

# **Institutions Involved**

## **University College London (UCL)**

### **The Bartlett School of Graduate Studies**

Just 180 years ago, in 1826, the benefits of a university education in England were restricted to men who were members of the Church of England. UCL was the first university to be established in England after Oxford and Cambridge, providing a progressive alternative to those institutions' social exclusivity, religious restrictions and academic constraints. UCL was the first to admit women to higher education on equal terms with men, and also pioneered the teaching of many subjects at university level. The university currently has over 19,400 students, of whom approximately 7,300 are graduate students. UCL is proud of its academic distinction; it can count 19 Nobel Prize winners among former academic staff and students. The Bartlett is unique in offering a multidisciplinary approach to the study of the built environment. It is named after its benefactor, the 19th century engineer and construction contractor Sir Herbert Bartlett. British architectural education began at UCL with the appointment of Professor Thomas Donaldson in 1841. Of interest to GLOBE project is The Bartlett experience in delivering a multidisciplinary MSc course in Environmental Design and Engineering (EDE) for over 25 years. This program is one of the oldest in the United Kingdom and deals with environmental issues associated with buildings.

## **Glasgow Caledonian University (GCU)**

### **The School of the Built and Natural Environment**

Glasgow Caledonian University is the newest of Glasgow's three universities. It was formed on 1 April 1993 as a result of a merger between Glasgow Polytechnic and The Queen's College, Glasgow. The origins of The Queen's College, Glasgow, date back to 1875, whereas the history of the Glasgow Polytechnic, on the present city-centre campus, goes back to 1971. Since the formation of the campus, it has undergone extensive development and refurbishment, making it one of the most modern and up-to-date campuses in the country. The aim of the University is to offer high quality education and training to a wide and diverse range of students, collaborating with commercial and industrial organizations and other providers of education. It has established a distinctive identity in terms of its flexible, vocationally-orientated academic programmes, its emphasis on lifelong learning and the wide

range of client groups it serves. Currently, the University has approximately 15,000 students, studying in eight Schools: Built and Natural Environment; Engineering, Science and Design; the Caledonian Business School; Health and Social Care; Life Sciences; Law and Social Sciences; Nursing, Midwifery and Social Health, and Computing and Mathematical Sciences. In addition, the Caledonian College of Engineering, in Oman, is accredited by the University. This allows local students study to Construction and Engineering subjects, and graduate with degrees validated by the University.

The School of the Built and Natural Environment is the largest academic department in Scotland in field Construction and the Built Environment, and one of the largest in the UK. There are over 1000 students studying a wide range of programmes related to the construction industry, but also degrees in Building Services Engineering, Environmental Civil Engineering, Energy and Environmental Management and Waste Management, at undergraduate and postgraduate (Master's) levels. As part of the School, the Caledonian Environment Centre has become a recognized centre for its expertise in waste management, and like the rest of the University, the School undertakes research and consultancy in specifically focused and commercially-orientated fields.

Dovde gotovo, so far!

## **Instituto Politecnico do Porto**

### **Instituto Superior de Engenharia do Porto (ISEP)**

## **Politecnico di Torino (PT)**

### **Land, Environment and Geo-Engineering Department**

The Land, Environment and Geo-Engineering Department (DITAG) is committed to the development of research and training in the sectors connected to environment, resources and land, and technologies aimed at protecting and ensuring the sustainable use of resources. The variety and complexity of these areas is reflected in the department's extensive range of areas of involvement. This spans over pure and applied sciences, with particular reference to: environmental, land and resource engineering; tunnel construction; quarry, mines and underground fluids reservoirs; environmental and workplace safety, identification and cleanup of contaminated sites, environmental compatibility assessments, environmental management

of man-made plans, works and activities: in short, all the engineering applications of earth sciences - geodesy, geology, geophysics, geotechnics, geomechanics, geomatics, geohydrology - and natural and economic sciences regarding the land and environment. A shared research approach is used: analytical, numeric and experimental tools, with laboratory and in situ testing, surveys, measurements and other strategies employed directly in the field, which is a peculiar aspect of the work of DITAG.

