
UNIVERSITAS TECHNICA IN ZVOLEN

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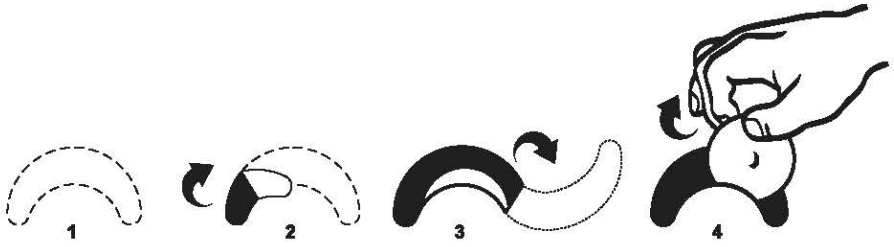
Abies alba

The European silver fir or silver fir is a large tree with a cylindrical straight clear trunk and a diameter of up to 2 metres. It grows in mountain and foothill forests, together with beech it creates beech and fir stands that are rare nowadays. It can grow up to 50 metres.



1762
1807
1952

TECHNICAL UNIVERSITY IN ZVOLEN

UNIVERSITAS TECHNICA IN ZVOLEN
2017

Published on
the 255th anniversary of university technical study in Slovakia,
the 210th anniversary of university forestry study in Slovakia,
and the 65th anniversary of the establishment of the University of Forestry and Wood Technology, the present Technical University in Zvolen

ZVOLEN 2017

UNIVERSITAS TECHNICA IN ZVOLEN 2017

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	Mgr. Ján Obročník
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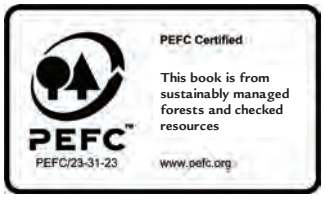

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Preface

The Technical University in Zvolen is proud of its mission of a green university issuing from the traditions of the Mining Academy in Banská Štiavnica, one of the oldest universities focused on the technical and forestry subjects in Europe and in the world.

The Technical University in Zvolen together with some other universities in Central Europe preserve heritage of the Mining Academy in Banská Štiavnica. In 1762, that is 255 years ago, it started

its educational pilgrimage on the basis of the edict by Empress Maria Theresa of Habsburg. In 1770, the Mining Academy grew up to a higher education institution and by inserting teaching forestry disciplines also to an institution of green higher education.

Similarly, as a giant tree goes from a tree species seed, also significant forestry higher education has been developed for Slovakia and Central Europe. By the decree of Emperor Francis I in 1807, the Forestry Institute was established at the Mining Academy in Banská Štiavnica. 210 years of forestry higher education in Slovakia is for our university a special jubilee which we are proud of. The beginning of the Forestry Institute has reflected an increasing importance of the need to provide sustainable forestry development and thus the idea coming from forestry education and science that has obtained a global character in modern history.

Another important university anniversary of this year is 65 years of its existence in the town of forestry – in Zvolen. It was sealed with signature on Memorandum of twelve institutions on 18th April 2016 in the Stará radnica (Old Town Hall). Thus, the town of Zvolen has accepted an official title "the town of forestry". Significant signatories of the Memorandum were the Technical University in Zvolen as well as its Faculty of Forestry whose beginnings go back to the year 1952 when the University of Forestry and Wood Technology was found in Zvolen. In 1992, the decision on the change of the university name to the Technical University in Zvolen was carried into life.

The Technical University in Zvolen is a modern higher education institution providing education in all three levels of studies within the European Higher Education and Research Area. It is involved in building the European knowledge society within its focus on the spheres of forestry and wood technologies with an appropriate expansion in other technical, natural sciences, security, economic as well as art spheres.

The Technical University in Zvolen has set a vision in its Long-term Plan for the years 2017 – 2023: by the year 2030 to have become an internationally recognized, research-oriented university which will be classed among the Slovak leaders in its scientific and research focus. By the year 2030 the Technical University in Zvolen wants to have become a provider of modern education, systematic offering knowledge and shared cultural and democratic values in the intergeneration process, but also a propagator of ideas of humanism, tolerance, cooperation and responsibility for life. In its vision, the Technical University in Zvolen is meeting the concept of "green university" providing the latest scientific knowledge concerning thorough keeping principles of sustainable life.

According to the Long-term Plan for the years 2017 – 2023, the strategic aim of the Technical

University in Zvolen is to meet the mission of a university and also research institution which:

- is respected and successful in the national and international context,
- has high quality of educational, research and art activities,
- has graduates who are exercisable in practice,
- is focused on supporting the development of knowledge and innovative economy,
- is focused on effective and environmentally-friendly exploiting natural resources,
- is focused on the third mission of universities by specific services for the development of society and the region,
- has all processes provided on ethic principles, and
- applies the concept of effective internal control, quality control, and risk control.

I would like to remind you of the idea of this book forerunner – the jubilee publication published five years ago, which was made with the idea of "one book = one tree". The book was festively launched with forest tree species seeds by the then President of the Slovak Republic Ivan Gašparovič. In his speech he referred the larch seeds put in the book as a symbol of new life for future generations and the idea of sustainable development as a basic priority of the work of teachers and researchers at the Technical University in Zvolen. Mr. President called for responsible approach towards the environment that we could symbolically show by planting a larch seed and so declare our interest in sustainable development of our planet. This idea was awarded within the national competition of ENVIROOSKAR 2012 in the category of ENVIRONÁPAD (ENVIROIDEA).

Forest tree species seeds grow up to trees, interacting with animate and inanimate nature they create forest ecosystems and their existence is the assumption of life on our planet. It is inevitable for all of us so that forests could keep providing clean air, experience of nature, the green, beauty, a possibility to observe animals and trees, an opportunity for recreation and a feeling of freedom. The life cycle of the forest ecosystems is a research and educational subject for university staff who use the latest educational and research technologies. The TUZVO virtual cave represents a modern facility for visualisation of forest ecosystems in the form of an immersive and interactive virtual reality and at the same time it provides unique educational and scientific research chances for simulating processes in the forest and countryside.

The jubilee publication TUZVO 2017 symbolically grasps the change of seeds into trees and refers to the creative research and pedagogical work of the university staff. The book starts with a symbol of responsible approach towards our environment, we call on you to plant seeds of forest trees and so symbolically declare your interest in preserving our planet for future generations. May your aesthetic reward is a look at the photographs at

the end of the book which will enable you to see the majestic beauty of trees with 3D seeing by means of the special glasses. By these symbols we nail our colours to the historical legacy and its interlinking with the modern green Technical University in Zvolen just as the history of using traditional photogrammetry is interlinked with modern means of information technologies.

Quality education and top research can be carried out only by righteous and systematic work of teachers, researchers and in close cooperation with talented students. Joint efforts can be crowned by a success, if the university staff and students keep being creative and the present historical anniversaries are used as an inspiration for their educational and research activities.

Dr. h. c. Prof. Ing. Rudolf Kropil, PhD.

Contents

HISTORICAL ROOTS

1952 – 1955

Professor RNDr. Ing. JUDr.
FRANTIŠEK PAPÁNEK

1955 – 1962

Professor Ing.
VÍŤAZOSLAV SPROCK

1962 – 1965

Professor Ing., CSc.
ELÍGIUS HROMADA

1965 – 1969

Professor Ing.
PAVEL VIŠŇOVSKÝ

1969 – 1971

Professor Ing.
FRANTIŠEK SETNIČKA

1971 – 1990

Academician
Professor Ing., Dr.Sc.
ADOLF PRIESOL

GALLERY OF THE RECTORS

1990 – 1994

Professor Ing., CSc.
VILÉM ŠTEFKA

1994

Corresponding Member
of the Slovak Academy of Sciences
Professor Ing., DrSc.
ŠTEFAN ŠMELKO

1995 – 2001

Professor RNDr., DrSc.
MILAN MARČOK

2001 – 2004

Professor Ing., CSc.
MIKULÁŠ ŠUPÍN

2004 – 2012

Professor Ing., CSc.
JÁN TUČEK

2012 to present

Dr. h. c
Professor Ing., PhD.
RUDOLF KROPIL

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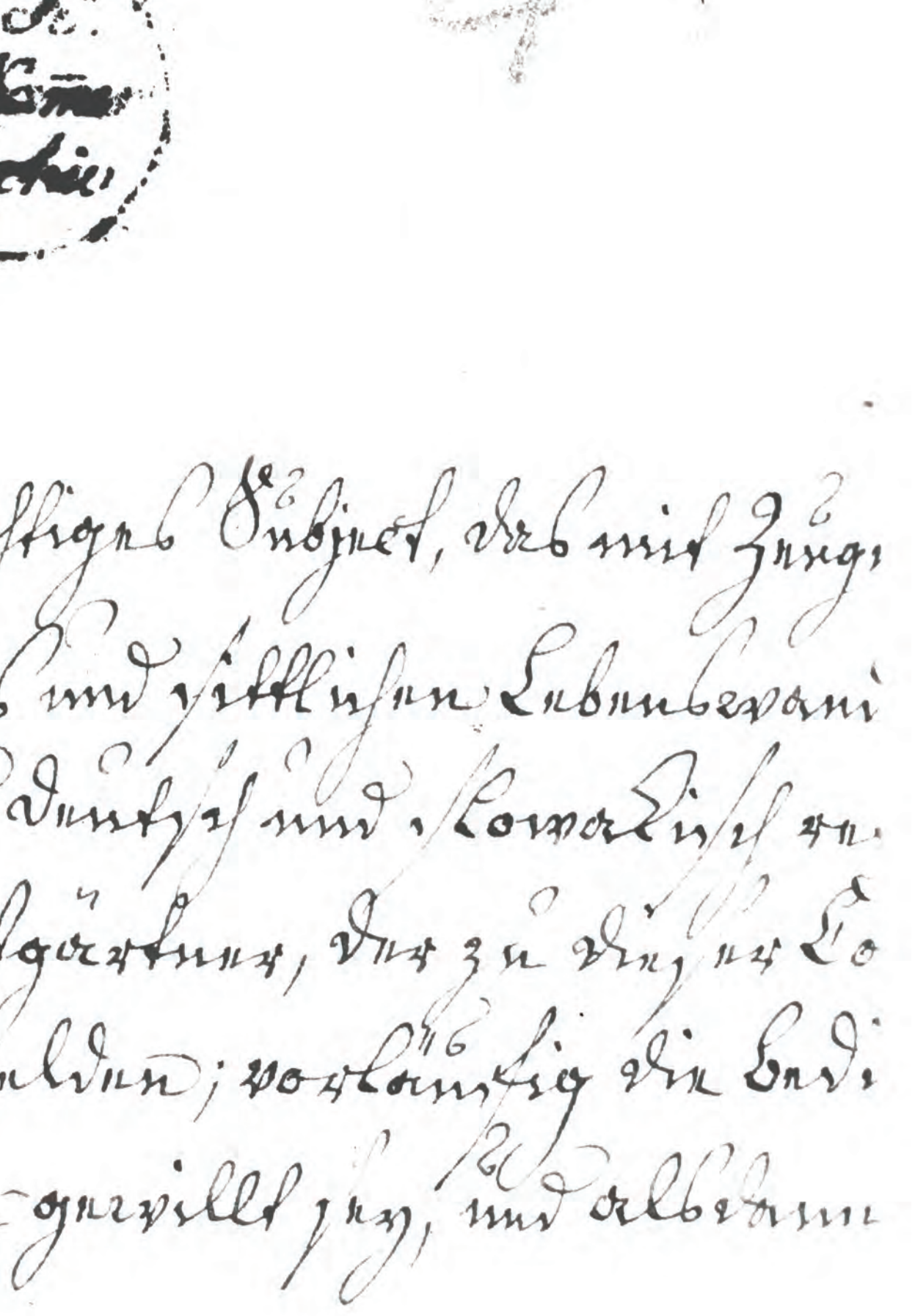


Professor RNDr. Ing. JUDr.
FRANTIŠEK PAPÁNEK
1950 – 1955

František Papánek was born on March 25, 1912 in Budapest. He studied law at Comenius University in Bratislava and forestry at the University of Agriculture in Brno. He worked at the Directorate General of the State Forests in Bratislava and at the Directorate of the State Forests and Properties in Žarnovica. In 1948 – 1950, he held the office of the regional director of the State Forests in Slovakia. In the meantime, he acted as an external professor of forestry economy at the University of Agricultural and Forestry Engineering (VŠPLI) in Košice. He had a merit in establishing the University of

Forestry and Wood Technology in Zvolen where he was the head of the Department of Forestry Economy. He also performed a function of the Rector from 1950 to 1955. In 1959 – 1971, he was a manager of the Department of Zoning at the Institute of Forest Management in Zvolen and in the meantime in 1967 – 1970, also a FAO expert in the project of the Caspian forests development in Iran. Since 1970, he worked at the Research Institute of Forest Management in Zvolen in the environmental sector. In his creative scientific and research work, professor Papánek was engaged in developing teaching texts of the subjects lectured at the Faculty of Forestry. He elaborated economic aspects of forest management, investigated current and perspective timber production and consumption in Iran, and dealt with economic problems of a developing country from the standpoint of capitalist economy. He also dealt with research into all-purpose forest functions and elaborating the theoretical basics of practical application of the functionally integrated forestry management. He was an editor-in-chief of Poľana journal (1945 – 1950), an editor-in-chief of the "Lesnícky časopis" journal of the Slovak Academy of Sciences (1955 – 1959), a member of the editorial board of the journal "Les" (1955 – 1957). He is an author of the first handbooks on forestry economy (1946, 1955) and the reportage book Forest Management in the USA (1948). He contributed to several foreign journals, published about 200 works. Professor Papánek had a good grasp of several foreign languages including also Persian, actively participated in international forestry congresses, later especially in conferences on environmental impacts of forests.
He died on September 25, 1995 and is buried in Sliač.

Professor Ing.
VÍŤAZOSLAV SPROCK
1955 – 1962

Víťazoslav Sprock was born on July 22, 1915 in Rožňava. In 1935, he passed the final examination at the Secondary Grammar School in Rimavská Sobota. He studied forestry at the Czech Technical University in Prague and due to closing the Czech universities in 1938 he graduated from the Slovak Technical University in Bratislava, completed forest engineering in the Department of Forestry and Agriculture in 1940. In 1940 – 1942, he worked as a technologist in the state sawmill in Žarnovica, in 1942 – 1944 as an officer of the commercial and technical sector of the Directorate General of the State Forests in Bratislava, in 1945 – 1946 as a manager of the division of timber industry at the Commission on Industry and Commerce, in 1946 – 1948 as a regional deputy director of woodworking factories in Bratislava and in the years 1948 – 1950 as a deputy director in the enterprise the Czechoslovak National Timber Industry in Prague.
In 1950, he started to work as a substituting associate professor at the University of Agricultural and Forestry Engineering in Košice. He played an important role in establishing the University of Forestry and Wood Technology (VŠLD) in Zvolen and then he held a position of the Dean of its Faculty of Wood Sciences and Technology. In the years 1955 – 1962, he held a post of the Rector of the VŠLD.
Professor Sprock was a prominent representative of woodworking industries, research and science, and education. He contributed to the development of modern woodworking industry in Slovakia and to organizing university teaching wood sciences and technology. He drew up a proposal for industrialization of Slovakia in the area of woodworking, participated in solving the conceptual tasks of the Czechoslovak woodworking industry. He also took part in organizing independent university

study of wood sciences and technology which was opened in the Department of Forestry of the VŠPLI in Košice. He designed the educational contents of this study, organizational structure of the Faculty of Wood Sciences and Technology at the VŠLD in Zvolen and its first curricula.
Rich is his publication activity. He wrote about the development of the modern woodworking industry, created university textbooks, scientific papers and current articles to help woodworking practice. His best-known publications are: Development of the Modern Woodworking Industries (1950), Organization and Planning of Wood Manufacturing (1962), Organization and Management of the Woodworking Industries (1963). He is a co-author of Planning, Survey and Financing in Woodworking Industry (1963) and Influence of Specialization and Cooperation on the Effectiveness of Building-joinery Production (1964). Professor Sprock is a holder of the Order of Labour and other honors conferred by the state.
He died on February 3, 1979 in Zvolen.

Professor Ing., CSc.
ELÍGIUS HROMADA
1962 – 1965

Elígius Hromada was born on December 2, 1927 in Ráztočno, Prievidza district. After the final examination at the Secondary Grammar School in Levice in 1947, he studied at the University of Agricultural and Forestry Engineering in Košice and in 1948 – 1952, at the Faculty of Forestry at the University of Agriculture in Brno. In the years 1952 – 1955, he was a research candidate and an assistant professor at the University of Forestry and Wood Sciences and Technology in Zvolen, in 1956 – 1957 he was a director of the Forest Enterprise in Smolenice, in 1957 – 1959 the chief engineer of the District Forest Administration in Pezinok. In the following period, he worked as a university teacher and researcher. In 1961, he became an associate professor, in 1965 an adjunct professor, and in 1980 a full professor. In the years 1959 – 1980, he was the head of the Department of Forest Economics, in 1960 – 1962 the Dean of the Faculty of Forestry at the VŠLD and in the years 1962 – 1965, the Rector of the VŠLD.
In his scientific and research activity, he addressed himself to economic issues of production in forest nurseries, methodology of analyses of forest plant activities, production effectiveness, questions of relationships of forest management and timber industry, economy of timber production and consumption in the Slovak Socialist Republic and the Czechoslovak Socialist Republic, using raw material resources in Slovakia.
Professor Hromada is the author of 6 books, 10 university textbooks and about 150 articles published in journals "Les", "Lesnícky časopis", "Technické noviny", "Životné prostredie", "Forst und Jagd", "Lesnoje chozjajstvo" and in various scientific proceedings. He was a member of the editorial boards of the proceedings of the Faculty of Forestry and "Lesnícky časopis" as well as the editorial boards of the publishing houses of "Príroda" and "Alfa".
Since the year 1981, he lived on disability, died on August 9, 1984 in Zvolen.

Professor Ing.
PAVEL VIŠŇOVSKÝ
1965 – 1969

Pavel Višňovský was born on June 30, 1913 in Banská Štiavnica. After the final examination at the Secondry Grammar School in Banská Štiavnica in 1931, he studied geodetic engineering at the Czech Technical University in Prague.
He worked in several cadastral survey offices and at the Institute for Photogrammetry for Slovakia in Bratislava. Since 1949 he worked at the University of Agricultural and Forestry Engineering in Košice as a teacher. After establishing the VŠLD in Zvolen in 1952, he became the dean of the Faculty of Forestry and in the period of 1956 – 1963, he was the vice-rector.
The post of the rector was performed by him in the years 1965 – 1969. He significantly contributed to the development of this school.
In his scientific and research work, Professor Višňovský was concerned with the application of modern surveying methods, particularly the aerial photogrammetry. The results of his research work resulted in new ways of evaluating aerial pictures of mountain areas and then in coming up with 5 inventions from among which one – the contour line interpolator MV-55 Metra-Višňovský has been broadly used in technical practice.
Rich is also the publication activity by professor Višňovský, it includes 45 research and specialized works containing 3, 124 pages and 2,860 illustrations. He published two nation-wide university textbooks, 3 university textbooks, worked on many projects and invention prototypes, final reports.
For his work, he obtained 25 awards, honorary degrees, acknowledgments, diplomas and memorial medals including also the state prize “For distinguished work”.
Professor Višňovský died on January 7, 1994 in Zvolen.

Professor Ing.
FRANTIŠEK SETNIČKA
1969 – 1971

František Setnička was born on April 17, 1910 in Kbelov, Benešov district, the Czech Republic.
In 1929, he passed the final examination at the Secondary Grammar School in Kutná Hora. In 1935, he graduated from the Czech Technical University in Prague with a specialization in mechanical engineering. Then he has worked as an assistant at this university for 3 years. Since 1938 he had worked in Škoda factory in Prague from where he was sent to Sweden in 1943. He spent there three years as a manager of factory assembly. Since 1947, he first worked as a manager of the Technical Department at the Drevokombinát Košice and then in Smrečina Banská Bystrica where he held the posts of the director and chief engineer. In 1954, he began to work at the University of Forestry and Wood Technology in Zvolen as a substituting professor and the head of the Department of Hydro- and Thermomechanics. In 1961, he became a full professor. He lectured on general science of machines, hydromechanics and air-conditioning, thermomechanics, and heating machines. In the years 1964 – 1967, he acted as the professor at the Haile Selasie University in Addis Ababa, Ethiopia. In the years 1955 – 1962, he was a vice-rector for research. The post of the rector he held in the years 1969 – 1971. He systematically dealt with research work, published many scholarly and professional articles. He has written 12 university textbooks concerning issues of hydraulic equipment and heat engineering, the handbook Heat Engineering for Wood-working Engineers and the textbook Heat Engineering. He worked out several expert opinions on behalf of the Development of Woodworking and Furniture Industry in Bratislava.
He retired on October l, 1979 and lived in Zvolen. Despite his ripe old age, he co-operated with the university externally. He died in 1998.

Academician
Professor Ing., CSc.
ADOLF PRIESOL
1971 – 1990

Adolf Priesol was born on September 20, 1926 in Bystrá, Brezno district. In 1946, he graduated from the State Higher Forestry School in Banská Štiavnica. He studied at the Faculty of Forestry of the University of Agriculture in Brno. Here he completed also the three-year internal postgraduate study programme. At the VŠLD in Zvolen, he has worked immediately since its beginning in the autumn 1952. He carried out practice in forestry as a forest trainee at the Forest District in Štiavnička in the years 1941 – 1942, as a forest trainee of the State Forests Directorate Revúca in the years 1946 – 1947, a forest assistant of the University Forest Enterprise VŠZ Brno in the years 1951 – 1952, and as a senior engineer of the University Forest Enterprise at the VŠLD in Zvolen (1960 – 1962). At the VŠLD, he became an assistant professor in 1955, an associate professor in 1960, an adjunct professor in 1969, and a full professor in 1975. The main discipline of his lectures was forest management (HÚL). He held the post of the head of the HÚL Department (1960 – 1980), the Dean of the Faculty of Forestry (1962 – 1964 and 1966 – 1971) and the Rector of the VŠLD (1971 – 1990).
In his research he was engaged in a greater range of problems within the field of biometry and forest management: the methods of determining tree increment and quality of timber supply, the methods of regulating logging and stand regeneration; solving the relationships between planning forest management and forest management; research into regularities of timber supply increment; research into information system of forest management and eventually management of the forest damaged by immissions. Rich is his publication activity focused on determining and checking forest produce, regularities of stand and tree growth, and new methods of forest management. He published 10 books, 5 university textbooks, 10 projects, 60 scientific works, 62 technical articles, also published many reports, translations, and reviews. As a corresponding member of the Czechoslovak Academy of Sciences (ČSAV) and academician of the Slovak Academy of Sciences (SAV), he was concerned in the activities of research advisory boards and boards of the SAV chairmanship. He was a national coordinator of the 1st task in the basic research "Biometry of forest tree species and theoretical basics to forest management".
He actively worked in the international organization IUFRO as a chairman of the work team for forest management.
He achieved the international recognition by means of awarding the honorary title "doctor honoris causa" at the Akademia Rolnicza in Poznan, Poland, in 1989.
Though he retired in 1991, still worked at the TUZVO externally. Professor Priesol died on May 5, 2005 in Bratislava.

Professor Ing., CSc.
VILÉM ŠTEFKA
1990 – 1994

Vilém Štefka was born on April 26, 1941 in Podvihov, Opava district. After completing the study of woodworking at the secondary school he continued in the study at the Faculty of Wood Sciences and Technology of the VŠLD in Zvolen from which he graduated in 1966. Since August of the same year he had worked in the national enterprise Bučina in Zvolen, first in the Department of the Central Control Station, later in the Department of the Technical Development and in the Division of Technical-economic Information. The main part of his work for Bučina was focused on technical works in the Development-Construction

Centre where he worked as a researcher. In 1971, he started to work at the University of Forestry and Wood Technology in Zvolen. In 1976, as an Assistant Professor in the Department of Wood Sciences at the Faculty of Wood Sciences and Technology, he obtained the PhD.. degree in non-ferrous materials focusing on wood anatomy and physics.
Then he continued in his work in the Department of Mechanical Technology of Wood where he was appointed as Associate Professor for agglomerated board materials in 1988. In 2002, he was appointed as Professor in the field of technology of woodworking. In January 1990, he was inaugurated as Rector of the VŠLD. He had held this post until February 1994.
During his professional practice he took part in some short-term study stays and internship programmes abroad (Hungary, Poland, former German Democratic Republic and Federal Republic of Germany). The medium-term study stays were taken by him at the Technical University in Dresden and at the University of Madrid.
Before retiring in 2008, he worked in the Department of Mechanical Technology of Wood at the Faculty of Wood Sciences and Technologies.

Corresponding Member of the Slovak Academy of Sciences
Professor Ing., DrSc.
ŠTEFAN ŠMELKO
1994

Štefan Šmelko was born on March 24, 1930 in Slavec, Rožňava district. He graduated from the Faculty of Forestry at the University of Forestry and Wood Technology in Zvolen, where he worked uninterruptedly in the Department of Forest Management and Geodesy from 1953 to 2000. In his research work he devoted himself to the elaboration of new methods of surveying forests and contributed to the development of modelling the biometric growth patterns and increment of forest trees and crops, and monitoring of sound and productive conditions of forest ecosystems. He published his results in 8 monographs and in more than 140 original scientific works and technical articles.
In the period 1966 – 1990, he held the positions within pedagogical activities, science, research and also in foreign contacts as the Vice-dean (1966 – 1972), the Director of the Forest Research Institute (1966 – 1980) and Vice-rector (1980 – 1990). In the years 1990 – 1994, he was head of the Department. Since February 1994 he had held the post of Rector which he, however, finished ahead the schedule because of health reasons in November 1994. He developed great activities in the international co-operation of the university.
The results of his researches were awarded by several ways including awarding the Prize of the Ministry of Education of the Slovak Socialist Republic (1981) and the Prize of the Foundation of the Federal Republic of Germany for development of forestry biometry (1991).
In 2002, he was awarded the state prize Ľudovít Štúr Order, the 1st class.
After retiring in 2000, he worked as a researcher at the National Forest Centre in Zvolen.

Professor RNDr., DrSc.
MILAN MARČOK
1995 – 2001

Milan Marčok was born on March 5, 1939 in Zámostie, Brezno district. In 1960, he graduated from the Faculty of Natural Sciences at the Pedagogical University in Bratislava and was specialized in physics and mathematics.
First he worked as a secondary school teacher at the Secondary Grammar School in Zvolen. In 1967, he worked as Assistant Professor and since 1980 as Associate Professor in the Department of Mathematics and Physics at the University of Forestry and Wood Technology in Zvolen (present-day Technical University). In 1989, he became Professor of Applied Physics and

worked in the Department of Physics and Applied Mechanics, at the Faculty of Wood Sciences and Technology of the Technical University in Zvolen. He held posts of the head of the department, Vice-dean of the faculty and Vice-rector of the university. From 1995 to 2001, he performed a function of Rector. In 1978, he completed his PhD study at the Institute of Physics, the Slovak Academy of Sciences in Bratislava and obtained the scientific degree of PhD. in physical and mathematical sciences at the Faculty of Natural Sciences, Comenius University in Bratislava. In 1989, he achieved the scientific degree of DrSc. at the Faculty of Electrical Engineering of the Slovak Technical University in Bratislava. In his research work he concentrated on physical-acoustic properties of wood, application of ultrasonic waves to intensify liquid flow through wood, application of electromagnetic waves in studying wood structure and properties, and stochastic problems in acoustics.
In 1993, he was the chairman of the Academic Senate of the Technical University in Zvolen. He was a member of scientific boards at several universities in Slovakia and the Czech Republic, a member of commission for defense of viva voce works, candidate and PhD. theses, a chairman and a member of inauguration and habilitation commissions for appointing professors or associate professors. He actively worked at the Slovak Physical Society, the Czech Acoustic Society and was also a member of the organization The New York Academy of Sciences. He is the author and co-author of many university textbooks, monographs, and numerous scientific papers.
Professor Marčok retired in 2006.

Professor, Prof. h. c., Ing., PhD.
MIKULÁŠ ŠUPÍN
2001 – 2004

Mikuláš Šupín was born on March 16, 1953 in Ružiná, Lučenec district. He graduated from the Faculty of Wood Sciences and Technology at the VŠLD in Zvolen in 1976. He worked in the VVÚ DNP in Bratislava. On September 1st, 1977, he was accepted as an Assistant Professor to the Department of the World Forestry and Wood Technology at the DF VŠLD in Zvolen. During his acting at the university he performed the functions of the secretary of the KERLH, head of the OSLD. After establishing the Department of Marketing, Trade and World Forestry at the DF he became its head (1997 – 2001 and from 2005 till now).
He also held the post of Vice-dean of the Faculty of Wood Sciences and Technology. In 1992, the Academic Senate of the DF elected him as Dean of the Faculty of Wood Sciences and Technology. He held this position successfully during two terms (1992 – 1998). In December 1998, he was elected as the chairman of the AS TUZVO (1998 – 2001). In the years 2002 – 2004, he was the Vice-president of the Slovak Rectors´ Conference.
He went through the part of his scientific and research preparation at the F. R. I. C. Dehra Dun in India in the years 1983 – 1984. He defended his dissertation in the field of branch and cross-section economies at the Faculty of Forestry at the VŠZ in Brno in 1986. In 1989, he was nominated as the Associate Professor for the branch of economy of forest management at the Faculty of Forestry, the VŠLD in Zvolen, and in 1991, he habilitated in the field of tropical wood species structure and properties at the Faculty of Wood Sciences and Technology, the VŠLD in Zvolen. In 1998, he was inaugurated as Professor at Mendel University in Brno, the Czech Republic, and in 2002, he was conferred the title of doctor honoris causa at the UGLTU in Jekaterinburg, Russia.
In his pedagogical work, Professor Šupín was engaged

in teaching especially subjects concerning problems of the world forestry and wood technology, marketing, international marketing, international trade, timber trade, and international management. He has supervised more than 100 master´s and bachelor´s theses. He also supervised 22 PhD. students including 5 foreign ones.
Professor Šupín has a very rich research and publication activities. As the author or co-author he has published 10 monographs, more than 130 scientific and specialized works in the Slovak Republic and abroad, 17 textbooks and teaching texts. He was the coordinator and partner within 40 research projects including 8 international ones. He was a member of the scientific boards at several universities and faculties in the SR as well as abroad, international wood organizations and also a representative of the SR in the JRC EU (Governor), FV CERN (Vice-president) Geneva, the VVTP OECD, the VTV CREST EU, the WoodEMA, i.a. (member, President). Since 2006 he had held the post of the general state adviser, General Director of the Section of Science and Technology at the Ministry of Education of the Slovak Republic. He has gone through long-term foreign stays in India (1983 – 1984), in Cuba (1989), the USA and Canada (1991). He has also visited most European and significant world universities with a similar focus as the Technical University in Zvolen.
He held the post of Rector of the Technical University in Zvolen in the period of 2001 – 2004. Nowadays he has been working in the Department of Marketing, Trade and World Forestry at the Faculty of Wood Sciences and Technology.

Professor Ing., CSc.
JÁN TUČEK
2004 – 2012

Ján Tuček was born on November 4, 1956 in Púchov. After completing forestry study at a secondary school he continued in his study at the Faculty of Forestry at the VŠLD in Zvolen which he graduated from in the year 1981. Then he worked at the Forestry Research Institute in Zvolen as a project partner and coordinator at the section of forest technology and also using computers in forestry.
In 1990, he started to work at the University of Forestry and Wood Sciences and Technology as the assistant professor in the Department of Forest Harvesting and Mechanization in the sphere of mechanization of works in forestry, planning and assessing harvesting and transportation technologies, later GIS. In 1996, he started to deal with mainly using computers and development of applying GIS also in other spheres of forestry and ecology and he changed over to the Department of Forest Management and Geodesy.
In 1989, he obtained the degree of Candidate of Sciences, CSc., in the branch of Technics and Technology of Forestry and Agricultural Production. In 1999, he was conferred the academic title of Associate Professor in the branch of Forest Management, Geographic Information Systems. In 2005, he was appointed as Professor of Geoinformatics by the President of the Czech Republic.
He is the author of the publication Geographic Information Systems – Principles and Practices, Computer Press Brno 1998, being basics for the development of the field, some monographs, many contributions in home and foreign professional journals including impact ones, many contributions at the scientific conferences in Slovakia and abroad. He supervised a great number of bachelor´s, master´s theses, dissertations, research projects including international ones, he elaborated several studies and applied projects, expert opinions etc.
He was one of the founders of

Geoinformatics and Geographic Information Systems within the SR, but also within the Czech Republic, mainly in forestry. During his professional practice he went through several foreign stays (the United Kingdom, Netherlands, USA). He was a member of the Scientific Board of the TU in Zvolen, the Scientific Board of the NLC – LVÚ Zvolen, the Scientific Board of the MZLU in Brno, the Scientific Board of the Slovak University of Agriculture in Nitra, a member of the SAPV and the SAPV Section of Forest Management, IUFRO work team, the Slovak Cartographic Society and a chairman of the Slovak Association for Geoinformatics. In the years 1994 – 1997, he held a position of the Vice-dean of the Faculty of Forestry, in the years 2001 – 2003 he was a chairman of the Academic Senate of the TU in Zvolen and in the years 2003 – 2004 the Vice-rector for research activities. Professor Tuček held the position of Rector during two four-year terms, namely in the years 2004 – 2012.

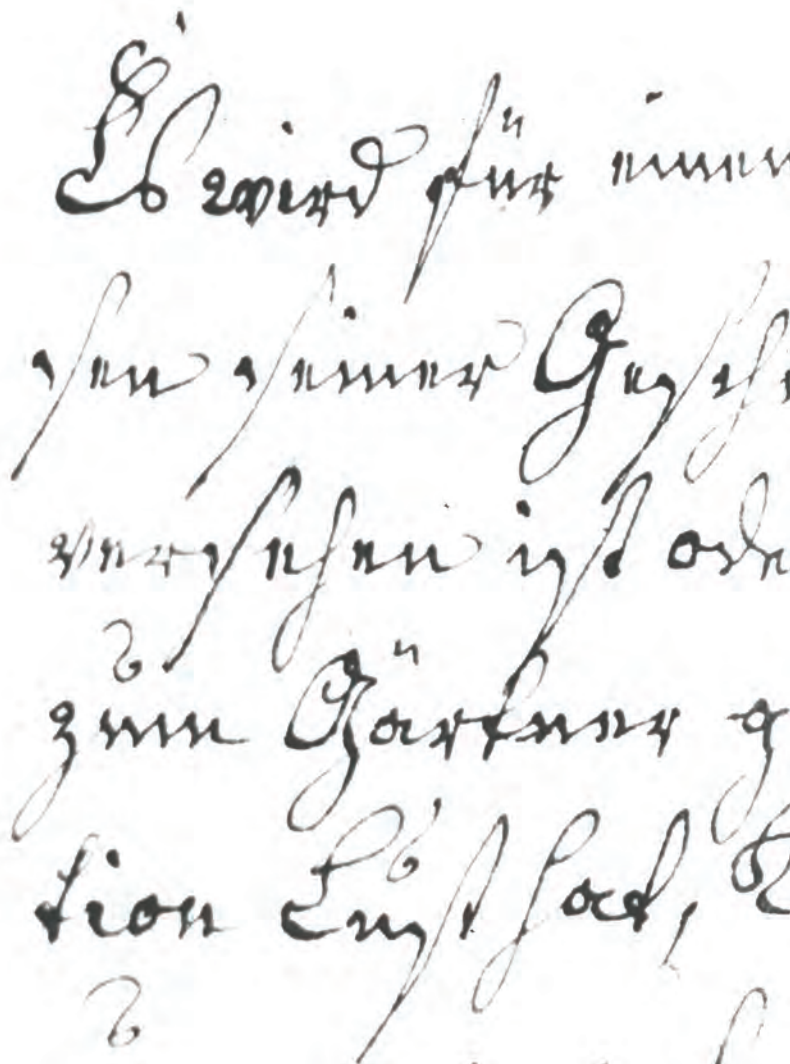
Dr. h. c.
Prof. Ing. Rudolf Kropil, PhD.
RUDOLF KROPIL
2012 to present

Rudolf Kropil was born on September 4, 1964 in Partizánske. He graduated from the Faculty of Forestry at the University of Forestry and Wood Sciences and Technology (Technical University at present) in Zvolen in 1987. In the years 1987 – 1989, he worked for the Low Tatras National Park District in Banská Bystrica. Since 1989 he has been working at the Technical University in Zvolen. The postgraduate degree of PhD. he obtained in 1994 in the discipline of agricultural and forestry phytopathology and plant protection. In 2002, he defended the habilitation work and obtained the scientific-pedagogical title of Associate Professor in the branch of applied zoology. In 2005, he was nominated by the President of the Slovak Republic as the University Professor for the branch of applied zoology. In his pedagogical and research activities Professor Kropil specializes in solving problems of sustainable development, applied zoology and forest ecology interlinked with economic, ecological and environmental disciplines. He was the manager of several projects and as a national coordinator solved ten international projects. He is an author and co-author of more than 200 scientific and specialized works with more than 500 responses.
Professor Rudolf Kropil has gone through many long-term foreign internships, study and lecturing stays – in the Forestry Research Institute in Hannoversch Münden, Federal Republic of Germany (1985), at universities in Bern, Switzerland (1992 – 1994), in Copenhagen, Denmark (1996) and in Oxford in the United Kingdom (2001). He lectured also at the University of Land Management in Vienna (Austria). He has gone through short-term stays also at universities and research institutes in the USA, Canada, Japan, and Australia and in most countries of the European Union. In the

years 2003 – 2006, he was a representative in the Programme board of the 6th Framework Programme at the European Commission in Brussels. He also worked in the advisory board of the Minister of the Environment of the SR. He was a member of the domain programme COST at the European Union and the coordinator of a research team Game Protection and Management within the International Union of Forestry Research Organizations (IUFRO). In 2000, he was awarded the prize and gold medal for the significant contribution to research in the fields observed by the IUFRO in Kuala Lumpur, Malaysia. In 2017, he was conferred the title of Doctor Honoris Causa at the National Agricultural University in Vinica, Ukraine.

Professor Kropil was nominated as the Rector of the Technical University in Zvolen by the President of the SR with effect from February 18th, 2012 for the first four-year term of office; with effect from February 18th, 2016 for the second four-year term of office. From November 1, 2007 to February 17, 2012, he was the Dean of the Faculty of Forestry, in the years 2001 – 2007 he held the post of the Vice-dean for research activities. Since the year 2012, Professor Kropil has been a chairman of the Scientific Board of the Technical University in Zvolen and a member of scientific boards at 10 university and research workplaces in the Slovak Republic and the Czech Republic. Since 1999, he has been a chairman or a member of several editorial boards of the international and Slovak scientific and professional journals.

Since 2014, Professor Kropil has been the President of the Slovak Rectors´ Conference; in June 2016, he started the second two-year term of his office. He is a representative of Slovakia in the Council of the European University Association. Since 2015, he has been an advisor to the Prime Minister of the SR for universities. He also acts as a member of the Solidarity and Development Council of the SR and a member of the Slovak Government Council for Science, Technology and Innovation. The Council of the European Union nominated him as a member of the European Economic and Social Committee (EESC) in 2015.



Banská Štiavnica, a view of the Nový zámok Castle (New Castle)

255th Anniversary of University Technical Study in Slovakia

When commemorating the 255th anniversary of the establishment of university technical study in Slovakia, we are also reflecting on a broader context of this significant milestone reached a quarter of a millennium ago.

Forests and the territory of Slovakia have always represented two significant intertwined historical phenomena. The Slovak territory was characteristic of its extensive forest cover at the ancient times, in the early modern period and also at present. In addition to the forests, it was also rich in mineral resources, especially in non-ferrous ores. Particularly valuable was the region of central Slovakia. From the 14th –15th centuries, a dominant position was already held by seven mining towns: Banská Bystrica, Banská Štiavnica, Banská Belá, Nová Baňa, Kremnica, Ľubietová, and Pukanec.

Among these towns, Banská Štiavnica stood out as the most prosperous one. In the second half of the 18th century, the time of its top prosperity, it became the third biggest town of the former Hungarian Kingdom. Still more rapid acceleration of the technical development also affected the spheres of mining, forestry, metallurgy, and other branches of industry.

Banská Štiavnica also became a place of purposefully organized schooling for young people in the sphere of mining run here since 1605 already. In the first half of the 18th century, the rapid technical development of the state and guild enterprise in mining started in the Hungarian Kingdom and Banská Štiavnica became the centre of the most advanced mining engineering applied especially in mining water pumping. In 1735, the first Mining School came into existence in Banská Štiavnica. It was headed by the known multi-disciplinarian Samuel Mikovíni (1700 – 1750). His title was an empire-royal geometrician for the central Slovakia's mining towns. The establishment of the Mining School was approved by the Chamber Court in Vienna already in 1737.

In accordance with the instruction for mining students of 22nd June 1735, the students were educated and trained in four specializations: 1 construction of mining works, mining law and practices, 2 mining surveying, 3 upgrading, 4 testing and metallurgy. The director Prof. Mikovíni himself taught mathematics, mining surveying, geometry, hydraulics, and mechanics. He was an outstanding cartographer and so during summer months, he trained students in surveying fieldwork and moreover, also in more remote places. Practical training was given by competent instructors. The course of study took two years and it was completed by the final

examination. The main aim of the school was to prepare middle specialized cadres (superintendents, wardens etc.) following one of four specializations. Having finished more specializations, talented students could become senior officials.

From the establishment of the Mining Schools in Banská Štiavnica in 1735 and in Smolník in 1747, the preparation of mining and metallurgy experts was not still sufficient.

Especially in the second half of the 18th century characteristic of a distinct development of natural sciences, they intensively started laying a heavy emphasis on young engineering novices so that they could acquire theoretical knowledge and master laboratory practices along with their practice in the mining plants.

An attempt to establish a mining college in Prague in 1762 based on the ideas of Ján Tadeáš Peithner (1727 – 1792), the registry official at the Office of the Supreme Mintage and Mining Master in Prague, was doomed to failure from the very beginning. Specifically, Prague and its surroundings did not provide even minimal possibilities for practices in plants or mines. J. T. Peithner elaborated an extensive paper on establishing the theoretical study of mining sciences in the Czech Kingdom and submitted it to the Sovereign Maria Theresa in Vienna in April 1762. He proposed to found the theoretical study of mining sciences by establishing a department of montanistic science (science of mining) at the Faculty of Arts, Charles University in Prague or by a separate mining academy. The Sovereign showed her approval to Peithner's proposal and on 21st July 1762, she ordered him to rework his proposal.

According to the Sovereign's instruction, J. T. Peithner elaborated another proposal in which he already specified and worked out in more detail the programme for teaching mining sciences. Having studied the second Peithner's paper, the Chamber Court called a meeting of experts concerned which was held on 1st October 1762. The special committee discussed in detail various possibilities for study of mining sciences and all participants of the meeting agreed to the idea that only one mining academy should be established for all lands of the monarchy (Herčko, 2006).

The extensive report of the committee made up of the Supreme Court officials and mining experts was submitted to Maria Theresa on 22nd October 1762. On the basis of the collective proposal of the best experts in the country, on 13th December 1762, the Sovereign issued the decree establishing the school for the practical teaching of mining in Banská Štiavnica. The report from the meeting held on 1st October 1762 and submitted to the Sovereign says, "When choosing a place, the Upper Hungarian town of Banská Štiavnica was decided as the most appropriate one taking into consideration that there is at hand complete mining, metallurgical, driving and testing the equipment, and also fire, water, and air machinery, "stangenkunst", i.e. pumping equipment with reciprocating leverage which is lacking in other places. This equipment can be used by a professor to demonstrate his theoretical knowledge and students can acquire theoretical knowledge as quickly as possible. There is an opportunity to master chemistry as it is connected with metallurgy and also to learn mechanics".

