URL - http://www.gtu.ge/

Georgian Technical University (GTU) is the leading institution for higher education in engineering and sciences in Georgia.

An INSTITUTE OF BIOENERGETICAL TECHNOLOGIES "***INBET***" focuses on modern aspects of BME. Research and industrial development in the area of bioenergetical device technology is very expensive, however, and competitive at a global level. Therefore, the department of Electrical Engineering seeks to extend its activities and curricula into higher level electronic design. Especially, embedded system design provides ample opportunities for developing industry-strength electronic solutions for many industrial applications include in BME. This will improve the ability of GTU graduates to bring innovation into small and mid-size companies and medical organization, or to start up new companies.

Education in embedded systems at GTU can be developed based on the existing specialization area. Education in this area includes fundamentals of digital design and computer organization. However, there are substantial deficits in the current curriculum. State-of-the-art education in design methodology for digital systems includes profound knowledge of hardware- and system description languages and requires training on advanced design projects using software tools for synthesis and verification intellectual medical devices.

Modern digital design is the first step towards education in embedded systems. Moreover, the GTU curriculum is to be extended towards dealing with computers as components in larger medical systems. Communication structures between system components and the general architecture of hardware/software systems being stand standard for embedded systems are insufficiently represented in the current curriculum.

Currently, *embedded system* technology in Georgia is being used in some key industries like automotive, life sciences and information, communication technologies, processing of agricultural production, but will soon reach other industries as well. The success of industrial innovation in many sectors is tightly linked to knowledge of embedded system technology.

In collaboration with Patras University, Georgia Technical University will build-up the educational backbone for this evolvement. A curriculum of lectures, seminars and laboratories needs to be established at GTU that educates students as well as professionals in architecture and design of BME devices. Graduates of this program will be able to lead industrial projects introducing state-of-the-art microcontroller technology into production processes, communication systems and BME areas. The curriculum will be adapted to the Bologna guidelines and will be integrated into a Bachelor and Master's program following international standards.

In particular, the curriculum and laboratories will emphasize those types of embedded systems that can be implemented at reasonable costs. For this purpose an important part of the curriculum is dedicated to dealing with programmable logic devices such as FPGAs (field programmable gate arrays) that provide a low cost alternative to application specific integrated circuits (ASICs). Due to their flexibility and universal applicability FPGA-based systems have become a standard approach in many embedded applications and have replaced standard chip solutions in many cases. Since FPGA technology is available at fairly low costs it is an ideal basis for hardware design under severe cost limitations.

The most important part of collaboration is to establish appropriate laboratories at GTU. This will ensure that the educational infrastructure built up at GTU will actually be integrated into the standard teaching curriculum.

After that, the educational environment at GTU will be further developed step by step both by transferring educational infrastructure to Tbilisi, and by scientists from GTU themselves. For a successful continuation of this process it is desirable that students from GTU enter and complete the international Master's program at Patras University. A few excellent candidates may be accepted as doctoral students. These graduate students at the master's and doctor's level will support the development of educational infrastructure already during their studies or dissertation work.