DITAG represents a hub of excellence at an international level, and actively participates in the development of groundbreaking research, transfer and exchange of teaching staff, updating and expansion of its own facilities, such as specialized testing laboratories, the latest IT equipment and a well structured specialized library. Research at DITAG uses analytic, numerical and experimental methods, with surveys and intervention in the field. The various studies carried out by the Department pursue the same aim: to safeguard both the natural and the manmade environment and to ensure its proper use and development. Research is split into 5 different sectors corresponding to work groups which are both flexible and highly specialised: economics, environmental quality and safety; tunnels, quarries and quarrying; geophysics, applied geology and environmental geotechnics; geomatics and GIS; aquifer and reservoir engineering, ecology and environmental protection. Each work group can further develop their knowledge within their particular field (together with government bodies and private companies). At the same time, there is room for collaboration among the groups, especially when multidisciplinary areas are approached. At the moment, DITAG employs 70 people: 54 teaching and research staff, and 16 administrative and technical staff. Every year, around 150 different courses are taught to more than 2,000 students. The number of doctorate students is about 40.

## **The University of Belgrade**

The highest educational institution of Belgrade and Serbia, the Belgrade University has 30 faculties, 8 scientific institutes, and a library. Its roots date back to 1808, when the *Velika škola* (Great School) in Belgrade was founded. The first Serbian University was formally founded on February 27, 1905, and it included three faculties: of Philosophy and Law, and the Technical Faculty. The entire University operated in the mansion that Captain Misa Anastasijevic had endowed to "his fatherland". The President's Office of the University in Belgrade is still situated in that building. Today, around 60,000 students study at the

University, within about 150 undergraduate degree programs, about 1,700 graduates - within the graduate degree programs, and a considerable number of students - within the specialist training courses. Since its foundation, the University in Belgrade has produced approximately 260,000 graduated experts of different skills, around 14,000 masters, and 8,500 doctors of science/arts.

## **Faculty of Mechanical Engineering, University of Belgrade**

The present Faculty of Mechanical Engineering of the University of Belgrade, the oldest and the largest educational and scientific institution in mechanical engineering in Yugoslavia has its beginnings in the "Grand School" in Belgrade. It was already during the first year of armed and political struggles for the liberation from the Turkish domination that the so-called "Velika škola" ("Grand School") was founded. It was opened from 1809 to 1813, in the period following the first Serbian Uprising (1804), and later on, after the Second Serbian Uprising (1815), it was re-opened in 1830. In 1833, the School was moved to Kragujevac and got the name "Liceum". It was ranked as a high school ("Gimnasium"). Soon there arose the necessity to enable the graduate students of the school to get further education and, thus the instructions at the university level began in 1838; a new institution in the rank of university was founded formally by the Decree of Miloš Obrenovic of October 9, 1839. Indeed, it still kept the name "Liceum", whereas the former school was renamed into "gimnazija". As early as 1841, it was moved back to Belgrade. In 1846, the first engineering school was founded, which, in 1853, became the Department of Natural Sciences and Technology of this institution. In 1863, the Lyceum changed its name and became "Velika škola" with three departments: the Department of Philosophy, Department of Law, and the Department of Technology. The subject Science of Machines was introduced for the first time within the development of the Department of Technology on December 20, 1873, by amendments to the Law. Therefore, this date is considered to be the beginning of university education in mechanical engineering in Belgrade, in Serbia and, as far as it is known, in the entire Balkans. During the past time, the university education in mechanical engineering has been constantly developed, meeting the growing demands in university-educated manpower in mechanical engineering, on the one hand, and the development of science and technology on the other. The Mechanical Engineering Department of the Faculty of Technology developed into the Electro-Mechanical Department (1922), which, in 1946, split into the Mechanical

Engineering Department and the Electrical Engineering Department. Upon the foundation of the "Tehnicka velika škola" (University of Technology), the former developed into the Faculty of Mechanical Engineering in 1948. Today, the Faculty of Mechanical Engineering produces graduate mechanical engineers, oriented towards the most significant wider of mechanical engineering, organizes post-graduate studies for obtaining the academic degrees of Master of Science and of the Specialist, and also performs guidance in elaborating doctorate theses in all fundamental theoretical disciplines of the mechanical engineering profession.