The reality predetermined that the Mining and Forestry Academy was established in Banská Štiavnica. The Empress Maria Theresa respected this

Maria Theresa (German Maria Theresia;

** May 13, 1717, Vienna – † November 29, 1780, Vienna) was Queen of Hungary (1740 – 1780, as Maria II Theresa) and of Bohemia (1740 –1780) from the House of Habsburg and Archduchess of Austria since 1740. She was the only woman to reign on the Czech throne. Her full title was Maria Theresa, Holy Roman Empress of the Habsburg dynasty, the Queen of Hungary, Bohemia, Croatia and Slavonia, Archduchess of Austria, Duchess of Parma and Piacenza, and Grand Duchess of Tuscany. In 1736, she married Francis I of Lorraine and they had 16 children. Maria Theresa endeavoured to create the government, to reform public-debt policy, simplify the code of criminal procedure, she introduced Theresian cadaster, supported home economy, reorganized the army, introduced compulsory school attendance. Significant was the issuing of so-called "Theresian Forest Order for Hungary"(Sylvarum conservadarum et lignicidii ordo) in 1769 which was obligatory for chamber estates and royal towns. In 1770, it was published also in then contemporary Western-Slovak language titled "Porádek hor aneb lesuw zachování"and it meant the beginning of the period of forest management. Some measures had been maintained in operation until the end of monarchy, while the others (in an altered or modernised form) continued also after the downfall of the monarchy.*
The ongoing conflict with the Kingdom of Prussia led to Seven Years´ War going on in the years 1756 – 1763 and finished in failure of the Habsburg Monarchy.

proposal and by the above-mentioned decree, the school (Lehrschule) was established in the place which was the most suitable for this purpose.

Progressive views about schooling were projected also in the organizational programme of the existing Mining School with its encyclopaedic teaching. They started to create particular departments of sciences. Only a lack of necessary trained and qualified experts made the organizational building of all departments at the same time impossible.

As the first one was created the Department of Chemistry, Mineralogy and Metallurgy in 1763. Gerhard van Swieten, chairman of the Court Study Committee, suggested Mikuláš Jozef Jacquin, his fellow countryman and student, for the position of a professor at this department. Maria Theresa indeed appointed him as professor of the Mining School in Banská Štiavnica. The committee members and the Sovereign did not want to leave Peithner without an adequate reward either and so the Sovereign appointed him as professor of mining studies for the school she had decreed to establish in Prague. His superior count Pacht was announced to finish his work in the position of the registry official and he was appointed as professor. He was asked to work out a list of matters necessary for starting teaching. Having submitted the list of matters, on 14th January 1763, he was ordered to set off for Prague immediately and prepare himself for teaching. At the same time, he was said to start teaching on 1st November 1763. The Department of Mining Studies operated in Prague until the beginning of the year 1772 when Tadeáš Peithner was relocated to Banská Štiavnica. Another course of lectures was not opened in Prague (Vozár, 2006).

As we have already mentioned, Gerhard van Swieten suggested Mikuláš Jozef Jacquin for the position of a professor at the school in Banská Štiavnica. Ján Seifried Herbertstein, the President of the Chamber Court, accepted the suggestion and put forward the Sovereign to appoint M. S. Jacquin as professor at the school she had decreed to establish in Štiavnica. However, Jacquin was reserved when accepting the offer. In his "promemoria" preserved of 13th January 1763, he laid down his conditions under which he was willing to accept professorship in Banská Štiavnica. He set the professorship in Banská Štiavnica on the level of chemistry and botany professorship performed by Professor Laugír at the University in Vienna. Professor Laugír taught chemistry in winter and botany in summer. Jacquin was also to teach two subjects in Štiavnica: chemistry and metallurgy. He needed ovens, various materials and tools so that he could carry out experiments. He expected he would get the same finances and repayment of travel expenses and subsistence allowances as other empire-royal officials got. Ján Seifried Herberstein, the President of the Chamber Court, submitted the Sovereign the report on this matter on 21th February 1763. In the report, he expressed conviction that the intended "theoretical mining school in the Czech Kingdom" would bring benefit. To achieve that, it was necessary to teach not only theory but undoubtedly also practice. Therefore, there was a need for a "practical school" where they could teach simultaneously also chemistry. Tadeáš Peithner did not have necessary knowledge of both these sciences (mining and chemistry) and therefore it was needed to find another person for the intended school in Banská

Štiavnica. Then he also repeated M. J. Jacquin's requirements and assured the Sovereign that he was ready to arrange everything to achieve the desired result by the introduction of teaching practical mining and chemistry.

Maria Theresa took a brief but approving attitude to this report. She ordered to fulfil Jacquin's wishes relating to payment and all the others as well as possible. She also asked them to inform her about the result.

The President of the Chamber Court submitted the report on results of the next talks with M. J. Jacquin to the Sovereign on 15th May 1763. According to this report, Jacquin insisted on payment because the study of practical mining was demanding and chemistry was also dangerous to health. He was not able to present expenses for laboratory equipment and materials for chemical and metallurgical tests more exactly. He supposed they would be used within 1–2 years and the majority of materials would be provided by the mines. Therefore, it would not be needed to have a big sum at once. For the President of Chamber Court expected from this professorship the improvement of mining studies and a higher profit on mines, he recommended satisfying Jacquin's requirements immediately. He recommended fulfilling them a lot more because Jacquin "was offered even more advantageous conditions from Moscow".

Maria Theresa approved these suggestions too. In the patent of 9th June 1763, it was announced the Sovereign appointed the Upper Hungarian mining counsellor M. J. Jacquin as professor of practical mining and chemistry studies in Banská Štiavnica in order to enhance mining studies. The Sovereign also ordered all lands having the mining industry to send interns to study in Banská Štiavnica. They were asked to announce to Vienna the names of the sent students.

The decree for M. J. Jacquin was issued by the Court Chamber on 13th June 1763. He was to get his salary from 9th June 1763, when the Empress decided on his appointment as professor in Banská Štiavnica. She approved his position of mining counsellor with the right to participate in meetings of the main chamber-count office in Banská Štiavnica and with suffrage. M. J. Jacquin came to Banská Štiavnica probably in September 1763. On 7th October 1763, he already took part in a meeting of the main chamber-count office where he was introduced as "Mikuláš Jacquin, the mining counsellor and professor of chemistry". At the same meeting, he announced his intention to start his lectures from September of the following year. First, he wanted to make himself familiar with local minerals and ores, and therefore he wanted to stay in Banská Bystrica and Kremnica for a couple of months. He also chose an assistant from among his students. The main chamber-count office informed the Chamber Court in Vienna about this Jacquin's declaration. The Chamber Court approved all his suggestions (Vozár, 2006).

Jacquin had worked at the Department by 28th February 1769. His first lectures were heard on 18th September 1764, which was influenced not only by preparations for the beginning study and the establishment of the first department at this school, but mainly by problems with filling their vacancies. The lectures and especially scientific research were successfully conducted by the world-known mineralogist Giovanni Antonio Scopoli (1723 – 1788).

He was appointed as professor of chemistry, mineralogy and metallurgy by the decree of the Chamber Court of 10th February 1769. After his leaving for the University in Pávia, his successor to the position was Anton Leopold Ruprecht (1748 – 1814), the student of the Academy proper. He was appointed as professor of chemistry, mineralogy and metallurgy and the head of the Department on 26th February 1779. Already during his work at the Department, Michal Patzier (1746 – 1811) was appointed as his substitute. After A. Ruprecht's leaving for Vienna to be a court counsellor in 1792, there were three applicants for this post. Besides M. Patzier, they were a mechanic from Vindšacht and František Panzenberg, an accountant from the smelting works in Tajov. On 28th August 1792, M. Patzier was appointed as head of the Department and regular professor. He had lectured at the Department by the end of the academic year 1809/1810, when he asked for the termination of his pedagogical activity. Due to severe eye illness and inability to move, he was not able to continue further in his lectures and laboratory work. That is why the Chamber Court appointed an assistant and his substitute on 6th September 1810. This substitute was M. Höring, an administrator at the silver smelting works in Žarnovica, who had successfully run the sections of ironmaking and forestry at the main Chamber-Count Office before. M. Höring was experienced in chemistry and mining and he also filled in his knowledge on study trips. Thus, a fluent course of lectures on chemistry in the second half-year was ensured. M. Höring worked as a professor at the Department from 2nd February 1811 till 6th May 1820 (Herčko, 2006).

When starting this school, the Chamber Court had the greatest worries with recruiting students. The demand for students to have a good command of two mathematical disciplines (arithmetic and geometry) was perhaps too difficult for that period and level of erudition. Due to not satisfying this demand, several students interested in the study had to be rejected. These claims were fulfilled best by the then interns, probationers. Therefore, most students accepted to the new school were chosen just from them. At the end of the summer 1764, there was concentrated already about 40 students interested in study in Banská Štiavnica. The majority of them was of local origin and only about a quarter was from other lands of the Habsburg Empire, especially Corutania, Styria, Tirol, Lower Austria, Timis Banat, Transylvania, and Bohemia. That is why the Mining Academy in Banská Štiavnica was really a school of a new type open for all lands of the Habsburg Empire. At this Academy, theoretical teaching was closely connected with practice. It was a rational compromise between T. Peithner's proposal to establish the theoretical study of mining sciences in Prague and the need of mining and metallurgic production for education of flexible mining specialists (Vozár, 2006).

However, the beginning school activity showed it was not capable yet to meet all the claims laid down on it and required especially by practice. Therefore, the Empress and Queen Maria Theresa ordered to set up also the second department in Banská Štiavnica already in 1765, namely the Department of Mechanics and Hydraulics.

The Department was established on 13th August 1765 as the second department of the arising

academy. This was to ensure teaching mathematics, mining surveying, mechanics, physics, hydraulics, and mining engineering. Mikuláš Poda (1723 – 1796), who started his lectures to mathematics and physics in 1765, was appointed as professor at this Department. After his leaving in 1771, Karol Thierenberger (1731 – ?), the author of lectures to physics, was appointed as professor of mathematics and physics. He worked at the Academy from 25th October 1771 till December 1779.

From 1st January 1780, his successor at the Department was Ján Szeleczký. After his appointment to a higher position at the beginning of the year 1788, M. Patzier applied for the vacancy of a definitive professor at the Department of Mathematics and Mechanics in March 1788. It was after 23 months of his substituting at the Department of Chemistry, Mineralogy and Metallurgy. M. Patzier was meeting the conditions for filling the vacancy at this department and moreover, he was also recommended by Professor A. Ruprecht. Despite this fact, they appointed Karol Haidinger (1756 – 1797) as professor of mathematics in 1788. He worked there from 9th May 1788 and lectured also in mining. So M. Patzier only lectured in mathematics at this department and he was appointed as a definitive professor of mathematics and mechanics only after K. Haidinger's leaving.

When Professor A. Ruprecht left for Vienna in 1792, M. Patzier successfully applied for his position again. It was sure already at that time, if he was appointed to the Ruprecht's position, there would be a vacated position for a professor of mathematics and mechanics at the same time. To this position, the main chamber count Mitrovský recommended J. Lill on the first place, F. Panzenberg on the second place, and J. Möhling, the assistant of the mining surveyor, on the third place. The Department of Mathematics, Practical Mining and Mining Law, as this department is mentioned in the archival documents, was finally consigned to Andrej Pribyl (1755 – 1835), a pit foreman of the Upper Biberova gallery in Vindšacht. It was done according to the decision of the Chamber Court on 28th August 1792 and after M. Patzier's leaving. A. Pribyl worked at the Academy as a professor of mathematics, physics and mechanics, practical mining and mining law until 10th June 1798. Then Ján Möhling (1762 – ?), a main mining surveyor in Vindšacht, was appointed as professor. He became the first regular professor of mining surveying, but he also lectured in the study of mining works, mathematics and mechanics. Atthe same time, he was running practical and theoretical teaching of drawing. Before his coming to the Academy, he had already written a textbook on mining surveying. After his leaving for Leoben in Styria, the Chamber Court appointed František Reichetzer (1770 – 1835) as the professor of mathematics, mechanics, practical mining, geognosy and mining law on 2nd December 1805. He worked at the Department until February 1812.

In 1809 Jozef Schittko (1776 – 1833) came to Banská Štiavnica and he was to run a two-year course of mathematics and logic. As the professor of mathematics, physics, mechanics and engineering and the head of the Department of Logic, Mechanics and Physics, he worked at the Academy till his death on 25th November 1833.

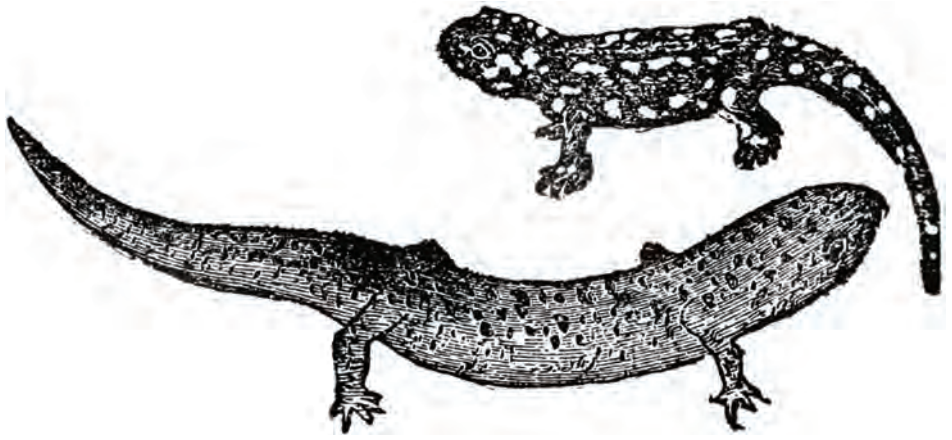
The Practical Mining School in Banská Štiavnica was a higher, partly academically oriented school.

Though it had two departments with theoretical contents, a department dealing with mining itself, which was taught only by external instructors, however, was lacking. Having been initiated by the Empress Maria Theresa, a special committee led by the count František Kollowrat Novohradský worked out a proposal for transformation of the school into an academy, including also a new curriculum on 16th March 1770. The Empress accepted the proposal on 2nd April 1770 with this memorable remark, "I approve the proposed plan. Moreover, I am highly satisfied with it. Concerning the shown eagerness of the committee, however, it is also necessary to take into consideration teaching forestry because it is inevitably needed for mining". The statement confirms the Sovereign's personal interest in promoting forestry education and prosperity of forest management.

The Chamber Court for Mintage and Mining in Vienna issued the decree on the establishment and systematization of the Mining Academy in Banská Štiavnica on 14th April 1778. It ordered to create the third mining department at which also forestry was to be taught. As compared with the practical Mining School, the study was expanded into three years and it had the following division: 1st year – arithmetic, algebra and analytics, geometry, trigonometry, physics, mechanics, hydrostatics, hydraulics, geometry and optics – all of them from the standpoint of utilization in mining and metallurgy, 2nd year – general physical chemistry, specialized mineralogical and metallurgic chemistry, testing and ore metallurgy, 3rd year – mining and upgrading, mining law and forest management, including also surveying and plan drawing up.

Regarding its administration, the Academy was subject to the Main Chamber-Count Office in Banská Štiavnica and the main chamber count was the director of the Academy at the same time. Principle questions (appointment of professors and employees, accepting students, allotment of finances and scholarships, changes in study programmes, and others) were decided by the Chamber Court in Vienna (Urgela, 1985).

Along with the establishment of the third department, Maria Theresa approved a proposal to buy Belházy House in Štiavnica for the needs of the Academy. She also agreed to the proposal relating to a new system for the Academy by the mining counsellor Bartolomej Gersdorf and approved an assistant for the mining surveyor with the salary of 450 florins obliged to teach art of drawing to mining academicians. On 11th August 1770, Krištof Traugot Delius, the then assessor at the Mining Headquarters in Banat, was appointed as mining counsellor and professor of mining sciences and mining law in Banská Štiavnica.



Thus, the Mining Academy in Banská Štiavnica was, in fact, built up. Other following changes were only an improvement of what had already existed (Vozár, 2006).

With its developed mining industry, secondary and higher mining schools, Banská Štiavnica became one of the best-known centres for education of mining experts in Europe. An interest in study at the renowned Mining Academy was great – especially until the half of the 19th century students from various corners of the world were coming to Banská Štiavnica to learn the art of mining.

For more than 150 years, the Mining Academy was a source of pride for the "silver town" below Sitno which during centuries gave off the silver metal from its bowels and attracted members of the royal court, tens of walburgers and private miners in their desire for profits. They were coming from various corners of the world to Banská Štiavnica to convince themselves with their own eyes of richness and sophisticated technology helping miners to extract and mine ores from the bowels of the earth.

The curiosity rose even more when the first technical university in the world for education of academically trained mining experts was established here and its professors with their technical discoveries and voluminous professional literature documented the high level of the Slovak mining and the development of all scientific disciplines which they lectured at this school. Within the course of its 155-year existence (1763 – 1918), the Mining Academy went gradually through further reorganization. Curricula as well as contents of lectures and laboratory exercises were changed.

A significant contribution to the development of chemistry, forestry, metallurgy, and mining sciences were undoubtedly also many, often unique, inventions by professors at the Mining and Forestry Academy as well as the tens of inventions by mining technicians and engineers from mining and metallurgical operations who obtained their professional qualifications just at this outstanding school.

We are obliged to them for introducing the new mining and technological, upgrading and metallurgical equipment in operations. It was also a broad array of professors of the Academy participating in improving the existing technologies and equipment for ore transport, ventilating the mining works, mine water pumping, ore treatment, and others.

The range of topics and problems the professors of the Academy dealt with is very huge. It covers mathematics, physics, mechanics, electrotechnics, chemistry, forestry, and other fields. They were such experts as chemists – Mikuláš Jozef Jacquin, Anton Ruprecht, and Alojz Wehrle, a mining expert – Krištof Traugot Delius, physicists – Jozef Schittko, Ján Adriany, Gustáv Faller, Anton Péch, Ferdinand

Helwig, and Eugen Broszmann, an expert in metallurgy – Anton Kerpely, a mining geologist – Ľudovít Cseh, the accumulator inventors – Štefan Farbaky and Štefan Schenek, and many others. At the Academy worked also many excellent mining surveyors – inventors and constructors of mining surveying apparatuses and tools, and the authors of the first textbooks on mining surveying, such as Ján Mőhling, Ján Nepomuk Lang von Hanstadt, Ján Adriany, Otto Czéti, and Július Szentistványi (Herčko, 2006).

The name of any professor at the Mining and Forestry Academy was connected with a technical novelty, new construction of a mining machine, apparatus or equipment, or technology of mining, upgrading and metallurgical work. Implementing their ideas, designs or inventions was thus all round.

The Mining Academy had an international character and a European and even worldwide importance. It was a workplace of world-known scientists and specialists in the sphere of mining, metallurgy, mineralogy, chemistry, forestry but also other natural and exact sciences. The Academy in Banská Štiavnica, which was in the town until 1919, is inseparably connected with many significant European and worldwide primacies in science and technology.

Mikuláš Jozef Jacquin (16th February 1727 in Leyden, the Netherlands – 26th October 1817 in Vienna), the first professor of the Mining Academy, belonged to the most significant chemists and botanists in Europe. He was a member of the Academy of Sciences in Petrohrad, Uppsala and Stockholm, a member of the Paris and Basel Doctor's Societies. Jacquin was extraordinarily greatly respected also by the then most significant

The academic staff, Banská Štiavnica

world chemist Antoine Laurente Lavoisier, the French scientist and the founder of modern chemistry. He declared the Jacquin's work as a "dissertation introducing the experimental method".

Sequentially, the second professor of this school was Mikuláš Poda (4th October 1723 in Vienna – 29th April 1798 in Vienna). He was also a scientist of a European importance. Before coming to

Štiavnica, he had been an administrator at the observatory in Graz. His three textbooks describing mining water pumping and upgrading equipment used in Banská Štiavnica ore area and published in 1770 –1773 were the first university textbooks on mining engineering in the world.

An outstanding scientist was also Jacquin's successor, Giovannini Antonio Scopoli (3rd June 1723 Cavalese, Italy – 8th May 1788 Padova, Italy). He was a medicine graduate from the University in Innsbruck. During his work in Banská Štiavnica (1769 – 1779), he published 14 books, among which especially those of botany were of a European importance (Novák, 2006).

Krištof Traugot Delius (1728 Wallhausen, Germany – 21st January 1779 Florence, Italy) was also a scientist on a European level. He was the first professor of the Academy and at the same time the head of the Department of Mining in the years 1770 – 1772. He finished the law study at the University in Wittenburg and then also Mikovíni's Mining School in Banská Štiavnica. Many students from abroad, even graduates from many renowned European universities, were coming to the Academy especially because of the high level of his lectures on mining economy, organization and administration. In 1773, he published in Vienna the world-known university textbook on mining "Einleitung zu der Bergbaukunst", the unsurpassable work in the world for many years. In 1778, this textbook was published in the French language in Paris and its second edition was published even in the German language in 1806.

This work was not only a classic textbook on mining. It also included the detailed principles for construction of the earth embankments of water reservoirs according to the generalization of the practice in construction of these reservoirs of that time. They were called tajchy in the surroundings of Banská Štiavnica. Until 1855, technically the most courageously solved earth embankment of the water reservoir in the world had been Rozgrund near Banská Štiavnica. Only in 1855, it was overcome by the French dam Meuraud in its technical courage and effectiveness. When building it, they still were following the principles described by Delius in his work.

In 1779 – 1791, Anton Ruprecht (14th November 1748 in Smolnická Huta – maybe 6th October 1814 in Vienna), an outstanding chemist and mineralogist of a European importance, was a professor at the Academy in Banská Štiavnica. In 1782 – 1785, Ruprecht was intensively engaged in the problem of tellurium production along with its later discoverer František Muller. For his experiments, he equipped the laboratory with the latest equipment in Europe.

Building up this laboratory drew an extraordinary admiration of the whole European scientific public. When smelting, Ruprecht was probably using pre-heated air and a mixture of air and oxygen. During his experiments, he even succeeded in getting barium, calcium, magnesium, aluminium, manganium, and volfram. However, he did not manage yet to find out what was left in the testing pots after the experiments. As Ruprecht's chemical laboratory was equipped with the most modern equipment in the whole Europe of that period, the experiments in it were carried out by Ruprecht along with the most renowned European chemists and physicists – Savaresi, Lippi, Tondi, Melograni, and others. After Ruprecht's leaving the Academy, the chemical

laboratory kept its number one European priority also at the time of his successor Michal Patzier, the author of the 4-volume "Introduction to Metallurgical Chemistry" (Novák, 2006).

At that time, there already were unique democratic principles at the Academy. Everybody had the access to school regardless of their nationality, citizenship, political or religious persuasion. Despite the orders of the Chamber Court in Vienna relating to strict holding the newest knowledge and inventions back, in practice, there were no obstacles for expanding the most progressive knowledge of extraordinarily developed science from Banská Štiavnica to the European and even world mining centres. It could be happening due to cosmopolitan views of professors from the Academy in Banská Štiavnica.

In 1786, Ignác Anton Born (26th December 1742 in Alba Júlia, Romania – 24th July 1791 in Vienna), the significant European cosmopolitan scientist, geologist, mineralogist, mining and metallurgy expert, built the amalgamation smelting works in co-operation with Ruprecht and Haidinger in Sklené Teplice. It was the first one in the world. In front of the most significant scientists from Europe and even from Mexico, I. A. Born introduced his so-called Born amalgamation method or the European amalgamation, a new effective method for getting gold and silver out of poorer ores. This gathering of the public is considered as the first international scientific congress in the world. Its members decided at once to publish the first international scientific journal in the world "Bergbaukunde" (Mining). Its 1st issue was published in 1789.

By the year 1789, up to 147 most significant personalities not only from Europe but also from America had applied for the membership of this society. Among them was Antoine Laurente Lavoisier, but also James Watt – the world-famous English inventor of the two-stroke steam engine. Even Johan Wolfgang Goethe became an honorary member (Novák, 2006).

In 1795, a polytechnic institute was being established in Paris, France. It is considered as the first one of its kind in the world. However, when establishing it, they used the Academy in Banská Štiavnica as a model. In its teaching programme, the newly established school in Paris took over mainly laboratory teaching of chemistry which was on the world level at the Mining Academy at the time.

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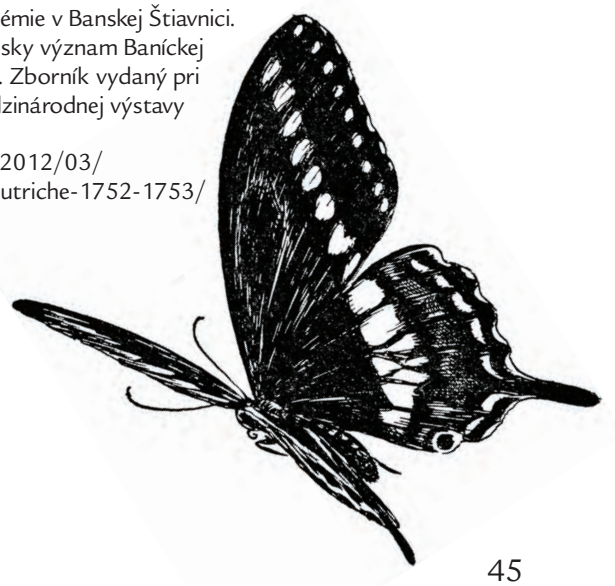

Development of the Forestry School System — from Banská Štiavnica to Zvolen

From the viewpoint of the history of technical education, the introduction of general forestry subjects into the curriculum at the Mining Academy already in 1770 was a significant deed. However, it did not meet with success. The academy graduates worked in their main field – in mining. The executive personnel were gaining only practical experience in individual study conditions, predominantly of a hunting character.

In such a political and forest management situation, they appointed František Wisner from Morgenstern as chamber prefect of the Hrádok-Likava dominium.

In 1796, he initiated the establishment of the Forestry School in Liptovský Hrádok. The establishment of the Forestry School was only an intermediate stage to fill in a gap in the education of qualified personnel – gamekeepers and forest guards. However, it was not sufficient for education of forest management experts capable of meeting the increasing need for wood production concerning needs of industries, mainly of mines and smelting works.

The next attempts at making forestry study independent resulted in that vocational forestry schools started to be established and in 1807, the independent Forestry Institue (Forst-Institut) was establihed at the Mining Academy in Banská Štiavnica.

The need for the specialized forestry school system was not felt only by the countries of Central Europe with the developed mining, mainly of non-ferrous ores, but also by the countries with the developed navy. Therefore, it was not a coincidence that on the basis of the decree of Tsar Alexander I already in 1803, they started teaching forestry at the established Practical Forestry School in Tsarskoe Selo (near St. Petersburg). It was moved to the imperial capital in 1811 and renamed as St. Petersburg Forestry Institute. In the Russian Empire, the need for quality wood raw material in shipbuilding was considered as decisive for equipment ofboth merchant navy and mainly war fleet. By comparison with other countries, it is necessary to say that they started establishing university forestry study later (Mariabrunn 1813, Tharandt 1816, Nancy 1824, Eberswalde 1830, Lvov 1874, etc.).

The task to manage the Forestry Institute was assigned to Dr. Henrik Dávid Wilckens, who became the first university professor of theoretical teaching forestry in our country.

The opening ceremony of the Forestry Institute was held on 12th February 1809.

H. D. Wilckens was a German expert. After having studied medicine in Helmstedt, he graduated from the Faculty of Mathematics at the University in Göttingen and he also attended lectures at the Mining Academy in Freiberg. Before he started lecturing, he had studied

thoroughly forest conditions in Austria-Hungary, he made several study trips (also to the forests in the surroundings of Žarnovica and Banská Bystrica among others), and on the basis of the obtained knowledge, he developed the curriculum.

He planned out forestry study for two years at first and from 1811, for three years. The first Prof. Wilckens' curriculum included general subjects, specialist forestry and law disciplines.

The general subjects included mathematics, forestry mapping, mechanics, structural engineering, forestry natural history within which were lectured mineralogy, botany and zoology, and also physics, forestry research into the environment, wood technology, and hunting. The specialist forestry subjects covered silviculture, forest harvesting, and forest management. Within forest harvesting were also taught wood and bedding utilization, fishing, beekeeping and gamekeeping. Forest management included forest mensuration, forest management itself (chamber forestry principles), and forest valuation. Forestry law studies consisted of general law studies of forest-police principles and forestry law.

Besides theoretical education, Professor Wilckens also laid a great emphasis on practical education. He introduced, therefore, practicals in the forests surrounding Sklené Teplice and Repište. A result of the practicals and forestry experiments have been some stands which, also nowadays, remind of the high level of forest management concerning not only our wood species, but also introduced ones (Weymouth pine, limba, larch).

In the Slovak Central Mining Archive in Banská Štiavnica, there is found the mensurational description from that period elaborated for the forest districts of Sklené Teplice and Repište which were a regular school area from 1816. Here Wilckens mentions the principles which had to be followed when working out mensurational descriptions and he also describes in detail the ways how to do particular works and calculations. He does not limit himself only to the instructions, but he also analyses a situation of forest management of that period and he shows reasons for newly suggested procedures. Thus, "Všeobecná a podrobná úprava pre okres sklenoteplický a repištský" (The General and Detailed Forest Management for the Districts of Sklené Teplice and Repište) becomes the first forest management plan and elaborated technological procedures which could be applied by school-leavers from Banská Štiavnica in practice. Owing to this forest management plan, Wilckens ranks as one of pioneers in the area-volume method. His views, working procedures and details of the forest management plan had been applied, in principle, in forest management and in operation itself by the end of the last century.

In 1835, Rudolf Feistmantel, an Austrian forest engineer, became Wilckens' successor. This outstanding expert continued in principles of his predecessor and in 1842, he achieved the equality of graduates from Banská Štiavnica with graduates from the Austrian Forest Institute in Mariabrunn, where a higher three-year institute was established in 1813. Moreover, he endeavoured to get the school forest district of Kysihýbeľ and established the collection of wood species which has been called Feistmantel garden till today. The development continued by the establishment of the Mining and Forestry Academy in 1846 and its reorganization into the Mining and Forestry University in 1904. A remarkable feature

Opening of a new building, the Mining Academy in Banská Štiavnica

of this university was that not only students from the former Austria – Hungary (that is also Czechs and Slovaks) studied there, but also students from Croatia, Serbia, Bulgaria, Romania, Albania, Turkey, Italy, Prussia, Saxony, and Japan. At the Academy and University in Banská Štiavnica worked many excellent foresters and researchers. Apart from H. D. Wilckens and R. Feistmantel, especially K. Wagner, L. Fekete, E. Vadas, G. Muzsnay, and A. Guttenberg. They not only educated the generations of good forestry experts, but they have left a valuable wealth of specialist literature.

The history of forestry research deserves a special attention. In our country, its pioneers were professors of the Academy in Banská Štiavnica, but also some outstanding forest managers – Jozef Dekrét Matejovie (1774–1841), Ľudovít Greiner (1796 –1882), and William Rowland (1814 –1888). A main driving force of forestry research in Hungary was the Academy. The first proposal for the establishment of a forestry research institute in Banská Štiavnica was worked out by Ľudovít Fekete already in 1874. He submitted it at the annual meeting of the forestry association "Uhorský krajinský lesnícky spolok". Despite a positive response, it was not carried out because of financial and personnel reasons. In 1892, after finishing the new building of the Forestry Academy, where a place for research purposes was also reserved, there were more real chances to establish a forestry research workplace.

A pioneer in the organized forestry research was Professor Eugen Vadas (1857–1922), by his original name Vlkolinský. At the Academy, he lectured on botany, zoology, silviculture, forest protection, and other subjects. In 1893, E. Vadas made study trips to Germany, Switzerland and Austria for the purpose of getting to know the local forestry research organizations better. In 1897, Eugen Vadas founded the Central Research Station in Banská Štiavnica as the first forestry research institute in the Hungarian Kingdom. On 31st July 1897, L. Bárányi, the Minister of Agriculture and Rural Development, issued the decree establishing the Hungarian Royal Forestry Research Station with effect from 1st January 1898. The establishment of the central station required a link to four forestry schools (in Liptovský Hrádok, Vadászerdő, Görgényszentimre, and Királyhalom) Eugen Vadas became the first head of the central station and Rudolf Benko became the head of the outside station in Liptovský Hrádok. In 1900, they established the Forestry Arboretum Kysihýbeľ at the Central Forestry Research Station. By the decree no. 91928/A/2 905, the Central Forestry Research Station was separated from the Mining and Forestry Academy on 6th September 1906.

The policy plan of the research station was especially aimed at solving biological questions of forest management. At the beginning, it was mainly a series of research areas established by Professor Roth in 1905 – the research areas for study of thinnings (Likavka and Kysihýbeľ) and provenance areas of larch and pine (Likavka and Malacky) as well as research areas oriented to management of spruce, oak and fir stands established in Žarnovica, Banská Bystrica, and Marmaros. The research of that period was also aimed at the introduction of exotic wood species. To assess a possibility for the introduction of wood species, J. Tuzson established the forestry arboretum with 283 wood species in Kysihýbel in 1900.

After all, it is also necessary to mention a edition of the classic work "Verbreitung der forstlich wichtigen Bäume im Ungarischen Staate"by the authors L. Fekete and T. Blattny. The 2-volume work was published in the Hungarian and German languages in 1914. E. Vadas published a pioneer work aimed at locust utilization in forest management "Die Monographie der Robinie und mit besonderer Rücksicht auf ihre forstwirtschaftliche Bedeutung" (Banská Štiavnica 1914). After finishing the World War One and the establishment of the Czechoslovak Republic, temporary management of the areas belonging to the Central Research Station was assigned to the newly established State Forestry College. In 1922, the State Forestry Research Institutes were formally constituted in Banská Štiavnica. In the areas of the Experimental Forestry Station in Kysihýbeľ, the Institute for Silviculture and Forest Biology started working. The Institute had been professionally subordinated to the Institute for Silviculture and Forest Biology in Brno until 1936, administratively to the director of the Forestry School in Banská Štiavnica. The research of that period was focused on solving problems of the exotic wood species acclimatization. Prof. B. Polanský, the superintendent of the Institute for Silviculture and Forest Biology in 1936, dedicated himself to the questions of selection forests, natural forest regeneration and tending felling in oak woods. In 1924, was formed the Institute for Wood Harvesting and Technology. Due to insufficient highly qualified staffing and apparatuses equipment, its activity was fully developed only after coming Prof. R. Ille in 1929, when the apparatus equipment was moved from Prague to Banská Štiavnica. A full attention was paid to research into beech wood. They studied its false heart, causes of its rise, its impact on penetration of impregnating agents, impregnation and fire wood treatment, questions of harvesting, mechanical processing and beech wood utilization. Activities of both the institutes continued in Banská Štiavnica until 1964, when the Institute was relocated to Zvolen and only one of six research stations remained working in Banská Štiavnica.

Professors of the Mining and Forestry Academy, especially J. von Scholtz and E. Vadas, stood at the start of the International Union of Forest Research Organizations (IUFRO), though Prof. Vadas did not attend personally the founding congress held in Mariabrunn 6. septembra 1890 and going on in Eberswalde 17. augusta 1892. Regardless of this fact, the Academy in Banská Štiavnica, substituting also a professional forestry research institute at the time of establishing the IUFRO, is rightly considered as a founder member of the IUFRO along with the research institutes in Mariabrunn, Eberswalde and Zürich. E. Vadas was elected as president of this international organization at the 6th IUFRO congress. After 1910, they started preparations for the 7th IUFRO congress which was planned to be in Budapest on 7th–17th September 1914. Within the preparations, they expected to arrange an excursion to Slovakia,

to the region of Banská Štiavnica. A memory of this event is retained in a book form of three excursion guidebooks. Unfortunately, the planned IUFRO congress was not held in the Hungarian Kingdom for the reason of breaking out the WWI.

After the disintegration of the Austro-Hungarian Monarchy in 1918 and after moving the Mining and Forestry University from Banská Štiavnica to Budapest at first and to Sopron later on, forestry university study in Slovakia was temporarily finished.

Simultaneously with the disintegration of the Austro- Hungarian Monarchy and the establishment of the Czechoslovak Republic, the question of the Mining and Forestry University in Banská Štiavnica was also being solved. A result of the negotiations was an official take-over of the school by the representatives of the Czechoslovak government on 8th January 1919 and the refusal of the Hungarian professors to take an oath of loyalty to the Czechoslovak Republic. Under these circumstances, the university closed down and in Banská Štiavnica was established the Czechoslovak College of Forestry and later on also the College of Chemistry. Slovakia remained without a forestry university for a long period.

The situation concerning the establishment of higher forestry education in the new republic had developed in such a way that they opened the forestry department at the agricultural section of the Czech Technical University in Prague already on 10th March 1919. Another city where forestry could be studied was Brno. The National Assembly approved the establishment of the independent state University of Agriculture in Brno under the law no. 460 Coll. of 21st July 1919. We know that the Slovaks did not agree on the cancellation of the Mining and Forestry University. The placement of the school in Slovakia, which along with Sub-Carpathian Ruthenia had a considerable forest acreage, would surely help the development of forest management much more than it was by means of two remote forestry faculties in Prague and Brno.

The question of university forestry study was topical for the overall duration of the first Czechoslovak Republic. The officials of the Czech Technical University in Prague, mainly professors at the forestry department, opposed the law on the establishment of the University of Agriculture with the Forestry Department in Brno and they did not allow to move the University of Forestry from Prague to Brno despite the explicit decision of the government. There was a steep scramble for whether there should be one university or two. This scramble was run very persistently by the forestry commission at the Czech Technical University (ČVÚT) in Prague. Resolving the disputes between the representatives of the two groups, for one or for two universities of forestry, had not been successful until 1938. The scramble was more and more intensifying and then attempts at establishing four universities of forestry appeared. Only the German one was established in Děčín (Tetschen)-Lebverde in 1938. The Slovak University of Forestry in Košice, planned as a faculty according to the draft law No. 170 Coll. of 25th June 1937 on the establishment of the Technical University in Košice, however, was not established.

All the period of the first republic is characteristic of efforts of the Slovak political representatives to establish a technical university in Slovakia. On the basis of the Cabinet decision, Vavro Šrobár delegated Michal Ursíny, the professor at the Czech Technical University in Brno, to create organizational

conditions. M. Ursíny worked out the draft law and rightful report and in January 1920, he submitted them to V. Šrobár and the Club of the Slovak deputies. In 1928, the second draft law on the establishment of the Technical University in Košice was elaborated. Although the ministers of education during the first Czechoslovak Republic were Slovaks: V. Šrobár, I. Markovič, M. Hodža, A. Štefánek, and I. Dérer, neither of the laws was approved by the Parliament.

University students also joined the political struggle for the establishment of the Slovak technical university. In particular, the Union of the Slovak Students organized several rallies already in 1930. "Matica slovenská" (Slovakia's public-law cultural and scientific institution) also organized numerous rallies. Finally, on 8th June 1937, the government passed the law no. 170/1937 Coll. on establishing the Technical University of M. R. Štefánik in Košice. The Technical University in Košice only started to be constituted when the Vienna Arbitration came into force and Slovakia lost Košice. The University moved to Prešov and Turčiansky Sv. Martin. A higher viewpoint and interests in the Slovak higher education requested to place the technical university in Bratislava.

It happened after enacting the law No.188 Coll. of 25th July 1939 on the Slovak Technical University. The Slovak Parliament decided about this on the basis of the draft law by Jozef Sivák, the Minister of Education and National Culture. According to the government directive no. 236 of 20th September 1939, the Department of Forestry and Agricultural Engineering was constituted at the Slovak Technical University. The Department of Forestry started working at once. Teaching was provided by the following institutes and their heads: the Institute of Mechanical and Chemical Wood Technology – Ing. Dr. Vojtech Hollý, the Institute of Silviculture – regular Prof. Ing. Samuel Kriška, the Institute of Forest Protection – Ing. Štefan Kapsa, the Institute of Forest Establishment – Ing. Vojtech Illenčík, and the Institute of Forestry Construction and Hauling Machinery – Prof. Ing. Róbert Binder.

Economic problems were part of work of the Station for National Economy ran by JUDr. Rudolf Briška. Lecturers were regular professors: RNDr. Dmitrij Andrusov for geology and petrography; Ing. Dr. Techn. Anton Bugan for the rudiments of technical mechanics; PhDr. Juraj Hronec for the rudiments of higher mathematics; Ing. Samuel Kriška for silviculture and forest aesthetics, and for the forest habitat study.

Associate professors: JUDr. Rudolf Briška for national economy and the science of finances, economic policy and taxation, rudiments of public law; Ing. Dr. Techn. Peter Danišovič for torrent control; Ing. Dr. Techn. Vojtech Hollý for the introduction to the study of forestry, mechanical wood technology, and forestry research; Ing. Ján Mikuša for the introduction to land cadastre and bridge building; Ing. Viliam Illenčík

for forest establishment and forest statics and forest plan drawing, forest valuation and rate of return; Ing. Koloman Kosljar for forest harvesting, forestry accountancy, and the study of forestry trade. Other teachers were supply teachers and remunerated associate professors. Study at the Department of Forestry took four years. Accepted were secondary grammar school-leavers, in small number also secondary forestry school-leavers. When developing the study plan for the Department of Forestry, they used as a starting point the curricula of the forestry department of the former university in Banská Štiavnica and the curricula of forestry departments of the Czech universities. Shorter practicals in forest management were organized in the Small-Carpathian forests, longer holiday practicals in the areas belonging to the directorships of the State Forests in Žarnovica and in Banská Bystrica.

From its beginning, the rector position at the Slovak Technical University was held by the following professors: Hronec, Bugan, Valentín, Bella, and also Prof. Kriška for several months. The position of the dean of the Forestry-Agricultural Department was held by Professor Hollý and later on by Professor Kriška. During seven years, the study of forestry engineering was successfully completed by 114 students (six of them were from Bulgaria). Although it was only 16 graduates a year, the fact remains that university forestry study was renewed and forestry obtained young specialists.

In Slovakia, the year 1945 was under the sign of joy concerning the end of WWII and the victory over fascism. People were overwhelmed by enthusiasm to renew what the war had destroyed, to build modern industry, to improve conditions in underdeveloped agriculture. Generally, this period in our country is called the period of industrialization, agricultural collectivization, and the national and democratic revolution. In the sphere of education, it was also necessary to draw level with what was not managed in the last decades. Other research workplaces and schools were being established. There was an interest in resolving differences between individual regions. Especially the region of eastern Slovakia lagged behind in more spheres. The Slovak National Council decided on the placement of the University of Agriculture and Forestry Engineering (VŠPLI) in Košice by the decree No. 48 of 25th April 1946. The school started in the autumn 1946. Study took four years and had, in the main, such syllabi as they were at the Slovak Technical University (SVŠT) and at the Czech universities. Forestry and related sciences were lectured by above-mentioned Prof. Ing. Samuel Kriška, and professors: Ing. Róbert Binder (1897–1980), Ing. Dr. František Papánek (1912–1996), RNDr. Ján Martin Novacký (1899–1956), Ing. Ľudovít Minich (1908–1981), Ing. Dr. Alexander Knapo (1912–1981) and several supply teachers and remunerated associate professors. More teachers taught at both the departments.

A special contribution mainly to the interlinking of the university and practice was made by Prof. Papánek, who was simultaneously a professor at the VŠPLI in Košice and also the Managing Director of the State Forests in Bratislava in 1948–1950. In the autumn 1950, Professor Papánek was appointed by the President of the Republic as the Rector of the University of Agriculture and Forestry Engineering in Košice for two years.

In the postwar years of intensive building, there was an increasing need for university experts in the sphere

Map of school forests, Sklené Teplice, the beginning of the 19th century

of wood-processing. During the period of forestry study in Bratislava was already established the Institute of Mechanical Wood Technology. It was a pioneer deed representing a new quality in the university teaching of wood sciences and technology. Thus, forestry study became the first step to a wood-processing and chemical or chemical and technological department. It was a situation leading to the establishment of a new type of university study – wood–working engineering. The leading experts endeavouring most in this sphere were: Ladislav Dérer, Víťazoslav Sprock, František Papánek, Róbert Binder, Imrich Janota, Rudolf Jandel, and others.

In 1949, they established the Department of Wood Sciences and Technology with the four-year study programme at the Forestry Department of the VŠPLI. This department became the basis for the establishment of the Faculty of Wood Science and Technologies in Zvolen in 1952. Forestry study in Košice lasted six years (1946–1952) and prepared 339 graduates, on average 56 students per year.

In the summer 1952, the Faculty of Forestry with the Department of Wood Science and Technologies started to be moved from Košice to Zvolen. By the governmental resolution of 8th July 1952, the University of Forestry and Wood Sciences and Technology in Zvolen was established. At the same time the Faculty of Agriculture was moved from Košice to Nitra. Thus, a new period started in the history of agricultural and forestry university study in Slovakia.

