

# *Cross-border network for knowledge transfer and innovative development in wastewater treatment*

## **WATERFRIEND IPA CBC program HUSRB/1203/221/196**

### **Partners:**

*Faculty of Technology, University of Novi Sad, Novi Sad, Serbia*

*Faculty of Engineering, University of Szeged, Szeged, Hungary*

**Project managers: Zita Šereš and Hodúr Cecilia**

**Cost of the project: 166.710 EUR**

**Start date : 2013. 03. 01. and End date: 2014. 06. 30.**

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### **Project objectives:**

- ∞ Promoting good-neighborly relations and professional cooperation;
- ∞ Improving of educational system in the field of water and wastewater treatment;
- ∞ To enhance the knowledge transfer between the Partner Universities;
- ∞ Purchase of modern equipment for practical courses and applied research in the field of biological wastewater treatment;
- ∞ Purchase of software for modeling renewable energy engineering;
- ∞ Training of academic employees to use equipment and software and establish practical lessons for students;
- ∞ Preparing practical syllabus for tutors and students;
- ∞ Providing mutual student cooperation;
- ∞ Facilitating experience and know-how transfer from Hungarian to Serbian project and industrial partners through trainings;
- ∞ Strengthening cooperation of education staff working in the field of wastewater treatment and environmental protection which leads to propose new joint projects;
- ∞ The objectives include prevention and reduction of natural water pollution and healthier life of the inhabitants of cross-border regions in the future;
- ∞ Enhance the knowledge transfer between the students;
- ∞ Getting more knowledge about each others culture and country trough the cultural events;
- ∞ Facilitating the cooperation between the two groups through new scientific projects.

## Faculty of Technology, University of Novi Sad

Univerzitet u Novom Sadu je osnovan 28. Juna 1960. Godine i predstavlja autonomnu obrazovnu, naučnu i umetničku instituciju. Danas je Univerzitet u Novom sadu drugi po veličini od šest državnih univerziteta u Srbiji. Univerzitet u Novom Sadu obuhvata 14 fakulteta lociranih u četiri najveća grada u Vojvodini: Novi Sad, Subotica, Zrenjanin i Sombor. U okviru Univerziteta u Novom sadu postoji: Filozofski fakultet, Poljoprivredni fakultet, Tehnološki fakultet, Pravni fakultet, Fakultet za sport i fizičko obrazovanje, Fakultet tehničkih nauka, Prirodno matematički fakultet, Medicinski fakultet, Akademija umetnosti, Ekonomski fakultet, Tehnički fakultet, Pedagoški fakultet I dva instituta: Institut za nijijsko šumarstvo i životnu sredinu i Institut za prehrambene tehnologije. Intenziviranjem međunarodne saradnje tokom procesa reformisanja univerziteta u Evropi, Univerzitet u Novom sadu je priznat kao reformski orijentisan univerzitet u regionu i Evropi. Tehnološki fakultet u Novom Sadu, kao deo Univerziteta u Novom Sadu, je osnovan 1959. godine sa ciljem da obezbedi akademsko obrazovanje inženjera tehnologije. 2008 godine Tehnološki fakultet postaje prva akreditovana ustanova ove vrste u Srbiji. Fakultet obezbeđuje studiranje na tri akademska nivoa: osnovne, master i doktorske studije. Sva tri nivoa studija se izvode kroz pet akreditovanih studijskih programa: Prehrambeno inženjerstvo, Biotehnologija, Farmaceutsko inženjerstvo, Hemijsko inženjerstvo i Inženjerstvo materijala. U brojnim nacionalnim i međunarodnim projektima, FP7, EUREKA, DAAD, WUS, IPA, TEMPUS, COST, CEEPUS učestvuje 85% nastavnika, saradnika i istraživača sa Fakulteta. Iz svega navedenog sledi da je Tehnološki fakultet u Novom Sadu jedan od vodećih obrazovnih i naučnih institucija u Srbiji, čiji kvalitet dokazuje postojanje duže od 50 godina na domaćoj i inostranoj sceni.



Picture 1. The university campus of the University of Novi Sad

The University of Novi Sad was founded on 28 June 1960. and it represents an autonomous institution for education, science and arts. The University of Novi Sad is now the second largest among six state universities in Serbia. The University is comprised of 14 faculties located in the four major cities of the autonomous Province of Vojvodina: Novi Sad, Subotica, Zrenjanin, Sombor. University of Novi Sad includes: Faculty of Philosophy, the Faculty of Agriculture, the Faculty of Technology, the Faculty of Law, the Faculty of Technical Sciences, the Faculty of Sciences, the Faculty of Sport and Physical Education, The Faculty of Medicine, the Academy of Arts, The Faculties of Economics, Faculty of Civil Engineering, Technical Faculty and the Faculty of Education

and two institutes Institute of Lowland Forestry and Environment and Institute of food technology. Having invested considerable efforts in intensifying international cooperation and participating in the process of university reforms in Europe, the University of Novi Sad has come to be recognized as a reform-oriented university in the region and on the map of universities in Europe.

Faculty of Technology in Novi Sad, as a part of University of Novi Sad, was founded in 1959. with it's aim to provide an academic education to technological engineering. In April 2008, Faculty of technology becoming the first accredited Faculty of technology in Serbia. Faculty organizes graduate studies at three levels: Bachelor studies, Master studies, PhD studies. All three levels of studies run at five accredited study programs: Food engineering, Biotechnology, Pharmaceutical engineering, Chemical engineering and Material engineering. The implementation of numerous national project and international projects, FP 7, EUREKA, DAAD, WUS, IPA, TEMPUS, COST, CEEPUS involved 86% of the teachers and researchers of the Faculty. From all this it follows that the Faculty of Technology in Novi Sad is one of the leading scientific and educational institutions in Serbia, their quality shows for more than 50 years, both at home and abroad.