### **The Faculty of Architecture, University of Belgrade**

The Faculty of Architecture is a part of the Belgrade University. Architectural education existed since 1946, in the Engineering School of Belgrade. In 1897, it was transformed into the Technical Faculty of Belgrade with a separate Department of Architecture and, in 1948, into the Faculty of Architecture. Today, the Faculty has: 1500 students, 135 teaching staff members (over 60 professors) and 6500m<sup>2</sup> of floor space. Since 1948, the Faculty has issued 8500 Engineer diplomas, 360 Master of Science diplomas, and 140 PhD diplomas. Until the last year, the basic curriculum consisted of a 5 year program (Engineer of Architecture). MSc diplomas lasted another 2 years but were not required for acquiring a full license to practice. PhD thesis was done through a mentor system.

Starting from this year, the Faculty has developed a 3 year curriculum for the Bachelor level, a 2 year graduate program in 3 major professional fields (architecture and urban design, urban planning, and architectural engineering), and finally a 3 year PhD course. There are 6 Chairs: Architecture and Urban Design, Urban Planning and Design, Construction and Technology, Structural Engineering, History and Theory, and Visual Communications. Research is mainly independent of the curriculum and is done mostly through government-funded programs by staff member teams. Most of the staff are active professionals with developed practices of their own. Members of the staff directly participate in various projects in the fields of architectural and urban design, urban and special planning, engineering and other projects, offering services as any other independent design, engineering or planning office.

### **Institute of Nuclear Sciences - VINCA**

Vinca - Institute of Nuclear Sciences is the largest scientific institute in Serbia and Montenegro. It is located 15 km from the center of Belgrade, 2 km from the river Danube, and close to the archaeological site of Vinca (a Neolithic site dating back to 5000 B.C.). VINCA Institute of Nuclear Sciences was established in 1948 as the Institute of Physics. By 1953, it had already become a recognized research center of nuclear sciences. Its name underwent changes from the Institute of Physics, to the Institute for the Investigation of the Structure of Matter (1950), and to *Boris Kidric* Institute of Nuclear Sciences (1953), getting its present name in January, 1992. Since 1968, it has continued research with a mixed scientific concept, not only nuclear. Today, VINCA is a multidisciplinary scientific institute, which covers a wide range of scientific and engineering fields. The basic and applied research activities of the Institute have dealt with the peaceful uses of nuclear energy, gradually being complemented by research concerning advanced aspects of physics, chemistry, biology, power engineering, air quality, environmental protection, electronics, and material sciences. VINCA Institute is organized in work and research units, internally traditionally called Laboratories, which are also successful in business activities in the market. The current number of employees is 800, out of which 400 research staff. The Institute has two designated platforms areas, research activities and examination of their potential for commercialization or development of corresponding industrial partnerships. Traditionally, the Institute has a very extensive cooperation with the universities, through the joint research projects and educational activities in postgraduate studies. These days, after the time of sanctions and the present period of transition, VINCA Institute is making efforts to again achieve the status of a highly recognized international institution in the science and education development, building its policy of scientific excellence and international collaboration.