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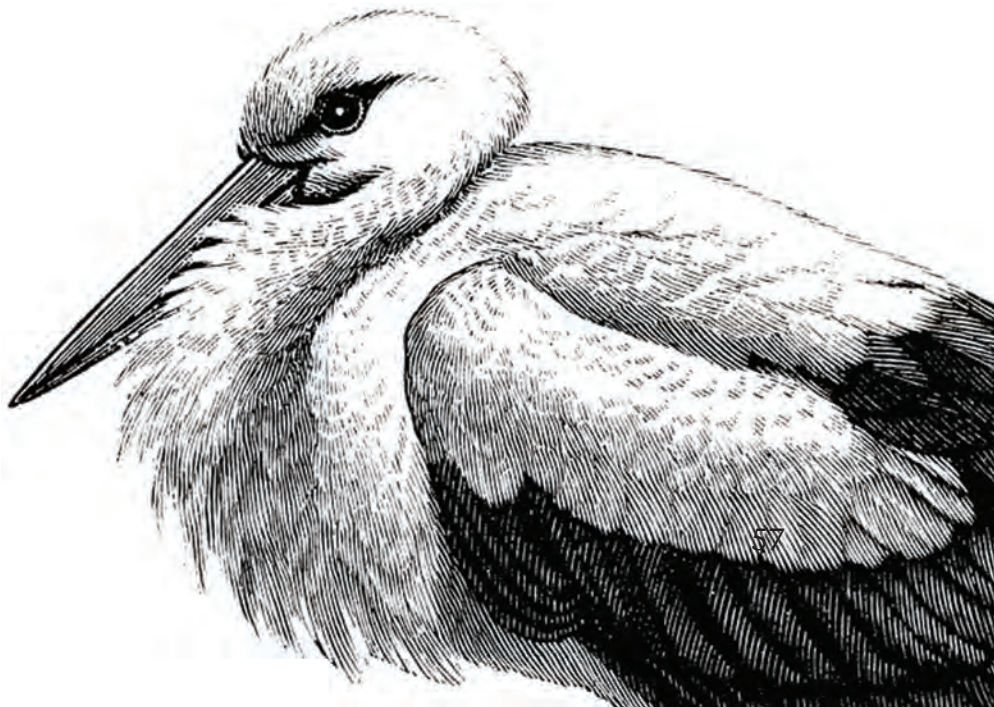


Zvolen Period (since 1952)

The high level and quality of education belong to the main attributes of every prospering society. The postwar development in our country also made great demands for education of young, professionally prepared manpower. There was a reasonable attempt of the government to overcome economic and cultural inequality in the development of individual regions of Slovakia. A more even distribution of universities in the country was expected also to improve the situation. The government of the Czechoslovak Republic was made to approve the resolution no. 30/52 on the basis of which the University of Agricultural and Forestry Engineering in Košice was dissolved and two independent universities were formed from its two faculties: the University of Forestry and Wood Sciences and Technology (VŠLD) placed in Zvolen and the University of Agriculture in Nitra.

The decision to place the VŠLD in Zvolen was motivated by the favourable communications location of the town lying in the middle of forested regions of Slovakia. The location was also suitable for the Faculty of Wood Sciences and Technology as there were big wood-working plants in the town and in its vicinity (Bučina Zvolen, Smrečina Banská Bystrica, and Preglejka Žarnovica). The local authorities in Zvolen were of a great help in every possible way and they were showing all-round readiness to help with establishing the new university. With its population of around 20,000 at that time, Zvolen became the university town with a significant forestry and wood technology community. The Faculty of Wood Sciences and Technology at the VŠLD had an all-state competence.

The newly-established VŠLD in Zvolen had an explicit aim: to provide the interlinking of theory and practice as close as possible placing emphasis on a successful graduates´ coming into their own practice. Moving and establishing the university was accompanied with some difficulties. The university had very poor facilities. If we compare the value of finances and facilities for teaching and research available in Košice and initially in Zvolen, it was approximately in the ratio of three to one. When moving to Zvolen, not only material conditions of the school were aggravated, but also personnel ones. More teachers, namely those of basic theoretical disciplines, remained in Košice or they left for the University of Agriculture in Nitra. Their positions were replaced by young graduates from the forestry and wood technology studies who started at the University as assistants and later on, they worked their way to top experts in many scientific disciplines.

Despite difficult material and personal conditions, but also the conditions concerning interior-policy and international conditions, the University has been successfully constituted and developed. It has gradually obtained the dominant position in educating the forestry intelligentsia in Slovakia and intelligentsia of wood sciences and technology within all the Czechoslovak Republic.

From its beginning, the VŠLD in Zvolen has followed the traditions of the Mining Academy operating in nearby Banská Štiavnica in the years 1762–1919. The Academy was well-known for highly professional level of professors, modern teaching methods as well as for introducing new theoretical knowledge in practice. At the time of its greatest flowering, it was one of the centres of Europan science. During its more than 150-year successful operating, the Mining Academy has developed rich educational traditions in the field of forestry and wood sciences and technology in Slovakia which have been followed also by the VŠLD in Zvolen.

The birth of the VŠLD in Zvolen and its first working decades are connected with prominent personalities. The first rector of the VŠLD was Prof. RNDr. František Papánek (1952 – 1955), the first dean of the Faculty of Forestry was Assoc. Prof. Ing. Pavel Višňovský (1952 – 1955), and at the Faculty of Wood Sciences and Technology the first dean was Assoc. Prof. Ing. Víťazoslav Sprock (1952 – 1955). It is also necessary to mention the following personalities acting at the VŠLD in Zvolen: Prof. Róbert Binder, Prof. Alexander Knapo, Prof. Anton Sokol, Prof. Hubert Bezačinský, Prof. Rudolf Jandel, Prof. Adolf Priesol, Prof. Rudolf Šály, Prof. Elígius Hromada, Prof. Štefan Makovník, Prof. Miroslav Stolina, Prof. Ján Halaj, Prof. Jozef Porubiak, Prof. Jozef Sládek, Prof. Eugen Rónay, Prof. Štefan Šmelko, Prof. Štefan Korpeľ, Prof. Klement Hubač, Assoc. Prof. Jaromil Húsenica, Assoc. Prof. František Kompán, Assoc. Prof. Eduard Červenka, Assoc. Prof. Jozef Réh, Assoc. Prof. Jozef Marko, Prof. Cyril Palaj, Prof. Imrich Janota, Prof. Karol Eisner, Prof. Jozef Palovič, Prof. František Setnička, Prof. Jindřich Halabala, Prof. Martin Sivák, Prof. Ľudovít Mikolášik, Prof. František Krutel, Prof. Dionýz Horský, Prof. Imrich Melcer, Prof. Ladislav Regináč, Prof. Pavol Trebula, Assoc. Prof. Ladislav Thern, Assoc. Prof. Elemír Šulán, Assoc. Prof. Jozef Lisičan, Assoc. Prof. Alexander Poláčik, Assoc Prof. Dušan Perlác, Assoc. Prof. Július Klein, Assoc. Prof. František Vince, and others.

The academic year 1952/1953 was starting in emergency conditions. Accommodation for students was only provisional, the classes were taught in the building of the former "gymnázium" (secondary grammar school) in T. G. Masaryk Street. All personnel of the university, employees and students worked devotedly to build a provisional residence hall for students, to finish a boarding house for teachers and also a building for the rector´s offices in Ľ. Štúr Street, initially planned for purposes of the municipal authorities. Also with the lapse of time, it is especially necessary to appreciate efforts of the university team of that time, the devotion of students and employees of the university who managed to build, work, teach, and learn under those difficult conditions.

In the academic year 1952/1953, the first year of the VŠLD in Zvolen, the Faculty of Forestry had four departments, the Faculty of Wood Technology had three departments, and the rector's office had four departments. At that time, the University had altogether 54 pedagogical staff, including 3 professors, 6 associate professors, 45 assistant professors, 67 other economic and technical staff, 37 employees in the residence hall and canteen. In that year, both the faculties were attended by 486 students.

Practicals for foresters were given in the Forest District of Kyslinky with an area of 2,958 ha in the region of the former Forest Management District of Vígľaš. There, students were also provided with accommodation during their one-week practicals. The Faculty of Wood Sciences and Technology ran its technological and operational practicals directly in the wood-working plants. Modest material conditions available during the first years of the University in Zvolen were gradually improved. By the decree of the Authorized Commission for Education, Sciences and Art in Bratislava of 18th December 1952, the State Study Library was established in Zvolen.

With regard to complicated commuting to Kyslinky by the small railway and problems concerning the accommodation of students during the practicals and doing research, in 1958 was formed the Faculty Forest Farm with an area of 5, 375 ha. It was on the south-eastern slopes of the Kremnické vrchy Mts. close to the town and in the vicinity of Sliač. In 1969, it was changed into the School Forest Plant with an area of 7, 746 ha and later on, in 1969, into the School Forest Enterprise (ŠLP). Since 2002, it has been called the University Forestry Enterprise and it manages 9,942 ha of forest land.

The Residence Hall of Ľudovít Štúr with the sleeping capacity of 600 students and a lodging house were built in the years 1958–1962. The fourth pavilion of the Residence Hall served as a basic building of the Faculty of Wood Sciences and Technology of the VŠLD until 1983. The building of the gym at the Faculty of Forestry was built in 1969.

Insufficient accommodation possibilities for students were improved by building a provisional student boarding house in the yard of the Residence Hall in 1970. Significant for all the University were the Developmental Workshops and Laboratories which came into use in 1972. In their beginnings, they presented modern facilities for teaching and research in the sphere of wood technology, electrotechnics and engineering. The Institute of Computer Technology was also placed in their premises.

With its equipment, it has undergone considerable changes from large computers to computer network with the interlinking of all workplaces and actually of all employees of the VŠLD in Zvolen. The premises of the ŠLP based in a temporary pavilion near the building of the rector´s offices from 1974 were also improved. In 1988, the head office of the ŠLP was moved in the new building in Študentská Street. The modern Residence Hall of the VŠLD in the town neighbourhood of Záhonok was put into operation in 1987.

In 1977, the foundation stone of the new main building of the VŠLD was laid. The building was finished in 1983, when both the faculties started moving in. Teaching in the new premises started partially in 1983 and in the autumn 1984 completely. The question of students´ accommodation was solved by building the new modern student Residence Hall in Bariny in the years 1990 –1993.

Teaching-learning orientation of the University was specified by a required profile of a graduate from each faculty. The profile was formed by means of curricula, the composition of individual disciplines, their contents, range and sequence. With regard to a versatility of the forest and wood-working engineer when getting to practice, the curricula included general engineering subjects and biology, chemistry, technological and economic subjects as well as social sciences. With the development of the scientific disciplines, the subjects started to be differentiated and this resulted in changes in curricula. A common feature in the curricula of forestry and wood-working studies was an effort to educate forest and wood-working engineers with a general profile, able to manage all aspects of forestry practices and operations in woodworking plants and specialized services.

New subjects were being added at both the faculties year by year. There appeared new scientific disciplines such as forestry phytocenology and typology, amelioration, landscaping, genetics and forest tree breeding, ergonomics, sociology, biocybernetics, mathematical methods in forest and woodworking plants, forest protection, problems of die-back of forest stands. Topical were issues of complex forest biomass utilization and concerning needed mechanization.

Study at the Faculty of Wood Sciences and Technology was being focused on an appropriate application of mathematical-physical and technical sciences in individual engineering branches of study. The aim of such oriented study was to educate experts for constantly changing demands of the labour market.

The pedagogical profiling of the VŠLD came out of the profile of a graduate with broader theoretical rudiments which were followed by the specialized postgradual study after the 3 – 5-year practice. At the Faculty of Forestry, the one-branch study of “forest engineering” was kept and at the Faculty of Wood Sciences and Technology, there were two branches of study – wood technology and since 1978, economics of managing woodworking industry. The former one was divided into two specializations: technology and manufacturing machinery. The length of study was various in individual periods, from 8 – 12 semesters.

Postgradual study at the Faculty of Forestry was organized in the specializations: economics of forest management, forest management,

machinery and manufacture process technology, forestry construction, silviculture, landscaping and protection of landscape. Completing the postgradual study taking 4 semesters was tied down with the ministerial systemizing order and organized according to the requirements of the given industry.

At the Faculty of Wood Sciences and Technology, the postgradual study was run in the following specializations: the systems management of manufacturing processes in woodworking industry, hydrothermal treatment and drying of wood, furniture production, production of musical instruments, quality features of raw material for primary wood processing. Completing the postgradual study was not compulsory and it was organized sporadically according to the needs of woodworking plants. The postgradual study has been organized at the VŠLD since1962.

An important role in the job description of the university staff was played by research activities which created a scientific profiling of the VŠLD. It formed a unity with the educational process. An important milestone was the establishment of research institutes at both the faculties on 1st August 1957. These institutes coordinated research programmes, cooperated closely with the departments and manufacturing practice. Research work at the VŠLD was directed to be an inseparable part of all the university activities and to accomplish its mission in three main spheres: performing research tasks for the needs of forestry and wood technology and social sciences, improving proper research work, a direct participation in introducing scientific and technological progress in practice of forest management and woodworking industry.

In the years 1961 – 1990, basic research tasks were all-state coordinated and they were solved within the State Scheme of Basic Research. In many cases, the University of Forestry and Wood Sciences and Technology was a coordinating workplace. Within research activity, the tasks of basic research were prevailing over faculty and industry tasks. In 1992, the research base had 226 employees, including 162 teachers and 64 researchers.

Important was also the co-operation of the University with practice by means of its additional economic activity which, on the one hand, presented an expansion of applied research activities of university staff and, on the other hand, it was also a source of out-of-budgetary incomes of the University and thus also the improvement of its economic situation. Talented and hard-working students were engaged in research activities at individual departments as so-called scientific assistants or in a way of so-called student scientific and research activity. In many cases, it presented a preparation for their following scientific career.

The results of the research activities were published in the Proceedings of the University of Forestry and Wood Sciences and Technology being issued in the years 1957–1963. Since 1964 they have been published in independent scientific proceedings of both the faculties – the Proceedings of Scientific Works at the Faculty of Forestry of the VŠLD in Zvolen, later on Acta Facultatis Forestalis, and the Proceedings of Scientific Works at the Faculty of Wood Sciences and Technology of the VŠLD in Zvolen, later on Acta Facultatis Xylologiae – with summaries or the whole contributions in foreign languages. The results of research activities

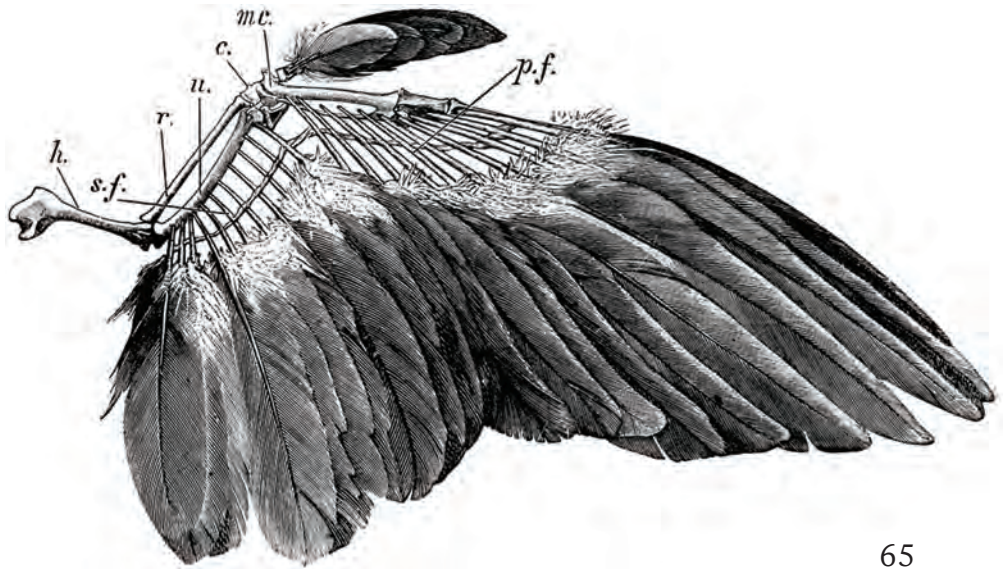
were published also in the professional journals "Les a Drevo" (Forest and Wood), but also in the scientific journals "Lesnícky časopis" (Journal of Forestry) and "Lesnictví" (Forestry) as well as in the Czech professional journals and quite often also abroad. Our teachers were authors or co-authors of university textbooks and university study texts. Increased publishing activity was directly proportional to qualification growth. There were more professors, associate professors, PhD. candidates and doctors of sciences year by year. Leading university staff were becoming supervisors in the scientific preparation for home candidates but also for those interested from other workplaces and from abroad, too.

At the University were organized polythematic international scientific conferences, most often on the occasion of anniversaries concerning forestry and wood sciences and technology education. The conferences were significant from the viewpoint of the exchange of scientific information and promotion of the Slovak science. They were also an opportunity to make personal contacts. Those who contributed most to the development of forestry, wood sciences and technology and other related scientific disciplines were awarded at the conferences.

In 1957, the University of Forestry and Wood Sciences and Technology became a member of the International Union of Forestry Research Organizations (IUFRO). Since 1977, one section during the international scientific conferences has been organized within the IUFRO structures. Moreover, several IUFRO symposiums with a greater international attendance were organized at the University. Due to its IUFRO membership, the VŠLD and later on the Technical University has brought itself to the attention in the international scientific area and 7 researchers of the University (A. Priesol, Š. Šmelko, L. Paule, J. Réh, A. Osvald, R. Réh, and R. Kropil) acted in the positions of the IUFRO structure officials. They worked as chairmen and vice-chairmen of its working and professional groups and divisions. In the years 1996 – 2005, L. Paule acted as a member of the IUFRO Executive Board. In 1995, Prof. Adolf Priesol was given the Distinguish Service Award and in 2000, Prof. R. Kropil received the Outstanding Doctoral Research Award.

Besides the involvement of its staff in IUFRO activities, the VŠLD in Zvolen became a member of the International Academy of Wood Science, a founder member of the movement for nature-oriented forestry Pro Silva, a member of the European Forestry Institute (EFI), and many other international organizations.

More teachers and researchers of the VŠLD as well as the Technical University were awarded foreign honorary doctorates as an acknowledgement of their scientific and pedagogical contribution:



Prof. J. Palovič (Dresden, 1984), Prof. A. Priesol (Poznan, 1989), Prof. Š. Korpeľ (Zürich, 1993), Prof. L. Miklós (Gödöllö, 2001), Prof. M. Babiak (Sopron, 2003), and Prof. E. Rónay (Sopron, 2005).

Life at the VŠLD in Zvolen was influenced by significant nationwide events and processes. Such a process was, for example, so-called "political thaw" headed by Alexander Dubček which was happening from January 1968 and then the tender shoots of the "Prague spring" were burnt down by the "Moscow frost". Enthusiasm to build "socialism with a human face"was replaced by fear for a bare existence. Political screening and vetting were carried out thoroughly at universities. Many quality teachers of the VŠLD in Zvolen were either entirely excluded from the pedagogical process or they were permanently shifted to less qualified positions and limited in their following qualification growth. Besides personal wrongs, in many cases it also signified a sensible loss of experts who could have been a contribution to the development of the University.

In the educational process, an increasing emphasis was laid on political-educational work, on the communist education, political trainings etc. It could be also seen when accepting students to the University. The class background belonged to priorities. The most desirable was working class background, then peasant one (small farmers or cooperative farmers) and finally so-called "others". Political shackle was counterbalanced especially for students by certain social advantages, such as cheap accommodation in student residences, cheap meals, reduction on fare, social and works scholarships, subsidized practices, and others.

In the 1970´s, building and investment activities at the VŠLD were intensified. From the end of the 1960´s, constructing the main building of the VŠLD was being prepared. The choice of a building site was slow and time-consuming: Baková jama, Stráže and finally the place opposite the railway station in the neighbourhood of existing buildings of the University. The project was elaborated by Ing. Arch. Vladimír Dědeček and the building was carried out in the years 1977–1983. By putting the new building into operation in the period of 1983 –1984, the conditions for teaching and research work were significantly improved.

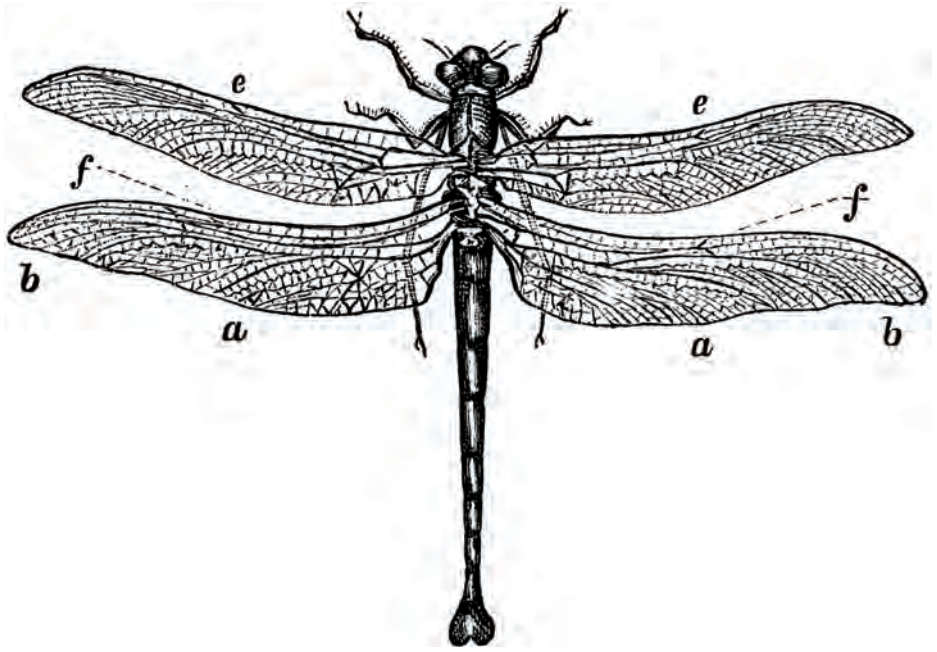
The political course of the former regime was practising a long-term continuity of cadres in personnel questions. In some leading positions, people remained until the time of "gentle revolution" (November 1989). November 1989´s events created conditions for the democratization of life also on the academic grounds. The monopoly of one party came to an end, the personnel policy was changed.

The socio-political changes and democratization of our society brought new conditions which, in a basic framework, were given by the new university law no. 172/1990 coming into force from 1st July 1990. In comparison with the past, this law provided universities with a considerably greater autonomy and authority to decide on their management and all their activities which were embodied in the statute of every university. The academic year 1990/1991 was a year in which short administration of the academic senates and academic officials finished. New senates and officials were elected for a three-year term of office.

At the VŠLD, changes were also carried out in the sphere of curricula. The faculties came back

to the 5-year study and an increase in quality of study as well as in the sphere of study organization and measurements to raise educational and professional level.

The Academic Senate elected Assoc. Prof. Ing. Vilém Štefka, CSc., as rector of the VŠLD, Assoc. Prof. Ing. Štefan Žíhlavník, CSc., became the dean of the Faculty of Forestry, RNDr. Marián Babiak, CSc., became the dean of the Faculty of Wood Sciences and Technology, and Prof. Ing. Štefan Šmelko, DrSc., was elected as chairman of the Academic Senate of the VŠLD.



After 1989, the VŠLD in Zvolen went through several organizational changes. On 1st October 1991, the independent Faculty of Ecology with its today´s name the Faculty of Ecology and Environmental Sciences was established. It is pleasing that the VŠLD in Zvolen corresponding to the worldwide trend of building the ecological education, noticed as the first one in Slovakia this positive trend contributing to mobilization of material and spiritual means, to more intensive interest in the environment and its protection, and also in the contribution of a reliable conception of further development of life technization. By the decision of the National Council of the Slovak Republic, on 17th December 1992 was approved the law no. 26/1992 Coll. on the change of the name of the VŠLD (University of Forestry and Wood Sciences and Technology) in Zvolen to the Technical University in Zvolen (TUZVO).

The aspect of integrating Slovak universities into the European system and their transformation led to the establishment of the 4th faculty of the TUZVO – the Faculty of Environmental and Manufacturing Technology (FEVT) which came into force on 1st October 1996. The Faculty filled up a gap in the education of university experts in providing ecologically acceptable technology in correspondence with the world trends and ecological norms of the European Union. In 1996, the TUZVO

gained a building for the FEVT in Študentská Street, where the Faculty has operated until now.

The year 2002 brought significant changes to the history of the Technical University in Zvolen. Since 1st April 2002, new laws relating to university education in Slovakia took effect, especially University Law no. 131/2002 Coll. While the preceding University Law no. 172/1990 Coll. brought back mainly academic freedoms, the new University Law continued in reforms by the compulsory introduction of the 3-stage university education and the European Credit Transfer System – ECTS, and also the economic independence of universities, among others.

On 31st March 2002, the TUZVO finished its existence as a state budgetary organization and since 1st April 2002, it has been a public university. It is also necessary to mention the Long-term Development Scheme of the Technical University in Zvolen for the years 2003 – 2010 approved by the Academic Council, the Board of Directors and the Academic Senate of the TUZVO in March 2003. This material sets the strategic plan of the TUZVO to become a research university while fulfilling its mission to develop creative research and, on its basis, to provide university education in the European research and educational area, including all three levels of university education, especially in the sphere of forestry, wood technology, ecology, environmental sciences, economics, management, engineering, information technologies, design, personal and property protection, industrial engineering, and related boundary and interdisciplinary spheres.

The year 2003 is a year of culminating preparations and a process of accreditation of study programmes as well as the complex accreditation of the University as amended by the University Law no. 131/2002 Coll. Most submitted proposals were successfully accredited.

In 2004, the TUZVO continued in implementing the Long-term Development Scheme of the TUZVO for the years 2003 – 2010 including the ongoing transformation of the social and economic life of university education in the Slovak Republic, but also the development tendencies in the developed countries of the world. The TUZVO continued in its efforts in further differentiation, versality and individualization of study and its mutual interlinking within and also among faculties. Developing an integral system of more study branches and sufficiently wide flexible choice of study programmes kept carrying on. It facilitated the fast adaptation of the graduate profile to changing needs of our society, labour market, and to a certain degree, also a personal interest of students themselves as well as an appropriate interaction with related departments at other universities. The two-way mobility of PhD. students, teachers and researchers with foreign institutions was supported, too. To use effectively the creative potential of employees, the synergic effect of the interdisciplinary focus of the main workplaces and relatively well-equipped specialized facilities of the Technical University in Zvolen.

On 1 May 2004, Slovakia became a member of the European Union and it gained all advantages, however, also risks and responsibilities resulting from that fact. Thus, severe competition in the sphere of research, education, and the development and operating the University became everyday reality.

Since 2004, an intense interest in study among

students has been generated by the new branch of study – Protection of Persons and Property. The branch of study Fire Protection has existed at the Faculty of Wood Sciences and Technology already since 1998. The next new study programmes in the branch of study Rescue Services were accredited in the year 2015 (in all study levels). On 26 February 2003, the Volunteer Firefighter Corps of the Technical University in Zvolen (DHZ TUZVO), in which the students as well as employees of the TUZVO actively act, were found.

At the beginning of the new millenium, the reform of the higher education system was carried out in Slovakia and it has influenced many economic aspects of university activities. Subsidies for universities were decreased. The demand for joint financing, mobilization of inner reserves and energy saving have had a strong impact upon the University. Thus, all life of the University has been marked by implementing the obtained measurements to pay back the internal debt of the University. Taking this situation into consideration, the Faculty of Ecology and Environmental Sciences, which was operating in Banská Štiavnica in the period of 2000 – 2006, was moved back to Zvolen. The relocation of the Faculty significantly influenced economy of the University and also has increased the interest in study.

Since 2007, administration of the TUZVO study routine has been fully digitized. Within the University Information System (UIS) a prospective student can electronically apply for the study, students electronically sign up for subjects, they electronically enrol for exams and also can complete their exam tests, within their study group they communicate with their teachers as well as fellow students. The UIS let teachers set dates for exams, inform on their results, continuosly keep track of assignments, check the condition of chosen items including attendance, there are also registered bachelor´s theses, diploma works, and PhD. theses.

In the academic year 2007/2008, Assoc. Prof. Marek Fabrika from the Department of Forest Management and Geodesy, the Faculty of Forestry, received the prestigious award Werner Siemens Excellence Award for the scientific project SIBYLA – virtual simulator of forest biodynamics – mathematical simulation of the forest biotope behaviour.

In 2008, the reconstructed premises of the Slovak Library of Forestry and Wood Sciences were opened. The TUZVO invested in the reconstruction over €1 million with the aim to improve its equipment and functionality. The investment has brought not only more quality and faster services for students and employees of the TUZVO, but also for the general public, especially from among small and medium-sized enrepereneurs in the field of forest forest management, wood-processing industry and the environment, protection of the environment. Thus, the access to the world information databases has been improved, accellerated, and facilitated.

The academic year 2009/2010 was entered by the TUZVO with the confirmed status of the elite university. On the basis of the complex evaluation and proposal of the Accreditation Commission of the SR, the TUZVO was ranked to higher education institutions of the university type along with other five Slovak universities.

Since the entry of the SR into the EU and mainly after the year 2007, the TUZVO has been successful

The jubilee TUZVO Monograph launch by the President of the SR Ivan Gašparovič and the Rector of the TUZVO Rudolf Kropil in 2012

in gaining finances from the structural funds of the European Union.

Among the most important tasks of the Long-term Development Scheme of the TUZVO for the period after the year 2011, there was internationalisation of the study, getting a more significant position within the international higher education and research area. One of the tools to meet this aim was the project with the title of The Designing of Study Programmes in a Foreign Language and Support of Teaching Foreign Languages at the TUZVO. The TUZVO received the financial contribution of € 999, 908. 40 from the European Social Fund. Within the project, three study programmes in the second, Master´s level of university study (Furniture and Interior Design, Production and Utilisation of Wood Products and Forestry and Wildlife Management) and one in the third PhD. level (Adaptive Forestry and Wildlife Management) were designed. Also their syllabi and study literature in the English language were prepared.

Preparation and design of projects, their management and carrying out are administratively demanding, therefore the TUZVO has established a specialized Department of Project Management. Its task is to provide support to all activities connected with designing applications for contributions including project management, factual implementation and administration of the routine. A great implemented project at the TUZVO was the demand-oriented project "The Reconstruction of TUZVO Premises with the Aim to Build Information and Communication Technologies and Technical improvement of the buildings" with the budget of € 11, 296, 602.87. Within the project in all main buildings of the TUZVO, modern efficient structured caballing was built and high-speed network connection among the TUZVO buildings was carried out. 55 classrooms and 36 laboratories of the TUZVO and 11 high-capacity lecture halls have been modernized; altogether 85 systems of projection and AV signal running have been installed, and the lecture halls have been completed with 11 interactive boards. Thus, technical conditions for educational process of the most modern character have been created. Also the Student Congress Centre and two videoconference rooms have been built.

For the TUZVO, the year 2012 was a year of significant jubilees. We were celebrating the 60th anniversary of the establishment of the VŠLD and its moving to Zvolen. In 2012, it was accurately 250 years as the Empress Maria Theresa of Habsburg issued the decree by which the history of university technical study in Slovakia started to be written and our university continues in it. In connection with the given anniversaries, the Days of the University were held on 17 – 18 September 2012. On this occasion more events took place, for instance the exhibition "Six stops in František Papánek´s life", the uncovering of the memorial plaque to Prof. František Papánek and the uncovering of the memorial to Professor Miroslav Stolin. The key event was the academic ceremony on 18 September 2012 with participation of the President of the Slovak Republic Ivan Gašparovič.

Rector and Vice-rectors 2012 – 2017

Rector
Dr. h. c. Prof. Ing. Rudolf Kropil, PhD., from February 18, 2012 to present

Vice-rector for Education
RNDr. Andrej Jankech, PhD., from May 1, 2012 to present

Vice-rector for Science and Research
Assoc. Prof. Dr. Ing. Jaroslav Šálka, from April 1, 2012 to present

Vice-rector for Development
Prof. RNDr. Danica Kačíková, PhD., until March 31, 2017
Assoc. Prof. Ing. Josef Drábek, CSc., from June 1, 2017 to present

Vice-rector for International Relationships
Assoc. Prof. Ing. Mgr. Rastislav Šulek, PhD., until April 30, 2016
Assoc. Prof. Ing. Branislav Olah, PhD., from May 1, 2016 to present

TECHNICAL UNIVERSITY IN ZVOLEN
2012 – 2017

Education

The university environment was during the years 2013 – 2017 characterised mainly by the process of the complex accreditation of the public universities and institutions providing higher education. Several changes in legislation had a significant impact on the pedagogical, scientific, research and economic activities, mainly on imposing the fee followed by extending the standard length of study in the part-time form. In order to reduce the bureaucracy and make the standard activities at universities more effective, the central registers of study programmes and university employees were introduced. Similarly, submitting accreditation applications or submitting materials within the complex accreditation was carried out electronically. The study at universities was carried out according to the Act on Higher Education no. 131/2002 Coll. and its further amendments adopted in later years. From the point of view of funding the universities, their activities adapted to changes from budget to subsidy financing, which mirrored largely the performance parameters including recalculated student numbers, evaluation of the research areas of universities within the complex accreditation, volumes of finances acquired from domestic and foreign grants, qualitatively structured outputs in publications and art activities etc. The intention of the Slovak Republic in the sphere of higher education was to build an effective system which would allow all people with interest and required abilities and skills to access quality higher education. Education is a process of constant study and verification of established procedures and activities. Moreover, it is searching for new and innovative activities or adapting to current modern trends respecting the needs of practice and society. The aim is to increase the education effectivity and thus increase the capability of graduates in the labour market in conditions of constantly growing competition. Many universities responded to these trends with creating new and popular study programmes in order to attract as many students as possible and thus raise the student number. Such study programmes covered mainly the fields of economy, law, social science and mass media communication. This started a battle among universities to attract students, while the students' interest in technologically focused study programmes had a downward trend.

Study at the Technical University in Zvolen in 2013 – 2017

The basic aim of education is a quality preparation of a competitive graduate, whose

knowledge and skills will be up-to-date and in accordance with the requirements of practice. The Technical University in Zvolen (TU in Zvolen) provides several accredited study programmes in the branches of forestry, wood sciences, economy, ecology and environmental sciences, environmental and manufacturing technology, safety services and design. On 2 June 2014 the Technical University in Zvolen submitted the application for complex accreditation of university activities connected to its Long-term Scheme. The accreditation committee, during more than 12 months since the application submission, evaluated the education, research, development and art activities of the university, as well as the staff, technological, information and other conditions, in which the activities take place. Activities within the years 2008 – 2013 were evaluated. In the academic year 2015/2016, on 12 November 2015, the Technical University in Zvolen received the complex accreditation results, and due to several changes in the study organisation it was necessary to move to newly accredited study programmes in the full-time form of study. Students in the part-time form of study could complete their study according to the conditions valid from the previous accreditation. The shift to the new study programmes (in several cases these new study programmes meant mainly a change, or modification of the name of the study programme), mainly changes in the study plans and changes in the organisation of state exams involved many technical issues, which needed to be solved. The shift to the new study programmes in the full-time form was organised in order to reduce the problems of students with accepting the study results achieved so far. Within the complex accreditation, the University defended its position among the universities. The accreditation committee commented also on the

Tab. 1: Overview of the number of accredited study programmes according to the results of complex accreditation

	1st level of study	**2nd level of study**	**3rd level of study**	**altogether**
Faculty of Forestry	6	9	16	31
Faculty of Wood Sciences and Technology	14	14	10	38
FFaculty of Ecology and Environmental Sciences	6	6	4	16
Faculty of Environmental and Manufacturing Technology	4	4	2	10
University study programmes	2	2	–	4
TUZVO	**32**	**35**	**32**	**99**

application for accreditation of study programmes and for accreditation of all habilitation procedures and procedures for appointing professors. The Technical University in Zvolen applied for accreditation in 100 study programmes at all three levels of study, and 99 applications were successful.

During the evaluated period the number of students at the TU in Zvolen decreased from 4,483 students in the academic year 2012/2013 to 3,481 students in the academic year 2015/2016. In the current academic year 2016/2017 altogether 3,028 students have attended the TU in Zvolen, thereof 2,372 students in the full-time and 656 students in the part-time form of study. Annually, the Technical University in Zvolen was chosen by an average of 100 foreign students for their education, representing approx. 3 % from the overall student number. The majority of foreign students studied at the Faculty of Wood Sciences and Technology, which provides a study programme of the first level of study at an external workplace in Volyně in the Czech Republic. The study at the 3rd level of study is also an integral part of the education. In the academic year 2012/2013 the PhD study was attended by 213 students in both forms of study. Currently, the TU in Zvolen has 113 students studying at the 3rd level of study, representing 3.7 %, while the intention within the Long-term Scheme was to reach and maintain a 10 % share. The change in the way of providing scholarships, possibility of PhD graduates' application in the labour market, as well as responsible approach of all faculties in selecting the applicants probably affected this situation quite significantly. Applying the ECTS system in the PhD study plays an extremely positive role in fulfilling the study duties of PhD students. The number of PhD students finishing their studies within the standard length of study is increasing. This situation was affected significantly by the obligation to pay annual tuition fee in the case of extending the standard length of study. Several students of the third level of study in the full-time form attend also supplementary pedagogical studies organised by the Centre for Continuing Education, since the current system requires the PhD students to take part also in the education process. Further important indicators, monitored also at the level of evaluating the results within the complex accreditation and being one of the deciding factors in assessing the public universities, include also the outputs of students and graduates of the PhD study programmes. The required output level is minimum C+ according to the Criteria for Evaluating the Level of Research, Development and Art and Other Creative Activities. Every PhD students after the dissertation exam, as well as every graduate in both, part-time and full-time form of study, has to submit one output. This was one of the reasons for including the requirement for every student to submit a scientific publication to a reviewing process of a journal with impact factor listed in the Web of Science, or to have an accepted application for industrial property. Another important accreditation criterion for universities is to have PhD students in at least 60 % of all research fields. The TU in Zvolen meets this criterion, since it has covered 75 % off all its research fields. These are the reasons why the study at the 3rd level of study and mainly its quality are seen as the key factors of defending successfully the present position in the education environment in Slovakia. The development of student numbers at all three levels

Tab. 2: Development of student numbers at the TUZVO in the academic years 2012/2013 – 2016/2017

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Full-time students	3,259	3,164	2,978	2,635	2,372
Part-time students	1,224	1,045	884	846	656
Altogether	**4,483**	**4,209**	**3,862**	**3,481**	**3,028**

of study in both forms at the Technical University in Zvolen for the last five years is illustrated in Table 2.

The lower number of students affected also the optimisation of the work load of teachers at individual faculties giving them more time for pursuing also their science and research activities. This was mirrored in the increased amount of acquired grants, as well as in the increase in publication outputs. The teaching process itself was influenced significantly by the gradual transformation of several standard activities through the university information system. The University could implement this system thanks to the long-term and hard work of many people. Several modules were implemented gradually, e.g. the modules Study System, E-learning, Science and Research, Additional Manager Tools, Personal Management, as well as the evaluation of employees' activities. All issues associated with the study are tackled in a complex way within this system from the first contact with the applicant for the study, such as presenting the information about the University and its study programmes, study application submission, through everyday study duties like timetables, exams, final thesis topics, thesis submission, keeping study records and finally the activities connected with study completion and issuing official documents such as certificates, diploma or diploma annexes. The university information system is used also to tackle the tuition fees, awarding the scholarships and grants to students or checking the final theses originality, which is then compared with the database of the Central Registry of Theses and Dissertations of the Ministry of Education, Science, Research and Sport of the Slovak Republic. The information system provides its users with more than 600 applications making the routine of the unified study system at the TU in Zvolen easier.

The Technical University in Zvolen, besides its focus on individual study branches and programmes, offers scientific courses and language courses improving the student foreign language competence. It has become a standard that at the beginning of the first year of study the student take a placement test, and according to its results they are divided into appropriate groups. In order to improve the foreign language teaching at the TU in Zvolen a new system of foreign language teaching was elaborated and introduced, requiring the students in all study programmes to pass a foreign language for specific purposes exam.

Fulfilling the Long-term Scheme 2011 – 2016 of the TU in Zvolen in the Field of Education

The education at the TU in Zvolen in 2013 – 2017 was carried out according to the Long-term Scheme of the TU for 2011 – 2016, results of the complex accreditation from 2009, reaccreditation and changes in providing the study programmes, document preparation for the complex accreditation in 2012 – 2013 and subsequently received results of the complex accreditation in 2015. Considering the Long-term Scheme of the TU for 2011 – 2016, the main aim in the field of education was the internationalisation of study. Task leading to fulfilling this main aim covered: applicants for study and students, access to higher education,

internationalisation of study, introducing new teaching methods, education quality assessment and life-long learning. Several tasks were fulfilled completely, some were fulfilled only partially, and some were not fulfilled at all due to not optimal definition of criteria and conditions, or due to the changes in legislation occurring during the course of fulfilling the Scheme, such as the number of students in the part-time form, which was subject to tuition fee in the monitored period.

Ability to change the working position flexibly, whether among various companies or industries, or in regard to moving from region or country to another, is considered a key ability when tackling the European issues with employment. Workforce mobility requires not only the readiness of workforce but also specifically adapted forms of education. One of the principal objectives of the Long-term Scheme is internationalisation of study. In order to support such study, several projects within the Operational Programme Education entitled Creation of Study Programmes in Foreign Language at the TU in Zvolen, were carried out at the University. The projects were aimed at preparation and subsequent creation of study programmes of the 2nd level of study: Furniture and Interior Design, Production and Utilisation of Wood Products at the Faculty of Wood Sciences and Technology; Forestry and

Wildlife Management at the Faculty of Forestry, Ecotechnology and Production Technology at the Faculty of Environmental and Manufacturing Technology; Economics and Management of Forestry and Forest Based Industry within the special purpose study programmes; and at the 3rd level of study the study programmes included were: Adaptive Forestry and Wildlife Management at the Faculty of Forestry and Environmental Engineering at the Faculty of Ecology and Environmental Sciences. All these study programmes were newly established; some of them have already been accredited successfully and others will be submitted to the accreditation committee for approval soon. This project included also creating the Self-Access Centre for individual study of foreign languages with various course books, professional dictionaries, foreign language journals, and e-learning programmes for English and German for specific purposes. The target groups of the study programmes in the foreign language are students, graduates of appropriate levels of higher education, applicants from Slovakia, as well as from abroad meeting the basic requirements for study determined by the corresponding legislation and by the TU in Zvolen. Reactions from the partner institutions, like BOKU Wien, Georg Augustus Universität Göttingen, University of Forestry Sofia, Sveučulište Zagreb, Transilvania University Brasov, Escuela Tésnica Superior de Ingenieros de Montes Madrid and other, indicate that such study programmes could be of interest, what could revive cooperation also in terms of student exchanges.

Nowadays, one of the words most frequently used not only in the education sphere of the developed countries is quality and innovation. Permanent innovations in products and services of higher quality can be provided only with quality education. Quality is an ambiguous and complex term with several meanings. The expression quality, e.g. a quality teacher, quality school, denotes most often a good teacher or a good school, which means a school of a high level. Recently, the Slovak

Tab. 3: Number of graduates in the study programmes at the 1st, 2nd and 3rd level of study in the academic years 2011/2012 – 2015/2016

Academic year	1st level	2nd level	3rd level	altogether
2011/2012	663	757	70	**1,490**
2012/2013	739	631	61	**1,431**
2013/2014	659	606	62	**1,327**
2014/2015	533	646	40	**1,219**
2015/2016	550	602	28	**1,180**

Rectors' Conference has accepted and supported Standards and Guidelines for Quality Assurance in the European Higher Education Area issued by the European Association for Quality Assurance in Higher Education. It established principles, mechanism, procedures and information sources to assure and asses the quality in higher education in order to enable evaluation and analyses of education level and adopt effective measures as quickly as possible. Since 2013 the Technical University in Zvolen has had the Board for Quality; politics and objectives of quality are established and are regularly assessed once a year, and an Evaluation Report of the Internal Quality System at the TU in Zvolen is elaborated. University officials, teachers, as well as students are involved in the evaluation process. University information system enables to evaluate students' surveys, where students can express their opinions on the quality of education at lectures and seminars, on the content of the study programmes and evaluate individual courses and teachers. These surveys, comprising also questionnaire on quality evaluation of the University, faculties, and overall students' satisfaction with the study or activities of the Department of Student Affairs, are evaluated twice a year. It is encouraging that the student replies are mainly positive and students are mostly satisfied. Assessment of the education quality is extremely important for universities in order to attract future applicants for study, and will be taken into consideration also by the accreditation committee when evaluating the study programmes.

An important and observed task is monitoring the successfulness of the graduates in the practice and getting feedback from them. In February 2015, several eminent personalities including a few successful TUZVO graduates shared their experience and reflections gained after the graduation and discussed their journey to success at an event entitled Presentation Days of Companies that took place at the TUZVO. In the evaluated period, more than thousand students graduated from the Technical University in Zvolen every year.

Overview of the graduate numbers in the finishing study programmes at the 1st, 2nd and 3rd level of study is illustrated in Table 3.