## **Faculty of Engineering, University of Szeged**

A Szegeden, 1962 óta működő felsőoktatási intézményben több mint hatezren végeztek és kaptak mérnöki, főiskolai (BSc. fokozat) végzettséget. A Kar oktatási feladata: a társadalom és a gazdaság fejlődését szolgáló korszerű szaktudás közvetítése, a piaci igényeknek, követelményeknek megfelelő gyakorlati szakemberek, mérnökök, szakmenedzserek magas színvonalú képzése.

Képzéseink:

Élelmiszermérnök (MSc, BSc)

Gazdasági és Vidékfejlesztési agrármérnök (MSc, BSc)

Műszaki Menedzser ( MSc, BSc)

Gépészmérnök (BSc )

Mezőgazdasági és élelmiszeripari gépészmérnök (BSc)

Informatikai és Szakigazgatási agrármérnök (BSc )

Biomérnök (BSc)

Környezetmérnök (BSc)



Picture 2. The central library of the University of Szeged

The Faculty of Engineering, in accordance with the traditions of the more than 45-years old food industrial engineer training in Szeged, offers dynamically developing technical-economical education. The training

consists of food-engineering, economic and rural development agrarian engineering BSc's, and food engineering MSc; besides the faculty takes part in the major postgraduate courses.

More than six thousand people have been conducted and got engineering diploma ( BSc, MSc) in Szeged's the higher education Institute founded in 1962.

The education tasks of the Faculty are: to broadcasting the state of the art to the society and high-level training of the expertise, engineers, technical managers for development of economy based on the market demand meeting the requirements of practice.

Courses:

Food engineering (MSc, BSc)

Economic and Rural Development specialist in agricultural engineering (MSc, BSc)

Technical Manager ( MSc, BSc)

Mechanical engineering (BSc )

Mechanical engineering specialist in agriculture and food industry (BSc)

Informatics and administrative management of agricultural engineering (BSc )

Bioengineering (BSc)

Environmental Engineering (BSc)

### **The main activities carried out in the frame of the WATERFRIEND project:**



Picture 3. The scheme of the main activities planned in the frame of the WATERFRIEND project

## Activities - Meetings

Until now 3 Project meeting are carried out from the planned 4 Meetings. They are the base of the action pyramid: the project team members are planning together the further actions and discuss about them. The curricula of the new courses about Industry wastewater treatment and Environmental protection are created on some of these fruitful meetings, as well as the ideas for the further scientific cooperation and innovative development in the area of the wastewater treatment.



Picture 4. The project team members together with the dean of the Faculty of Technology (prof. dr Zoltan Zavargo) and the dean of the Faculty of Engineering (prof. dr Keszthelyi-Szabó Gábor)

## Training courses

According to the Project plan, after 1<sup>st</sup> Training Course at laboratory of environmental protection and wastewater treatment at Faculty of Engineering in Szeged, organized for project members and relevant PhD students, it is planned the 2<sup>nd</sup> Training Course at the similar laboratory at Faculty of Technology in Novi Sad. Training course is organized on new purchasing equipment for aerobic digestion (which is the first one in Serbia), on membrane module unit and in computer laboratory for modeling the environmental processes on the new software. Also there were scheduled the lectures about environmental protection and wastewater treatment, about legislations in EU and the Best Available Techniques, which were provided by project members and invited lecturers – experts and trainers in that area. The lectures and exercises delivered on 2<sup>nd</sup> Training Course of the WATERFRIEND project and manuals for laboratory practices delivered on the 1<sup>st</sup> Training course are printed for the Training courses, and will be used further for the students education. On these event notebooks and pencils are delivered for the students.



Picture 5. Photos from the 1<sup>st</sup> Training course on the Faculty of Engineering in Szege



Picture 6. The 2<sup>nd</sup> Training course in the sugar factory TE-TO in Senta, Serbia with the general manager Deak Teodora (1<sup>st</sup> photo, in the middle) and with the main engineer of the sugar factory mr Robert Bleskanj, dipl.ing. (2<sup>nd</sup> photo in the middle)



Picture 7. Panorama of the sugar factory TE-TO in Senta, Serbia and the students and the lecturer on the 2<sup>nd</sup> Training course

## 1<sup>st</sup> and 2<sup>nd</sup> HUSRB Students Meeting

The activities for preparing students to the 1<sup>st</sup> and 2<sup>nd</sup> HUSRB Meeting and Conference will give more knowledge about environmental protection and industry wastewater treatment. Through the project the team members continually have been working with students on mentioned subjects, as it was theoretical approach and knowledge transfer, as it was practical laboratory exercises and serious laboratory experiments on wastewaters from different area of food industry. On these students meetings the Serbian and Hungarian students are equally involved. On the Meetings they will not learn just about the environmental protection, but they can spread their knowledge about each other education system, culture and country through the cultural events which are organized during mutual activities of project partners.

The Book of abstracts contains the summary of the results of the continuous work with the students theoretically and in the laboratories in the field of environmental protection and industry wastewater treatment on the new equipments.



Picture 7. Students working in the laboratory of environmental protection preparing their students work for HUSRB Meeting

### Dissemination of the results – innovative development and scientific cooperation

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