## **The University of Niš**

The University of Niš was incorporated as an independent degree-granting institution on June 15, 1965. Its establishment rounded off an important, in many ways pioneering, period in the more recent history of the town, which started in 1960, when the first undergraduate programs commenced in Niš under the academic patronage of the University of Belgrade. They were institutionalized as the faculties of Law & Economics, Medicine, and Engineering, constituting a core from which a more and more complex and richer physiognomy of the University would systematically develop, following the demands of times and life itself. The University started

its independent life with 234 full-time teaching staff and 6,800 students. The increase of the student population, the development of new disciplines and the rising needs of the immediate and broader industrial and social environment brought about a reorganization of the existing faculties and foundation of new ones. The beginning of the third millennium finds the University as a medium-sized, mature and well developed academic community comprising thirteen academic units (faculties): Faculty of Civil Engineering and Architecture, Faculty of Economics, Faculty of Electronic Engineering, Faculty of Fine Arts, Faculty of Law, Faculty of Mechanical Engineering, Faculty of Medicine, Faculty of Occupational Safety, Faculty of Philosophy, Faculty of Physical Culture, Faculty of Science and Mathematics, Faculty of Technology and Teacher-Training Faculty. Most of the mentioned faculties have composite structure, i. e. various departments, divisions or majors offering wide and diversified study and research opportunities at both the undergraduate and the graduate level, including opportunities to obtain Ph.D. degrees. Over the past 37 years, the University teaching staff has grown to 1,410 and its student body to more than 27,000, including 433 foreign students. So far, more than 33,900 students have graduated from the University, 1,528 have earned master's degree and 936 have successfully defended their doctoral dissertations.

## **Faculty of Mechanical Engineering, University of Niš**

### **Thermal Engineering and Thermal Energy Department**

The Faculty of Mechanical Engineering, with its origins deeply set in the earliest days of higher education in Nis, has established a strong reputation and a recognizable image of a modern and successful academic center with a distinguished record of research and teaching. In addition to the vigorous undergraduate and graduate programs covering the full-range of university degrees, the Faculty also offers refresher and continuing education courses meant for those who intend to keep up with the latest developments in the area of mechanical engineering. The Faculty maintains a wide-ranging research activity mainly directed toward fundamental and developmental undertakings, as well as toward innovative and applicable creative concepts resulting in the design of new products, plants, installations, and technological solutions, development and investment programs, testing and attesting of machines, assembly blocks and elements of industrial plants and installations, etc. The Faculty of Mechanical Engineering has 9 departments. One of the biggest is Thermal Engineering and Thermal Energy Department. It has 20 teaching staff, and covers the

programs for the following profiles: HVAC, thermal engineering and chemical engineering, and has been doing research for about twenty five years. Our field of interest is numerical and experimental investigation of the phenomena of heat and mass transfer in stagnant and porous media, complex turbulent flows (cooling towers, dryers, steam boilers, heat exchangers, cooling, heating, air conditioning, internal combustion engines, chemical engineering, power plants, etc.). We are particularly involved in the modelling of engineering processes based on complex flow interaction, such as heat and mass exchangers, design of HVAC equipment, rational usage of energy, alternative energy sources. Our experimental investigations are mainly oriented towards heat and mass exchange in cooling towers, and also in steam boilers and in different kinds of heat and mass exchangers (primarily shell and tube).

## **Faculty of Civil Engineering and Architecture, University of Niš**

### **Ministry of Science and Environmental Protection (Serbia)**

The Ministry of Science and Environmental Protection (MSEP) is responsible for strategic issues concerning science that cut across the responsibilities of individual government departments. The paramount objective of the MSEP is to enhance research in higher education sector and to encourage cooperation between industry and academia. Furthermore, the MSEP supports all efforts aimed to develop an innovative modern structure in the higher education sector, which would help harmonization of the existing programs with the EU standards. The short-term research-higher education policy of MSEP is based on the statement that universities should share the responsibility for academic research with industry and specialized institutions. They have to have a particular responsibility for the development of knowledge through free and fundamental research, for the training of new researchers, and the maintenance of a healthy balance between the different types of research. Government will encourage universities and research institutions, in accepting commissioned research, to give priority to those activities, which supplement or strengthen their central mission in research and teaching.