Student Social Support

The student support scheme is provided also in the form of various types of scholarships and grants in terms of valid legislation and internal directives of the TU in Zvolen. The students can draw scholarships and grants from the sources provided for this purpose from the state budget and from the University's own resources through scholarship fund. The state budget provides maintenance grants, excellence scholarships and career specific scholarship. The excellence scholarship is at the TU in Zvolen provided in the form of either merit scholarship or extra scholarships. Own resources are used to award extra scholarship.

Maintenance grant can be awarded to students in the full-time form of study of the 1st or 2nd level of study with permanent residence in the Slovak Republic. When calculating the amount of the grant, the overall income of family members living together is considered. Maintenance grant can be awarded only to those students whose family income is close to the sum of subsistence minimum.

Mgr. art. Igor Želtvay, Little big furniture, 2013

Merit scholarship is awarded to students of study programmes of the 1st or 2nd level of study and the quality of achieved study results in enrolled courses is considered.

Since 2014 the subsidy from the Ministry of Education, Science, Research and Sport of the Slovak Republic has been allocated also to several specific study branches. Within the TU in Zvolen following selected study branches were covered: Transportation Machines and Equipment, Industrial Engineering, Manufacturing Technology, Agricultural and Forestry Machines, Wood Sciences, Environmental Engineering, Environmental Management, Landscape Protection and Use, General Ecology and Ecology of Individuals and Populations. The subsidy for career specific scholarships is based on the number of students in the selected study branch in the full-time form of study in accredited study programmes (1st and 2nd level of study), whose coefficient of student capability is over 0.95 (at the TUZVO all selected branches met this criterion). The use of these funds is bound to students of the selected study branches and can be awarded to maximum 50% of students of the study branch in question.

Extra scholarship can be awarded to students of the TU in Zvolen achieving outstanding study result (Rector's Award, Dean's Award) or results in the professional field, science, research or sport or to

students representing the University or faculty at significant national or international events.

Further scholarships are awarded to students of the 3rd level of study in the full-time form according to the relevant working tariff. Extra scholarships for the students of the 3rd level of study for achieved scientific or research results remained in the competence of each faculty.

In accordance with the new amendment to the Act on Higher Education the TU in Zvolen employed a coordinator for students with specific needs. The coordinator's activities are directed by the guidelines for creating conditions for students with specific needs at universities. Following an entrance questionnaire or student application, the student is evaluated annually during the study, however, if it is necessary also more times a year. The average number of students, for whom corresponding conditions were created without eliminating the study requirements, is approx. 20. For these students the University assigned and furnished a room, where they can spend free time between classes or prepare for the classes and where necessary information technologies and comfortable premises for undisturbed study are at their disposal.

Further Education at the TU in Zvolen

The management of the Technical University in Zvolen keeps in mind also further education of their employees, including compulsory trainings and retraining arising from corresponding legal regulations. Further education is a part of life-long learning and enables everyone to complete, broaden and deepen already existing education or provides the possibility of retraining or simply satisfying own personal demands and interests.

The last century brought huge changes in people's lifestyle in industrial countries. Introducing the technologies decreased the ratio of physical work and increased the demands on the person's psyche. Aging people need to maintain appropriate activity in order to feel needed and self-actualised. The Technical University in Zvolen values and appreciates the elder generation of people who gave their best years to the society. The majority of them are already retired. Nevertheless, they are still active and they are maintaining a good level of fitness and mental freshness. Exactly these people are the target group for activities known as the University of the Third Age. Elderly people are still interested in such form of education and the number of attendees has been rising for the past 5 years, especially in programmes such as: English Language – intermediate level, English Language – beginners, Decorative and Medicinal Herbs as a Part of People's Environment, Psychological Practice, Psychology, Work with Computer for Beginners and Intermediate Level, Law in a New Way, Modern Lifestyle, Sports for Health and Mushrooms New Way. The University of the Third Age was in 2015/2016 attended by 382 students in 20 study programmes, and 140 graduates completed successfully their studies. In order to increase the capability of own graduates, the Technical University in Zvolen organised supplementary pedagogical studies in cooperation with the Matej Bel University in Banská Bystrica. We also have to mention the Children's Forestry University taking place regularly and giving the

selected sixth graders from Zvolen the possibility of attending several interesting lectures. The programme of professional lectures is supplemented by experience based learning and forest pedagogy activities with foresters during walks in the forest. Each student of the Children's Forestry University is matriculated, receives the student's record book and after completing all planned activities they take part in the graduation ceremony and become graduates of the Children's Forestry University.

Conclusion

In term of education the Technical University in Zvolen enters the future with clearly stated direction in the form of Long-term Scheme for the period of 2017 – 2023. The University's vision is to defend its position and provide education at all three levels of study. The most important guarantee of fulfilling this aim is the initiative, devotion, interest and determination of all members of the academia.

Within the complex accreditation, 99% of the applications submitted for accrediation of study programmes at all three levels of study and all seven applications for habilitation procedures and procedures for appointing professors were successful.

Science and Research

Science and research have been playing an increasingly important role in the society. Researchers are expected to present findings that would lead to economic development, creation of new jobs and would help solve important social and environmental challenges. At the same time, in accordance with the European trend, a better interconnection between research and innovations as well as a close collaboration between public and private sectors are presupposed. A characteristic feature of the contemporary research and development environment in Europe is its outstanding internationalisation. The Slovak Republic as an EU member country claims its rights to the principles of the developing European research area that should be based on excellent research following the competition principles, common priorities, free access to information and open labour market for researchers.

The Slovak Republic has for its object to fulfil the ambition of being a full-value member of the European research area. The Slovak research and development have had a long-established tradition and they have been achieving results at the top-level worldwide. The Slovak research potential can be seen on the participation of our researchers in a number of European and international research and development projects, where they successfully represent the Slovak science abroad.

The implementation of science and technology policy is being increasingly understood in a broader context of cohesion to education, international scientific research and knowledge transfer and its utilisation in practice, by the medium of innovations. Following its long-term goals, the Technical University in Zvolen also aims at fulfilling these strategic intents. The significant role the Technical University in Zvolen is playing as a scientific institution must be predominantly comprehended within the context of economic and social development of the particular regions as well as the rural development. Its focus on forestry, wood-working industry, ecology and environment predestines our University to be a significant factor in supporting the green economy principles. Thanks to science and research and their connection to practice, the TUZVO is a substantial institution, which helps to increase economic growth, create new jobs and improve the standard and quality of living, primarily for residents in the rural regions.

The near future will be in token of implementing the Research and Innovation Strategy for Smart Specialization of the Slovak Republic (RIS3 SK) that should influence research and development in a positive way and start on the complex changes in the institutional provision of support for research

and development in Slovakia. A crucial factor in the development of the Slovak science will be the partnership of all the subjects concerned, i.e. all the respective ministries, Slovak Academy of Sciences, universities and private sector including small and medium-sized enterprises, because they are being the prerequisite for successful fulfilling of RIS3 SK goals.

However, the state of research and development in Slovakia is also characterised by multiple perennial problems. The long-standing underfinancing has definitely been the greatest problem in the Slovak research. In practice, this has also been manifested in the insufficient budget for the Slovak Research and Development Agency - as the main grant agency it only has meagre resources in regard to announcing new calls. Moreover, in contradiction with the European trend, the support of basic research and financing research from public resources dominate the Slovak professional society. However, this should change in accordance with RIS3 SK. The Technical University has been evaluated by a number of ranking and rating agencies in recent years, whereby it has achieved some very good results.

Scientific and Research Activities in the Period of 2012 – 2016

According to the enacted Long-term Development Scheme of the Technical University for the Period of 2011 – 2016, the strategic aims of the TUZVO were as follows: internationalisation of education, scientific research and knowledge utilization; further development of the university status as such; improving the emplacement of the TU in Zvolen within the European educational and research area as well as the University engagement in creating the European knowledge society in terms of its profile and strengthening its uniqueness in the university system of the Slovak Republic. 2016 was characterised by the preparation of a new Long-term Development Scheme of the Technical University for the Period of 2017 – 2023. Within the frame of scientific and research, creative and art activities, the strategic objective is to achieve internationally acknowledged results and to transfer the knowledge into economic and social practice.

The Technical University in Zvolen entered the science evaluation resource of SCImago Institutions Rankings (SIR) in 2014 as it reached the limit of 100 publications registered in the SCOPUS database in 2013. The rating of scientific and research institutions through the SCImago Institutions Rankings (SIR), which is being accomplished by SCIMAGO Lab in collaboration with SCOPUS, represents the worldwide evaluation of their scientific and research activities. For the evaluation, SIR uses a set of 12 criteria and indicators in three areas: scientific results (50%), innovative results (30%) and social results (20%). The Slovak Academy of Sciences reached the highest ranking as far as the Slovak scientific and research institutions are concerned. The issued ranking list gives the big scientific and research institutions more or less advantage. However, even small-sized high-class and more specialised institutions such as the Technical University in Zvolen can be part of the ranking. Differences in the institutions´ size can indeed be settled, if the SIR relative indicators were recalculated at resources budgeted for science and research or the number of research staff members. The Technical University in Zvolen has continually been improving its ranking position since 2014. In 2014 it took the 687th place, in 2015 the 672nd and in 2016 the 663rd place.

If we want to assess scientific and research activities at the TUZVO within the period of 2012 – 2016, it is necessary to point at its scientific focus on primary research areas, its participation in international projects and national agency projects as well as at publication and application outputs of the projects.

Primary research areas at the Technical University, that wants to be distinguished as a green university, were focused on forest, wood, ecology and environment and were implemented by means of scientific and research activities of the particular faculties. The primary research area at the Faculty of Forestry (LF) was defined as "adaptive forest management in the forestry of the Slovak Republic": the primary area includes all forest functions ranging from silviculture, harvesting and wood logistics, forest ecology, economics and management of forestry up to forest protection and hunting. The primary area should secure the continuity of scientific and research activities and it also should innovate the priorities of the scientific and research activities with regard to new challenges in the international and national forestry research, society and economy. Following the approved primary topic of scientific and research activities, the Faculty of Wood Sciences and Technology (DF) focused itself on "transformation of wood raw material into products of the new generation". Its partial goals strive for design and furniture production, wooden constructions, fire protection and integrated safety, energy usage of wood as well as economic and marketing aspects of effective wood utilization. At the Faculty of Ecology and Environmental Studies (FEE), the emphasis was put predominantly on water and terrestrial ecosystems and biodiversity assessment, land and ecological processes, identification of anthropogenic impacts on particular elements of the environment, identification of countryside indexes, optimisation of waste treatment and waste industry, technological procedures in the industry and reduction of environmental impacts as well as on philosophical, social, cultural and legislative aspects within the relationship man – environment. The primary scientific and research profile of the Faculty of Environmental and Manufacturing Technology (FEVT) was to solve technical and technological research tasks as far as waste and secondary raw materials management concerned, water and air protection technology, machinery and mechanisms for woodworking and forestry engineering, production management, quality management, diagnostics and operational machine reliability, in connection with the environment.

Creative employees of the TUZVO have been participating in the collaboration with foreign partners in the past five years. A clear proof of this is the success of the Faculty of Forestry, Faculty of Wood Sciences and Technology and Faculty of Ecology and Environmental Sciences that managed to get foreign grants within the Framework programmes and Horizon 2020 financed by the European Commission.

Apart from this, creative employees of the TUZVO have also worked in the international scientific networks through the COST actions, bilateral projects supported by the national Slovak Research and Development Agency and the European Forest Institute (EFI).

The national science and research projects at the Technical university in Zvolen were financed by the native agencies: Slovak Research and Development Agency (APVV), Scientific Grant Agency of the Ministry of Education (VEGA), Cultural and Educational Grant Agency of the Ministry of Education (KEGA) and Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic for the Structural Funds of EU (ASFEU). In cooperation with the institutes of the Slovak Academy of Sciences, the National Forest Centre and other Slovak universities, the TUZVO succeeded in creating a system of unique centres of excellence through the Operational Programme: Research and Development that is coordinated by the Agency of the Ministry of Education for the Structural Funds. The centres of excellence were built mostly at the Faculty of Forestry in collaboration with selected departments at the Faculty of Ecology and Environmental Sciences and the Faculty of Wood Sciences and Technology. The financial statement of the last project that belonged to the programme period of 2007 – 2013 has also recently been finished within the scope of Operational Programme Research and Development at the Technical University in Zvolen.

In 2016, the Research Agency – as an intermediary body of the Ministry of Education, Science, Research and Sport of the Slovak Republic for implementation of projects from the European Union funds – announced new demand-based calls for the programme period of 2014 – 2020. Within the call announced for the support of Industrial Research and Development Centres with the specialisation area RIS3 SK (OPVaI-VA/DP/2016/1.2.1-02), the Technical University in Zvolen participated in 8 projects as a partner. There were altogether 7 projects submitted in these calls to support Industrial Research and Development Centres with the specialisation area RIS3 SK (OPVaI-VA-DP-2016 1.2.1-03).

INTEGRAL *– Future-oriented Integrated Management of European Forest Landscapes (Prof. Ing. Ján Tuček, CSc.)*

ECONANOSORB *– Ecological Application of Nanosorbents on the Base of Natural and Synthetic Ionites and Carbons (prof. Ing. Ján Sedliačik, PhD.)*

ALTERFOR *– Alternative Models and Robust Decision-making for Future Forest Management (Prof. Ing. Ján Tuček, CSc.)*

CHARMED *– Characterisation of a Green Microenvironment and Study of its Impact upon Health and Well-Being in the Elderly as a Way Foreward for Health Tourism (Ing. Magdaléna Pichlerová, PhD.)*

A measurable result of project scientific and research activities is a first-rate publication.
The publication activity at the Technical University in Zvolen was divided into 5 groups - A1, A2, B, C and D - in line with the recorded data of the central publication activity register. The group A1 represents book publications having the character of scientific monographs, the group A2 stands for the authorship of other book publications such as university textbooks, specialised book publications, lecture notes,

etc. Publications in ISI-indexed journals, authorised certificates, patents and discoveries are included in the group B. The group C registers recorded items published in Web of Science and SCOPUS magazines. The group D covers other peer reviewed publications as well as chapters in specialised books and textbooks, scientific works in magazines and peer reviewed proceedings. Creative employees of the TUZVO were very active as far as book publications are concerned and they published very often in plenty of international and domestic scientific conferences. In natural sciences, our creative employees were also very successful in publishing in prestigious international magazines and they can be commended for a great number of patents in the applied research. The art activity at the Department of Furniture Design and Wood Products completed the broad spectrum of creative outputs of the TUZVO employees.

Centre of Excellence: Adaptive Forest Ecosystems,
project co-ordinator: Prof. Ing. Rudolf Kropil, CSc.

Completion of the Centre of Excellence: Adaptive Forest Ecosystems,
project co-ordinator: Prof. Ing. Rudolf Kropil, CSc.

Centre of Excellence for Decision Support in Forest and Landscape,
project co-ordinator: Prof. Ing. Ján Tuček, CSc.

Centre of Excellence for Integrated Research of Earth´s Geosphere,
project co-ordinator: Assoc. Prof. Ing. Juraj Bebej, CSc.

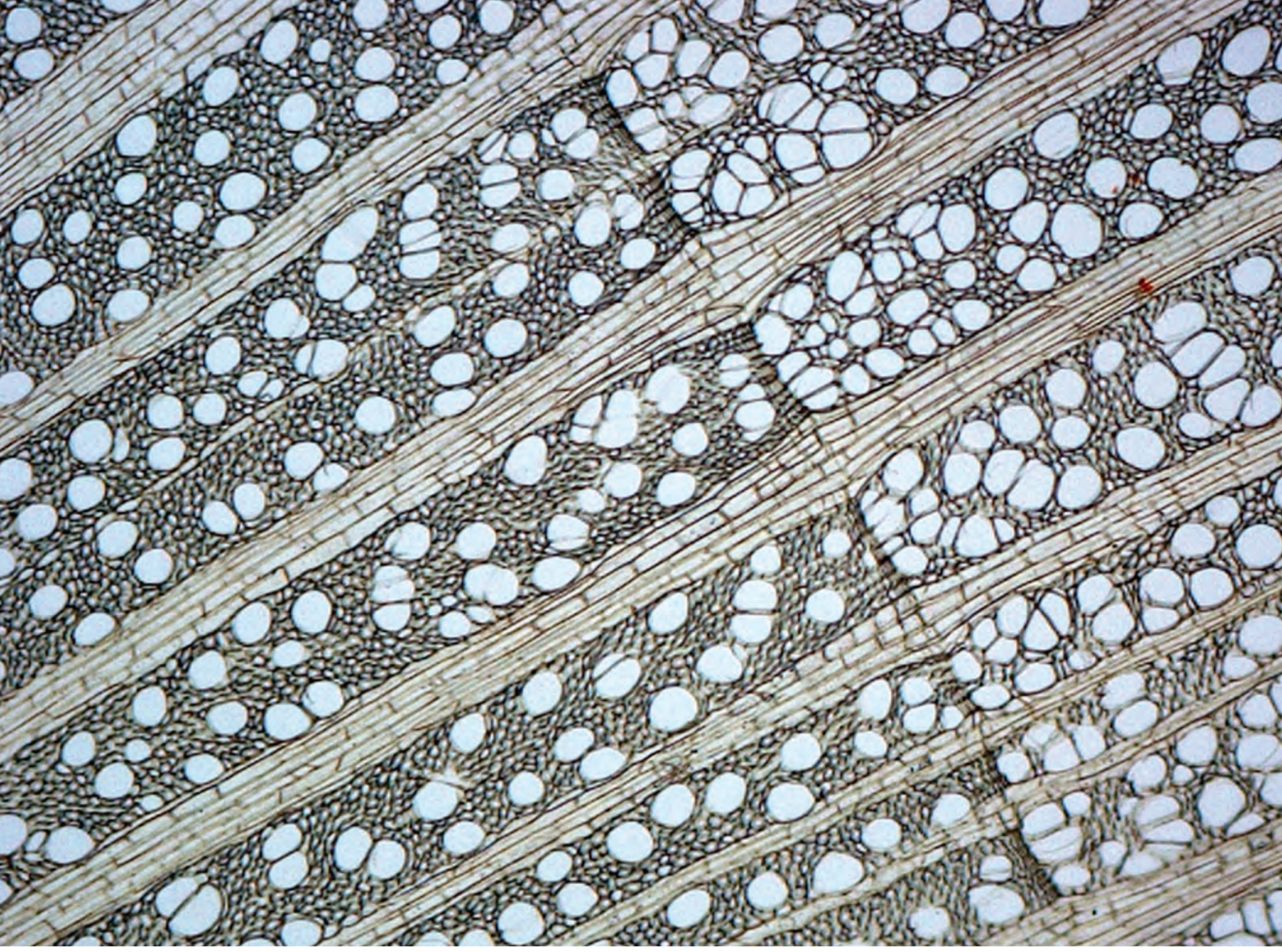
Centre of Excellence: Utilisation of Wood Ash in the Forestry,
project co-ordinator: Assoc. Prof. Ing. Juraj Gregor, CSc.

Centre of Excellence for Integrated River Basin Management in the Changing Environmental Conditions, *project co-ordinator: Assoc. Prof. Ing. Katarína Střelcová, CSc.*

Integration between Scientific and Research Activities and Pedagogical Process

A high-quality integration between scientific and research activities and the pedagogical process can be achieved through engaging students and PhD students into working on research projects also in the framework of the Student Scientific and Professional Activity (ŠVOČ). Encouraging young scientific employees to submit scientific and research projects through the Internal Project Agency (IPA) also plays a central role.

The Student Scientific and Professional Activity at our University has become an integral part of the policy supporting students´ scientific and professional activities and it has already become a tradition. The ŠVOČ represents a significant support for the general scientific and research work at the TUZVO and is a great contribution for students themselves, at the same time. It namely develops their scientific and research creativity and professional self-confidence, using the positive



experience basis. A lot of students and PhD students are in command of excellent inventive thinking and very often they themselves address their teachers in order to jointly search for possibilities of how to implement their ideas. On the other hand, the pedagogical staff can offer students the opportunity to be involved in the research process, in topics they are interested in and where they can fully show their creative skills.

The priority objective of the Internal Project Agency (IPA) is the support for young creative employees and PhD students in acquiring practical skills and experience in regard to conceiving research projects and coordinating the project cycles. The Project Agency focuses on supporting research activities of the young pedagogical staff, researchers up to 30 years of age, as well as full-time PhD students. From a long-term view it can be assumed that the experience gained from cooperation with IPA will be a stimulation for obtaining projects from national and international agencies.

Although quite common abroad, it is not usual in Slovakia to use new forms of co-opting new researchers, e.g. by means of postdoctoral working positions. This kind of integration between science and pedagogical process will strengthen both fields and enable the institutions to encourage young first-rate research workers.

Atomic force microscope: The Faculty of Forestry has the atomic force microscope MultiMode 8 at its disposal (producer: Bruker Nano Surfaces, Santa Barbara, CA, USA), which was purchased within the project Completion of the Centre of Excellence: Adaptive Forest Ecosystems. The microscope is used to depict the cell wall surface of biological specimens (predominantly cross sections of stems, leaves, roots and wood) at the micrometer up to nanometer levels. This happens through scanning the specimen surface by a silicone peak with the radius of some nanometres. In the special mode of PeakForce Quantitavive Nanomechanical Mapping, the microscope manages to measure force curves, which depict pressing the peak into and pulling the peak out of the specimen. Subsequently, on the basis of these measurements, the nanomechanical characteristics of cell walls such as elastic modulus, adhesion, energy dissipation and deformation are elicited. Apart from that, the microscope can also measure magnetic, electric and resonant features of materials. In the picture – cross section through the stem of a rooted hybrid poplar Populus tremula × (Populus × canescens) and lignified cell wall surface are depicted by means of atomic force microscopy.

International Cooperation in Basic Research

In the research field, several departments and institutes of our University cooperate with foreign institutions at an international level. However, there are only a few international projects belonging to the framework programmes and Horizon 2020 that this kind of cooperation has resulted in. The TUZVO usually plays the part of a partner in the EU projects. The number of projects carried out in the evaluated period stayed at the same level, but this surely cannot be understood as satisfying. The cooperation of the TUZVO with other institutions in regard to the COST actions is of more significance. The originally low participation in the COST projects has been increasing gradually.

Members of the top research team SylviBio: Biological Principles of Silviculture are Prof. Ing. Dušan Gömöry, DrSc., Prof. Ing. Ladislav Paule, CSc., Prof. Ing. Jaroslav Kmeť, CSc., Assoc. Prof. Ing. Karol Ujházy, PhD. and Ing. Daniel Kurjak, PhD. Within the research area 19 "Agricultural and Forestry Sciences", the team focuses on ecophysiology, ecology of plant communities and genetics of forest woody plants. Moreover, every team member undertakes their own research activities, of course, e.g. Prof. Paule has been running projects on animal genetics. Team members jointly work on research projects on a long-term basis.

In the assessed period, the TUZVO set up projects in order to join the international scientific projects predominantly within the scope of the 7th Framework Programme, HORIZON 2020 or through the European Forest Institute. Some project plans were not successful even though they broadened our researchers´ experience, which surely can be used in the future.

It is necessary to improve our scientific infrastructure in terms of laboratories, devices and equipment so that the TUZVO is able to successfully participate in the international basic research. This was accomplished mainly through projects financed by structural funds in the operational programme Science and Research. In spite of considerable activities undertaken at some faculties of the Technical University in Zvolen, the scientific infrastructure needs to be strengthened in all parts of the University. The Technical University has recently acquired possession of some unique research infrastructures, and at this point we have described the atomic force microscope in more detail.

However, human resources should not be forgotten as they play a key role in this process. Language competences are inevitable and they already should be emphasised in the third level of study, when young scientists are being trained. The participation in international scientific networks, even through organisations that have not been supported by scientific and research projects yet, also is an essential precondition for the internalisation of research activities at the Technical University in Zvolen. Interdisciplinarity and transdisciplinarity of scientific and research activities by an international standard require the support of larger cross-sectional research teams at the Technical University in Zvolen, as well. Only teams like these will have the possibility to be involved in the international research. Potential of the TU in Zvolen is great, but systemic measures will have to be taken to support these scientific and research activities. Apart from the growing need of cross-sectional research, small-sized top research teams will also play a decisive role in the basic research. Supporting these teams will be inevitable in order to improve the excellent standard of the Slovak science and research. The Accreditation Commission as an advisory board of the government of the Slovak Republic has already announced two calls aiming at the identification of top research teams at universities in Slovakia. The Technical University in Zvolen has participated in these calls and there is one of the 40 Slovak top research teams working at our University – Prof. Gömöry´s top research team SylviBio: Biological principles of silviculture.

Applied Research and Interconnection with Practice

The findings of some accomplished research projects provided authentic and very often unique technical solutions and the authors filed requests for their industrial and judicial protection, i.e. patents or utility patterns. The University, through its Department of Science and Research in particular, is vigilant about following the relevant measures of the Organisational Directives No. 1/2013 about enforcing, protecting and implementing the industrial property rights at the TUZVO. In 2014, the Organisational Directives No. 3/2014 about commercialisation of industrial property rights were approved at our University. The University is the owner of 18 patents, 22 utility patterns and 6 designs registered at the Industrial Property Office in Banská Bystrica.

Under the terms of contract about providing expert supportive service in the field of Technology

BIOcultivator – Project BIOcultivator (originally Balcony Cultivator) is a project carried out by team of employees of the Technical University in Zvolen cooperating with specialists with practical experience. The project outcome met with a great success at international level. In 2015 in the American city of Austin, the project got to the finals, being one of the best ones in the category of professionals within the international designer competition "Biomimicry Global Design Challenge 2015". Along with that, it also was awarded "People´s Choice Award". In 2016, after multiple redesigns, the first prototype was built on a scale, and subsequently it was presented in the USA within the scope of events such as Living Product Expo in Pittsburgh and Technology Showcase in San Francisco. Moreover, the project was presented on the occasion of Bioneers conference, where it was awarded the prize of Ray C. Anderson Foundation for the best design. The competition subject was the product designing with the emphasis on "Food System" and the competition itself was organised by The Biomimicry Institute in collaboration with the Ray C. Anderson Foundation. The competition focused on innovative and design solutions in the environmental and social field.

BIOcultivator is a self-sustaining functional system that enables people to grow their own food right on their balconies. The cupola design was inspired by the skin of the Texas horned lizard (lat. Phrynosoma Cornutum), as it has the ability to collect water, or rather humidity from the air even under extremely dry conditions. The water is condensed in the cupola macrostructure and subsequently, it is directed to the roots of the plants, using the collecting channels. BIOcultivator both enables people with no access to the free nature to grow their own food and it offers an alternative solution for growing plants in drought-prone areas.

The team of the TUZVO employees consisted of: Zuzana Tončíková, Miroslav Chovan, Miloš Gejdoš, Miroslav Němec, Tomáš Gergeľ and František Tóth.

BIOMIMICRY GLOBAL DESIGN CHALLENGE FOOD SYSTEMS

Transfer in collaboration with the Slovak Centre of Scientific and Technical Information, the TUZVO has made use of various services such as: assistance by selection of scientific and research activity results that are to be under the industrial and judicial protection; assessment of their commercial potential; examination of its technology condition. The TUZVO creative employees have been given several awards for their inventive ideas. To demonstrate this, we can refer to a number of prizes awarded to the team of authors led by Zuzana Tončíková, regarding the so-called balcony cultivator.

In regard to its professional specialisation, the Technical University in Zvolen has been undertaking actions on the basis of expert and concept activity in the field of forestry, wood sciences and technologies, ecology and environment, renewable energy resources, wood processing and forest machinery and equipment, as well as protection of people and property. A task we have to cope with today is to build and to ensure an effective operation of the Centre for Technology Transfer emphasizing the commercialisation of research results.

Conclusion

From the strategic point of view, the University has been trying to increase the share of financial means provided in the projects, to more efficiently make use of the existing research capacities and to concentrate them into bigger research units. The University has also been supporting the competitive environment, especially thanks to dividing the financial means according evaluation by objective performance parameters. The University has been attempting to lay emphasis on practical implementation of results achieved in scientific and research activities and in this way, to reflect the contemporary trend. Moreover, our University has the ambition to guarantee a well-balanced combination of scientific and research, educational and occupative activities covering the developing science spectrum within both basic and applied research as well as its engineering, technology and technical use.

In regard to the significance of continual scientific and research activities at the TU in Zvolen that has been emphasised on a long-term basis, we can say that the scientific and research activities are being understood not merely in their traditional sense, but they have also acquired some new dimensions. Obtaining financial means from various sources is an important factor of competitiveness by both national and international standards. These resources significantly help to receive a greater recognition for all component parts of the TUZVO in the international and European research area, in particular. Subsequently, they also play an essential role in the innovation efforts of the Slovak national economy.

Public Relations

An international aspect of every university activity is becoming more and more important within the European educational and scientific research. The membership of the SR in the European Union, as well as the membership of universities in the European University Association, result in many implications and challenges which cannot be ignored. The orientation onto the paying students from countries of Asia, America, Africa and naturally, an exchange of students and employees within the EU, requires devoting careful attention to the instruction in foreign languages and the international publicity. Likewise, the integration of research capacities into international science and research network is linked to active international contacts and to publishing results of research projects in internationally acknowledged journals.

Technical University in Zvolen (TUZVO) in 2013 – 2017 conducted its mission in the area of public relations by developing international cooperation based on mutual projects with foreign academic and professional institutions as well as academic mobilities. Also, availability of University to foreigners can be considered an important aspect of internationalisation of the University, which is, however, subjected to the sufficient language skills of students as well as academic employees. In that period, the Public Relations Office continued in expanding contractual cooperation even beyond the European space, in renewal and development of academic mobilities and in making the cooperation with home and foreign strategic partners more intensive.

Bilateral Cooperation

In the area of bilateral cooperation which is the basis of the development of activities in all areas of public relations, the priorities and a strategy of international cooperation of TUZVO are fully in accordance with the Long-term Development Scheme of the University and the priorities related to the speciality of the University.

Currently, there are valid in total 47 international agreements with partner universities and organisations from 19 countries and 39 home agreements. Most of these agreements are signed for an indefinite time. Concluding the Memorandum of Understanding between TUZVO and the Joint Research Centre of the European Commission (JRC) in September 2016 can be seen as one of the most remarkable accomplishments. From the viewpoint of home cooperation, there was concluded the Agreement on Cooperation with IC-Centre, s.r.o. (Ltd.), Banská Bystrica, according to which they

will cooperate in providing educational services in the area of Slovak language for foreigners for the purpose of their further study at the University.

Stabilisation or expanding contractual cooperation into the region of the Balkans and Eastern Europe can be assessed positively, while the current trend suggests that the University is able to participate actively in academic activities not only in the member states of the EU but also in wider European and international space (e.g. bilateral cooperation with partners in Canada, China, Kazakhstan, or efforts to open a deeper cooperation with the institutions and universities in Near East or Africa).

A long-term objective in the area of bilateral cooperation is not the quantitative increase of the concluded agreements but the quality of their completing. Considering this fact and the requirement of the efficient use of the funds to support this sort of international activities, the University is aiming at defining the strategic partners for the expansion of cooperation on the basis of the bilateral agreements. Considering the territorial interests, the TUZVO has come to the key partnerships with the institutions which have laid very good relations and which are also related to the potential for the further development of intensive cooperation with all faculties at the TUZVO.

Mobility Programmes

The aim of the University within mobility and educational programme is to ensure an increase in all mobilities of students, teachers, and other employees so that they are in harmony with qualitative requirements of participating institutions namely with a specific field of expertise of the university, its faculties, and other constituent parts. The main programme of the EU for mobilities and cooperation in the area of university education is Erasmus+ programme as the EU programme for education, professional development, for the youth and sport.

The area of education, professional preparation, the youth, and the sport was indicated to be the main stimulus to overcome a social and economic crisis in European countries, to stimulate growth and employment and to strengthen social equality and social inclusion under the Europe 2020 Strategy. From this point of view, the main objective of the Erasmus+ programme is especially fighting the increasing unemployment, where quality and effective systems focused on education, professional preparation and the youth can help in the way so that young people shall achieve the necessary skills which are required by the labour market and competitive economy. Besides this, the Erasmus+ programme is created so it would support the efforts of the countries involved in the programme to use the potential of the European manpower and social capital efficiently while applying the principle of life-long education via formal and informal education. The programme also expands the mobility opportunities and cooperation with partner countries.

Erasmus+ helps young people to widen their horizons. Teachers and the youth educators can take professional stays in various countries which enable them to achieve experience with new working procedures and learn knowledge from their counterparts abroad. The activities of Erasmus+ programme in the area of university mobilities for students and employees referred to as KA103 Individual Mobilities and KA107 Mobility

of Students and Other University Employees to programme countries and partner countries have an irreplaceable place in execution of the Long-term Development Scheme of the TUZVO in the area of internationalisation.

The mobilities of students and teachers of the TUZVO are carried out at foreign universities with which the TUZVO has concluded a bilateral agreement within the Erasmus+ programme. Currently, it is 78 universities from 19 countries in Europe and 5 universities from the third countries (Russia, Serbia, and Ukraine) with which the TUZVO continues in cooperation within the KA107 activities of Erasmus+ programme – Mobilities in/ from partnership countries. We keep recording an increasing trend in the number of sent participants of the Erasmus+ programme at the TUZVO which is supported by a considerate increase in the volume of financial funds allocated from the sources of the EU through the Slovak Academic Association for International Cooperation. In last years the TUZVO participated in KA203 activity – Strategic Partnerships in the projects called Motivational Workshops for vocational students to continue studies at a higher level and FEAL: Multifunctional Farming for the Sustainability of European Agricultural Landscapes.

Except for the Erasmus+ programme, the TUZVO also takes part in other international programmes and networks, especially in CEEPUS. It refers to central European exchange programme for university studies which supports academic mobilities in central, eastern, and southeast Europe, contributes to the European integration and emphasises regional specifics. The Programme enables to develop cooperation of universities by creating academic networks within which a scientific research is being carried out and mobilities are being performed by students, PhD students, and university teachers. Another great opportunity to achieve individual scholarship of foreign mobilities is represented by National Scholarship Programme of the SR as a programme to support mobilities of students, PhD students, university teachers and research workers.

The TUZVO has intensified the cooperation with SAIA, SAAIC with WorkSpace Europe because of the increased number academic mobilities. Students and teachers as well as employees have a chance to participate in informative seminars and presentations.

Membership of the TUZVO in international organisations is an essential presumption to get involved in international projects, to gain new information about new trends in education, research and about the overall development of universities and last but not least it is also the way how to establish contacts and how to promote the TUZVO.

The TUZVO is a full member of European Universities Association, a long-time member of International Union of Forest Research Organisations and member organisation of the European Forest Institute. The TUZVO has its representation in many other academic and professional international organisations out of which we can mention International Academy of Wood Science, International Association of Wood Anatomists, European Union of Foresters PRO SILVA, European Biomass Association, and International Association for Landscape Ecology, the Czech Academy of Agricultural Sciences and many others.

The membership in the international organisations brings as rights so responsibilities. It concerns especially attendance of annual meetings, scientific undertakings, commission sessions, management meetings and so on. It can be said that the TUZVO undoubtedly fulfills its mission in the area of internationalisation by developing international cooperation with the earlier mentioned organisations.

Teaching of Foreign Languages and in Foreign Languages

The essential assumption of successful cooperation in the European educational and research space is the command of foreign languages with an absolute emphasis on English.
This requirement is primary for students as well academic workers.

The TUZVO applies a systematic approach to language teaching based on three pillars:

The first bearing pillar is formed by compulsory subjects:

a) in bachelor study – Professional Communication I or a Foreign Language for Managerial Students in a wider extent
b) in doctoral study – a foreign language for PhD students

The second additional pillar is created by compulsory optional subjects

a) in bachelor study – Grammar for Technical Purposes
b) in master study – Professional Communication II, Foreign Language for Academic Purposes

The third pillar is created by paid additional and preparation courses, or courses to achieve special certificates.

The form of the exam from the compulsory subjects or compulsory selective subjects shall approximate to a standardised exam in foreign languages.

Every student takes an exam from a language in a professional or specialised context in bachelor study at the level of B2 according to the Common European Framework of Reference (CEFR).

The emphasis in language skills of students in study programmes at FF, FWST, FEE, FEMT and USP is placed on receptive skills, first of all, understanding of technical texts. The students of economic study programmes at the FWST and USP complete a foreign language in four or six terms in bachelor study and they are always completed by an exam. The foreign language in these study programmes develops all language skills of a language at the level of B2 or C1 according to CEFR. In master study of the study programme of Economy and Management of Wood Processing Enterprises, the students also learn second foreign language from A1 level as a compulsory subject. In this case, the principle of plurilingualism is supported and the concept of multi-language command in teaching foreign languages.

The availability of the university to foreigners, which is based on the instruction in a foreign language, which is subjected to language skills of academic staff, is another important aspect of TUZVO's internationalisation. The key activity was completed as early as in 2014, when a project called Formation of Study Programmes in a Foreign Language and Support of Foreign Language Education at TUVO under the operation programme Education was implemented. The project was aimed at, besides others, preparation of study programmes in a foreign language and in particular:

- One study programme at the second level at the FF (Forestry and Wildlife Management),
- One study programme at the third level at the FF (Adaptive Forestry and Wildlife Management),
- Two study programmes at the second level at the FWST (Furniture and Interior Design, Production and Utilisation of Wood Products).

The measurable outputs of the project were accreditation proceedings of the mentioned study programmes which were submitted for accreditation in the complex accreditation of TUZVO in 2014. To support the study programmes there was written core study literature in English the amount of 37 textbooks. After completion of accreditation process in 2015, the Faculty of Forestry gained both programmes in English accredited and the Faculty of Wood Sciences and Technology was accredited one study programme in English - Production and Utilisation of Wood Products.

In 2015 there was successfully completed implementation of another project within the operational programme

Education called Creation of Study Programmes in English and Reengineering Study Subjects for the Practice Needs at the TU in Zvolen – 2nd stage, which was beside other aimed at preparation of new study programmes in English, in particular:

- One study programme at the 3rd level at the FEE (Environmental Engineering)
- Two study programmes at the 2nd level at the FEMT (Eco-technology, Manufacturing Technology)
- One university study programme at the 2nd level at the TUZVO (Economics and Management of Forestry and Forest Based Industry).

The completed accreditation proceedings of the mentioned study programmes have not been submitted for accreditation yet. The primary study literature in the number of 42 textbooks has been prepared for the study programmes.

The Institute of Foreign Languages (IFL) participated in the project of the operational programme Education "Increase of Human Resources Capacity for the Transfer of Research and Development Knowledge on Production and Processing of Biomass into the Practice" in language education for research and development workers in communication seminars combined by distance education. The communication seminars focused on improving language skills and overall command of languages of the research and development workers and university teachers. IFL in cooperation with the

Human Resources Department assesses teachers' and research workers' command of a language at an employee selection process. The Centre for Continuing Education opens language courses for the TUZVO employees and students every year.

Public Relations

Current globalisation and intensification of information sources makes management of public relations crucial for existence and further development of academic institutions. Therefore, the TUZVO continuously encourages processes and tools of aimful public relations development emphasizing quality and volume of such activities, the systemisation and modernisation of the tools, flexibility of communication channels and updating of information.

From the viewpoint of the public relation scope, orientation to external audience, especially to expert public, and also to potential applicants for the study emphasising that the TUZVO is a modern educational and research institution with international historic background, modern infrastructure, and with a strong position in Slovak and international academic space is becoming the measure. In this era of constantly growing demands and completion in educational and research space, quality management of public relations is becoming a determining tool to influence the interest of students in study programmes of the TUZVO and as well for an increase in the number and attractiveness for the partners in research and development projects which also determines the success in raising the funds and involvement into international scientific programmes.

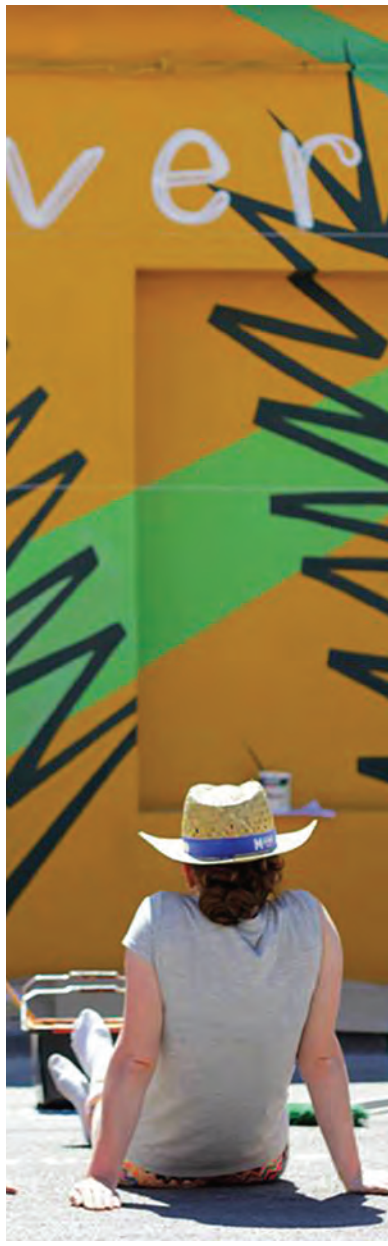
The TUZVO actively participates in education fairs in Slovakia. Among the most important the TUZVO participated in the international study and career fair of AKADÉMIA & VAPAC in Bratislava (20th anniversary year of the Study and Career Fair in 2016 under the auspices of Vice-chairman of the European Commission Maroš Ševčovič, The Minister of Education, Science, Research and Sport of the Slovak Republic Peter Plavčan and the president of the Slovak Rector´s Conference Rudolf Kropil), The European Fair of Undergraduate and Life-long Learning Gaudeamus in Nitra and the Fair of Education PRO EDUCO in Košice. The TUZVO also takes part in presentations in Trenčín, Žilina and Banská Bystrica. The individual faculties prepare Open Days, which are becoming more and more popular, for the persons potentially interested the study. We do appreciate the participation of students of the FWST at the international conference of students INTERFOB, which is hosted by a different country every year. In 2017 it is the privilege of Slovakia to host the conference.

Consistent with its technical profile, long traditions and mission of the modern university educational institution, the TUZVO presents itself through the public relations activities for the broad public and expert public at home and abroad as a committed body of research, educational and artistic processes focused on the socially significant platform of the sustainable development of the mankind. Within this context, there were various research and social events organised by

the Event Management. The notable expertise and technical events organised by TUZVO include Game Management and Protection, Forest Protection, Enviro I Forum, Financing Forest – Wood, Applied Ornithology, Forum of Young Geoinformaticians, Progress in Fire and Safety Engineering. In 2016 two younger faculties of the TUZVO commemorated important anniversaries of their establishment. At the 25th anniversary of the Faculty of Ecology and Environmental Sciences, there was accomplished an international scientific conference named Selected Aspects of Integrated Management of the Environment. At the 20th anniversary of the Faculty of Environmental Science and Manufacturing Technologies's establishment, there was organised an international scientific conference at the Faculty called The Trends in Environmental and Manufacturing Technologies in the 21st Century.

The TUZVO is also involved in organising of the international film festival Agrofilm. It is the festival of films and video programmes which mainly concern the topic of agriculture and rural development. It is also accompanied by the event called Plodobranie (Crop harvesting - translation) – a traditional autumn event of the students of the Faculty of Ecology and Environmental Sciences. TUZVO also got involved in the traditional participation in showing films from the international festival of Ekotopfilm/Envirofilm.

The positive image of the TUZVO as the green university is enhanced by the system of carparks at University (in cooperation with the National Recycling Agency Slovakia NARA-SK, where the TUZVO is a member), which are built from materials from recycled waste, then execution of a joint venture project of Township of Zvolen and the TUZVO called Biotechnological Innovations in the Use of Rainwater in Zvolen; concluding the Memorandum of Forestry Institutions in Zvolen and an official status of the town of Zvolen – the town of forestry. Recently, the media's attention has also been evoked by the assessment of TUZVO by SC Imago Institutions Ranking, where TUZVO appeared for the first time in its history; the results of a complex accreditation of universities among which the TUZVO resulted within the seven best universities in Slovakia; estimation of the brown bear population in Slovakia or building up a virtual cave to investigate and visualise forest development. An international success and positive media reaction were achieved by the team of designers and scientists from the TUZVO who were awarded the Audience' Award for a balcony cultivator in a prestigious worldwide competition of Biomimicry Global Design Challenge 2015 in the USA. This news created reaction in television, electronic, print and internet media. In the national and region media coverage, the cultural and artistic activities carried out at the University, such as the 60th anniversary of the establishment of Poľana- folklore assembles in 2016, have also found the space. TUZVO's publicity was increased also by the news about the election of the Rector of University by the President and re-election of the Rector, prof. Ing. Rudolf Kropil, CsC. for the President of the Slovak Rector´s Conference for the next 2-year service. An international success and positive media reaction were achieved by the students of the TUZVO who participated in the training programme of IT Talent in the Huawei Company in China called Seeds for the Future.



