

AREAS OF SECURITY SCIENCE

- research into the concept, development and system of security science;
- the human-technology-environment relationship, the examination of the regulatory circuits of the technosphere;
- research on the conditions of integrated and complex security;
- research into the preservation of health and safety at work;
- research into individual and collective protection tools;
- research into malfunctions occurring in operation and the conditions of safe operation;
- development of safety and protection machine elements implementing the safety function;
- the safety of robot technology;
- Broadening the safe operating conditions of technical devices;
- environmental safety and its implementation;
- ergonomics, harmonization of the human-machine-environment relationship, matching the human and technical environment;
- risk management, risk theory;
- examining the human factor, human reliability and safety culture.

Some areas of safety science whose research is not considered as a research area by the doctoral school are:

- product safety, consumer protection,
- food safety,
- traffic safety, e.g. aviation safety,
- the technical safety of hazardous technologies (e.g. nuclear industry, chemical industry),
- social security,
- Legal certainty.

In **the field of Safety Science**, Óbuda University offers accredited bachelor's and master's degree programmes, and continuously develops its laboratories in accordance with international trends in order to provide high-quality training. In the course of the research on the security and protection of critical infrastructures mentioned among the research areas of security science, the National Development Agency (TÁMOP 4.2.1.B-11/2/KMR) accepted the application entitled "Critical Infrastructure Protection Research" jointly submitted by Óbuda University and the Zrínyi Miklós National Defence University in the topic of "Improving the quality of higher education through the development of research, development, innovation and education". The HUF 940 million grant awarded will provide significant help to the two institutions, which have already cooperated in many fields, to advance in safety science research.

In connection with the above, Óbuda University has set the goal of launching a doctoral school in the field of the development of training, initiating the establishment of a Doctoral School of Security Sciences, which was signed with the Zrínyi Miklós National Defence University at the beginning of 2011 in a scientific research related to the research topics of the Doctoral School of

Security Sciences, the examination of the human-machine-technology environment and the activities of critical infrastructures. The doctoral school strives to clarify the emerging questions by applying the scientific methods of research, and to search for new security solutions in order to achieve complex security.

Óbuda University has a strong tradition and a qualified research base in both fields (engineering security science, protection of critical infrastructures). Our research background is constantly strengthening both in terms of staff and research activities. The continuous development of our scientific activities is evidenced by a series of successful domestic and international projects, and our traditionally strong industrial relations have been further expanded in recent years. The publication activity of the university's lecturers is internationally recognised, not least with the increasing recognition and impact factor of its scientific journal (*Acta Polytechnica Hungarica*) in both the national and international professional community. The diversity of theoretical and applied research activities reflects the wide range of educational experience and scientific knowledge of the staff.

The aim of the doctoral school is to go beyond the traditional, disciplinary approach and solve scientific problems motivated by real industrial applications by using the full range of tools of safety science. In this way, the line between previously sharply separated disciplines is blurred, the project-oriented approach required to solve practical tasks generates synergies between disciplines, and a series of research in a novel discipline is realized.

The core members have already collaborated significantly in their research, which is also indicated by the high number of joint publications. At the same time, one of the basic goals of the Doctoral School is that the core members and guest lecturers not only strengthen their own research topics, but also complement each other to generate new research topics of an interdisciplinary nature, and that the talented young people working on them achieve significant results by international standards.

The doctoral program builds on the disciplines of engineering modeling, simulation, knowledge-based intelligent engineering systems, robotics, mechatronics, control theory, production control and production planning, computer-aided manufacturing, transportation informatics, etc. Its special topics of high priority often come to the fore when solving scientific problems raised by industry. In these areas, Óbuda University has a significant intellectual

resources, domestic and international research (academic and industrial) cooperation agreements.