LLP – Erasmus Intensive Programme:

An Interdisciplinary and Holistic Approach to Engineering Education – Workshops on Advanced Learning Technology in Design and Practice of Embedded Systems (WALT)

July 3rd – 16th 2011 – Bialystok, Poland

Organized by:

Białystok University of Technology, Faculty of Electrical Engineering

Cooperating with partners:

Technical University of Ostrava

Kaunas University of Technology

Firat University
Summary of programme

Electronic engineering practice has evolved rapidly with the proliferation of fast computers on a chip. Additionally, the use of microcontrollers and embedded systems has become inevitable in almost every field. An area that has traditionally been reserved for electrical or mechanical engineers is now multidisciplinary, integrating digital and analog electronics, communications, and computing with a variety of systems ranging from medical to biological and environmental. During the course will be used a wide set of microcontrollers and the embedded systems. Using this philosophy the robotics education can be available to undergraduate and graduate students from a wide range of scientific disciplines, for example including computer science, electrical and electronic, mechanical and also biological engineering, physics and many others. During the course, students have to develop a related system design, for example: mobile robots. The control system, consisting of sensors, actuators, microcontrollers and software is one key component. The students can select from different prefabricated electronic and mechanical components to construct their robots.

General assumptions
1. The course is for a broad multidisciplinary undergraduate and graduate student body.
2. The course is Introduction to Robotics, Embedded Systems, Sensors and Microcontrollers.
3. The course equip students with necessary tools and know-how to make use of powerful technology of microcontrollers within their own disciplines.
4. Using various pedagogical methods such as team work, it is possible to achieve the right balance between theory and practice, and giving students from various disciplines an "industry like" experience.

The general assumption for this intensive course program is to give for the students some practical engineering knowledge during the lectures and the laboratory sessions (workshops) in the very attractive way. Thus, a typical framework for engineering work is provided that extends beyond the technical aspects. This includes:
- Cooperation in multidisciplinary teams.
- Coordination of parallel work between the team members.
- Finding engineering solutions under time pressures.
- Applying the theory learned to solve practical problems.
- Learning from failures to finally achieve working solutions.