An increasing trend in a number of press releases was recorded not only at the university level but at the university constituents as well e.g. the Faculty of Ecology and Environmental Sciences via the project of global eco-education The Socrates Institute, at the Institute of Foreign Languages – foundation of the Confucius Classroom, in the Centre for Continuing Education – the thousandth graduate of the University of the Third Age. Within the students' activities, these were for example Stavanie májov (erecting a decorated tree as a symbol of a new life and strength in spring), the Day of Saint Hubert (celebration of the Patron of game and wildlife), Drevák race (adrenaline terrain running), Beh šrégom nočným Zvolenon (running competition across night Zvolen). The most used tool to develop media relations were press releases.

The most important electronic tool of PR achieving the highest flexibility and web traffic is the website of TUZVO. On an everyday basis, there are added current information and the latest news from the academic life. The structure of the website is gradually becoming simpler and interconnected with the University Information System (UIS), which is another important electronic communication channel, mainly oriented to students and employees of the TUZVO. The internal communication between the University and students uses such communication channels as an internal television network, email communication, or web pages of individual faculties at the social networks.

The most important print medium of the university is TUZVO magazine which is issued quarterly. The magazine serves as an important

information and promotion medium which reflects the life at the University and also promotes the activities and events at all its constitutional parts. The magazine is also accessible in an e-form on the website of the University. Except for the magazine, there is also published an electronic newsletter, which informs about important events at the University for the past month and invites to the events in the next month. The e-newsletter is distributed electronically at the beginning of the month to all students and employees and is also accessible on-line on the website of the University.

To improve public relations oriented internally there were supported various activities of the TUZVO students, work of the students' radio INRO, which has ranked among the best ones in Slovakia for many years, the activity of the folklore ensemble Poľana, students organisation WoodenWorld and many other hobby clubs and groups.

The TUZVO also maintains the position of the leader in the environmental protection and sustainable development in the region. This is enhanced by the events like TUZVO Days, Earth Day, Forest Days and other events in the Borová Hora Arboretum – Rose Days, Rhododendron Days, Autumn in the Borová Hora Arboretum, Welcoming Bird Messengers of Spring. The ecological and environmental approach of the University is also documented by the international certificate of PEFC, whose holder the University is. Therefore, it is eligible to use the PEFC label and logo. The TUZVO magazine is also printed on the PEFC certified paper.

Lately, the public relations at the TUZVO has marked a great quantitative expansion and qualitative growth. However, it shall be understood that it is crucial to keep the trend because the successful relations with the public which are built and developed by a planned, systematic and transparent way, directly influence the successful achievement of the strategic goals of the Technical University in Zvolen and its permanent establishment in home and international academic space as a generally accepted prime European educational and research institution.

Continuous attention is devoted to the execution and development of public relations to build „goodwill" purposefully. Successful management of main tasks resulting from the mission of the TUZVO significantly influences TUZVO's image as the top educational and research institution among the general public and expert community while they contribute at the same time to building loyalty and proudness of the alma mater among the students and employees and to developing relations with state and local authorities and other expert institutions.


TECHNICKÁ UNIVERZITA

Investment and Economic Management

Maintaining and improving the position of the Technical University in Zvolen (TUZVO) in the Slovak and international education and research sectors is integrally linked to the development of its resource base via targeted capital investment as set out in the approved medium and long-term planning documents.

In 2012 – 2016 the investment at the Technical University in Zvolen was carried out in accordance with the University's Long-term Scheme for 2011 – 2016, where the aim was to create the conditions for the successful implementation of priority tasks in the University's main programmes for development: higher education; science, research and art; external relations; international collaboration.

The University development in 2012 – 2016 can be positively assessed in terms of the projects realised. This is due to it having largely succeeded in implementing all planned projects, which clearly contributed to the improvement in the University's performance and competitiveness. This is indicative of the fact that an institution can only be run successfully on the basis of targeted and managed investment.

This assessment of the University's investments is based on a review of the state of its tangible and intangible assets, buildings, machines, instruments, laboratory equipment and facilities, and infrastructure. The state of the University's non-current assets can be assessed by considering their acquisition value.

The scope of investment, including renovations, modernisations, the purchase of new machinery and expenditure recorded under the technical valuation of buildings, depends on the amount of finances acquired for capital expenditure during the period being assessed. The capital expenditure funding provided by the Ministry of Education, Science, Research and Sport of the Slovak Republic and from the state budget in 2012 – 2016 was as follows: in 2012 a total of €359,116; in 2013

The value of the University's non-current assets was €58,895,141 as per 31 December 2016, which is an increase of €16,624,523 against its value on 31 December 2007.

a total of €377,467; in 2014 a total of €324,000; in 2015 a total of €225,000 and in 2016 a total of €120,000. This shows that funding for capital expenditure fell in 2014 – 2016 compared to the previous period, and this was due to an overall reduction in capital expenditure by the Ministry of Education, Science, Research and Sport of the Slovak Republic.

To ensure the smooth implementation of investment projects, additional resources were secured in the form of non-recurring funding from the EU Structural Funds (in 2012 this amounted to €5,409,883; in 2013 – €715,572; in 2014 – €949,781; in 2015 – €2,191,116 and in 2016 – €60,554), as well as a significant amount from our own resources from the Reproduction Fund.

In 2014 – 2016 these resources were targeted at project preparation for the next period, largely because almost no grants were made available for the modernisation of public higher education. One achievement was obtaining the resources to renovate the Bariny Student Halls in December 2016, and the University implementing its own project in 2017: Reducing Energy efficiency in Buildings Belonging to the Technical University of Zvolen – Bariny Building.

Capital Expenditure Investment

To ensure the optimal technical state of buildings and constructions, update instruments and laboratory equipment and develop information and communication technologies in line with market instruments for financing and rationalising the financial resources spent, it is essential that projects are prepared to a high level in accordance with investor demands and the terms and conditions for project submissions.

When assessing the University investments, the capital expenditure on procurement and expenditure recorded under the technical valuation of non-current assets must be broken down by expenditure. Table 4 shows the pattern of investment by year.

Throughout this period the University performance was influenced positively by the financial resources reinvested in the purchase of machines, instruments, equipment, machinery and tools in 2012, especially the procurement of special machines, equipment and machinery. Significant amounts were also invested in computer and telecommunication technologies. The full amount reinvested in the Purchase of Land and Intangible Assets was used to purchase the software. This was related to informatisation and the University's main areas of activity.

A closer analysis of the carried out investments carried influencing positively the financial running of the University and its main responsibilities indicates that the priority was to increase the efficient use of all types of energy. The reduction in the energy intensity of existing buildings achieved in 2012 – 2016 has had a marked impact on its financial results. Examples of actions taken are the insulation and sealing of building cavities at the Bariny Student Halls and bloc D of Študentská 17 Student Halls, the construction of a central transfer station and lift renovations. Another technical valuation expenditure was the full insulation of the roof of Študentská 17 Student Halls. A further project that can be assessed

Tab. 4: Pattern of investment in 2012 – 2016

Investment	2012	2013	2014	2015	2016
Purchase of land and intangible assets	402,647	102,349	948,265	228,785	22,156
Purchase of buildings and constructions	–	86,897	–	–	400
Purchase of machines, instruments, equipment, machinery and tools	3,457,951	738,370	333,591	1,335,662	232,685
Purchase of vehicles	50,449	48,400	58,736	131,768	535,192
Project preparation and documentation	29,485	–	750	39,245	–
Execution of constructions and other expenditure recorded under technical valuations	1,749,778	1,181,140	1,152,653	1,254,233	1,114,951
Renovation and modernisation of machines and equipment	–	13,303	27,774	1,117	–
Purchase of other tangible assets	–	–	–	–	611
Total expenditure on procurement and technical evaluation of assets	**5,690,310**	**2,173,459**	**2,521,769**	**2,990,810**	**1,905,995**

positively is the construction of automatic revolving doors in the main University building.

An important project that reflected the University's public image as an environmentally responsible entity was the Reconstruction of the access and carpark roads, preventing irresponsible drivers from parking on grass areas and substantially reducing the risk of ground contamination from fuel. The carpark and access roads were also reconstructed in relation to this project.

Biotechnological Innovations in the Use of Rainwater in Zvolen is another project that will have a positive impact on the ecology and environment around the University. The partnership agreement was signed between the University and Town of Zvolen on 11 August 2014. The Blue Alternative Foundation is another partner. The project is financed through the EEA Financial Mechanism and from the Slovak state budget as a part of "Healthy Cities – Developing Climate Change Adaptation Strategies and Actions".

The non-recurring grant was awarded to the Town of Zvolen, and the University's budget for the project is €567,894 (€482,710 of this was from the non-recurring grant). A total of 210 trees have been planted in the environs of the University and a rain garden will be created as will underground resevoirs, a bioclimatic reservoir, a fountain, a water wall and soak away blocks. The planned project completion date is April 2017.

Another important investment was vehicle modernisation, which has dramatically reduced the cost of repairs and maintenance and has also improved performance. This is most evident in the purchase of new vehicles for the transport of timber managed by TUZVO University Forest Enterprise (VšLP). Other important VšLP investments were the construction and repair of forest roads, the Jačmeniská firefighting reservoir and the modernisation of Bieň game reserve.

Total amount of capital investment on procurement and technical valuation of assets at TUZVO in 2012 – 2016 was €15,282,344.

The modernisation and renovation of three large-capacity classrooms, the construction of a biology laboratory, the refurbishment of the nature laboratory for environmental studies students and the modernisation of the exhibition space, the Dizajnérium, have all helped improve teaching and learning.

University Development Projects Financed by the EU Structural Funds

As already indicated, updating the technical infrastructure and development of the University were significantly aided by the receipt of funding from the EU Structural Funds. In 2008 – 2012 three university projects were successfully implemented, aimed at renovations, the technical valuation of premises and the modernisation of indoor facilities as part of the Operational Programme: Research and Development (priority axis 5 – Higher Education Infrastructure, action 5.1 Building Higher Education Infrastructure and Modernisation of Indoor Facilities to Improve Learning Conditions).

As part of a project entitled Renovation of TUZVO Premises Targeted at Facilities and the Technical Valuation of Buildings – Stage 3 (ITMS 26250120038) with a budget of €4,075,070 that was completed on 31 October 2012, an optical path with a transfer rate of 10Gb/s was constructed between the University and the Arboretum (Arboretum Borová hora, ABH), substantially improving access to online information sources for ABH staff. In addition, the computer server capacity was increased with the purchase of eight new servers for the virtualisation of the network and server services, while TUZVOnet was expanded to include new network components and the reliability of the telephone exchange was improved by connecting it to a diesel aggregate backup.

A Virtual Cave for 3D simulations was constructed in the newly renovated Scientific Research Workshops Hall in the Development Workshops and Laboratories, which can be used to present the results from simulations of forest growth models. The Sibyla unique software workstation is used to simulate processes within forest ecosystems. In addition to the virtual cave, a 3D visualisation workshop was created containing 3D data projectors, 3D scanners, 3D displays and software equipment for working with 3D images. The installation of these technologies creates conditions in which students, lecturers and research staff can engage more closely and visually with real life practice and visualise the results of their calculations and theoretical models. These facilities will enable them to explore techniques for collecting three-dimensional data in the real world, both in the laboratory and out in the field. This is the only place in Slovakia where various 3D technologies are integrated in one location.

This project was followed by a number of activities relating to another university project, Completion of Infrastructure and Modernisation of Technologies to Improve Education Conditions at TUZVO (ITMS 26250120067). The project implementation period lasted from 14 February 2014 to 30 September 2015. The total budget of €2,025,999 was spent on the complete modernisation of three lecture theatres and two conference rooms equipped with audiovisual and communication infrastructure, the renovation of rooms in which a new laboratory will be set up, the replacement of the sealing in building cavities in the student halls. Some of these activities related to the procurement of hardware and software to enhance the server base for virtualisation of networks and

Virtual cave

server services. In addition new disc arrays with a total capacity of 140 TB were acquired for the central archives and university information system. WiFi infrastructure was also installed in the University grounds, around the student halls, auditorium and Professor Priesol Park.

Significant capital investment from the EU Structural Funds was carried out as part of research projects within the Operational Programme 2.1 Supporting the Networks of R&D Centres of Excellence as Pillars of the Regional Development and Support for Supraregional Collaboration. In 2012 – 2016, computer and telecommunication technologies, working machines and equipment, special instruments, software and licences totalling more than €3,286,000 were acquired to achieve the specified research goals. The projects contributing the greatest amount were Building the Centres of Excellence: Adaptive Forest Ecosystems (ITMS 26220120049) and Centres of Excellence for Supporting Decision-making in Forests and Regions (ITMS 26220120069).

Information and Communication Technology Support for the University Main Activities

In 2012 – 2016 the University invested considerable financial resources into further development of information and communication technologies. As indicated above, the main source of funding was the EU Structural Funds and these enabled us to make significant improvements to the ICT infrastructure. Table 5 provides an overview of investments from all sources in individual years.

The Centre of Information Technologies (CIT) is responsible for developing and maintaining the network of communication infrastructure, the management of central servers, the management of information systems – university information system, attendance system, access system, meals system, registration and ID card management and the accommodation system). SOFIA, the financial information system, was operated by the Data Centre in Bratislava, the Ministry od Education, Science, Research and Sport of the SR. The Slovak Forestry and Wood Sciences Library (SLDK) services are provided by and accessed via the Advanced Rapid Library information system. In 2016 all information systems were routinely operated from the fully modernised ICT infrastructure.

"Building these state-of-the-art workshops, the only ones of their kind in Slovakia, is prerequisite to fulfilling our ambitions to become an important player in domestic and international education and research and thereby fulfil the mission of the Technical University in Zvolen to educate specialists who can compete on the labour market and to ensure progress in the University priority research areas," stated Prof. Ing. Rudolf Kropil, CSc., Rector of the Technical University in Zvolen at the opening of the Hall of Experimental Scientific Workshops on 7 June 2013.

The ICT infrastructure was built using a cable system with over 5,000 connection points and over 200 network components. Regular software upgrades were performed expanding the WiFi network and the server certificates required for the safe authorisation of student and staff network access were updated. Hardware and software equipment for the storage of staff data, new network services and the central management of the WiFi system for the exterior and selected indoor areas were added. In 2016 the work continued with installing a Kernel-based Virtual Machine to virtualise the majority of network services.

Total volume of investment in physical infrastructure at TUZVO from the EU Structural Funds including state funding and co-financing in 2012 – 2016 was €8,326,908.

The information systems communicate with one another automatically or via the manual import and export of data. The long-term goal is to eliminate all manual processes to minimise human error. Figure y shows the current scheme for data links and interaction between the University information systems.

The library and information services and activities were electronic services and processes. The ARL library and information service contains the following modules: Cataloguing and Authority, Loan, Serials management, Record of publishing activities (EPCA), Decataloguing, Outputs and statistics, System management, RFID, Equipment reservation, IPAC (public access online catalogue).

Necessary modifications were made to the EPCA module in line with the CREPČ Methodical Guidelines to reflect the current conditions and changes at the University. The images and scientometric data required by JCR and SCImago were regularly updated and supplemented. As part of the drive to make new electronic services accessible, new display formats were added to the Citace PRO citations manager in the online IPAC catalogue.

The use and proper functioning of the Information and Communication Services was essential to the University's ability to fulfil its main responsibilities and mission in 2012 – 2016. In the upcoming period of 2017 – 2023 further development will be

Tab. 5: Financial resources (in €s) invested in information and communication technologies in 2012–2016

Year	2012	2013	2014	2015	2016
hardware	2,118,217	307,000	205,664	935,244	114,415
software	456,288	72,288	275,008	255,199	22,670
Total	**2,574,505**	**379,288**	**480,672**	**1,190,443**	**137,085**

Tab. 6: Funding for ordinary expenditure provided by the Ministry of Education, Science, Research and Sport of the SR to the University in 2012 – 2016 in €

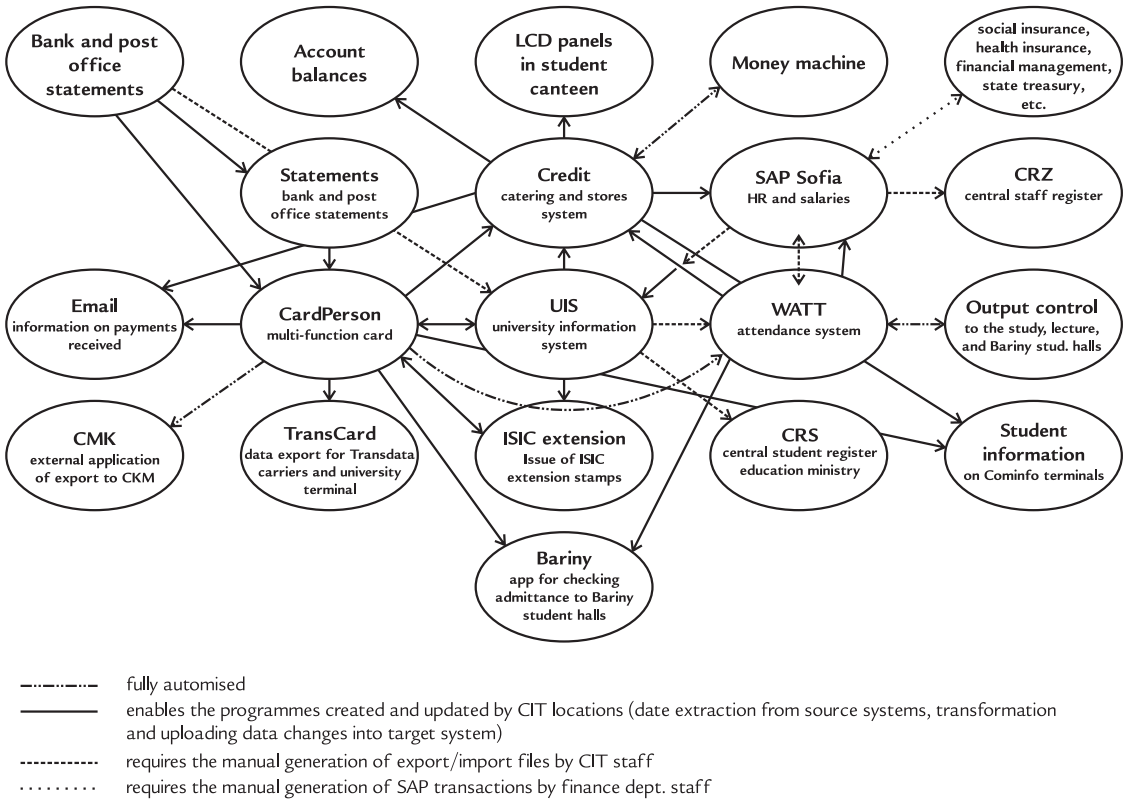
Grant/programme structure	2012	2013	2014	2015	2016
Grant for running accredited study programmes	6,619,878	6,549,207	6,494,016	6,285,434	7,074,459
Grant for research, development or art	3,654,652	3,993,590	3,432,585	3,626,666	4,630,879
Grant for higher education development	–	–	–	–	–
Grant for student social support	1,588,175	1,418,407	1,739,787	1,559,517	1,463,428
Grant total	**11,862,705**	**11,961,204**	**11,666,388**	**11,471,617**	**13,168,766**

necessary, including the expansion of functionalities and upgrades, support for user mobility and improvements to ICT skills, to ensure the quality and continued development of the University in keeping with the strategic goals laid out in the University's Long-term Scheme.

Financing and Economic Management of the University

The economic management of the University in 2008 – 2011 was affected by various changes in higher education funding and the method for allocating funding from the state budget. Higher education is subject to Act No. 131/2002 Coll. on Higher Education, an on Changes and Supplements to Some Laws (Higher Education Act), and it has undergone several amendments. In accordance with §15 of the Higher Education Act, the University has drafted its own internal regulations and in 2008 these were harmonised in line with the amendments made to the Higher Education Act – primarily Act No. 332/2005 Coll. and No. 363/2007 Coll. on Funding Public Higher Education (VVŠ) regulated by Act No. 523/2004 Coll. on Budgetary Rules in parallel with other legislation: laws on accounting,

In 2012 – 2016 TUZVO reinvested monies from the EU Structural Funds, its own resources and grants totalling €4,761,993 in the development of ICT.



Data interactions and information system connectivity at TUZVO in 2016

employee remuneration etc. One relatively important change is that higher education is now funded from multiple resources, with income obtained by higher education institutions from other main (non-grant) and commercial activities through their own activities being retained as a non-grant source.

Table 6 shows the grant-based funding pattern for the University, which reflects trends that are both positive and negative and that will further influence our activities and potential to finance our requirements and the University's further development in the given environment. Funding available from grants for ordinary expenditure fell in 2012 – 2015. This was largely related to the decrease in funding for accredited study programmes – the result of an overall fall in the number of students at the University. One can see that there was an increase in 2016, which is linked to the University


IVERZITA

obtaining accreditation and to significant growth in its performance in research and development undertaken within VVŠ. The funding obtained through science research grants by competing for agency grants is indicative of the enhanced performance by University staff. Since 2012 the grant for higher education development has basically been replaced by financing development requirements via EU Structural Fund projects. The decrease in resources is a consequence of the small number of funding tenders for VVŠ and the difficult and complex process of submitting applications and above all the time involved in assessing projects. Both the time factor in project preparation and the long assessment process have a negative impact on project realisation.

University Assets

The Technical University in Zvolen owns assets that require substantial financial resources to ensure their operation – on 31 December 2016 the value of its fixed assets was €63,919,501.11 at cost value and €36,092,180.67 in residual value. It has the following non-current assets: software €1,603,355.88; valuable rights €799291.20; land €3,900,202.07; works of art €5,368.63; buildings €31,609; €708.29; machines, instruments and equipment €18,081,530.08; vehicles €2,290,104.21; small non-current assets €307,033.40; other non-current assets €298,547.38; acquisition of non-current assets €5,024,359.97.

Economic Management of the University

As Table 7 shows, the University bottom line for 2012 – 2016 can be assessed as extremely positive. The financial growth reflects strongly the systemic measures adopted since 2012. In each year from 2012 to 2016 the forecasted bottom lines were achieved. The decline in 2016 is the result of a marked fall in student numbers and rising costs, particularly in energy, transportation and maintenance, as well as the growing workload in payroll and financial departments in Slovakia generally.

Investment for University Development

As indicated above, the volume of capital expenditure spent on investment in 2012 – 2016 can be assessed positively overall. The projects undertaken improved the technical and technological level of the University departments and had a positive impact on the performance growth.

University Financing and Investment Strategy

Formulating an effective financing and investment strategy for the University as a whole for the years 2017 – 2022 is certainly not easy and will be affected by a whole range of factors including these key ones:

Tab. 7: University bottom line for 2012 – 2016 in €

University bottom line	2012	2013	2014	2015	2016
Annual bottom line	658,512	1,008,139	1,012,783	1,015,194	816,998

1. Method for allocating VVŠ grants and amount of grant funding obtained for the University.
2. The University's ability to obtain funding from grant agencies (both domestic and international).
3. Potential for obtaining funding from the EU Structural Funds in 2017 – 2022.
4. Amount of resources obtained through the University's commercial activities.
5. Amount of resources from restructuring and growth in the University's performance as a whole.

It is clear that in 2017 – 2022 the main source of University financing will be the grants from the Ministry of Education, Science, Research and Sport of the SR, and these will mainly reflect the University's performance in teaching, research and art. The EU Structural Funds will have to be regarded as a supplementary source for investment requirements. The University as a whole will certainly have to seek further ways of increasing the amount of resources provided by its commercial activities, that is, by identifying commercial opportunities relating to the market needs as well as the targeted and managed use of disposable assets. There is a need to continue applying a combined strategy of investment and financing – profit growth, university cash flow, and increased market value (value of assets). All investments, whether of construction, technical or technological nature, as well as any other investment, must be conducted in line with the financing strategy, including securing resources in the given period. This has to be a task for every member of the University's management team.

In conclusion one can state that further investment and financial expansion at the University as a whole will undoubtedly depend on its competitiveness within VVŠ. Maintaining its current position will certainly not be easy. However, each manager at the University will have to identify the opportunities for successful development within the department and in the given market environment, making effective use of all the available, resources (capacity, financial and human resources).

FACULTY OF FORESTRY
2012 – 2017

Faculty of Forestry

The Faculty of Forestry (LF) and its focus take a unique position in the system of Slovak higher education. It is the only faculty providing higher education study programmes in the study branches Forestry and Wildlife Management; it is engaged in the scientific research and application of its results in the forestry management practice. The Faculty awards the graduates the Bachelor (Bc.) and Master (Ing.) degrees. Regarding the focus on science and research, the Faculty draws from the trends in the world forestry science and the graduate profile requirements. The current principal orientation within the research activities of the Faculty is towards the adaptive management of forest ecosystems in the conditions of global changes and uncertainty. Within the scientific research, the Faculty provides PhD study in individual study branches and awards their graduates the title "philosophiae doctor" (PhD.). The Faculty is entitled to award the title Associate Professor and Professor and prepares habilitation procedures and appointing professors in accredited study branches.

During its 65-year long history, the structure of the Faculty workplaces has adapted to the changing development needs in the fields of research, study branches and practice. Nowadays, the Faculty comprises 8 departments (the names of the current heads of the departments are given in the brackets): Department of Economics and Management of Forestry (Assoc. Prof. Mgr. Ing. Rastislav Šulek, PhD.), Department of Phytology (Assoc. Prof. Ing. Karol Ujházy, PhD.), Department of Forest Management and Geodesy (Assoc. Prof. Ing. Marek Fabrika, PhD.), Department of Forest Harvesting, Logistics and Amelioration (Assoc. Prof. Ing. Ján Merganič, PhD.), Department of Applied Zoology and Wildlife Management (Prof. Ing. Rudolf Kropil, CSc.), Department of Silviculture (prof. Ing. Milan Saniga, DrSc.), Department of Natural Environment (Prof. Ing. Jaroslav Škvarenina, CSc.) and Department of Integrated Forest and Landscape Protection (prof. Ing. Jaroslav Kmeť, PhD.). The qualification structure of the LF employees, as well as the number, structure and focus of the departments adapt to the needs of excellent education and research. Currently the Faculty employs 14 professors, 21 associate professors, 30 assistant professors, 33 researchers including postdoctoral researchers and 19 other employees. The number of researchers and other employees has fluctuated for the last few years depending on the amount of project grants from the EU structural funds, where such positions are planned for the purpose of each projects. Since 2012, 6 Faculty employees have been awarded the Associate Professor title and 3 Professors have been appointed.

The recent successes of the Faculty include:

• since 2013 the LF has been ranked as the best university faculty by the independent Academic Ranking and Rating Agency (ARRA) in the AGRO group (6 faculties),

• success rate in getting and implementing projects from domestic and foreign grant schemes, mainly EU framework programmes – Project "INTEGRAL – Future-oriented Integrated Management of European Forest Landscapes" – as well as the project "ALTERFOR – Alternative Models and Robust Decision Making Methods for Future Forest Management" of the programme HORIZON 2020,

• successful project implementation highlighting the transfer of knowledge into practice, e.g. project financed from the EU structural funds of the OP Education "Increasing Human Resources Capacity for the Transfer of Research and Development Knowledge Concerning Biomass Production and Processing into Practice" and project "Research and Monitoring of Big Predator Populations in Slovakia, under the Auspices of the State Nature Conservancy of the Slovak Republic" studying the size of the brown bear population in Slovakia.

Several employees worked as Deans of the LF. Since 2012 Prof. Dr. Ing. Viliam Pichler has been in the position of the Dean of the LF. Further current faculty officials are: Vice-dean for Science and Research – Assoc. Prof. Mgr. Jaroslav Ďurkovič, PhD., (Prof. Ing. Jaroslav Kmeť, PhD., in the years 2012 – 2016), Vice-dean for Education – Assoc. Prof. Ing. Bc. Miroslav Kardoš, PhD., (Prof. Ing. Valéria Massingerová, CSc., in the years 2012 – 2016), Vice-dean for Development and International Relations – Ing. Danihel Halaj, PhD., (Prof. Ing. Ľubomír Scheer, CSc., in the years 2012 – 2016) and faculty secretary – Ing. Miroslava Babiaková (Ing. Helena Gibasová, in the years 2012 – 2013). The function of the Academic Senate chair has been held by Assoc. Prof. Katarína Střelcová, PhD. since 2011.

Education at the Faculty

In order to use fully the possibilities offered by the common European space for higher education and in order to harmonise the academic degrees, the LF provides education at three levels of higher education (bachelor – master – PhD). The study is carried out in accordance with the European Credit Transfer and Accumulation System (ECTS). Study programmes are carried out in the full-time and part-time form of study. The length of the study in the full-time form is three and two years in the bachelor and master study programmes, respectively. In the part-time form, the standard length of study is four years in the bachelor and three years the master study programmes. The structure and content of the study programmes were updated according to the needs of accreditation process in 2014, which was successful for the Faculty. The successful complex accreditation in 2014, where all programmes submitted by the Faculty were accredited, was in 2015 – 2016 followed by the process of the educational process optimisation focused on creating new experience with teaching and learning for students and teachers that should reflect the expectations and needs of the young generation, as well as the need for reaching and exceeding the required level of professional skills and transversal skills of graduates. Creating the conditions for the future success of the graduates is

one of the main objectives of the LF in the field of education.

PhD study programmes last three years in the full-time and five years in the part-time form of study. The Faculty teachers provide education also in two special purpose study programmes Economics and Management of Renewable Natural Resources (bachelor study programme) and Management and Financing of Forest Enterprises (master study programme). All study programmes, mainly at the second level of study, emphasise the readiness of the graduates to be able to identify, analyse and propose variant solutions to problems or tasks.

The study programme Adaptive Forestry is a traditional study programme at the Faculty of Forestry. Students of this study programme gain the necessary theoretical knowledge and practical skills in the field of biology, technology and economics of general as well as forestry specific character, considering the current global changes. At the second level of study, the students deepen their knowledge and practical skills in the specific forestry disciplines, emphasising the specific methods of silviculture, forest protection and management, forest valuation, forest functions, management, financing and management of natural resources, designing projects and structures of forest management.

Study programmes at the Faculty of Forestry

Bachelor study programmes
- Forestry
- Applied Zoology and Wildlife Management
- Arboriculture and Urban Forestry

Master study programmes
- Adaptive Forestry
- Applied Zoology and Wildlife Management
- Geoinformatics and Mapping Technologies in Forestry
- Forest Ecology
- Forestry Technologies
- Forestry and Wildlife Management (in the English language)

PhD study programmes
- Silviculture and Forest Protection
- Forest Management
- Forestry Phytology
- Ecosystem Forest Services
- Forestry Technologies
- Applied Zoology and Wildlife Management
- Adaptive Forestry and Wildlife Management (in the English language)

The study programme Applied Zoology and Wildlife Management provides the students with knowledge from the field of applied zoology, wildlife management, forestry, design and protection of the agricultural landscape, management and protection of wildlife populations, design and creation of wildlife forest and field environment. The study at the second level is focused more on extending the knowledge in the sphere of adaptive wildlife management in the conditions of the market economy with the application of modern ecology and protection functions of wildlife management and protection of higher animals.

The study programme Geoinformatics and Mapping Technologies highlights the geo- and

eco-information aspects of the master study. The students acquire deeper and more specific knowledge from forestry disciplines. In addition, they also gain special knowledge from applied informatics, geographic information and geographic information systems, land registry, database systems, remote sensing of the Earth, geodesy, photogrammetry, cartography and mapping.

The study programme Forest Ecology enables the students to build on the information from forestry disciplines and enhance their knowledge from the forestry ecology and natural environment, emphasising the forestry and environmental pedology, forest and landscape ecology, biogeography, abiotic and biotic monitoring, ecotoxicology, landscape engineering, nature and landscape conservation, environmental and ecology legislation and politics.

In 2015, a new study programme of the 2nd level of study Forestry Technologies was accredited at the LF. The graduates of this study programme can analyse and solve complex and structured information, technically and technologically oriented tasks and issues of forest management, as well as issues of primary wood conversion, landscape management and urban management.

At the bachelor level of study, a new study programme Arboriculture and Urban Forestry was accredited as well in 2015. This study programme is aimed at educating professionals prepared to carry out analytical, evaluation, project, implementation, legal and assessment activities, mainly in the state, public and municipal administration of urban vegetation, in state and private subjects dealing with the complex processing of biomass, arboriculture. The graduates can work in positions requiring higher education, in state administration and organisations for nature protection, in educating apprentices, in research into wood species and biomass.

The development of student numbers at the Faculty during the last five years is illustrated in Table 8. Considering the demography in Slovakia, difficulty of the study, as well as introducing the tuition fees in the part-time form of study, the Faculty has seen a slight decrease in the student numbers in the last period. However, the extent of the issue is nation-wide and it is also associated with

Tab. 8: Development of student numbers at the Faculty of Forestry

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Full-time students	688	695	717	641	609
Part-time students	247	223	194	198	162
Altogether	935	918	911	839	771

the ever wider offer of study programmes at Slovak universities.

In this period, approx. 870 students studied at the LF on average annually, thereof 23% in the part-time form of study. The number of students at the PhD level of study was around 44 students per academic year. In this period, 1,008 students graduated from the LF in bachelor and master degree study programmes and 64 PhD students completed their studies. The graduates of the LF can work in forestry, in state forest enterprises and legal entities of non-state forests, research institutes or in primary wood conversion enterprises. Moreover, they work also as teachers at forestry schools, as employees of protected landscape areas administration and national parks, in environmental authorities, as entrepreneurs in the field of forestry and other branches associated with forestry.

Scientific and Research Activities of the Faculty of Forestry

The scientific and research activities of the Faculty are focused on solving current theoretical and practical issues in forestry. Research problems and topics are oriented towards the development of scientific theories, as well as towards specific solutions in applied research. The current direction of the research activities at the Faculty for the years 2011 – 2020 is aimed at adaptive management of forest ecosystems while considering new challenges

in international and national forestry research, society and economy. Within the new principal research direction, the LF departments have defined this research orientation:

- economic and social aspects of adaptive management of forest ecosystems and the issue of ecosystem services,
- research into the structure and function of forest ecosystems based on more extensive knowledge of natural science in the conditions of global changes,
- forest modelling and planning and control instruments of adaptive management of forest ecosystems,
- analysis and processing of theoretical an practical knowledge from the field of wood harvesting, transportation and manufacturing technologies, forestry machines, ergonomics of occupational safety, complex utilisation of biomass,
- aspects of forestry structures, soil amelioration and damming up the torrents in association with adaptive management of forest ecosystems,
- adaptive management of forest ecosystems of wildlife populations influenced by the disturbance processes in changing ecological conditions aimed at sustainable forest management and biodiversity conservation,
- research into the structure and processes in the primeval forests in Slovakia, development, verification and optimisation of growing models in forests with various targeted functions considering the climate change, research into shape and growth variability of rare wood species,
- state and changes in natural environment of forest ecosystems in Slovakia in the process of implementing the adaptive management of forest ecosystems.

These themes are solved by highly productive research teams, one of them being the SylviBio team. The team members are engaged with biological principles of silviculture and the Accreditation Commission assigned the team into the List of top research teams at Slovak universities in 2015.
The solved research projects have been financed from

Tab. 9: Number of projects solved at the Faculty of Forestry

	2012	2013	2014	2015	2016
VEGA (Scientific Grant Agency)	16	22	25	17	17
KEGA (Cultural and Educational Grant Agency)	3	5	6	9	8
APVV (Slovak Research and Development Agency)	16	17	15	11	15
6th and 7th Framework Programme	3	2	1	1	1
COST	4	1	11	11	11

Tab. 10: Overview of publication activities at the Faculty of Forestry according to the groups of categories

	2012	2013	2014	2015	2016
A	52	46	29	34	36
B	27	36	34	34	54
C	–	–	38	17	26
D	442	304	235	176	172

Explanatory notes:
A – Book publications having the character of scientific monographs
B – Publications in ISI-indexed journals and patents
C – Journal publications, that are not peer reviewed but registered in Web of Science or SCOPUS databases.
D – Other publications

various national and foreign grant schemes, mainly by financial means of the Scientific Grant Agency of the Ministry of Education (VEGA), the Slovak Academy of Sciences, the Cultural and Educational Grant Agency of the Ministry of Education (KEGA) and the Slovak Research and Development Agency (APVV). A significant part of research financing have also been the EU international programmes and EU structural funds, the COST projects as well as institutional financial means of the LF and the TU.

The survey of structure and number of solved projects is listed in Table 9. From the international projects solved in the recent period within the EU 7th Framework Programme, the project INTEGRAL (2011 – 2014) "Future-oriented Integrated Management of European Forest Landscapes" was successfully completed in 2014. The project outcomes are efficient solutions dealing with creation of effective strategies in the integrated forest management and its functions that have the potential to unite policies in European countries. Moreover, both in the near and far future they can create conditions for effective development and usage of forests and forest land. Part of the project was to identify the critical contradictions and differences within the European state policies, which are focusing on forest and land and to suggest processes and tools that could unite this situation.

Following the successful implementation of the project INTEGRAL, the LF team succeeded in acquiring another project within the calls of the programme EU HOZIRON 2020. The project is

called ALTERFOR (2016 – 2020) and its aim is to identify and to facilitate the implementation of forest management models (FMM) in Europe that will be suitable in terms of persistent providing of the required ES in the next century.

In the past five years, the implementation of several projects from the EU structural funds focusing on establishing of Centres of Excellence and the research within them was completed: Completion of the Centre of Excellence: Adaptive Forest Ecosystems (2010 – 2013), the Centre of Excellence for Decision Support in Forest and Landscape (2011 – 2014) and the Centre of Excellence for Integrated Research of the Earth´s Geosphere (2010 – 2013).

The LF members have been yearly publishing a number of books, textbooks, teaching manuals, monographs, original scientific papers and conference proceedings from scientific conferences, symposia and workshops. Many of them are of essential importance in terms of both development of the particular study programme and utilisation in practice. Basic overview of publication activity is illustrated in Table 10. Despite the fact that, on a long-term basis, the publication activities at the LF have been the best as far as all the faculties of the TU are concerned, it is necessary to increase primarily the proportion of original scientific works in internationally impacted journals. These are decisive not only from the viewpoint of acquiring financial means within the grant schemes and state subsidies but also in terms of accreditation of all activities at the Faculty. Moreover, as a rule they also contain the most valuably and appropriately defined recommendations and knowledge that can be used in practice.

Since 1958, the Faculty has been publishing a yearly compendium of scientific works "Acta Facultatis Forestalis Zvolen", a journal nowadays, in which the Faculty´s members, as well as employees from other institutions in Slovakia and from abroad can publish their original scientific works.

A significant part of scientific and research activities of the Faculty of Forestry is the organisation of scientific and professional events, conferences, symposia and seminars to disseminate research results in the scientific community, but also for professional public at both national and international level.

The LF has a long-term tradition in organising the Student Scientific and Professional Activity (ŠVOČ). In 2015, already the 55th year of this conference was held at the Faculty. 44 works were enrolled in one bachelor section, two master sections and two doctoral sections this year.

In the five recent years as well as nowadays, the Faculty of Forestry has had its representation in the VEGA and KEGA committees and the APVV councils, where a lot of scientific personalities from the members of the Faculty have participated not only in the selection of the best quality projects assigned for funding, but also in outlining the state scientific policy.

Development Activities of the Faculty

The standard of the material and technical equipment and the overall infrastructure of the Faculty have increased and developed significantly in the five recent years. It is an ongoing process at present and is mainly connected with drawing

financial means from the University or Faculty projects financed by the EU structural funds.

In the framework of the 3rd phase of the project Reconstruction of Objects of the TU in Zvolen, a new workplace at the LF, focusing on the utilisation of virtual reality of forests in the teaching process, was built and in 2014 it was festively opened with the participation of the Minister of Education assoc. prof. Dušan Čaplovič. It is a device facility called a "virtual cave" (quadrant: 3 x 3 x 2,5m). On the quadrant walls, a stereoscopic picture of a virtual forest is projected, where students can "walk" and undertake some interventions in the forest and they also can forecast its development. It is a unique solution in the field of virtual reality modelling and in the European forestry education.

Atomic force microscope MultiMode 8 (producer: Bruker Nano Surfaces, Santa Barbara, CA, USA), was purchased for more than € 217,000. It is a unique apparatus for measuring and depicting the cell wall surface of biological specimens, predominantly cross sections of stalks, leaves, roots and wood at the micrometer and even nanometer levels. This happens through scanning the specimen surface by a silicone peak with the radius of some nanometers. Apart from this, the microscope can measure magnetic, electric and resonance properties of biological materials. This is a microscope of the new generation and there are not many of this sort in Slovakia.

International Relations of the Faculty

The Faculty of Forestry, its particular departments and members have strong relationships and activities with foreign and domestic partners. The cooperation with foreign partners is anchored in the principle of bilaterial and multilateral contracts and these are the base for elaborating agreements for particular activities, reciprocal mobilities of students and teachers.

Students´ and creative employees´ mobilities have been accomplished mainly within the Erasmus, CEEPUS programmes and COST projects. All of them enable the students and employees to take part in study stays, lecture stays and short-term science missions lasting from several days and weeks up to months. Students´ mobilities within the Erasmus programme are mainly designed to enable them to spend a part of their study at foreign faculties, to participate in language courses and internships on the bilateral agreement basis. In 2011, the LF entered into a contract with 32 faculties and universities abroad. The creative staff mobilities have also been conducted within the international programmes and projects, by participating in scientific and professional events abroad and on the basis of informal contacts with colleagues at foreign workplaces. A good example of an excellent and long-term collaboration are the relations and cooperation between the LF and the institutes of the Faculty of Forestry and Forest Ecology of the Georg-August-University in Göttingen. We can look back at a 25-year history, which was based on the DAAD-project "Ostpartnerschaften" in the period of 2014 – 2016. This project is focused on applied informatics, spatial information systems, geoinformatics, growth simulators, genetic diversity of forest tree species and implementation of e-learning in the teaching process. Several bilateral mobilities of students, PhD students and teachers took place within this project.

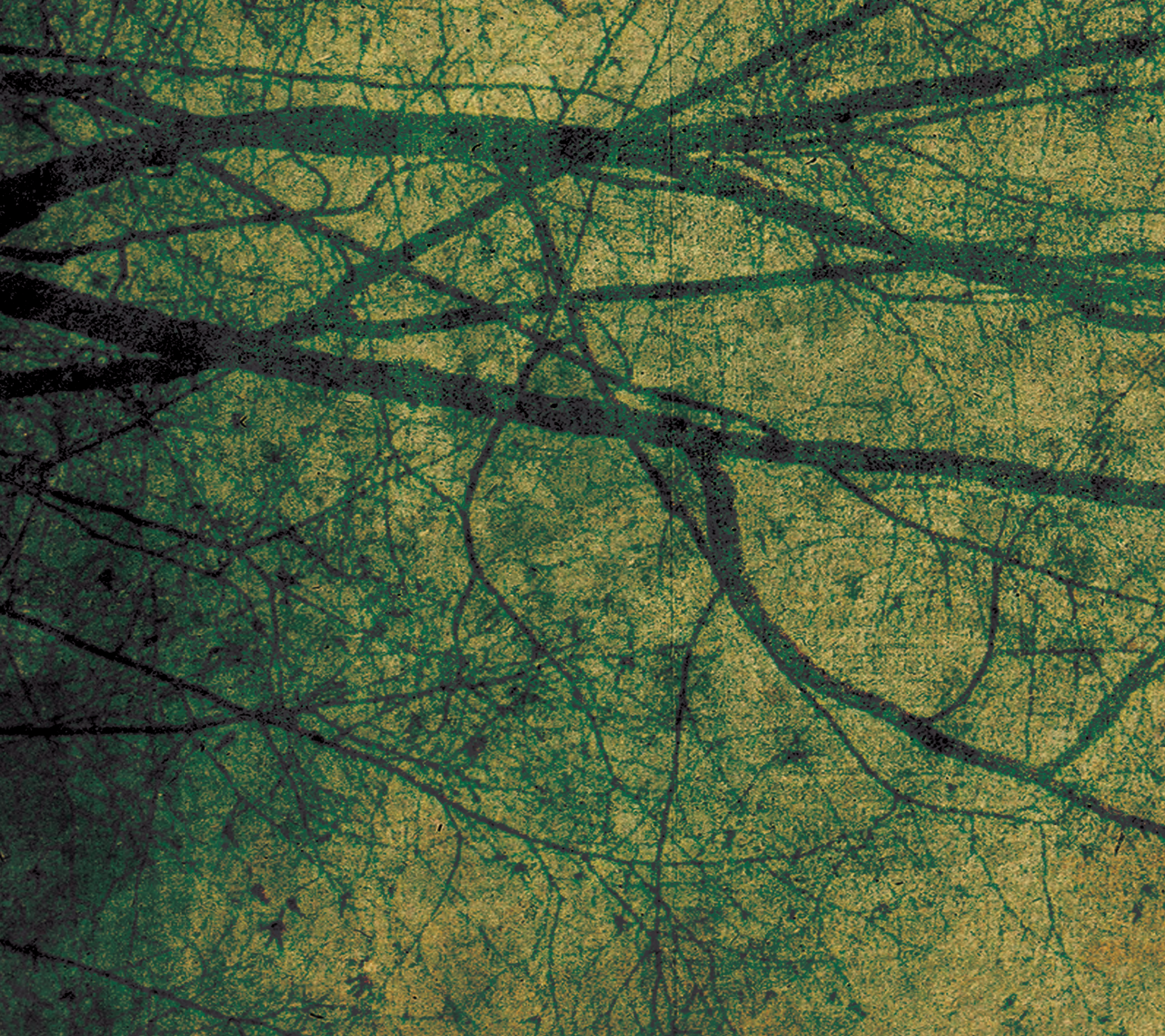
Projects designed to support the teaching process, science and research as well as elaborating the study programmes in a foreign language are also of great importance for building and strengthening the international relations of the Faculty. The LF elaborated two study programmes in English for foreign students within the operational programme Education - "Creation of study programme in international language and promotion of teaching of foreign languages at the TU in Zvolen". Both programmes were accredited in 2015. This activity included the 2nd level of study – the study programme "Forestry and Wildlife Management" and the 3rd level of study – the study programme "Adaptive Forestry and Wildlife Management". The project CEEPUS "New directions for forestry sciences in Central Europe" also belongs to this group and thanks to it the LF cooperates with faculties of forestry, or more precisely, similar faculties in Cracow, Braşov, Zagreb, Ljubljana and Vienna. This group also includes projects based on the bilateral collaboration, which are financed by the APVV.

