the students take part at 5 years engineering programs (considered equivalent to M.Sc.). Besides Hungarian there are training programs in English, French, German and Russian as well.

BUTE has important international relations (both in education, research), and is an active participant of different international programs, mainly European /e.g. Socrates, Leonardo/, but it has good contacts with several US, Asian and Australian universities as well. The following paragraph presents the main aspects of the initial education (undergraduate) in foreign languages of the university.

INTERNATIONAL EDUCATION AT BUTE

The regular courses in foreign languages started at BUTE in 1984 by the creation of BUTE International Education Center (IEC, www.tanok.bme.hu). Nowadays there is undergraduate training leading to some kind of certificate in 4 foreign languages (additionally to Hungarian).

English (since 1984). Engineering programs (B.Sc., M.Sc.) in English are taught at all 8 faculties (Architecture, Civil, Chemical, Mechanical, Transportation Engineering, Electrical and Informatics, Economic and Social Sciences, Natural Sciences). These programs were mainly established for foreign students. There is a tuition fee (between 2500 - 6000 USD) depending on the training form. Some exchange and Hungarian students take part in the education as well. The total number of students is about 500. The Bulletin containing the detailed programs can be found from the above given homepage of IEC.

Russian (since 1989). It is a 2-year (M.Sc. type) engineering program in robotics established for Russian speaking students from some countries of the former Soviet Union. The number of students enrolled is about 10-20 / each year. There is no tuition fee, the training is financed by bilateral governmental sources.

French (since 1991). It is a 4 semester training in French leading to the French first cycle certificate ("premier cycle", DEUG delivered by the main French partner INSA de Rennes) for students of 7 faculties (Architecture, Civil, Chemical, Mechanical, Transportation Engineering, Electrical and Informatics, Economic and Social Sciences). This program was mainly established for Hungarian students (but there are some foreign participants as well). There is no tuition fee, the training is financed by BUTE (earlier EU programs, the French Ministry of Education and other partners took part at the co-financing as well). The total number of students is about 50 / year. Besides the academic studies (which combine the French and Hungarian programs) there is an obligatory summer practical placement (at least 1 month), followed by a report, and oral

presentation before a joint university-enterprise jury. The program can be seen www.francia-tagozat.bme.hu. After graduation the students typically continue their studies (5-10 semesters) at the corresponding faculty of BUTE.

German (since 1992). Similarly to the French one, it is in the first 4 semesters in German for students of 4 faculties (Civil, Mechanical, Transportation Engineering, Electrical and Informatics). This program was mainly established for Hungarian students. There is no tuition fee, the training is financed by BUTE and DAAD. The total number of students is about 100 / year. After graduation the students typically continue their studies (5-10 semesters) at the corresponding faculty of BUTE. A large number of students (about 50 / year) spend their 5th semester at the University of Karlsruhe, main German partner institution of this educational form. It should be underlined that besides the listed above training forms the students at this university have much more possibilities (different type of academic exchanges, practical placements etc.) to follow the formation in foreign languages or in a foreign country. The next paragraph will present some details related to the French training.

EDUCATION IN FRENCH AT BUTE

The French language training forms were started by the briefly presented above "first cycle" education. This basic education was created in 1991-93 in the framework of an European TEMPUS project. For the management of French language activities BUTE has created a French Filial (as a part of the International Education Center). The teaching activities are carried out by the professors of the university (as a supplementary work), the French Filial has only a small administrative staff (secretary, responsible for industrial relations /partly paid by the French-Hungarian Youth Foundation/), the other posts (direction, faculty responsible) are part time. Since 1991 BUTE has become practically a French speaking university as well.

In different types of cooperation, projects etc. BUTE has adapted educational forms, has joined networks, has been running joint training programs. Some of these programs are carried out in the framework of the French Filial, some have been integrated in different units of the university. The next 2 points present several French related training forms.

Activities of the French Filial

The main objective of this filial is the management of undergraduate education in French language, in French speaking countries.

The main higher educational partners are:

- INSA de Rennes (priority partner), Lyon et Rouen,
- 10 schools of Paristech,
- Ecoles (Schools) des Arts et Métiers de Cluny, de télécommunication de Brest, de chimie de Montpellier, l'ISTIA d'Angers,
- Ecoles d'architecture de Clermont-Ferrand, Lyon, Strasbourg, Rennes et Lille,

- universities of Liège and Bruxelles,
- Université Laval in Canada.

Besides the 1st cycle training in Hungary the French Filial manages (among others) the following educational forms:

- **EURINSA.** About 5 Hungarian students / year take part in an international training in semesters 1-4 of their engineering studies (see: www.insa-lyon.fr).
- **Lectures in French** at BUTE (called "ponctuel") in 5-10 semesters (the total number of participants is approx. 100).
- **Academic exchanges 1-2 semesters** in the framework of EU Socrates/Erasmus, AUF CIME, bilateral etc. projects (about 25 students in French relation).
- **Double diploma.** After 8 semesters in Hungary and 4 in France (2-3 students / year, e.g. "n+1" project, see: <http://nplus1.org>).
- **Validated short academic exchanges** (e.g. ATHENS program: 8-10 day professional training + European dimension activities in one of 17 leading European universities for 2 ECTS points. www.paristech.org). About 40 outgoing, 90 incoming students.
- **Other academic placements** (e.g. a 2 week course in informatics for 12 Hungarian students at ENST Bretagne /Brest/).
- **Practical placements.** 1-3 month summer work after the 2nd semester (about 50 French speaking students / year), diploma work in France (5-10 students / year). This activity is partly supported by EU Leonardo projects (see: <http://tutor.nok.bme.hu>, click "Practical placements"). For more about this [1-2].
- **Cultural exchanges.** Approx. 40 outgoing, 200 incoming students.

The plans for introduction of 2nd cycle (5-10 semester) organized training at the Faculty of Chemical Engineering and Electrical Engineering & Informatics can be mentioned as a new initiative of the French Filial.

Other French related programs at BUTE

Several projects, new training forms were initiated in cooperation with French speaking organizations. Sometimes they have national, regional (Central-Eastern Europe) effect as well.

- **Post-secondary training.** The 4 semester "accredited high level vocational training" has been introduced (national law, methodology etc.) in Hungary based on the experience of French IUT (university technology institute). The first training was at BUTE in the mid 90-ies. Today it is a nationwide accepted training form.
- **Management.** There is a 2-year French-Hungarian post-graduate MBA course in cooperation with University Lyon 3 at the Faculty of Economical and Social Sciences of BUTE.
- **Translator-interpreter.** Another post-graduate course with several partners (e.g. University of Strasbourg).

- **Alternating training of engineers.** It is an adapted variant of the know-how, experience of CNAM (France). The idea is the alternation of academic and industrial periods of training. Click on "Sandwich" at <http://tutor.nok.bme.hu>, or [3].
- **Competence courses.** Another training form of CNAM introduced into the continuing education of engineers.

CONCLUSIONS

One can see that there are important activities on all level (national, university general and a given -here French-language) of international education. The aim of this paper is not only to present the current situation, but to search for partners in the development, further cooperation. The main areas of possible joint work are:

- Nationwide introduction of the B.Sc, M.Sc academic training forms, and the related practical placements.
- Development of the evaluation, assessment technics.
- Sharing experience in the financial aspects of international education, possibilities of the involvement of enterprises.

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