Cooperation with external partners in Slovakia plays an important role in the PR of the Faculty and it leads to formation of national forestry policy and strategy at the strategic level. The Faculty of Forestry became a collective member of the Slovak Forestry Chamber in 2013. Moreover, in 2016, together with other eleven partners from the forestry sector and the city of Zvolen, the Faculty signed an important Memorandum on cooperation by promoting Zvolen as the capital city of forestry in Slovakia. The collaboration is also manifested in participation of representatives of the state enterprise Forests of the Slovak Republic and the National Forest Centre Zvolen in degree examination and dissertation committees at the LF, in participation of domestic partners and institutions in joint projects and in events focused on promotion of forestry and university forestry education. Collaboration with domestic partners has also a practical dimension, mainly in the form of expertise for organisations under state administration as well as enterprises belonging to the government departments of agriculture and environment, in cooperation with the Public Health Authority of the Slovak Republic, Criminological and Expertise Institute of the Police Force SR, etc.

The LF is a collective member of non-governmental organisations IUFRO (International Union of Forest Research Organization) and PRO SILVA (Union Européen des Forestiers aux Concepcions de Gestion Proche de la Nature) and since 2010 it has also been represented in the international IUFRO committee. Thanks to the University, the Faculty also is a member of EFI (European Forestry Institute). Moreover, the Faculty employees are members of a number of international organisations and executive boards, especially UNECE/FAO Forest Communicators Network, IUFRO – Division 6.13.00 Social, Economic, Information, and Policy Sciences and Division 8, Unit 8.01.04 – Water supply and quality. The Faculty of Forestry is a part of the Regional Research Centre EFI – Towards and the Sustainable Forest Sector in Europe: "Fostering Innovation and Entrepreneurship" and a member of the European Committee PRO SILVA, International Council for Game and Wildlife Conservation, etc. In 2016, the LF significantly participated in putting the Memorandum on collaboration between the TU in Zvolen and the Joint Research Centre in Ispra, Italy.

In the past two years, the Faculty of Forestry signed memoranda on collaboration with other important institutions: University of Agriculture in Cracow, Faculty of Forestry, Institute of Biosciences and BioResources, Firenze, Aurora Research Institute of the Aurora College, Inuvik, Mendel University in Brno, Institute of International Forestry and Forest Products, Dresden, ARO Volcani Center, Bet Dagan, Forest National Corporation, Ministry of Agriculture and Forestry (Sudan), University of Khartoum, Faculty of Forestry, Khartoum, College of Forestry and Range Science and Sudan University of Science and Technology, Khartoum.

The Faculty of Forestry is a significant and inextricable part of the University, it is the successor of modern university forestry education and its roots are connected with the establishment of the Forest Institute at the Academy of Mining in Banská Štiavnica in 1807. Forests have always been an inherent part of human life. The forest is used and changed by man and at the same time it changes him. Forests cover nearly 41% of the Slovak territory and they are said to be one of the greatest natural treasures and a renewable natural resource. To manage forests adequately, experts with various levels of education are required, who approach forests globally, with all their parts and ongoing processes. Therefore, the Faculty of Forestry plays an important and well justified role in the system of university education in Slovakia.



FACULTY OF WOOD SCIENCES AND TECHNOLOGY

2012 – 2017

Kakamega – tropical primeval forest, Kenya

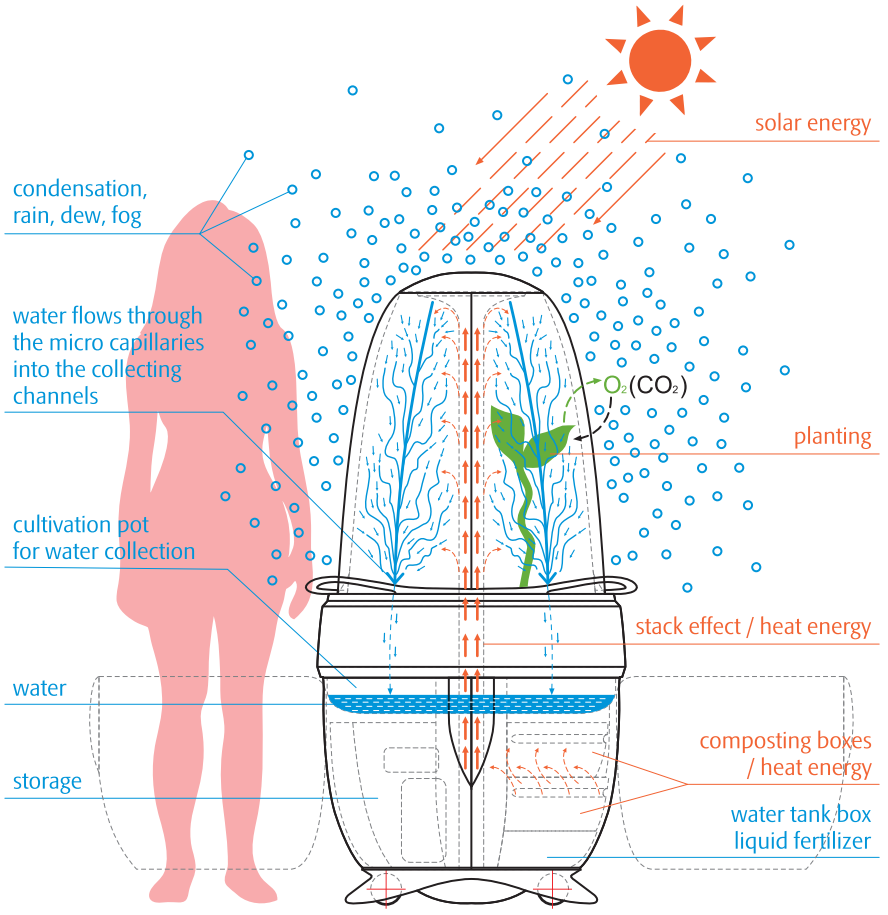
Faculty of Wood Sciences and Technology

The Faculty of Wood Sciences and Technology (FWST) at the Technical University in Zvolen belongs to the top educational and research institutions among other universities in the Slovak Republic. The main mission of the Faculty is to provide university education, develop research and creative artistic activity. The educational process uses the latest global knowledge of science, engineering, technology, economics, evolves from own basic and applied research, cooperation with other universities, research institutes, wood processing industry and wood production industry. It educates highly qualified specialists – bachelors, engineers, doctors for the complexly understood field of wood processing and production, graduates for the positions of wood technologists, designers and interior consultants, managers, economists, or specialists in fire and rescue services for the needs of Slovakia and abroad. The studies at the Faculty can be either in a regular or part time form (alongside the occupation).

The research activity of the university focuses on complex utilisation of raw wood, technology, technique, economics, fire safety, and protection. It is especially aimed at adding value to wood by its transformation to the new generation products which create an entire environment for the life of a human.

During its 65- year history, the Faculty of Wood Sciences and Technology has gone through a gradual development. Currently, it is divided into 12 departments (in brackets there are given the present heads of the departments):

Department of Wood Science
(assoc. prof. Ing. Rastislav Lagaňa, PhD et PhD),
Department of Woodworking
(prof. Ing. Ladislav Dzurenda, PhD),
Department of Mechanical Wood Technology
(assoc. prof. Ing. Ivan Klement,CSC.)
Department of Interior and Furniture Design
(assoc.prof. MFA René Baďura)
Department of Furniture and Wood Products
(prof. Ing. Ján Sedlačik, PhD)
Department of Wooden Structures
(prof. Ing. Jozef Štefko, CSc.)
Department of Business Economics
(assoc. prof. Ing. Andrea Sujová, PhD)
Department of Marketing, Trade and World Forestry
(Dr. h.c. prof. Ing. Mikuláš Šupín, CSc.)
Department of Mathematics and Descriptive Geometry
(RNDr. Andrej Jankech, PhD.)



Department of Physics, Electrotechnics and Applied Mechanics (assoc. prof. RNDr. Milada Gajtanska, CSc.)
Department of Fire Protection (prof. RNDr. Danica Kačíková, PhD)
Department of Chemistry and Chemical Technologies (assoc. prof. Ing. Iveta Čabalová, PhD)

Pedagogical, research and other work is carried out by 148 people. There are working 13 professors, 29 associate professors, 66 lecturers, 8 research workers, and 32 other employees. The aim of the Faculty of Wood Sciences and Technology is to bring education of new specialists closer to the constantly changing needs of the practice. The programmes are built on versatility and individualisation of the study.

During 2013 – 2017 the management of the Faculty was working under this staffing: Dean - prof. Ing. Mikuláš Siklienka, PhD; Vice-dean for pedagogical work – Ing. Adrián Banski, PhD; Vice –dean for research work – prof. Ing. Ján Sedliačik, PhD; Vice-dean for the Faculty development and public relations – assoc. prof. Ing. Hubert Paluš, PhD., the Faculty secretary – Ing. Anna Hazlingerová. During 2013 and March 2015 the position of the Chairman of the Academic Senate for the Faculty

An exceptional achievement of the TUZVO team of employees, special from the Department of Interior and Furniture Design led by Ing. Zuzana Tončíková, ArtD., is a remarkable "People's Choice Award" in the first round of an international design contest of "Biomimicry Global Design Challenge 2015" held in Austin, Texas, USA. The project called "Balcony Cultivator" was selected by a specialized jury from among eight top designs from more than 70 worldwide projects around the world focusing on innovative and design solutions in environmental and social areas.

was performed by prof. Ing. Ladislav Dzurenda, PhD. and from April 2015 until the present by prof. Ing. Igor Čunderlík, CSc.

Pedagogical Work of the Faculty

The study at the Faculty of Wood Sciences and Technology in Zvolen was carried out in accordance with the objectives of the Long-term Development Scheme of the Faculty and the results of the overall accreditation at the Technical University in Zvolen.

The Faculty of Wood Sciences and Technology achieved the main goals in the area of education in compliance with the Long-term Development Scheme of the FWST in 2011 – 2016, which focused on the utilisation of the intellectual potential of the young generation, preparation of new and attractive study programmes, improvement in the approach to the university study, regular assessment of pedagogical work quality, internationalisation of the study and retaining university approach in educational work.

The main mission of the Faculty of the Wood Sciences and Technology is to provide university education at all three levels of study in five areas of research and in study programmes aimed at wood processing, creation and constructing of furniture and wooden structures, economy and management of enterprises in wood-processing industry, furniture and interior design, and fire safety and protection.

Today there are more than 1300 students at the Faculty of Wood Sciences and Technology in all forms and levels of university education. The development of the number of students in 2012 – 2016 is given in Table 11. The instruction has been carried out according to newly accredited study programmes in bachelor, master and doctoral study from the academic year 2015/2016. Most of the study programmes are possible to be taken also in a part-time form.

The Faculty of Wood Sciences and Technology has a detached workplace at the Higher Professional School in Volyně in the Czech Republic. There have been created separate study programmes for the students in Volyně such as Creation and Construction of Furniture and Wooden Structures. Considering the proximity of study branches and similar study content, those students have the possibility to complete the university study at the bachelor level alongside their regular study at the Higher Professional School and achieve a bachelor degree.

Tab. 11 : Development of the number of students at the Faculty

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Regular students	1,277	1,331	1,268	1,180	1,090
Part-time students	571	495	424	410	307
Total	**1,848**	**1,826**	**1,692**	**1,590**	**1,397**

Study programmes – 1st degree of study (Bc.)

Study branch: Wood Sciences
- Wood Processing
- Creation and Construction of Furniture
- Creation and Construction of Furniture (Volyně)
- Management of Wood and Furniture Production

Study branch: Constructions and Manufacturing Processes for Wood Products
- Wooden Structures
- Wooden Structures (Volyně)

Study branch: Economics and Enterprise Management
- Economics and Management of Wood Processing Enterprises

Study branch: Rescue Services
- Fire Protection and Safety

Study branch: Design
- Furniture and Interior Design

Study programmes – 2nd degree of the study (MSc, MFA)

Study branch: Wood Sciences
- Wood Engineering
- Creation and Construction of Furniture
- Management of Wood and Furniture Production
- Production and Utilisation of Wood Products (taught in English)

Study branch: Constructions and Manufacturing Processes for Wood Products
- Wooden Structures

Study branch: Economics and Enterprise Management
- Economics and Management of Wood Processing Enterprises

Study branch: Rescue Services
- Fire Protection and Safety

Study branch: Design
- Furniture and Interior Design

Study programmes – 3rd degree of the study (PhD., ArtD.)

Study branch: Technology of Wood Processing
- Technology of Wood Processing

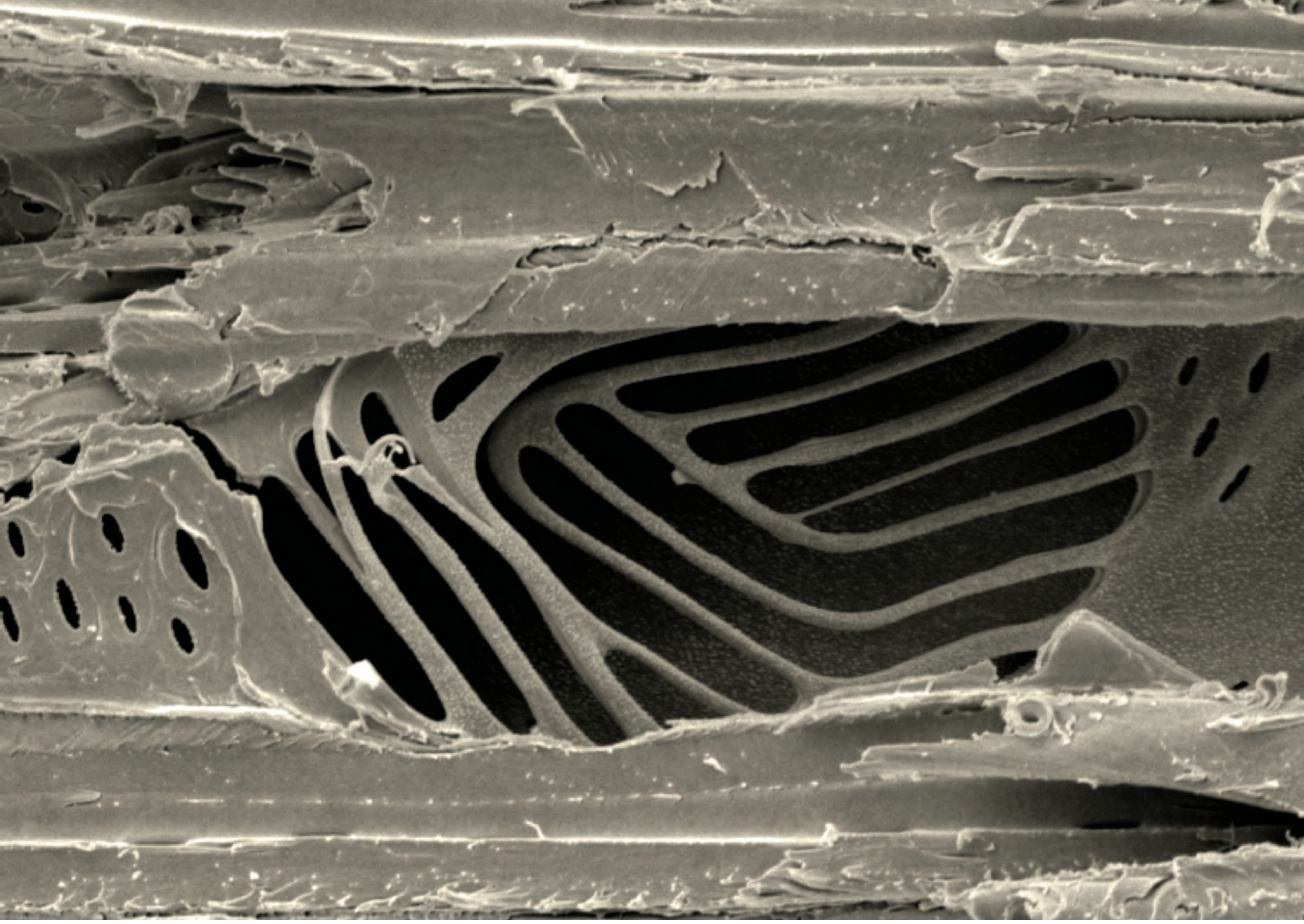
Study branch: Structure and Properties of Wood
- Structure and Properties of Wood

Study branch: Constructions and Manufacturing Processes for Wood Products

- Constructions and Manufacturing Processes for Wood Products

Study branch: Rescue Services
- Fire Protection and Safety

Study branch: Design
- Furniture and Interior Design



The study at the Faculty of Wood Sciences and Technology is based on the credit system which is compatible with the European Credit Transfer System (ECTS) and enables the students to take compulsory, elective or optional subjects to complete the study specialisation profile.

The Faculty students can take up a part of the study at a foreign university within the international program of Erasmus and vice versa, the Faculty offers the possibility of study to foreign students. The student of Erasmus can be any student of the Technical University who completed the first year of the study. The least length of the study stay is three months. The standard length of the study is one semester and maximal length of the study is 12 months.

The Faculty of Wooden Sciences and Technology is one of the partners of the operation programme called Education, which focuses on increasing extent and quality of further education of pedagogical and research workers, doctoral students and university students. The ambition is to complete effective participation of pedagogical and research workers not only in teaching the study programmes in a foreign language but in cooperating with international research teams.

Research and Artistic Activities of the Faculty

Research, artistic and creative work of the Faculty of Wood Sciences and Technology are taking place in accordance with the completion of the strategic goals of internationally accepted results in research, artistic work and the transfer of knowledge in economic and social life in the following research directions:

- the quality of wood and other lignocelluloses materials as natural raw materials related to their effective use and processing,
- declustering, disintegration, improvement, renewal of existing wood assortments to products with added value,
- integration of wood and solid materials with various mechanical load, chemical and other substances and other forms of energy,
- chemical composition of wood mass and its chemical processing, energy capitalisation of wood,
- constructions and technologies of furniture production, interior design and architectural creation, historic development of furniture, art, and graphic design,
- wooden structures constructing, manufacturing technology and development of wooden structures, properties of wood based products, exterior and interior wood products,
- fire protection and integrated safety, reaction of materials to fire, organisation and work of the units of fire and rescue services,
- economic and marketing aspects of effective capitalisation of wood and system management of production processes and innovations.

Fulfilling the objectives of the Faculty´s research is carried out via projects which are funded by the Ministry of Education and via Scientific Grant Agency (VEGA), Cultural and Educational Grant Agency (KEGA), Slovak Research and Development Agency (SRDA-APVV) and funds supported by the European Union. Currently, there are being run 16 projects in VEGA, 6 projects in KEGA, the SRDA is financing six projects under the grant scheme of General Call for Research and Development Projects and one project under the scheme of Bilateral Cooperation.

The employees of the Faculty under the leadership of prof. Ing. Ján Sedliačik, PhD took part in the international project in the 7th Framework Programme of the EU called "Ecological application of Nanosorbents on the Base of Natural and Synthetic Ionites and Carbons". The project dealt with the topic of the use of nano sorbent added to polycondensate glues used for binding wooden composite materials to lower the formaldehyde emissions.

Some of the employees of the Faculty are the members of the workgroup of COST programme of which the most important are "European Network of Bioadhesion Expertise: Fundamental Knowledge to Inspire Advanced Bonding Technologies" and "Active and Intelligent Fibre-Based Packing – Innovation and Market Introduction". Other employees are partners and members of the teams in the EU project programmes of Leonardo da Vinci, International Visegrad Fund, and Erasmus.

The research capacity of the Faculty employees presents about 180 000 hours annually. Doctoral students and some of the technical support employees and the employees of other Faculty workplaces also take part in the research activity.

A significant part of the research work of the Faculty employees is publishing and artistic work. The Ministry of Education, Science, Research and Sport of the Slovak Republic publishes a regulation on the bibliographical registration and categorisation of publication outputs, artistic creation and citations based on which the rules to register and categorise the publication outputs and procedures to process the published documents and the artistic work were stated.

In 2013 – 2017, there are annually published almost 20 book publications of scientific monographs, around 40 pieces of university textbooks, course books and other specialised study literature. There is a significant increase in the number of publications in indexed journals and authorship certificates.

The Faculty employees are authors and co-authors of more than 100 research works in foreign and home journals registered in the databases of Web of Science and SCOPUS, several dozens of specialised works, abstracts, posters and final reports.

The Faculty of Wood Sciences and Technology under the auspices of prof. Marián Babiak, PhD at 23rd to 27th June 2014 organised the 57th annual conference of the worldwide professional wood science organisation called "Society of Wood Science and Technology" (SWST) aimed at the topic of "Sustainable Resources and Technology for Forest Products". There were 168 participants in total from the countries of five world continents. The conclusions of the conference pointed at the challenges which lay ahead of the wood science in the next years: a need for studies in newly developing areas of nano sciences and nano technologies in production and processing of lignocelluloses materials, development of methodologies to optimised sorting of wood by the final consumer, development of technologies for processing of lignocelluloses materials for energetic purposes, formations of new processes for sustainable utilisation of local sources of raw wood, technologies for recycling and repeated use of wood.

An important part of the Faculty of Wood Sciences and Technology research outputs is discussion and confrontation of their own results and the other authors results at conferences and presentations for the expert public. Beside the participation of our employees at such events, the Faculty organises approximately twenty research and special –focus conferences and events.

Another important form of the presentation of research and development outputs of the Faculty is the publication of a scientific journal of Acta Facultatis Xylologiae in Zvolen. In 2016 the 58th year was issued.

The journal of Acta Facultatis Xylologiae Zvolen (AFXZ) is a successor of the periodical of "Proceedings of Scientific Articles" by the Faculty of Wood Sciences and Technologies at the College of Forestry and Wood Sciences of which the first issue was published in 1958.

Zuzana Piliarová, Coffee tables, 2016

The journal publishes reviewed original theoretical or experimental scientific articles in the area of wood sciences focusing on structure and properties of wood, processing processes, woodworking, drying, modification and protection of wood, furniture construction and design, wooden building constructions, economics and management of wood-processing industry. Besides research articles, there are also published reports and reviews. It is published at the internet web page of TUZVO (www.tuzvo.sk/df/afx) and it is distributed to more than 23 countries around the world by the Slovak Forestry and Wood Sciences Library. AFXZ is indexed in the citation database of SCOPUS and it has an international standard serial number ISSN 1336-3824 allocated.

In 2016 there was held the 57th year of Students Scientific and Research Activity under the auspices of the Dean of the Faculty. Around 50 students usually take part in this international conference with the contributions divided into this these sections: technology – technique, protection of persons and property against fire, enterprise economics and management, marketing, trade, and innovation management, artistic and design work and doctoral section. Besides the students of our university the conference is usually attended by foreign students and students from other universities such as UTB Zlín, West Hungarian University in Sopron, MU Brno, Moscow State Forest University, Uniwersytet Przyrodniczy in Poznan or from TU Košice, ŽU FŠI Žilina, MTF STU Trnava, UMB Banská Bystrica.

Recently the students of the Faculty of Wood Sciences and Technology have taken part in several similar conferences of students, PhD students and young scientists at other universities. In 2015 our student, Bc. Diana Gurová achieved the 1st place in the section Quantitative methods and technologies at the Faculty of Economics at the University of Matej Bel in Banská Bystrica.

The students' competition "Professor Jindřich Halabala Award" is an international competition of students' term and final thesis in the area of furniture design and interior design. In 2015 its 11th year was held in the premises of the Zvolen Castle. The competition was joined, except by Slovak students, also by the contestants from the Czech Republic, Hungary, Belgium, Sweden, Poland. The main awards were decided by the jury which assessed in total 98 works from 16 universities from the mentioned European countries.

Development Activities of the Faculty

The Faculty has bought an advanced computer controlled CNC machine to solve the basic research tasks in the research of chip machining focusing on the study of the phenomena in processes of mechanical machining of wood on several CNC machines from the point of view of dimension preciseness of the workpiece and surface roughness, energy consumption and environmental impacts on the environment and the work environment.

The Faculty of Wood Sciences and Technology provides modern technical infrastructure to achieve the planned objectives and research activities. Among the newest ones, we can mention the apparatuses of the of the Department of Wood Science such as scanning electron microscope (SEM) used for microscopic analysis of materials, and Atom Force Microscope (AFM) Multimode 8 for the analysis of

the topography of surfaces, mechanical and adhesive properties at the nano level to measure a contact angle, to determine surface energy and wetting of the surface. The analyser of the surface energies is used. The Department of Chemistry and Chemical Technologies owns analytical devices in particular a gas chromatograph with the mass detector GC-MS to analyse wood constituents, products of wood processing and the samples of the environment, a liquid chromatograph to analyse main constituents of lignocellulose materials, their degradation products and also to observe gram-atomic weights of lignin, celluloses, and hemicelluloses. FTIR spectrophotometer (an optical gas analyser) is used to analyse constituents of wood, pulp, and paper. The Department of Fire Protection owns IKA C 5000 calorimeter to determine the combustion heat value for various combustible materials or an explosion chamber of VK 100 type to state the lower and upper explosive limits.

Tearing machine Labor Tech 4.050 is used at the Department of Furniture and Wooden Products to test the strength of small samples of glued timber and wooden composites. Other departments possess many other devices and measuring apparatuses to measure mechanical, moisture content and acoustic properties of wood or wooden construction such as SM100 apparatus to measure thermal and physical properties of materials and to state specific capacity and coefficients of heat and thermal conductivity.

Public Relations of the Faculty

The activities in the public relations and building international cooperation of the Faculty of Wood Sciences and Technology at the TU in Zvolen focus on expanding the contacts and cooperation of the Faculty with foreign and home partners and workplaces, participation in the international scientific, artistic, university organisations, participation of the Faculty employees in the international projects of science, education, research and development. Within the Long-term Development Scheme of The Faculty of Wood Sciences and Technology at the TU in Zvolen for 2011 – 2016, the main goal in the area of public relations and the international cooperation was the openness of the Faculty. To achieve the stated goal the following tasks are being carried out:

- supporting students and teachers mobility,
- participation in international agreements and membership in international organisations,
- development of relations with the public.

The last years can be seen as the period of continuous development of students' mobilities, expanding contractual cooperation with home and foreign institutions, expanding promotion of the FWST and execution of the activities related to building a positive image of the FWST in the public.

The cooperation between the FWST and foreign partners in the area of students and teachers mobilities is being carried out on the basis of execution agreements and programmes of cooperation. At the present, the FWST has 30 bilateral agreements for students and teacher mobilities within the ERASMUS+ programme and concluded agreements on cooperation with partners' institutions in 24 European countries. The Faculty of Wood Sciences and Technology is a constitutional part of the TU, which uses the opportunities of the

Lenka Janeková, The interior of subcultures, 2017

Daniel Dodok, Interior element VEŠSI, 2016

ERASMUS+ programme most. In the academic year 2015/2016 the teacher mobility was completed by 11 teachers, training mobility by 13 employees and within incoming mobilities, the FWST received 8 foreign teachers. At the same time, the FWST accepted annually more than 140 persons from abroad and almost 180 Faculty´s employees are sent abroad either as an employee mobility or an active participation in international events. During the same time 29 students were studying abroad and 15 students completed a stay in foreign companies.

The Faculty permanently develops the activities in the public relations. In the last years, besides the relations with traditional partners, the development of relations with the countries out of the European space is carried out on the basis of the projects resulting from the bilateral agreements of the SR and third countries executed by calls of bilateral cooperation between the SGA and European mobility and education programmes. Within the call of ERASMUS+ , the key activity KA1 – university students and teachers mobility between the programme countries and partner countries (Erasmus + Credit Mobility), the execution of planned mobilities with the universities of partner countries out of the EU space has been carried out since 2016 in the Federation of Russia, Ukraine, and Serbia.

The FWST has cooperation with educational institutions of similar scope in the Czech Republic, Poland, Austria, Russia, Croatia, Bulgaria, Chine, Ukraine, Lithuania, Macedonia, Slovenia, Belgium, Germany, Hungary, Ireland, Portugal, Scotland, Italy, and Finland.

A part of building public relations is also the focus on home institutions and arranging contacts oriented on the development of cooperation and support of pedagogical activities, participating in research activities and visualising the results. The Faculty of Wood Sciences and Technology has a contractual cooperation with the remarkable companies

in the wood processing and woodworking practice such as Rettenmeier Tatra Timber, s. r. o. (Ltd.), Liptovský Hrádok; Mondi SCP, a. s. (plc.), Ružomberok; Ekoltech, s. r. o. (Ltd.), Lučenec; Bučina DDD, s. r. o. (Ltd.), Zvolen; Nefab Packaging Slovakia, s. r. o. (Ltd.), Levice; The Institute of Special Medicine and Training of the Ministry of Defence of the SR Lešť and similar.

The Faculty of Wood Sciences and Technology is represented by its employees in editorial boards in home and foreign scientific journals, international organisations, councils, committees and commissions seated in the SR or abroad, such as IAWS – International Academy of Wood Sciences, SWST – Society of Wood Sciences and Technology, IUFRO – International Union of Forest Research Organizations, EPS – European Physical Society, EAA – European Acoustic Association, WoodEMA, i.a., – International Association for Economics and Management in Wood Processing and Furniture Manufacturing, American Chemical Society, FPS – Forest Products Society, ALCA – The American Leather Chemists Association, IRG – The International Research Group on Wood Preservation, UEA – European Furniture Manufacturers Federation, IBPSA – International Building Performance Simulation Association, Slovak Institute of Technical Standardisation, the Agency for Research and Development Support, the Slovak Society for Quality and so on.

A significant support of foreign relations development is also execution of other educational projects within the ERASMUS (Intensive programme), TEMPUS, LEONARDO da VINCI programmes. Within the Operational programme - Education, there was created and accredited a second-degree study programme in English called "Production and Utilisation of Wooden Products". To support students' mobilities and arouse the secondary school students' interest there was executed the project at the FWST in 2015 – 2016 within the call of ERASMUS+, key activity KA2 Strategic partnerships called "Motivational workshops for vocational students to continue studies into a higher level" with partner universities in Finland, Germany, Hungary.

Increasing the awareness of the FWST and its promotion among the uninformed and expert public the FWST carries out activities focused on the support of public relations such as regular attendance at international exhibitions and fairs of education and career, active promotion at secondary schools, arranging the Open Day at the Faculty or other international events. It actively uses the electronic media to visualize its position. It closely cooperates with a students' organisation Wooden World at promotional activities.

The Faculty of Wood Sciences and Technology has become a full member of an international umbrella organisation InnovaWood, which integrates more than 70 members from 24 countries in the area of research, education, and transfer of technologies in the forestry and wood sciences industries. The main objective of the organisation is the support of innovations in these industries to raise the competitiveness of European industry in harmony with the framework politics of the EU. The organisation provides products and services which concern education, research, and innovation projects regarding the development of partnerships, counselling, technical support and seminars, conferences and workshops supporting its members.

FACULTY OF ECOLOGY AND ENVIRONMENTAL SCIENCES
2012 – 2017

Faculty of Ecology and Environmental Sciences

In 2016 the Faculty of Ecology and Environmental Sciences (FEE) of the Technical University in Zvolen commemorated the 25th anniversary of its founding. It was established by the resolution of the Academic Senate of the then University of Forestry and Wood Technology on 14 January 1991, coming into effect from the beginning of the academic year 1991/1992. The Faculty is the first and the only faculty so far within the Slovak education system with solely ecologic and environmental focus. It provides complex higher education covering the composition, structure, arrangement and bonds in various types of ecosystems and associated protection of the natural environment, ecosystem care, landscape design, as well as technical, political, legislation, social and philosophical aspects of the protection of environment components.

Graduates of the Faculty of Ecology and Environmental Sciences can work in the state administration, in professional organisations of the Ministry of Environment of the Slovak Republic, in production companies and non-governmental environmental organisations. They can also use their knowledge in counselling services in the areas of waste management, waste gases and water, environmental monitoring etc.

The Faculty orientation is mirrored also in the extracurricular activities of its students and in alternative education activities. It is this field where the Faculty of Ecology and Environmental Sciences has been successful in the recent years.

The Faculty of Ecology and Environmental Sciences comprises six departments: Department of Applied Ecology (Head of the Department: Assoc. Prof. Ing. Vladimír Kunca, PhD.), Department of Biology and General Ecology (Head of the Department: Prof. Ing. Slavomír Stašiov, PhD.), Department of Environmental Engineering (Head of the Department: Prof. Ing. Dagrmar Samešová, PhD.),

The FEE as the only faculty from among all TUZVO faculties publishes their own magazine eFEEkt that was in 2013 given the "Best School Magazine" award at the second edition of the contest Press Day. The content, as well as the graphics of the eFEEkt magazine are created by the students of the FEE themselves, and the editor in chief is the PhD student Ing. Andrea Uherková.

The education project Socrates Institute, initiated by the FEE and carried out at the TUZVO in cooperation with the Centre for Environmental and Ethical Education Živica, was in 2015 given the BrilianTT award for innovations in education in the category universities.

Department of Landscape Planning and Design (Head of the Department: Assoc. Prof. Ing. Peter Jančura, PhD.), Department of Social Sciences (Head of the Department: Mgr. Attila Rácz, PhD.) and UNESCO Department for Ecological Awareness and Sustainable Development (Head of the Department: Dr.h.c. Prof. RNDr. László Miklós, DrSc.). As per 31 March 2017 the Faculty employed altogether 5 university professors, 13 associate professors, 22 assistant professors (all with the PhD degree), 6 researchers (thereof 4 with the PhD degree) and 11 administration and other staff. Despite the relatively stable number of professors and a slightly higher number of associate professors, in comparison to the previous period, it will be necessary to increase these numbers also in the future. This fact results from the need for optimising the qualification structure and from the need for securing the guarantors of study programmes and rights for carrying out habilitation procedures and appointing professors.

The strength of the Faculty staff is that the former Minister of Environment of the Slovak Republic (1998 – 2006) and a member of the current Prime Minister's consultative committee Dr.h.c. Prof. RNDr. László Miklós, DrSc. and the former delegate expert of the European Environmental Agency in Copenhagen (2009 – 2013) Assoc. Prof. Ing. Branislav Olah, PhD. are among their staff.

The Faculty of Ecology and Environmental Sciences has been managed in the latest period (2012 – 2017) by the following academic officials:

Assoc. Prof. Ing. Branko Slobodník, PhD.
(Dean of the FEE until 30 April 2017)

Assoc. Prof. Ing. Marián Schwarz, CSc.
(Vice-dean for Pedagogy from 24 September 2015 until 30 April 2017, Dean of the FEE since 1 May 2017)

Ing. Juraj Modranský, PhD.
(Vice-dean for Education until 23 September 2015)

Assoc. Prof. Michal Wiezik, PhD.
(Vice-dean for Science, Research and PhD. study until 23 June 2017)

Ing. Magdaléna Pichlerová, PhD.
(Vice-dean for Development and International Relations)

Ing. Andrea Zacharová, PhD.
(Vice-dean for Pedagogy from 1 May 2017)

Ing. Marek Svitok, PhD.
(Vice-dean for Science, Research and PhD. study from 1 July 2017)

Education at the Faculty

Study Programmes

The aim of the study at the Faculty of Ecology and Environmental Sciences in all accredited study programmes is to educate the graduates who will be able to analyse the problem of nature, landscape and the environment and to propose measures and solutions to cope with those problems successfully. All offered study programmes provide an appropriate share of scientific, technical and social disciplines.

Currently, the Faculty of Ecology and Environmental Sciences is allowed to carry out

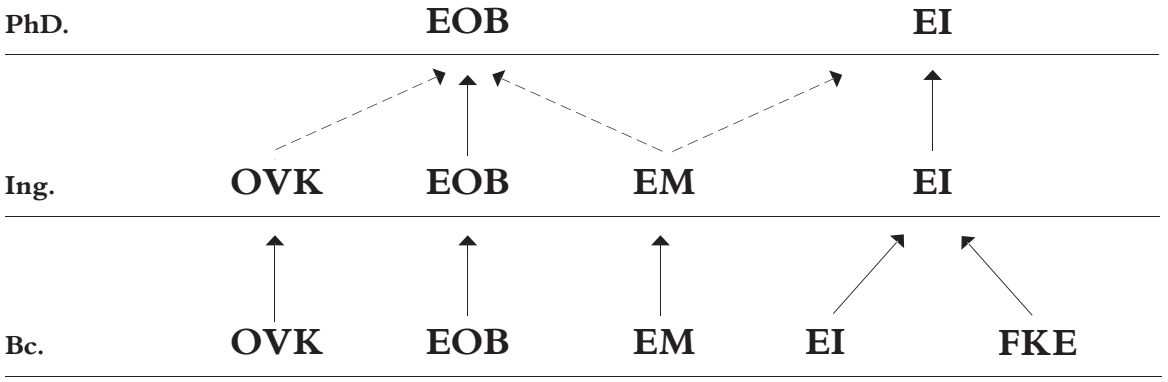
education in four study branches: 4.3.1 Landscape Protection and Use, 4.3.2 Environmental Engineering, 4.3.3 Environmental Management and 4.3.4 General Ecology and Ecology of Individuals and Populations.

Within the above-mentioned branches, the Faculty provides Bachelor and Master degree study in study programmes Landscape Protection and Use, Environmental Engineering, Environmental Management and Ecology and Biodiversity Conservation. The latest study programme – Forensic and Criminalistic Environmental Sciences in the study branch 4.3.2 Environmental Engineering has been accredited for the Bachelor degree study so far. The FEE prepared this study programme following the social demand from 2016 and it is available for students from the academic year 2017/2018. The programmes Landscape Protection and Use, Environmental Management and Forensic and Criminalistic Environmental Sciences are provided in the full-time and part-time form, as well.

The PhD level of higher education is carried out in study programmes Ecology and Biodiversity Conservation and Environmental Engineering, both in full-time and part-time form.

The current structure of the provided study programmes (Scheme) corresponds to the current possibilities of staff. In the future, the Faculty would like to get accreditation for the new study programme Forensic and Criminalistic Environmental Sciences also in the Master degree study and PhD degree study, which would level off the representation of study programmes at all three levels of the university study. Regarding the real Faculty capacities, such condition would optimally mirror the wide range of application possibilities of ecological and environmental knowledge in the practice and science. In order to reach the proposed structure of offered study programmes, it would be inevitable to improve the qualification structure of employees and continue in the intensive effort in personal development of the guarantors.

Faculty puts the maximum emphasis on ensuring the rights for carrying out the habilitation procedures and appointing professors from the



Scheme of the structure of study programmes at the Faculty of Ecology and Environmental Sciences (EVK = Ecology and Landscape Use, EOB = Ecology and Biodiversity Conservation, EM = Environmental Management, EI = Environmental Engineering, FKE = Forensic and Criminalistic Environmental Sciences; Bc. = Bachelor degree level, Ing = Master degree level, PhD. = PhD degree level).

staff, as well as organisational point of view. The rights are currently granted to carry out mentioned activities in the following branches: 4.3.2 Environmental Engineering and 4.3.4 General Ecology and Ecology of Individuals and Populations.

Students

Although the current decreasing number of students of the Faculty of Ecology and Environmental Sciences copies the negative trend in the demography development in Slovakia, it does not correspond to the Faculty's real possibilities considering the staff and premises. When compared to the best years 2010 – 2012, the overall number of students of the Bachelor degree and Master degree study programmes decreased by less than 40% (Table 12). Also this fact (besides the existing demand) was an impulse for preparation and creation of the above mentioned new study programme Forensic and Criminalistic Environmental Sciences, which was created with the aim to increase the student numbers as well as to improve the graduates' capability in the practice.

Tab. 12: Development of student numbers (1st and 2nd level of study) at the Faculty of Ecology and Environmental Sciences

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Full-time students	557	489	387	289	214
Part-part time students	94	65	50	43	41
Altogether	651	554	437	332	255

Graduates

During the first 25 years of its existence, the Faculty of Ecology and Environmental Sciences of the Technical University in Zvolen educated 2,560 graduates of the Bachelor and Master study and 123 graduates of the PhD degree study. The wish of the Faculty into the future is to increase the number of successful graduates year by year, and to educate future well-known and respected personalities in the environmental field, as well as in the academic environment, in non-governmental organisations, private sector or in the field of environmental education.

Significant Achievements of Students

Bc. Zuzana Oravcová, student of the Bachelor study programme Ecology and Biodiversity Conservation was listed among twenty selected students from over the world, who, thanks to their own initiative, obtained the possibility of attending the programme SUSI (Study for US Institutions), Environmental Issues. It is a programme for students actively interested in environment, current issues and work with people, and it takes place under the auspices of the American English Institute at the University of Oregon, based in Eugene.
The five-week programme consists of lectures and workshops at the university, as well as of voluntary activities in local civic associations. Its aim is to show the students the local organisations involved in the sustainable development and supporting local communities, to engage the students into activities and encourage the cooperation among all participants in order to develop individual leadership skills. Within this programme the students work on their own projects that are later implemented in their home countries.

Bc. Zuzana Oravcová, student of the study programme Ecology and Biodiversity Conservation was among twenty selected students from over the world, who, thanks to their own initiative, obtained the possibility of attending the programme SUSI (Study for US Institutions), Environmental Issues.

Our PhD students present their research results successfully at numerous scientific conferences including foreign conferences. In this context we have to mention students: Ing. Michal Pástor dealing with the ecology, spread and health of sweet chestnut; Ing. Oqil Rasulov (from Tajikistan) studying environmental impacts of aluminium production; team of PhD. students of the Department of Biology and General Ecology, who focus on animal ecology (Ing. Vladimíra Dekanová, Ing. Peter Lindtner, Ing. Zuzana Matúšová, Ing. Marta Veselská) and others.

Students of the Faculty of Ecology and Environmental Sciences carry out also various annual activities focused on protection of nature, environment and preserving biodiversity (e.g. Earth Days, Bio-fair, Fruit Harvest, Graft Exchange etc.). Mainly the event called Fruit Harvest, aimed at celebrating autumn fruits highlighting the preservation of old cultivars and landraces of fruit trees, is worth mentioning. The event is supervised by Ing. Andrea Uherková, a PhD student, who besides mapping the old cultivars presents her research results to various target groups, e.g. within the international student exchange programme Youth Exchange or to primary school pupils and wide public. Moreover, thanks to her effort the landraces are being planted more often and in greater extent. Andrea and her team used the experience gained in education programmes also in real education, e.g. in the form of a text book "Staré odrody sú IN" (Old Cultivars are IN), which includes a comprehensive overview of the most significant historical and regional cultivars, as well as teachers' guidelines for secondary schools.

Our students, as participants in the education project Eco-School (Zelená škola), can also be seen in the role of consultants for primary and secondary schools, where they present their knowledge, gained during the course of Environmental Education, to younger generation.

Scientific and Research Activities of the Faculty

Research Focus

Besides providing the education, the Faculty of Ecology and Environmental Sciences emphasises also the scientific and research activities, mainly in the following branches: (1) ecosystem properties and biodiversity assessment, (2) applied ecology, nature conservation, (3) landscape and ecology processes, landscape development, its utilisation and landscape changes (4) state of individual landscape components and identification of anthropic impacts influencing the landscape components, (5) landscape structure rate and its characteristic features, landscape design, (6) optimisation of waste processing and waste management, (7) technological procedures in the industrial sphere and decreasing the environmental loads, (8) managing, legislation and economic aspects of the relationships among human, nature and environment (landscape, natural and urban) and (9) cultural, philosophic and social aspects of the relationship human – nature – environment.

The research of the FEE is principally divided into two main scientific platforms – environmental sciences and ecology. The research focused on

ecology has a long-term tradition in monitoring the properties and assessing the biodiversity of terrestrial and aquatic ecosystems, where several faculty employees achieve notable results. In the ranges of creative employees of the FEE we can find specialists in ecology of several animal and plant groups; recently, a very strong and prolific group of specialist focusing on fungi ecology has been formed. Also the branch of landscape ecology with several renowned professionals at the FEE has rich traditions in terms of ecologically oriented scientific and research activities of the Faculty. These research activities are focused on the issues of land use, nature and landscape conservation, study of landscape abiotic characteristics, assessing the landscape image and landscape planning. Studying the philosophic, sociological and legislation aspects of nature conservation and relationship of humans to nature and surrounding environment represent an inseparable part of the scientific orientation of the Faculty.

Another central scientific platform is the wide range of environmental scientific disciplines. Within these disciplines the Faculty focuses mainly on the fields of waste processing and recovery, research into production technologies in terms of their impacts on the environment and work environment, possibilities of decreasing the environmental loads, innovations and designing technological procedures in industry, management of old environmental loads, analyses of environmental crime rate etc.

Foreign Projects

Thanks to the Faculty of Ecology and Environmental Sciences, the Technical University in Zvolen is a member of partner consortium in the project Horizon 2020 (Call Marie Skłodowska-Curie Actions in the part Research and Innovations Staff Exchange) entitled CHARMED (Characterisation of Green Microenvironment and to Study its Impact upon Health and Well-being in the Elderly as a Way

Tab. 13: Number of projects of the Faculty of Ecology and Environmental Sciences.

	2012	2013	2014	2015	2016
VEGA (Scientific Grant Agency)	7	9	7	4	5
KEGA (Cultural and Educational Grant Agency)	3	4	3	1	1
APVV (Slovak Research and Development Agency)	2	3	2	2	–
Bilateral projects APVV	–	2	–	2	1
7th Framework Programme	–	–	–	–	–
HORIZONT 2020	–	–	–	–	1
COST	–	–	1	1	2
International project from other sources	–	–	–	–	1
IPA (Internal Project Agency)	–	–	–	3	3
Altogether	**12**	**18**	**13**	**13**	**14**

Forward for Health Tourism). The objective of this project is to provide solutions in order to improve the quality of life with the effort to eliminate the health and social issues associated with the demographic changes in Europe, mainly with the increased average age. The Faculty of Ecology and Environmental Sciences, represented by the project coordinator for Slovakia – Ing. Magdaléna Pichlerová, PhD., from the Department of Landscape Planning and Design, participates in creating the concept of innovative socio-economic infrastructure based on health tourism and using ecosystem characteristics beneficial for health.

Significant steps of the Faculty of Ecology and Environmental Sciences in this filed cover also engagement in the programme COST activities, as well as the participation in the international education project FEAL: Multifunctional Farming for the Sustainability of European Agricultural Landscapes. The project is funded by the grant scheme ERASMUS+ (key action 2: Cooperation for Innovation and the Exchange of Good Practices) and is aimed at professional education and preparation of small and young farmers. The project coordinator for our party is a member of the Department of Landscape Planning and Design Ing. Martina Slámová, PhD.

National Agencies Projects

To the most important national agencies research projects, carried out at the Faculty of Ecology and Environmental Sciences in recent years, belong:

APVV SK-UA-2013-0023 "EPT Communities in the Slovak-Ukrainian Transboundary Region: Structure, Diversity and the Assessment of Ecological Status of Streams" (principal investigator: Ing. Marek Svitok, PhD., Department of Biology and General Ecology);

VEGA 2/0081/13 "Alpine Ponds – Sensitive Indicators of Environmental Changes: Macroinvertebrates and Determinants of their Multilevel Diversity" (principal investigator: Ing. Marek Svitok, PhD., Department of Biology and General Ecology);

VEGA 1/0186/14 "Assessment of Ecosystem Services at National, Regional and Local Level" (principal investigator: Assoc. Prof. Ing. Branislav Olah, PhD., Department of Applied Ecology);

VEGA 1/0463/14 "Impact of the Extreme Weather on the Phenological Expressions of Plants" (principal investigator: Assoc. Prof. Ing. Jana Škvareninová, PhD., Department of Applied Ecology);

Thanks to the FEE, the TU in Zvolen is a member of partner consortium in the project Horizon 2020 entitled CHARMED (Characterisation of Green Microenvironment and to Study its Impact upon Health and Well-being in the Elderly as a Way Forward for Health Tourism). Another significant foreign project of the FEE is the international education project FEAL: Multifunctional Farming for the Sustainability of European Agricultural Landscapes. The project is funded by the grant scheme ERASMUS+.

VEGA 1/0096/16 "Ecosystem Services of the Landscape-ecological Complexes in the Area of the UNESCO World Cultural and Natural Heritage Site Banská Štiavnica and Surrounding Technical Monuments" (principal investigator: Dr. h. c. Prof. RNDr. László Miklós, DrSc., UNESCO Department for Ecological Awareness and Sustainable Development);
KEGA 013TU Z-4/2016 "The Didactic Support of the Study Programme "Environmental Management" in English Language" (principal investigator: Dr. h. c. Prof. RNDr. László Miklós, DrSc., UNESCO Department for Ecological Awareness and Sustainable Development).

An overview of research and other projects carried out at the FEE in the years 2012 – 2016 can be seen in Table 13.

Financial Support of the Research

In the period of the last five years, financial subvention to the grant tasks was € 647,271. From this sum, € 206,957 (i.e. nearly one-third) falls on the year 2016.

Publication Activities

During the last five years, the Faculty set a growing tendency in number of publications, recorded in international scientific databases (Table 14), as well as in the number of citation indexes to these publications. The increase of quantity of the highest ranked publications represents, together with the increase in the volume

Tab. 14: Overview of the publication activities of the Faculty according to the category groups

	2012	2013	2014	2015	2016
A1	7	10	8	8	6
A2	18	19	11	21	9
B	12	15	14	17	17
C	–	6	9	4	8

Glossary:
A1 – Scientific monographs
A2 – Other book publications
B – Original scientific works in Current Contents database
C – Original scientific works in WoS and Scopus databases

of funds from the grant projects, a very significant way of compensating financial loss, caused by the decreasing number of students and the related decrease of subsidy for pedagogical activities.

The number of recorded citation indexes to the works published by the Faculty employees reached the historically highest level in 2016.

During the last five years, the most cited publication was an original scientific work "Seto, K. C., Reenberg, A., Boone, Ch. G., Fragkias, M., Haase, D., Langanke, T., Marcotullio, P., Munroe, D. K., Olah, B. & Simon, D., 2012: Urban land teleconnections and sustainability. Proceedings of the National Academy of Sciences of the United States of America 109: 7687 7692", where one of the authors was the employee of the FEE. This work had 157 citations totally according to the database Science Citation Index and 267 citations according to the database Google Scholar in the period from 2012 to 31 March 2017.

The most cited publication in the period of the last five years, where one of the authors was the employee of the FEE, was an original scientific work "Seto, K. C., Reenberg, A., Boone, Ch. G., Fragkias, M., Haase, D., Langanke, T., Marcotullio, P., Munroe, D. K., Olah, B. & Simon, D., 2012: Urban land teleconnections and sustainability. *Proceedings of the National Academy of Sciences of the United States of America* **109:** 7687 7692". This work had 157 citations totally according to the database Science Citation Index and 267 citations according to the database Google Scholar in the period from 2012 to 31 March 2017.

Student Scientific Conference

Every year, the students of all three levels of university studies participate in the Student Scientific Conference "Ecology and Environmental Sciences" at the FEE, where the results of their research are presented. The Conference is connected with the evaluation of presented contributions and it has a 14-year tradition. Special category has been devoted to the presentations in the English language for several years.

Students from other national and foreign faculties have participated in individual years of the Student Scientific Conference, as well as the FEE students are involved in Student Scientific Conferences, organised by other faculties and universities, where they won several awards. Furthermore, our students take part in other similarly oriented events, e.g. competition of the Association of Wastewater Treatment Experts of the Slovak Republic or the annual event Technique or Air Protection, organised by the Faculty of Mechanical Engineering of the Slovak University of Technology in Bratislava. At the Technique of Air Protection 2015, Bc. Kristína Tonhauser, a student of the FEE, got the first place and won the award for the best student work.

The FEE student, Bc. Kristína Tonhauser, got the first place in a competition Technique of Air Protection 2015, organised by the Faculty of Mechanical Engineering of the Slovak University of Technology in Bratislava and won the award for the best student work.

Faculty Development Activity

In recent years, the Faculty of Ecology and Environmental Sciences has been notably active not only in the structure of proposed study programmes and in the quantity and quality of scientific publications, but also in international cooperation and cooperation with companies. Several employees of the Faculty joined actively scientific activities within extensive demand-oriented project "Centre of Excellence for Decision Support in the Forest and Landscape", co-financed by the EU resources. Modern laboratories and classrooms have become standard. They were equipped thanks to all-university development projects, financially supported by the EU structural funds.

External Relations of the Faculty

The Faculty of Ecology and Environmental Sciences carries out several of its significant activities thanks to the intensive and fruitful cooperation with Slovak, but also foreign governmental and non-governmental organisations.

Several of the activities, in which the Faculty successfully participates, are implemented owing to close and long-term cooperation with the Centre of the Environmental and Ethical Education Živica (CEEV Živica). Beside the above mentioned education project the Socrates Institute and the programme for pedagogical staff education entitled "Eco-School", there are also other very successful activities with the CEEV Živica, in which the FEE has been involved since 2013. The first one was the project "Global Education at the FEE" (2013 – 2014), followed by "Global Education in Context" and "Global Education – Universities in the 21st Century" (2015 – 2016). At present, a similar project entitled "The Academics – Actively and in Practice" (2016 – 2018) is being carried out. In cooperation with the CEEV Živica, the FEE got involved in implementing the project "Secret Town Life", which has been carried out parallelly in Slovakia, as well as in the Czech Republic since September 2016. The project is oriented on mapping the towns' biodiversity, using innovative methods, e.g. mobile applications for determining plant species in urban area.

The Faculty has an active cooperation with Špirála, too. It is a nationwide network of organisations dealing with environmental education. Thanks to this cooperation, the FEE as a partner organisation was given a right to conduct the educational programme of continuous learning for the teachers with the central topic of environmental education at nursery, primary and secondary schools, using the method of participative environmental management.

In the period of the years 2012-2016, except for the prolongations, the Faculty also initiated several preparations of bilateral agreements, which have already been actively used, e.g. in active cooperation with the Eötvös Loránd University Budapest (Hungary), Universitŕ degli Studi di Firenze (Italy), University of West Hungary (Hungary), Masaryk University in Brno (the Czech Republic) and with Universitŕ degli Studi di Torino (Italy). The cooperation agreement on research and students' exchange was signed with the M'hamed Bougara University of Boumerdes, Faculty of Engineering Science (Algeria).

The UNESCO Department of Ecological Awareness and Sustainable Development has a special position within the FEE in the sphere of international cooperation. The Department was established in 1994 within the programme UNITWIN/ UNESCO Chairs Programme (University Twinning and Networking) as a part of international network of similarly oriented workplaces, running under the patronage of the United Nations Educational, Scientific and Cultural Organisation.

In the sphere of academic mobilities of creative employees and students, the FEE has joined mainly the EU programmes ERASMUS and ERASMUS+, focused on mobilities and cooperation in the sphere of university education in Europe. In recent years the mobilities have been carried out also within the CEEPUS Programme and through the grants from the National Scholarship Programme.

Considering the number of the employees' mobilities, the Faculty belongs to the faculties with more or less stable, but relatively low interest in these types of activities (professional internships, teaching mobilities, language courses etc.).

Students' mobilities are getting more and more popular. It is mainly the case of the Programme ERASMUS+ (or ERASMUS), as well as of mobilities within the Programme CEEPUS Freemover. PhD students prefer also scholarships provided by the National Scholarship Programme. Considerable increase has been recorded since the academic year 2012/2013 (Table 15), but currently it is negatively affected by the decrease in the number of the Faculty students. The popularity of post-graduates' internships, supported by the Programme ERASMUS+ since the academic year 2014/2015, has been growing recently. The FEE belongs to the faculties, whose students can participate in those internships in companies, even with possible job offer. Active participation of the FEE students and teachers in the events organised within Erasmus

Tab. 15: Development of number of mobilities at the FEE

		2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Students	Sent for studies	17	19	14	5	1
	Sent for internship	4	5	12	10	17
	Incoming	22	3	4	3	1
Teachers	Sent for conference	30	50	31	29	20
	Sent for internship	8	6	1	4	5
	Sent for other	29	37	40	21	42
	Incoming internship	3	3	4	2	5
	Incoming other activities	59	49	34	45	38

Intensive Programme in the past is positive, too, including an event called Care for Public Greenery, organised in 2013.

Thanks to the initiative of the FEE, the Technical University in Zvolen is an active member of two important international organisations. Since 2011 it has been a member of the organisation UNISCAPE – international network of universities, focused on support and implementation of the European Landscape Convention. In 2015 the Faculty became a member of the Global Universities Partnership on Environment and Sustainability (GUPES). It is an organisation that works within the United Nations Environment Programme (UNEP). It was established in June 2012 and nowadays it has more than 500 partners from the universities all over the world.

The Faculty is also proud of its participation in successful and regularly publicised project entitled "White Carpathian's Fruit Treasure". It is an activity implemented within the scheme of Swiss and Slovak cooperation of the Ekopolis Foundation. It is performed by the State Nature Conservancy of the Slovak Republic, Administration of the Protected Landscape Area Biele Karpaty in Nemšová, Swiss partner – Foundation ProSpecieRara, based in Basel, and by several cooperating organisations, including the FEE.

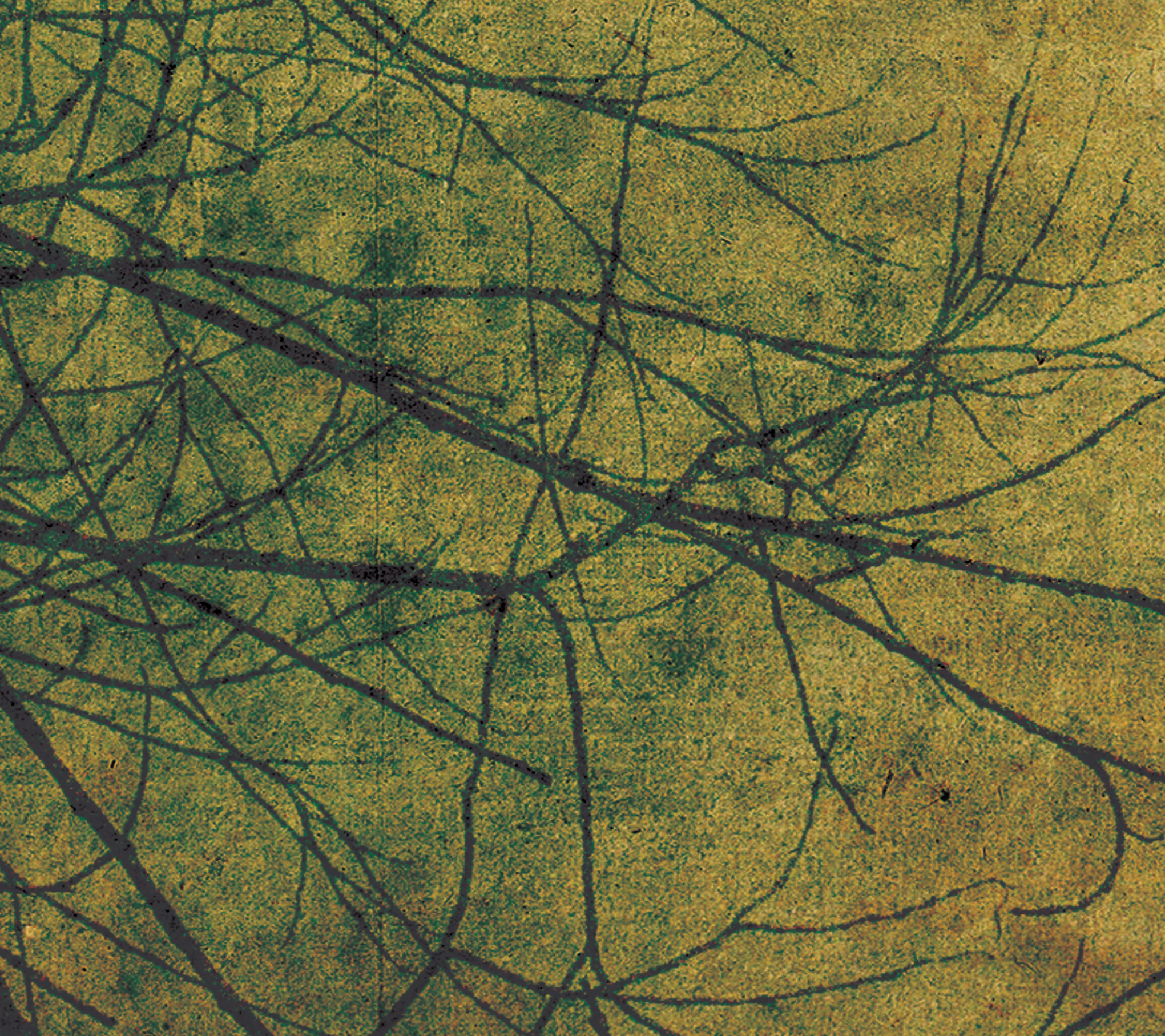
The membership of the FEE in organisations GenoFond (association of friends of old cultivars of cultivated plants and farm animals' breeds) and Ekoklaster (association of subjects focused on the use of renewable energy sources) is related to the cultivation of old cultivars and landraces of fruit trees and to sustainable development of the countryside. Both memberships date back to spring 2016.

Individual Faculty departments or employees are also members of other 44 organisations, e.g. British Myriapod and Isopod Group, Centre for International Documentation de Arachnologique, Centre International Myriapodologie, Czech Society for Ecology, Czech Scientific Society for Mycology, European Academy of Science and Art, European Culture Expressed in Agricultural Landscapes, European Dry Grassland Group, European Geosciences Union, European Pond Conservation Network, European Centre for Nature Conservation, Global Water Partnership, International Association for Landscape Ecology, International Association for Vegetation Science, International Society for Fungal Conservation, International Society of Arboriculture etc.

The FEE participates in the project "White Carpathian´s Fruit Treasure", oriented to the rescue of gene pool of old cultivars and landraces of fruit trees.

The FEE adopted a Przewalski's horse, kept in the Bojnice Zoo, and thus contributes to the rescue of its gene pool under ex situ conditions.

The Faculty is building on the traditions of ecological and environmental education and research, which started to be developed by the FEE, as one of the few university institutions in Slovakia, already in 1991. Persisting interest of students in ecological and environmental activities, as well as the interest of partner specialised institutions and general public in cooperation in ecological and environmental issues is a positive indicator of the Faculty importance.



FACULTY OF ENVIRONMENTAL AND MANUFACTURING TECHNOLOGY

2012 – 2017

Faculty of Environmental and Manufacturing Technology

The Faculty of Environmental and Manufacturing Technology (FEVT) is the most recent faculty to have been set up at the Technical University in Zvolen (TUZVO). From the outset it was strategically conceived as a unique, specialist faculty, both in terms of its mission and its place within the structure and profile of its parent university, the Technical University in Zvolen. In the academic year 2016/2017 the Faculty celebrated its 20th anniversary. From a purely historical perspective this may not seem like a particularly long period of time, but in terms of human lives, memories and expectations, it is a period in which a whole generation has matured and come of age. The Faculty of Environmental and Manufacturing Technology has also followed a similar trajectory since its inception on 1 September 1996, the day on which the decision to set up the independent Faculty of Environmental and Manufacturing Technology taken by the Academic Senate of the Technical University in Zvolen on 27 March took effect. The idea was to create a faculty that would add to the scope of the University's other, previously established, faculties, thereby making the Technical University in Zvolen an institution with a comprehensive profile in forest, wood, ecology and the environment. The Faculty's focus reflects humanity's need to rectify the growing imbalance between nature and people. The intellectual basis of the Faculty's profile lies in the need to address the long-term sustainability of human action by monitoring, identifying and minimising the negative impacts manufacturing processes have on people and their working and living environments and on nature as a whole. The Faculty's primary mission is to build on its main focus in science, research, development and innovation, especially in the education and training of specialists to meet the continually changing needs of the labour market. Its education programme is based on general and individual study, which is achieved through the credit system that is replacing the old rigid courses with more flexible ones.

In addition to the compulsory programme subjects, students have a range of study options to choose from, enabling them to co-tailor their own study plan and thus their specialist profile. The education and training is based on the latest world knowledge in science and technology, findings from its own basic and applied research and collaboration with other universities and higher education institutions, research institutes, industry and societal practice both at home and abroad.

The Faculty competes in the university sector as an educational institution that produces university-educated specialists at the bachelor, master's and PhD levels with a technical focus in manufacturing technologies for forest management and all aspects of timber processing; technologies and equipment for minimising and fully addressing the secondary outcomes of industrial processes; technologies, equipment and management systems for protecting health, assets and the living and working environment in relation to industrial processes and human activity; technologies and equipment used in non-traditional and renewable energy sources as well as the technologies and manufacturing equipment for controlling machines and production and its various stages using modern computing and communication technologies.

The Faculty of Environmental and Manufacturing Technology offers technical university education and trains specialists at the tertiary level, equipping them with knowledge and skills relating to forestry machines, operating equipment, energy and vehicle technologies, manufacturing machines and equipment used in timber processing, environmental facilities and manufacturing systems as well as risk management and analysis for engineering, and integrated and project management for industrial processes.

The Faculty has recently began organising promotional events for primary and secondary schools aimed at encouraging interest in the Faculty's technical subjects among young people. Projects financed by the commercial sector played a crucial role in this – Volkswagen Slovakia Foundation: Roboplay for the FEVT and Virtual reality simulation of the dynamics of the motor vehicle and setting parameters in the real world to improve vehicle safety and comfort and the Living Energy Foundation Fund as part of support for the Research and Demonstration Solar Concentrator project.

In its twenty-year existence the Faculty of Environmental and Manufacturing Technology has evolved. It is currently divided into four departments (names of current department heads are given in brackets): Department of Environmental and Forestry Machinery (Assoc. Prof. Ing. Jozef Krilek, PhD), Department of Production Engineering and Quality Management (Assoc. Prof. Ing. Miroslav Dado, PhD), Department of Machinery Control and Automation (Prof. Ing. Štefan Barcík, CSc), Department of Mechanics, Mechanical Engineering and Design (Assoc. Prof. Ing. Marián Kučera, PhD is responsible for managing the Department)

Pedagogic, research and other activities are currently performed by 38 staff members. There are 3 Professors, 14 Associate Professors, 13 Assistant Professors and 8 technicians/administrative staff members.

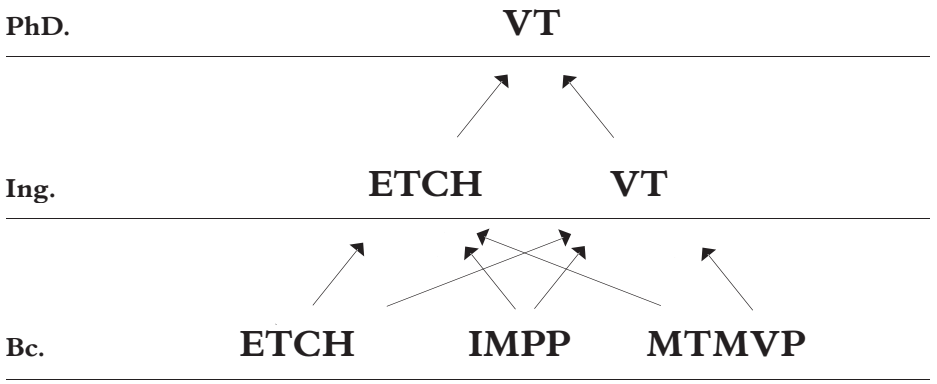
In 2012 – 2015 the Faculty management team consisted of Assoc. Prof. Ing. Marián Kučera, PhD, – Dean, Assoc. Prof. Ing. Branislav Danko, PhD, – Vice-dean for pedagogy and promoting the Faculty (since 2014 Assoc. Prof. Ing. Pavel Beňo, PhD, has been responsible for managing the Faculty), Assoc. Prof. Ing. Pavel Beňo, PhD, – Vice-dean for international activities, development and economic activity, Ing. Ján Kováč, PhD, – Vice-dean for science, research and PhD studies (since 2015 Prof. Ing. Štefan Barcík, CSc), and Ing. Magdaléna Klacková – FEVT Secretary.

The current FEVT TUZVO management team consists of Prof. Ing. Marián Kučera, PhD, – Dean, Assoc. Prof. Ing. Ján Kováč, PhD, – Vice-dean for pedagogy and promoting the Faculty, Assoc. Prof. Ing. Pavel Beňo, PhD, – Vice-dean for international activities, development and economic activity, Prof. Ing. Štefan Barcík, CSc, – Vice-dean for science, research and PhD studies, and Ing. Magdaléna Klacková – FEVT Secretary. In 2012 – 2014 the FEVT Academic Senate was chaired by Prof. Ing. Jozef Černecký, CSc, and since 2014 the chair of the FEVT Academic Senate has been Ing. Ján Turis, PhD.

Progress has also been made in improving the level of academic qualifications held by Faculty members. At the Faculty of Environmental and Manufacturing Technology assistant professors defended their habilitations and professorships were awarded in manufacturing technologies. In 2012 – 2017 two associate professorships were awarded at the FEVT. In addition, during this period one professorship was awarded and five Faculty staff received their habilitations at other universities either in Slovakia or abroad.

Pedagogy at the Faculty

The courses provided by the Faculty of Environmental and Manufacturing Technology at the Technical University in Zvolen in 2012 – 2016 correspond to the Faculty's Long-term Scheme and the full accreditation of the University gained during this period. All the study (degree) programmes submitted were accredited, generally with no delay.



Current breakdown of study (degree) programmes at the Faculty of Environmental and Manufacturing Technology

Glossary:
VT – Manufacturing Technology
ETCH – Ecotechnologies
IMPP – Integrated Management of Industrial Processes
MTMVP – Manufacturing Technology and Management of Production Processes

Tab. 16: Changes in student numbers at FEVT

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Full-time students	384	266	210	164	163
Part-time students	142	130	109	97	77
Total	**490**	**396**	**319**	**261**	**240**

Tab. 17: Changes in student numbers at FEVT – PhD students

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Full-time students	14	8	6	8	10
Part-time students	10	5	6	6	5
Total	**24**	**14**	**12**	**14**	**15**

A quote by Isaac Newton, 'If I have seen further it is by standing on the shoulders of Giants', refers to the fact that knowledge grows when accompanied by intergenerational continuity over the long-term.

Students and Programmes

The full and part-time study (degree) programmes offered by the Faculty are taught by experts in special technical sciences (mathematics, physics, mechanics and information studies) and in key subject areas. During their course students will engage in scientific research in the form of student scientific and academic activities, engaging in projects with academic staff at the Faculty as part of Slovak grant agency projects, such as VEGA (Research Grant Agency), KEGA (Culture and Education Grant Agency) and APVV (Slovak Research and Development Agency) as well as others funded out of the EU Structural Funds. Students will have access to computer labs and a powerful computer network including wireless connection both inside and outside the Faculty including the library, student halls and

study rooms. During their course students will have the opportunity to improve their foreign language skills (English, German, Russian, French). In addition the Faculty encourages students to participate in sports activities, competing in student sports competitions, tournaments etc. We have had the honour of educating graduates who have successfully represented Slovakia in various sports, such as the biathlon, athletics, parachuting, badminton and mountain biking.

One advantage of the Faculty is that it is multidisciplinary in nature. The Faculty operates on the basis that its role is to produce technically skilled graduates who have little difficulty applying themselves in the workplace, and the study programmes are designed with this end in mind.

Every year SOVA Digital awards prizes to the best bachelor and master's theses in engineering undertaken at technical universities in Slovakia. In 2015 and 2016 these by our students featured amongst the best bachelor these in the Žilina, Trenčin and Banská Bystrica regions.

In 2015 a practical teaching centre was set up at the Faculty with support from the 'Higher education

as the driver of a knowledge society' national project aimed at improving tertiary education by adapting educational content to present-day needs and fostering innovative forms of education for the needs of the labour market in selected promising study (degree) programmes at the Faculty. The Centre of Scientific and Technological Information secured the education resources in the form of study aids, textbooks, licences and digital innovative content. In 2016 the first new official training centre for Parker Hannifin hydraulics and pneumatics in Slovakia was opened at the Faculty under the aegis of BRC Slovakia. The company organises training courses that serve the educational needs of its partner company clients and those of FEVT students as part of their education.

Scientific Research at the Faculty

The Faculty's science and research profile is based around work centring around the Forest – Wood – Environment nexus and stems from the Faculty's long-term Scheme. Other key elements underpinning FEVT's scientific research profile are the Faculty's know-how, staff opportunities and its resource and technical base.

In terms of content, the Faculty's research activities relate mainly to developing and assessing the quality of forest and wood-processing machines, improving resource and energy efficiencies (long-term renewables, biomass) and quality management in manufacturing companies.

The Faculty's development strategy is based on its research and technology development goals in terms of world trends and society's requirements. The aim is to ensure that all the Faculty's accredited subjects and specialist disciplines provided by its Departments are developed equally.

The main areas and focal points of the scientific research performed at the departments stem from the Faculty's Long-term Development Scheme and centre around:

- machines, tools, products, workpieces for woodworking – woodworking processes and energy efficiency, power ratios in woodworking processes, the relationship between the quality of the woodworked surface and occupational health hygiene on the one hand and the technological and technical conditions of the process on the other,
- elements and construction nodes in the working mechanisms of woodprocessing machines and operating systems,
- sourcing, transformation and effective use of energy, especially alternative energy,
- minimising the negative impact of industrial technologies on the natural environment,
- sensory networks and their use in manufacturing technologies,
- numerical 3D imaging processing and optimisation of trajectory generation in two-dimension and three-dimension,
- non-traditional energy sources for microelectronic systems,
- mathematical modelling of the behaviour of hygroscopic anisotropic materials under external load and changes in temperature and humidity,
- theoretical and experimental testing of the operating, strength and reliability qualities of machine parts,
- analysis of tension and deformation in hygroscopic anisotropic materials under static and dynamic loading,
- analysis of the tribological properties of sliding and rolling parts in machines and equipment,
- research into the dynamic qualities, traction and rolling resistance of tyres in mobile machines,
- research into the energy efficiency of machines for the processing and transporting dendromass,
- research into mobile machines, the dynamics of movement and observing the interaction between the forest environment and the mobile machine,
- research into the optimisation of manufacturing, environmental and forest mobile machines using Creo Parametric, MSC Adams and SolidWorks,
- research into endurance tests on operating fluids with a low environmental impact,
- research into the effect work fluids have on the degradation processes of working elements,
- research into the cross-sawing of timber and establishing the technical parameters of the cutting nodes with application for handling and distribution storage and logging machines,
- research into reducing the negative impact of chainsaws on the workforce and forest environment,

- studies into the properties and possible uses of traditional and special technical materials in mechanical engineering,
- improving machine quality and life-expectancy,
- analysis of material properties and enhancing product performance,
- introducing new materials and testing technological approaches in production,
- the design and operation of complex production systems with special emphasis on environmental acceptability, safety and user-friendliness.

The Faculty's basic and applied research concentrated on achieving resource and energy efficiencies, the use of new energy sources and activities that substantially help minimise the negative impacts of machinery and technologies on the living and working environment. Much of the research concerns the development of new machines and equipment for forestry, the timber industry and environmental engineering.

During this period, the Faculty completed APVV, VEGA, KEGA and other research projects and implemented their findings. The Faculty collaborates with the Faculty of Forestry on APVV projects to develop an adapter and the technologies to deploy it to enhance the effectiveness of forest fires. Faculty

Tab. 18: Number of projects completed at the Faculty

	2012	2013	2014	2015	2016
VEGA (Scientific Grant Agency)	3	3	5	9	4
KEGA (Cultural and Educational Grant Agency)	5	4	3	4	6
APVV (Slovak Research and Development Agency)	1	1	1	1	1
Bilateral projects APVV	–	–	–	–	–
OP Education	1	1	2	2	–
6th Framework Programme	–	–	–	–	–
COST	–	–	–	–	–
Science technology and other projects	3	5	5	3	–
IPA (Internal Project Agency)	2	3	2	1	3
Total	**15**	**13**	**14**	**18**	**14**

staff have also worked on VEGA and KEGA projects, some of which led to the award of patents and utility models. To enhance the international nature of research, the Faculty collaborated on a project that was part of the Operational Programme Education "Creating Study Programmes in English and Reengineering Subjects for the Practical Needs of TUZVO – Stage 2", which was financed out of the European Social Fund and coordinated by Prof. Ing. Jozef Víglaský, CSc. and Prof. Ing. Štefan Barcík, CSc. on behalf of the Faculty. The University has the important task of producing graduates for the requirements of practice who are ready to apply the knowledge they have acquired and implement the latest methods to solve technical problems. For this purpose the Faculty engaged in the 'Higher education as the driver for developing a knowledge society' project, involving Prof. Ing. Štefan Barcík, CSc., Assoc. Prof. Pavel Beňo, PhD, Assoc. Prof. Ján Kováč, PhD, and Assoc. Prof. Ing. Jozef Krilek, PhD. 'Roboplay' projects were the means whereby Assoc. Prof. Mgr. Elena Pivarčiová, PhD, sought to raise interest among school-age children in technical science.

Faculty staff were also engaged in the University's IPA (Internal Projects Agency) projects which are conducted by PhD students and young researchers.

A general overview of projects completed at the FEVT is shown in Table 18.

The amount of research funding obtained from grant projects in 2012 to 2016 was around €184,000. Projects financed out of the Education Operational Programme received over €170,000. The amount the remaining projects were allocated was around €30,000.

The publishing activities of university lecturers, researchers and PhD students is an important element in the criteria for assessing universities and faculties. It is the primary means of presenting research findings, sharing knowledge obtained from scientific research via academic and specialist journals and of directly presenting and comparing research findings at scientific conferences, symposiums and seminars with those of other researchers working in the same field. Assessing the Faculty's publishing activities is not an end but is contingent to the allocation of financial resources to higher education institutions and as such has become one of the Faculty's most important tasks. Lists of publications are required for accreditation purposes, for the submission of project and grant applications, for obtaining qualifications and in recent years for the allocation of public higher education grants from the budget of the Ministry of Education, Science, Research and Sport of the SR.

An important element in the research activities undertaken at the Faculty of Environmental and Manufacturing Technology is student engagement in various forms of study and undertaking course work. The scientific student conferences organised annually showcase the best work. It is encouraging that in recent years Slovak students have shown an increasing interest in this and that students come from abroad to attend. The conferences are becoming international, increasing the competition and thereby the quality of the work presented. Student scientific and academic activities (ŠVOČ) are a means whereby students can engage in the University's research work. It is an opportunity for students to enjoy and develop their special interests,

talents and creative thinking. By partaking in ŠVOČ students tackle contemporary issues that are closely linked to the University's research focus. The knowledge and experience obtained can be further used in bachelor and master's theses, and for some it is also a good springboard for the scientific work conducted later at the PhD level. ŠVOČ is an opportunity for students to test their abilities to independently analyse and tackle tasks, present their findings and defend their work in front of experts. All these research-related activities help promote TUZVO at home and abroad, helping improve its position in Slovakia and in Europe.

Our students regularly participate in ŠVOČ conferences at the Alexander Dubček University in Trenčín and the Slovak Agricultural University in Nitra, where they feature among the best.

Collaborations with Key Institutions in the Slovak Commercial Sector

Building up external relations involves forming contacts with Slovak organisations to develop collaboration to support pedagogy and participate in research and promote the findings. The FEVT

Tab. 19: Overview of FEVT publishing activities grouped by category

	2012	2013	2014	2015	2016
A1	4,55	5,37	3,25	3,93	1,05
A2	7,67	4,06	9,15	21,2	15,29
B	1,7	12,07	18,38	10,0	8,32
C	180,68	105,62	103,34	15,76	26,0
D	–	–	–	85,04	68,77

Glossary:
A1 – scientific monographs
A2 – other books not including scientific monographs
B – publications in indexed academic journals and certificates, patents and discoveries
C – publications in journals that are not indexed but are registered in the WOS database (up to 2014 other publications only
D – other publications (from 2015)


EPSILON

has entered into collaboration agreements with key engineering companies such as BRC Slovakia, s.r.o., ZETOR Slovensko, s.r.o., DAVOS trade–logistics, s.r.o., Zvolenská Teplárenská, a.s., Zvolen, Locomotion Slovakia, s.r.o., ESSEL Slovenská Lupča, QUERCUS, s.r.o., Bratislava and WAY INDUSTRIES, a.s., Krupina.

Collaboration between the Faculty and Other Universities and Research Institutions Abroad

The Faculty's collaboration agreements primarily concern institutions where the focus is on practice, and whose activities have a similar scientific research and teaching focus. In addition to relations with our traditional partner organisations, in recent years relations have been developed with non-European countries, based on project collaboration stemming from bilateral intergovernmental agreements between the Slovak Republic and non-European countries. This has been achieved via applications to European mobility and education programmes. The FEVT has engaged in collaboration with education institutions of a similar profile in the Czech Republic, Croatia, Romania, Hungary, Finland, Serbia, Ukraine, Russia and Germany. Recently it has stepped up collaboration with partners in Poland, specifically with Koszalin University of Technology and Silesian University of Technology in Gliwice.

Mobility and Mobility Projects

Most of the mobility of the Faculty staff and students is undertaken within the European LLP/ ERASMUS+ and CEEPUS programmes. ERASMUS+ is the EU's flagship education and academic training programme. It is aimed at higher education mobility and collaboration among higher education institutions in Europe. ERASMUS+ also promotes collaboration between higher education institutions via intensive programmes, multilateral networks and projects. The Faculty of Environmental and Manufacturing Technology has the most CEEPUS programme networks within the University as a whole and during the period of interest participated in the following programmes:

CII-SK-0310-06-1314 / 07-1445 Non Traditional Processes in Production Technologies and Integration of the Study and Research in the Eastern and Central Europe Universities

CIII-PL-0701-03-1415 Engineering as Communication Language in Europe

CIII-RS-1012-02-1617 Building Knowledge and Experience Exchange in CFD

Recently in its efforts to exploit mobility opportunities and further collaboration in education and science, the Faculty has concentrated on KA1 – Learning Mobility of Individuals. This involves the mobility of higher education students and staff between programme countries and partner countries and enables European higher education institutions to collaborate with partner institutions outside the European Union via the international mobility of individuals. In this regard, the Faculty has initiated first steps with the Ukrainian National Forestry University, Lviv, and the Saint Petersburg State Forest Technical University.

Membership of Slovak and foreign organisations

The Faculty of Environmental and Manufacturing Technology is represented in the editorial boards of Slovak and foreign journals, within international organisations, in councils, committees and commissions based in Slovakia and abroad, for example Česká společnost pro povrchové úpravy (Czech Society of Surface Treatment) AEBIOM, AEE–Association of Energy Engineers, Agronomy Research, CEBC, Springer, European Acoustics Association, ASENEM (Association of Energy Managers), ASTFE (American Society of Thermal and Fluids Engineering),

As an integral part of the University, the Faculty is a leading spiritual institution in society. A healthy society relies on the health of its universities and its departments, while the success of our generation depends on our ability to identify and motivate young people. We, therefore, seek to support the best and promote them to management positions in the academic sphere.

Why is it important for us to retain technical subjects? The labour market increasingly demands qualified specialists with a technical education (without the technical side the economy would collapse).

We believe that in the future the FEVT will continue to provide technical education that is highly competitive in Europe's education sector and that it will continue to be based on good quality scientific research. Our students must play their part in this as well.

OTHER ORGANIZATIONAL PARTS
2012 – 2017


TECHNICKÁ UNIVERZITA

Other Organizational Parts

Institute of Foreign Languages

The Institute of Foreign Languages (ÚCJ) as a university workplace was established in 1999. However, its history had already begun in 1952, when the Department of Languages, as one of the departments of that period, was founded at the University of Forestry and Wood Technology in Zvolen. The Institute has been directed by Dr. phil. Mgr. Marek Ľupták since the year 2010.

The ÚCJ supervises the education of foreign languages in bachelor, master and PhD study programmes at all the faculties of the Technical University in Zvolen. At the beginning of their studies, the students are required to master the foreign language at the B1-B2 levels (Independent User) according to the Common European Framework of Reference for Languages. In the study programme Economics and Management of Wood-Processing Enterprises at the Faculty of Wood Sciences and Technology, the students in the second level of their university studies are obliged to choose (after their first foreign language - predominantly English) another foreign language: German, French, Chinese or Russian. This plurilingual approach in foreign language education arises from the particularity of the managerial study programme. The PhD students are obliged to pass the course of Scientific and Academic Communication in a chosen foreign language and at the end of the course, they have to pass the language exam before the committee. The compulsory courses of foreign languages are aimed at profile and partial mastering of individual language skills in students' specialisation, with the focus on professional discourse. Foreign language competence is considered as an added value to the professional education of the graduates of the Technical University in Zvolen.

At present there are ten teachers at the Institute of Foreign Languages: Dr. phil. Mgr. Marek Ľupták (head of the ÚCJ); Mgr. Žaneta Balážová (deputy head of the ÚCJ); Dr. phil. Mgr. Veronika Deáková (secretary of the ÚCJ); PaedDr. Darina Veverková, PhD. (secretary for scientific and research activities of the ÚCJ); Mgr. Jaroslava Štefková, PhD. (project manager of the KEGA (Cultural and Educational Grant Agency) project in the years 2014 – 2016); Mgr. Ivana Slováková, PhD.; Mgr. Zuzana Vyhnáliková, PhD.; Mgr. Zuzana Danihelová; PhDr. Andrej Timko; PhDr. Jana Luptáková and Anna Zwachová (administrative worker). In the period we are writing about, i.e. from 2012 until nowadays, the following teachers were teaching at the ÚCJ in different periods: Mgr. Hana Weissová (until the year 2012); PhDr. Oľga Lejsalová, CSc. (until the year 2012); Mgr. Tomáš Škraban, PhD. (summer semester 2013); Mgr. Zuzana

Ličková (until the year 2014); PaedDr. Martina Babiaková, Mgr. Mária Laciková, PaedDr. Monika Michaleková (until the year 2016) and Mgr. Katarína Hudáková (winter semester 2016). In the winter semester of the academic year 2016/2017, a guest teacher of the Russian language Irina M. Nekipelova from the Izhevsk State Technical University, the Russian Federation, worked at the ÚCJ within the National Scholarship Programme of the SAIA agency.

Based on the contractual cooperation with the Confucius Institute at the Faculty of Arts of the Comenius University in Bratislava headed by Prof. Mgr. Jana Benická, PhD., the Confucius Classroom was established at the ÚCJ in 2016. The aim of the Confucius Classroom is to teach Chinese language and culture at the Technical University in Zvolen. In the academic year 2016/2017, Chinese language teacher Yuanyuan Wang worked at the ÚCJ.

In their scientific and research activities, the teachers of the ÚCJ are engaged in their own philological topics – linguistics, literature, methodology – with practical applications. Furthermore, they focus on lexicographical research into terminology and translations related to the University profile. The ÚCJ organises annual autumn conference oriented towards applied linguistics problems and publishes the scientific proceeding called "Applied Languages in the University Context".

The teachers of the ÚCJ participate in projects of other departments of the University, as well as in their own institutional research. The ÚCJ guaranteed, under the supervision of Dr. phil. Mgr. Marek Ľupták, the language education oriented towards professionalisation of language skills of pedagogical and academic staff and PhD students of the University from 2013 to 2015 within the project Operational Programme Education OPV-2012/1.2/04-SORO "Increasing Human Resources Capacity for the Transfer of Research and Development Knowledge Concerning Biomass Production and Processing into Practice".

The ÚCJ team carried out the KEGA project No. 013TU Z-4/2014 entitled "Implementation of Electronic Education of Foreign Languages Based on Multimedia Teaching Materials at the Technical University in Zvolen". The project was managed by Mgr. Jaroslava Štefková, PhD.

Since 2017 the ÚCJ employees have implemented another KEGA project No. 010TU Z-4/2017 entitled "Developing the Reading Competency and Teaching Technical Foreign Languages at Technical Universities", under the supervision of PaedDr. Darina Veverková, PhD.

The ÚCJ is a philological workplace and its research and pedagogical activities are focused on applied languages. Therefore, it is a bridge of understanding the intercultural academic space, brought by foreign languages.

Institute of Physical Education and Sport

The activities of the Institute of Physical Education and Sport (ÚTVŠ) as a university workplace are focused on sport activities for the students of the Technical University in Zvolen. They have a possibility of choosing individual courses (each of the value of one credit) "Physical and Sport Education" or "Optional Sport and Health" during the first and

second level of the university studies. Except for the main courses, the students can choose various forms of kinetic activities in a course form of physical education: winter ski courses, course of hiking and living in nature, course of boating activities or in a club form of physical education: university leagues and occasional sports events.

The aim of this pedagogical workplace is to lead professionally and methodically the students to the development and improvement of kinetic abilities and skills in the selected sports that are offered by the ÚTVŠ. The pedagogical process at the ÚTVŠ is led by university teachers, who supervise offered sport activities and, in cooperation with the Slovak University Sports Association, organise sport events and competitions within the University, region and the Slovak Republic. In cooperation with sport unions, they prepare students-sportsmen for the representation of our University and in many cases of Slovakia, too. To mention few of them: participants in the Slovak Winter Universiade: Denis Nociar, Radoslav Gábor – hockey, Miroslav Šulek, Rudolf Michalovský, Eva Segečová – cross-country skiing, Andrea Hôrčiková – biathlon, medallists from the Slovak Winter and Summer Universiades: Tomáš Novysedlák – arm wrestling, Filip Ištokovič, Patrik Kučera, Erik Barboriak, Matúš Kollár, Viliam Paško, Stano Fekiač, Peter Palaščák, Gregor Vilhanček – volleyball, Nikola Berčíková – 6th place at the Obstacle Course Racing World Championship.

In the sphere of scientific and research activities, the ÚTVŠ carried out the IPA (Internal Project Agency) project (2015 – 2016) "Accessibility of the Selected Area of Interest Locality of the University Forest Enterprise for its Recreational Use" and participated in the VEGA (Scientific Grant Agency) project (2016 – 2018) "BUBO Intervention Programme and the Development of Physical Abilities of Primary Education Students" No. 1/0714/14. Since 2012 the pedagogical staff has published a lot of professional articles, 7 professional monographs have been published in Slovakia and 2 monographs abroad. Already for 7 years, they have organised annual scientific international conference "Physical Education and Sport – the Way to Form Relation of Young Generation to Exercising and Sport". They are also regular co-organisers of international sport Olympic Games for the University of the Third Age students (Poland, Turkey, Lithuania, Russia, Ukraine, the Czech Republic and Slovakia).

Professional and recreational sport at the Technical University in Zvolen comes under Slávia Sports Club of the Technical University in Zvolen, whose activities are focused on students, as well as employees of the University and different sport activities and events are continuously prepared for them.

Slovak Forestry and Wood Sciences Library

The Slovak Forestry and Wood Sciences Library (SLDK) is an academic library of the Technical University in Zvolen. In accordance with the Act No. 126/2015 Coll. on Libraries, the SLDK is a scientific, information, bibliographic, coordinating and advisory workplace of the University. It also fulfils the function of specialised scientific library in the sphere of forestry and wood sciences.

Its foundation is related to the establishment of the University of Forestry and Wood Technology

in Zvolen. The Library was founded on 1 September 1952 as the State Study Library in Zvolen, scientific institute for the region of Banská Bystrica and simultaneously forestry and wood sciences library for whole Slovakia, as amended by the Decree-Law No. 30/1952 Coll. and supplemented with the changes of university organisation and by the Decree of "Povereníctvo školstva, vied a umení v Bratislave" (the Authorised Office for Education, Sciences and Art in Bratislava). The 65th anniversary of its establishment is commemorated in 2017.

The mission of the Library is to support educational, research and scientific activities of the Technical University and lifelong learning, and to provide unrestricted access to information to students, pedagogical staff, researchers and other employees of the Technical University, as well as to the institutions, professional public and citizens in the Slovak Republic and abroad.

In the last years, the complex reconstruction of the Library interior and store with interior, technical and technological equipment was carried out within the national project supported by the EU structural funds. Due to the project activities, the SLDK brought significant change in providing library and information services to its users. The establishment of the

Information and Scientific Centre was a contribution, too.

The library and information activities and services are fully automated. The SLDK uses library and information system called the Advanced Rapid Library, integrated with the electronic collection protection. The Library provides lending services, inter-library and international inter-library loans, electronic documents delivery service, as well as information, advisory, consulting, reference and searching services from Slovak and foreign databases, bookbinding and reprographic services and it proposes stimulating environment for its users.

The SLDK provides access to study literature, professional and scientific publications and other information sources. The library collection contains more than 372,000 library units of professional books, periodicals and special literature, standards, final and qualification theses from the sphere of forestry, wood sciences, ecology, environmental sciences and manufacturing technology and from other natural, technical and human sciences. The library collection is continuously complemented and updated. It is replenished also by publications given to the Library as gifts, as well as by publications exchanges, thanks to the cooperation with foreign and Slovak partners. Within its project activities, the SLDK obtains finances to buy literature from subsidies of the Ministry of Culture of the Slovak Republic, the Slovak Arts Council and from other sources.

One of the priority tasks of the SLDK is recording the publication activity and citations and creating the Database of Publication Activity and Citations of the Technical University employees. The SLDK participates in creation of the Central Register of Publication Activity of the Slovak Republic. It also provides bibliographies of publication activities of the Technical University employees. The Library creates and makes accessible professional information databases focused on forestry, wood sciences, ecology, environmental sciences and manufacturing technology and other related disciplines. The database of documents, involving also the Database of Articles, is unique in the Slovak Republic. All the databases, created in the SLDK, are accessible via online catalogue on the Library website.

By the participation of the SLDK in national projects, the Technical University got access to electronic information sources and distant access to databases. The Library constantly extends the access possibilities to external electronic information sources and it provides online access to full-text databases, which can also be used in the form of distant access through the online Library Catalogue.

The use of Global Education Resource Centre is another Library service. The Centre was established within the project activities of the University in the SLDK and is equipped with education book and multimedia materials, dealing with the topic of global education, multiculturalism, facilitation and leading of education programmes. Information seminars, as well as the meetings with significant personalities take place there. Students and employees of the University also use the Self-Access Language Centre for individual or group studies. This centre is oriented towards the support of foreign languages education at the Technical University in Zvolen and it was established within the all-university project Operational Programme Education.

Informational education, focused on improvement of the University students' and PhD students' competences in the sphere of searching for and using information, is implemented in cooperation with the faculties.

Information meetings of SAIA about the possibilities of study internships abroad, as well as various scientific and professional events, are popular, too.

Arboretum Borová hora

The Arboretum Borová Hora (ABH) is a scientific and educational workplace of the Technical University in Zvolen. It has been built since 1965 and has an area of nearly 50 ha. The beginning of its existence dates back officially to 30 March 1965, when the first plantings were carried out.

Thanks to its content specialisation, the ABH occupies a specific position not only within the Technical University. It is unique in Slovak, as well as in the European scope due to the fact that it concentrates especially autochthonous tree species in their inter-species and geographical variability. The extensive tree species collection involves more than 500 coniferous and deciduous tree species, as well as more than their 1,000 different forms or cultivated varieties and 1,500 of geographical origins, in total amount of nearly 14,000 items. The material planted on the area of the ABH is very precious. In most cases there are originals gained directly from natural forests of Slovakia, or they were obtained from different specialised institutions. The exact register and photo documentation are maintained, therefore the preconditions for the next monitoring and evaluating are created. The most valuable purpose of the Arboretum resides in the fact that individual populations and precious forms of indigenous tree species from different parts of Slovakia are generatively and vegetatively reproduced and subsequently preserved as a valuable gene pool.

The ABH also contains the largest collection of roses in the Slovak Republic. This collection includes more than 800 varieties of bed, park, climbing and miniature roses, in total number of nearly 3,500 pieces. The collection specialisation is particular, too. The varieties of roses, bred in Slovakia and the Czech Republic, are concentrated and recorded there, as well as quality and resistant varieties from the cultivators from other countries. In one part of the greenhouse, there are more than 650 species of cacti and succulents. The majority of them has been registered in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In 1981, as an acknowledgement of the great value of the collections, the ABH was declared a protected area "to protect the samples of genetic richness of the tree species of the Slovak Republic forests and wide variability of individual tree species, as well as for scientific, research, educational and cultural purposes."

Nowadays the mission and activities of the ABH include especially:

– creating and providing conditions for the use of the Arboretum collection fund for pedagogical, scientific, research and professional activities of the workplaces of the Technical University in Zvolen and other scientific and professional institutions in the Slovak Republic;

- saving and conservation (archiving) of original and endangered species of Slovak dendroflora;
- carrying out scientific and research tasks in cooperation with the faculties of the Technical University in Zvolen and other universities;
- dealing with professional tasks following the Programme for Rescue and Protection of Dendroflora Gene Pool of the Slovak Republic in compliance with creating collections;
- educational activities within society-wide tasks of arboreta and botanical gardens.

In the period of 2012 – 2016, the use of the ABH has been intensified mainly through the direct education of different fields of dendrologic, land use and ecological orientation. The material centralised in the ABH is evaluated through bachelor's, master's and doctoral theses, as well as in the sphere of research work. In this period, the collections and area of the ABH have been the base for writing 3 doctoral theses, 12 master's theses, 16 bachelor's theses and 18 scientific projects and research tasks. Within implementation of 2 projects of the Cultural and Educational Grant Agency (KEGA) by the ABH employees, three educational trails were made accessible in order to make education more attractive for the students of all types of schools visiting the ABH. Educational trails offer possibilities of experience based learning for wide range of visitors using creative methods and aimed education activities in the Arboretum. Demonstrations of the phytocoenosis directly on the stands and highlighting their characteristics are a precondition for a better and easier understanding of their differences and acquiring knowledge and consequences related to the studied ecosystems.

Within the Long-term Scheme of the Technical University in Zvolen, the transformation of the ABH to the scientific incubator with a possibility of joining the European research space is anticipated. The ways for closer cooperation in the sphere of scientific research with workplaces of similar specialisation not only in Slovakia, but also in the EU member states, are searched for.

Centre of Continuing Education

The Centre of Continuing Education (CĎV), as an all-university purpose centre of the Technical University in Zvolen, is focused on the development and provision of continual education to the Slovak Republic citizens in accordance with the Act No. 568/2009 on Lifelong Learning. The function of the CĎV is to organise continuing education through different courses, trainings, seminars and conferences, as well as to carry out national and international projects in the sphere of further education. The main education activities are focused on forestry – wood sciences – ecology. The main target groups are the students and employees of the Technical University in Zvolen, as well as wide professional public.

The CĎV was established in 2004. Until nowadays, it has provided education to more than 2,500 graduates in the sphere of further professional education, to more than 800 graduates in the area of language and computer education and to more than 1,000 graduates in other types of education. National projects of the CĎV are carried out within the Rural Development Programme and the Operational Programme Human Resources. International projects are carried out within the Erasmus+ Programme.

These days the CĎV is focusing especially on new calls from national or international grant schemes, which support continuing education or education of seniors.

The CĎV organises the studies at the University of the Third Age (UTV) in several study specialisations. The UTV of the Technical University in Zvolen is attended by more than 480 students. In cooperation with the Czech University of Life Sciences in Prague, the UTV opened the Virtual University of the Third Age in January 2017.
It actively cooperates with the towns of Detva and Žiar nad Hronom.

Some examples of current activities:

For the students and employees of the Technical University in Zvolen:

- language courses (English, German, French, Russian, Spanish);
- computer courses (applications in CAD, modelling and predicting of forest development, basics of geoinformatics, specialised CAD/CAM applications – Dietrich, programming of CNC wood-working machines);
- other: course of pedagogy for university teachers, occupational health and safety inspector course, wooden buildings.

In the future, the CĎV will focus especially on the lifelong learning development of the employees and students of the Technical University in Zvolen, on the participation in lifelong learning projects of national and international importance and on supervising further professional education in the sphere of forestry – wood sciences – environmental sciences. The continual teachers' education will not be omitted.

The CĎV is a member of the Slovak Academic Association for Lifelong Learning (www.tuzvo.sk/saacv) and the Association of Universities of the Third Age (ASUTV – www.asutv.sk).

Developmental Workshops and Laboratories

The Developmental Workshops and Laboratories (VDL) are an organisational part of the Technical University in Zvolen. They have performed a function of all-university purpose centre since 1971, providing space and experts for science, research and pedagogy.

The workshop halls and specialised laboratories are focused on the complex of forest – wood – environment. Wood, wood-based materials and metal materials are processed there into the form of products and samples in time, quality and volume allowing the employees to carry out the education process and scientific research.

For the needs of the Technical University and its other organisational facilities, the VDL design, make to measure and install traditional, but also special interior and exterior parts.

For the subjects outside the University, the VDL offer paid services of the maintenance and sharpening of woodworking tools – circular saws, band saws, plane blades and milling cutters.

After 40 years of minimal maintenance and investment into the VDL, the Technical University carried out the project "Reconstruction of Facilities of the TU in Zvolen Aimed at Creating the Information and Communication Technologies (IKT) and Technical Revaluation of the Facilities – stage III", subsidised by the Structural Funds of the EU, aimed at top-ranking

three-dimensional information and communication technologies in the education process and with the secondary outcome in form of the reconstruction of two facilities of the Technical University in Zvolen: workshop halls of the VDL and dilapidated hall of the then Realisation Centre into the form of the Hall of Scientific and Experimental Workplaces.

After being trained, students who tend to create their own work have a possibility of transforming their projects into the form of functional models or prototypes. The support of skills acquiring creates the principle of so-called experience based learning.

In the future, there will be an attempt to profit from the European projects for the reconstruction of functional, but outdated machine equipment. Innovations in machine equipment are 5-axis CNC furniture and working centre, linear edge bander and innovated laser workplace.

In accordance with the Long-term Scheme of the Technical University in Zvolen, the VDL provide the space for scientific incubators implementation.

Following the Strategic Aim of the Technical University in Zvolen, the VDL link scientific and research work to pedagogical process and allow connecting the applied research and practice.

Centre of Information Technologies
Brief Historical Overview

The history of the present Centre of Information Technologies (CIT) started on 14 April 1972, when its predecessor, the Institute of Computing Technology (ÚVT), was established by the transformation from the then Computing Centre (founded in 1969) of the University of Forestry and Wood Technology (VŠLD). The ÚVT began its operation with 35 employees, engaged in software development and computer maintenance. In 1977, a training centre for professional education of programmers, analysts and designers of automated information systems was founded. The technical equipment of the workplace was fundamentally changed after the year 1990. The old mainframes were exchanged for modern servers with the operating system UNIX. In that period, the employees of the Technical University started using new personal computers, as well as new software. The ÚVT also started fulfilling new tasks, especially in the sphere of introducing new information and communication technologies and building computer networks.

A node of the Slovak Academic Data Network (SANET) was created at the Technical University in Zvolen in 1992. The Institute of Computing Technology started providing the first Internet services in November 1992. In the same year, the first websites of the University were launched. In the year 2004 the ÚVT was transformed into the CIT.

The period of 2009-2015 was probably the most distinctive in a short history of the CIT. During three years an optical network, connecting all University facilities in Zvolen, including the Arboretum Borová Hora, was built, with a transmission rate of 10 Gb/s. All the employees and students of the Technical University got access to the Internet with minimum speed of 1 Gb/s for fixed connection and 100 Mb/s for wireless connection in the buildings and in the areas where the University students and employees are usually concentrated. All the servers and disc arrays with the capacity of 140 TB were centralised in the air-conditioned central server room. Their

permanent operation was assured by 35 kVA standby supply together with 80 kVA diesel generator. LCD information boards were installed in the interior of the University to provide information from individual workplaces. Web kiosks, allowing the access to the University Information System, were made accessible to the students.

In cooperation with the Town of Zvolen, the creation of the Zvolen optical network ZOMES, which is administrated by the CIT, was finished in 2015. In 2016, a new transmission technology was installed in cooperation with the association SANET. It increased transmission rate of the Internet connection to 200 Gb/s, while it is possible to increase the speed even to 500Gb/s.

Nowadays

At present, there are 14 employees working in three independent departments of the CIT:

Department of the Information System of the University provides the operation of all-university information systems, from which the most important are:

UIS – the University Information System for the administration of study, science and research;

IS KREDIT – information system of the canteen, attendance registration system and access system;

FIS SOFIA – financial and economic system, system of electronic filing cabinet.

Except for that, the Department issues multifunction identity cards for the employees and students of the University and ensures safety management of information systems.

Department of the Users Service enables technical support to the employees through IS HelpDesk CIT.

Department of Communication Networks supplies constant operation of the computer network TUZVOnet that connects more than 1,400 personal computers. It also provides running of all servers and disc arrays, administrating the network ZOMES (currently connecting all nursery, primary and secondary schools in Zvolen, as well as other organisations).

Future Plans

In the following period, the CIT will continue providing operation and maintenance of information and communication technologies at the University. Besides its ordinary activities, the CIT will perform the tasks defined in the Long-term Scheme of the Technical University in Zvolen for the period of 2017-2023, e.g. expanding offered services, increasing security and quality and integrating existing information systems. Apart from these activities, the CIT will support the University workplaces in preparation and implementation of educational, scientific and research projects in the sphere of the information and communication technologies.

University Forest Enterprise

The university forestry study in the area of the Slovak Republic has provided hands-on training as an important part of students' preparation for future

profession since 1807. The situation was not different after the establishment of the University of Forestry and Wood Technology in Zvolen. Since 1958, an independent purpose facility for hands-on training of students and for checking the results of scientific and research studies of the University employees named Faculty Forest Management, with the total area of 5,375 ha, has been used by the Faculty of Forestry. During its existence several changes were made concerning its position, name, organisational structure and area.

Nowadays it is an organisational part of the Technical University in Zvolen named the University Forest Enterprise (VŠLP). Totally it has 26 technical and economic employees and it is divided into a head office, a forest district Budča and a service centre Lieskovec. The forest district Budča involves 7 forest territories; the service centre provides mainly transport and wood manipulation.

The VŠLP manages the forests of the area of 9,742 ha. This area comprises 9,106 ha of state forests, 71 ha belong to the Technical University in Zvolen and the rest is rented from land-register associations. The use of natural qualities of forests, beyond a common management, allowed the Enterprise to incorporate state-owned forests into the special purpose forests (i.e. 80 % from the total area, 14 % are protection forests and 6 % are production forests). Variable natural conditions in the altitude range of 250 – 1,026 m and technical equipment enable observation of different communities of flora and fauna at a relatively small area, as well as performance of wide range of forest research and operational activities. Therefore, there are suitable conditions for hands-on training of the Technical University students in more than 100 courses of biological and technical disciplines.

The VŠLP works at the area that covers predominantly the Kremnické vrchy mountains and the Javorie mountains, and it also reaches the Zvolenská kotlina basin and the Štiavnické vrchy mountains. The forest communities are integrated into 5 forest vegetation altitude zones, from oak to fir-beech zone. The wood composition is dominated by beech (nearly 52 %), the most common conifer is spruce (8 %). Totally, there are 27 species recorded (83 % broad-leaved and 16 % coniferous species). Various natural conditions of the area indicate rich fauna. From the viewpoint of gamekeeping the most important position is occupied by deer, roe deer and wild boar. The protected species of permanent occurrence are bear, lynx and wildcat.

In the main economic activity the forest regeneration is carried out at the area of approximately 72 ha every year, as well as improvement felling at the area of 120 ha and clearings at 200 ha. Total timber harvesting accounts for approximately 65,000 m³ (15,000 m³ of softwood). 75% of the area is naturally regenerated under the shelterwood system. From rich sources of forest reproduction material for all main tree species, seed material for artificial regeneration is prepared in forest nurseries.

The activities, such as enterprise economic activity, management of permanent research and semi-operation sites, obtaining different technical equipment, but also special building of demonstration facilities, pursue the main objective and that is to create optimal conditions to accomplish the principal aim - hands-on training of the Technical University students. The hands-on training is provided through

the trainings during the semester and through special after-semester trainings. According to the requirements of the courses supervisors, this education is supplemented also by technical and economic employees of the VŠLP and there are workers and external suppliers of forest works at different demonstrations, too. The intensity of the use of the VŠLP for hands-on training and compulsory practice can be expressed by a number of 85,000 lessons taught per student and it is still increasing. Every year, the area of VŠLP and a number of facilities serve to obtain information for writing bachelor's and master's theses, for research activities of PhD students and for scientific research of the University employees, as well as partnership organisations in Slovakia and abroad.

Students' Hall of Residence and Canteen at the Technical University in Zvolen

The Students' Hall of Residence (SHR) and the Canteen is the workplace at the Technical University which provides accommodation and meals for students, staff, and guests of the TU. Two separate facilities of the Hall of Residence currently have the capacity of 1278 beds.

After the arrival of the College in Zvolen, the students had serious difficulties with accommodation. The considerable number of students was accommodated in borrowed premises of the military office, in a workmen´s block of flats near the school flats in Štúrová Street and in the private flats. In 1953-1956 the college built seven buildings in the playground of the former grammar school to accommodate 240 students.

Construction and putting into the use of individual blocks of the Štúr's Students' Hall of Residence in Študentská Street 17 took place in 1958–1962 and had 571-bed capacity. D block of the 4-block building served as the main building of the Faculty of Wood Sciences of the then College of Wood Sciences and Forestry until 1983. The mentioned capacity did not suffice the growing demand, therefore, two prefabricated buildings were built in 1970 and 1978, of which one offering 120 beds, served until 1993. In 1984 when D block was left, this facility was rebuilt into students' accommodation. In 1998 the premises in D block were offered to the newly established Department of Furniture Design and Wooden Products.

In 1983 The Students´ Hall of Residence Záhonok with the accommodation capacity of 208 beds was put into use. Its use was terminated in 2016 due to the impossibility of efficient operation.

New residential and catering facility at the Bariny (SHR Bariny) (Študentská Street 27) with the capacity of 608 beds enabled to lay up an obsolete accommodation facility P-120 near the water canal.

SHR Bariny keeps some guest rooms for guests and part-time students during an academic year. During vacations, the SHR offers the accommodation to the participants of conferences, seminars, and other events, as well as to the public.

In 2012 to 2017 the reconstruction building works were carried out to improve accommodation facilities and to maintain energy efficient operation.

The part of the SHR is the Canteen which provided catering for university students and staff in 1958 to 1193 in the SHR at Študentská Street 17. Since September 1993 is the catering of students and employees of the University and other interested

persons provided in new facilities in SHR in Bariny. The average daily capacity of meals during an academic year is approximately 1000 meals. After a complex reconstruction of the Canteen, there was opened a new Canteen Bariny 2 whose part is a cafeteria. It was reconstructed and expanded from the former snack-bar. The facility with the capacity of 80 seats complies with the barrier–free access and so it also enables serving meals to students with mobility impairment.

SHR creates conditions for extracurricular activity of students by providing space for the individual clubs and by co-organising of various events. The INRO (dormitory radio broadcast) established in 1969 has a long tradition. It was fully digitalized in 2005 and its broadcasting is done via the Internet network. There are two Herkules club gyms available for the sport fans. The members of Aqua-tera Club, WoodenWorld, chess club and forestry clubs (cynology, hunting, falconry, roe and bird caller) are also active.

The post of the director of the SHR and the Canteen has been occupied by several employees: Anna Šagátová (1953 – 1960), Mr. Milanský (1960 – 1961), Emil Suja (1961 – 1964), Pavel Šarkan (1964 – 1971), Juraj Mlynár (1972 – 1986), Pavel Duben (1986 – 1989), Viera Rybová (1990 – 1993), Martin Šiagi (1993 – 2011). Since 2011 the post of the director of the SHR and the Canteen has been held by Zuzana Zelemová.

Publishing House

The year was 1952. Zvolen was becoming a university town and the University of Forestry and Wood Technology was starting its history. These days we are commemorating its 60th anniversary. Retrospectively, we return to all foundation stones, but also foundation pebbles, which gradually helped to build and create this university to its present-day form. In October 1968, the permission to publish textbooks and books for needs of the University became one of those steps. This step stimulated the establishment of the Editorial Centre in January 1969 and later on the Publishing House of the Technical University (the VTU) in May 1995. The VTU led by Eva Fekiačová PhDr. has been performing its activities since its establishment in 1969.

If we analyse the activity and the role of this organisational unit in more detail, the Editorial Plan of the Technical University for a given calendar year is the main source for annual fulfilling tasks. The process prepress – press – postpress finishes by a publication serving as the basic teaching aid to support the scientific-pedagogical process of the University and as the source of specialised information for the public. The VTU publishes 120-140 books per year. It cooperates not only with the University workplaces, but also with external institutions in this area i.e. the Slovak National Library, ISSN National Agency and the Ministry of Culture of the Slovak Republic, which is also the inseparable part of the VTU activity.

The following titles rank among the most successful textbooks such as Historický nábytok – tvaroslovie a konštrukcia (Historical Furniture) by J. Veselovský et al., Chémia životného prostredia (Environmental Chemistry) by M. Schwarz, Pestovanie lesa (Silviculture) by M. Saniga, Dendometria (Dendometry) by S. Šmelko, Poľovníctvo (Game Management) by P. Garaj and R. Kropil, Manažment

podniku (Enterprise Management) by J. Rašner, Súčasná spoločnosť – výzvy a vízie (Current Society – Challenges and Visions) – a handbook by Z. Gallayová, Nebezpečné látky (Dangerous Materials) – a university textbook by I. Čabalová and F. Kačík, Atlas rastlín (Atlas of Plants) by E. Križová and many others, which aroused interest of professional public not only at the University. Publication of the books for the public beyond the University was a success, too: books Štúrovo pero – dve desaťročia novinárskeho talentu (Štúr's Pen – Two Decades of Journalistic Talent) in the year of the 200th anniversary of Ľudovít Štúr. Immediately after their publication, the following monographs attracted interest of the public: Tri duby - K histórii lietania na Pohroní a letiska v Sliači, Oslobodenie Faktografia II. svetovej vojny and multi-purpose medical publication Otorinolaryngológia na strednom Slovensku – včera a dnes.

The other activities of the VTU include the distribution and selling of published literature through the brick-and-mortar shop and e-shop of specialised literature at the Technical University, the publishing of information and advertising brochures, directives, documents, printed matters, and presentation materials. The Copy Centre as part of the activities of the VTU provides services connected to the activity of the VTU.

The jubilee publication of the Technical University UNIVERSITAS TECHNICA IN ZVOLEN 2012 was rewarded with 2nd place in the category Environmental Idea of the Year 2012 by the professional jury of the Slovak National Environmental Contest 2012 in Bratislava. The publication was awarded the silver Enviro Oscar for the implementation of the idea ONE BOOK = ONE TREE in book edition. The publication was graphically processed and published by the Publishing House of the Technical University.

CULTURAL AND SPORTS LIFE AT THE UNIVERSITY
2012 – 2017

Culture and Sports Life at the University 2012 – 2017

Folklore Ensemble Poľana

The Folklore Ensemble Poľana has been working at the Technical University in Zvolen since the turn of 1955-1956 and in May 2016 it celebrated its 60th anniversary. Yet, at its birth, the ensemble wished to promote Slovak folklore traditions and took its name after the volcano dominating this region – Poľana.

During its 60-year long tradition, the Ensemble has had 700 active members and participated in more than 100 performances at home and abroad in more than 20 countries. The performance was applauded by the audiences in Austria, Bulgaria, Poland, France, Hungary, the Czech Republic, Serbia, Slovenia, Croatia, Italy, Portugal, Spain, Greece, Belgium, Turkey, Syria, the USA, the Ukraine, the Russia, Cyprus, Mexico. The Folklore Ensemble Poľana regularly takes part in home folklore festivals in Východná, Detva, Heľpa, Myjava, Zuberec, Červený Kláštor and others. A special place in the life of the Ensemble belongs to the every year participation in the festival of the university folklore ensembles called Academic Zvolen and Academic Nitra.

In the present, the ensemble members comprise of especially young people, mostly students of and employees of the University and also young people from Zvolen and the surroundings, for whom the folklore dancing and songs have become a hobby or even the way of life. Today, the Ensemble has around 50 members who work in the male and female vocal group, and in the dance group of the Ensemble.

The director of the Ensemble is Ing. Pavol Gejdoš, PhD. and the artistic director and choreographer is assoc. prof. Ing. František Chudý, CSc.

Slávia Sports Club

Slávia Sports Club (TJ Slávia) of the Technical University in Zvolen was established on 6 August 1990. It is an association of citizens, as well as sport organisations, which provides suitable sport conditions not only for the students of the Technical University, but also for general public. The TJ Slávia organises, manages and develops university, professional and recreational sport and supports sport and recreational activities for people of all age groups.

There are more than 600 members in 13 sport groups of professional and recreational sport. The activities of the TJ Slávia are not focused only on the students, but also on the employees of the Technical University, for whom different sports activities and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events are continuously prepared. Professional sport is concentrated in badminton, climbing, canoeing, karate, volleyball and chess groups, as well as in groups of jogging and recreational running and in a technical sports club. Recreational sport is represented by the groups of aerobics, tennis, hiking, bodybuilding and sport for all – sports that do not belong to one specific group (floorball, basketball, hockey, archery etc.).

From the best results of the professional sports groups in the seasons of 2013-2016 must be mentioned: women's volleyball team – participant in Women's Extraliga and the 2nd place – U18 Beach volleyball, 7-times Champions of Slovakia in karate teams (karate kata – J. Nemček, F. Kačík, J. Škoda, as well as in category of individuals), 31 titles of Champions of canoeing (Barbora Kortišová – world champion of canoeing, C2, women sprint and bronze medal at the European Junior Cup in C2, Alan Porubský – several times Slovak Champion, silver and bronze medals at the European Junior Cup in C2 and K1). Badminton group won 43 gold medals at the Slovak Championship and international badminton events, with the most successful athlete Martina Repiská (19-times Slovak Champion), and Andrej Antoška (17-times Slovak Champion). In biathlon and cross-country skiing the Club got 5 gold, 8 silver and 2 bronze medals at the Academic Championship of the Slovak Republic. The group of jogging and orienteering was represented by Nikola Berčíková, the Technical University student, winner of the Tvrďák race and participant in the Obstacle Course Racing World Championship in Ontario, Canada, where she got 6th place in her category. Lukáš Petriľák, a member of climbing group, represented the Slovak Republic in sport climbing.

EPILOGUE

Epilogue

Each tree bears its historical stamp from a small seed in the form of genetic information. Each institution is given a start with its historical roots and use them for its successful growth and development. The historical roots of the Technical University in Zvolen and above all the anniversary of the beginning of the technical and forestry higher education in Slovakia evoke our staff´s feelings of pride. The development since the beginning of the technical and forestry higher education has shown that sustainable development is not only an important priority, but also a basic condition for the existence of human society. The unique focus of the Technical University in Zvolen on education and research activities in the sphere of sustainable development calls us to a responsible approach towards the development of the university in terms of keeping the historical legacy.

The tree seeds fixed at the beginning of this book represent a new life for future generations and symbolically refer to the idea of sustainable development as a basic priority of the work of teachers and researchers at the Technical University in Zvolen. We have started our book with a symbol of responsible approach towards our environment and we call on you to plant the seeds and thus symbolically proclaim your interest in sustainable development of our planet and its preservation for our children.

All trees in the forest and animate and inanimate nature interlinked to them represent a complex forest ecosystem inevitable for human life. The forest ecosystem is subject to the life cycle and its determining element – trees – can grow up out of our planted seeds. At the green Technical University in Zvolen we use modern educational and research technologies in the service of getting and disseminating knowledge of forest ecosystems without which life on our planet would not be possible. Modern technologies for doing research into forest ecosystems, however, would not start without accepting the historical roots and historical memory.

Just as a tree grows out of a seed, the tree of knowledge grows out of the seed of knowledge. A symbol of this book, therefore, is also the development of knowledge. Having used the photogrammetric methods in forest management since the half of the last century has outgrown up to information technologies of the virtual forest mapping which our students and employees use in the modern educational and research sphere. In the book, we cannot provide you with a walk in a virtual forest, however, at the end of the book you can find the attached glasses and be delighted with a space image of our trees, bearers of our life.

Education and research in the sphere of sustainable development and forest ecosystems make great demands on employees of the Technical University in Zvolen. However, it is the only possible way, if we want to be an important part of efforts to preserve our planet for next generations. With their work, the employees of the Technical University in Zvolen follow the historical legacy and modern education and research and for that, special thanks go to them.

Assoc. Prof. Dr. Ing. Jaroslav Šálka

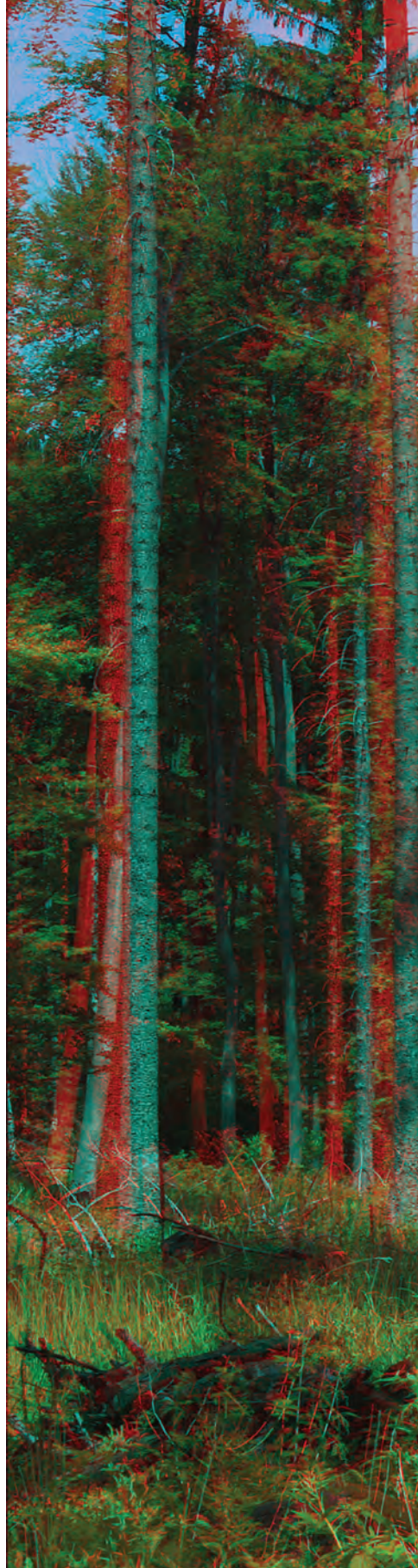
ILLUSTRATED SUPPLEMENT

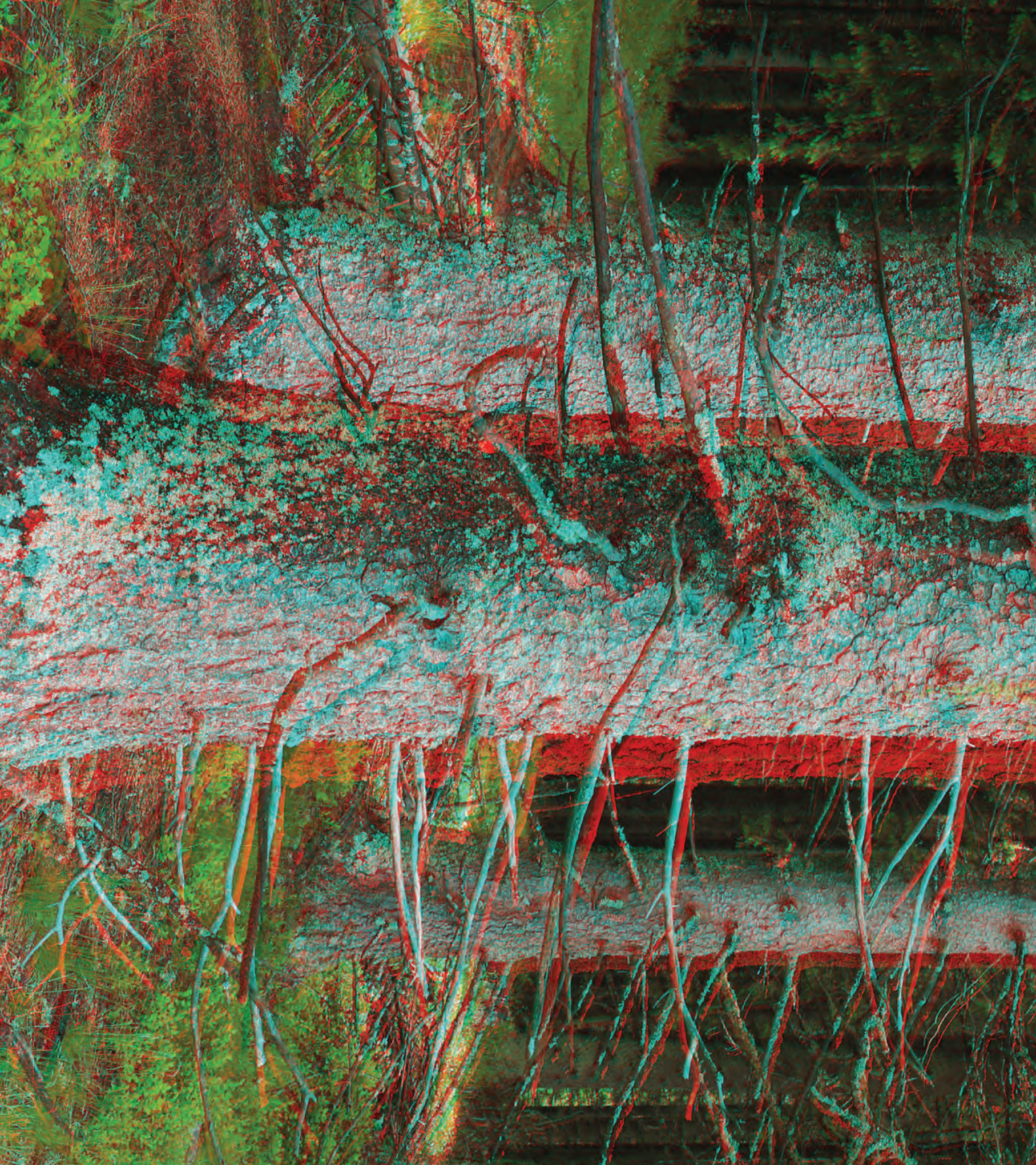
/ 3D PHOTOGRAPHS /

The jubilee publication TUZVO 2017 symbolically grasps the change of seeds into trees and refers to the creative research and pedagogical work of the university staff. The book starts with a symbol of responsible approach towards our environment, we call on you to plant seeds of forest trees and so symbolically declare your interest in preserving our planet for future generations. May your aesthetic reward is a look at the photographs at the end of the book which will enable you to see the majestic beauty of trees with 3D seeing by means of the special glasses.

By these symbols we nail our colours to the historical legacy and its interlinking with the modern green Technical University in Zvolen just as the history of using traditional photogrammetry is interlinked with modern means of information technologies.

Rudolf Kropil





Graphic motifs and photo collages
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Photographs
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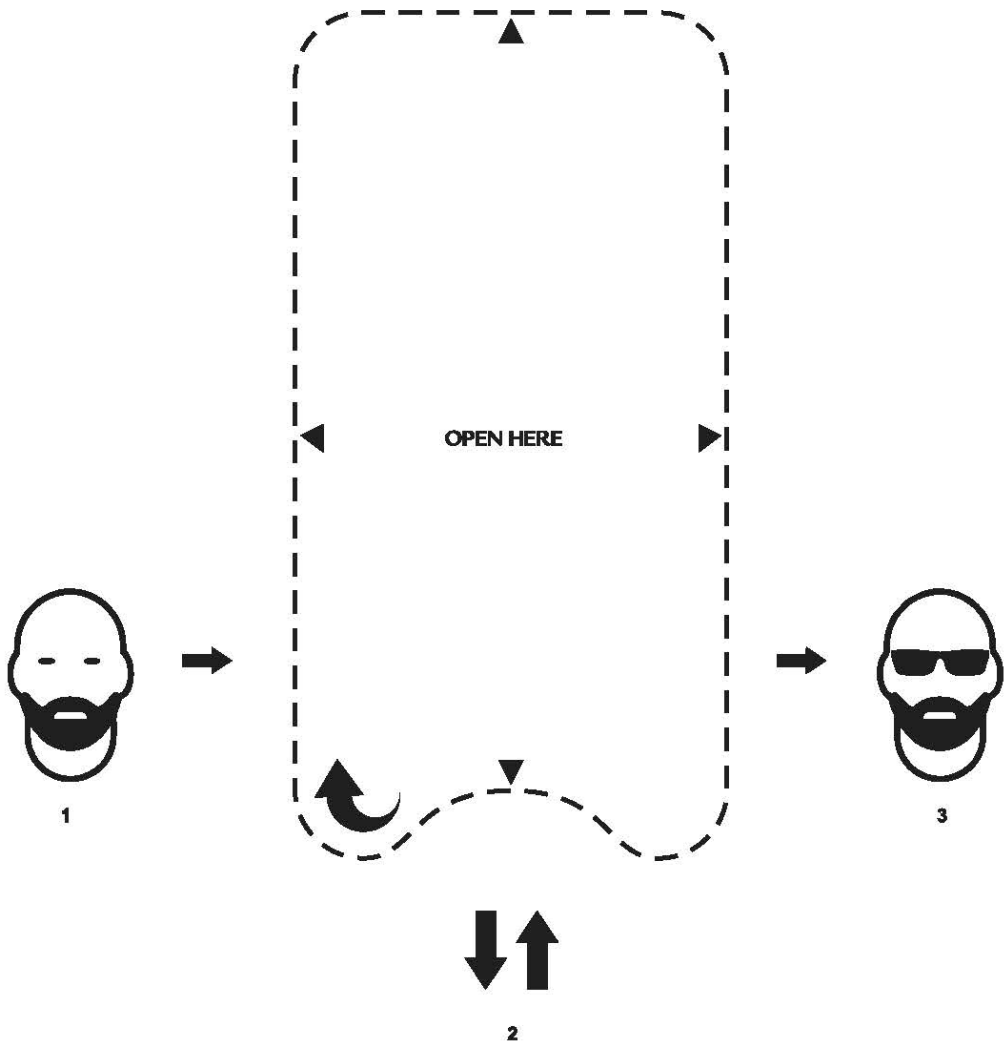
* (3D photographs, pp. 240 – 253; ideas: Ing. Miroslav Chovan, ArtD.; technical cooperation: Assoc. Prof. Ing. Marek Fabrika, PhD., Ing. Martin Mokroš, PhD.)

Internet photo sources
© http://animalia-life.club/other/red-deer-stag-antlers.html – p. 63
http://educandatosanbenedetto.gov.it/i-giovani-incontrano-leuropa/ – p. 106
www.flickr.com – pp. 41, 42, 45, 46, 51, 53, 54, 57, 60, 65, 66, 68, 73, 91, 105, 205, 225, 237
http://challenge.biomimicry.org/ – p. 103
http://www.nocliteratury.cz – s. 32
http://olenenyok.livejournal.com/4142247.html – p. 35

Notes:
1 (author of the design: Daniel Dodok, supervisor: Assoc. Prof. Mgr. art. Marián Ihring, ArtD.)
2 (author of the design: Lenka Janeková, supervisor: Assoc. Prof. Ing. Anton Stolár, ArtD.)
3 (authors of the design: Ing. Zuzana Tončíková, ArtD., Ing. Miroslav Chovan, ArtD.)
4 (author of the design: Mgr. art. Igor Želtvay, supervisor: Assoc. Prof., academic sculpturist René Baďura)
5 (author of the design: Zuzana Piliarová, supervisor: Assoc. Prof., academic sculpturist René Baďura)



Anaglyph glasses to watch the stereoscopic 3D photographs which are part of the publication in the final chapter.

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