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UNIVERSITAS
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University of Novi Sad

Faculty of Technical Sciences

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CONTENT

NOVI SAD

PHOTO: Tourist Organisation of the City of Novi Sad

Novi Sad is the capital of the Autonomous Province of Vojvodina and the second largest city in Serbia.

Once the cradle of political and cultural renaissance of Serbia, nowadays it is a university, administrative, economic and cultural centre of Vojvodina, proud of its multicultural approach and multi-confessionalism. The first written documents about the town date from 1694. Novi Sad gained the status of a free royal town in 1848, at a time when Vojvodina was a part of the Austro- Hungarian Empire. The following important historical dates are related to the period after 1918, when Vojvodina became a part of Serbia to form the Kingdom of Serbs, Croats and Slovenes, as well as 1944, when the town was liberated from fascist occupation.

Today, Novi Sad has about 450,000 inhabitants. Serbian Athens, as it is also called, is a city of education, culture, a city of museums, galleries, libraries and theatres as well. A few hundred year old cultural and educational activities remain a long standing tradition. In 1810, the first high school was established and in 1861 the first professional theatre, the Serbian National Theatre was founded. Matica Srpska, the oldest Serbian cultural institution, moved to Novi Sad from Budapest in 1864. Further development of the city led to the establishment of new cultural and educational institutions, especially the intensive development of education. Nowadays, there are numerous schools of all levels of education, from primary to higher education. University of Novi Sad is regarded as an especially important institution.

Novi Sad 2021 – European Capital of Culture 2021.

University of Novi Sad

PHOTO: Tourist Organisation of the City of Novi Sad

University of Novi Sad is the only university on the territory of Vojvodina and the second largest university in the country. It was established on 28th June 1960 and it is an autonomous, educational, scientific and artistic institution of higher education.

The University comprises 14 faculties located in 4 cities in Vojvodina: Novi Sad, Subotica, Sombor and Zrenjanin. It is situated in specially landscaped Campus on the left bank of the Danube, at an area of 260,000 m2, which places seven faculties, student centre, institute for students' health care, two student dormitories, housing for the accommodation of young teaching and research staff, the central student restaurant, Centre for physical culture with different sport fields, university student organizations and other scientific, technical, informational, cultural and sports organizations. Over 50,000 students are studying at the University and thus, it employs more than 5,000 teachers, associates and technical staff. Faculty of Technical Sciences is the largest faculty of the University of Novi Sad.

PHOTO: Saša Simić

Faculty of Technical Sciences in Novi Sad

PHOTO: Media center FTS

Background

The Faculty of Technical Sciences originates from the Faculty of Mechanical Engineering which was established by the Decree of the National Assembly of People's Republic of Serbia on 18th May 1960 as a Faculty of Mechanical Engineering in Novi Sad and it was a constituent part of the University of Belgrade. After the founding of the University of Novi Sad on 28th June 1960, the Faculty, along with six previously established faculties in Vojvodina, established the University of Novi Sad.

In the first period of its development, the Faculty provided educational activities for three different profiles of mechanical engineering. In 1971, electrical and civil engineering studies were founded. The establishment of the Department of Electrical Engineering as well as the Department of Civil Engineering brought about the change of name into the Faculty of Technical Sciences on 22nd April 1974. In the academic year 1979/80, the studies in the area of traffic engineering were established, and in 1996/97, the first generation of students of architectural engineering was enrolled. In the academic year 1999/2000 several different studies for the new professional profiles were introduced: Industrial Engineering and Engineering Management (the first generation of students of Industrial Engineering was enrolled in 1969, though within the Department of Mechanical Engineering), Graphic Engineering and Design, and Environmental Engineering. Study programme for Postal Traffic and Telecommunications were introduced at the Department for Traffic Engineering in 1999/2000. Interdisciplinary studies of Mechatronics were established in the academic year 2002/03. In the academic year 2006/07, the first generation of students attending specialist academic studies was enrolled at the Faculty (according to the Law on Higher Education) and the studies of Geodesy and Geomatics engineering were introduced into the educational activities of the Faculty in the academic year 2007/08. Furthermore, in 2009/2010, the studies of Safety at Work were established at the Department of Environmental Engineering, as well as the undergraduate professional programme at the Department of Power Engineering – Renewable Energy Sources. In the academic year 2011/2012, the following studies were established: Risk and Fire Protection Management, Animation in Engineering, as well as undergraduate professional studies Software and Information Technology at the Faculty Department in Inđija; the same study programme was also introduced at the Faculty Department in Loznica in the academic year 2012/2013. In the academic year 2013/2014, the following study programmes were established: Biomedical Engineering; Measurement and Control; Clean Energy Technologies; Scene Architecture, Technique and Design; Electrical and Software Engineering (renamed into Applied Software Engineering); Software Engineering and Information Technology in Novi Sad, as well as at the Faculty Department in Loznica and undergraduate professional studies within the study programme of Electronics and Telecommunication. Undergraduate and master level academic studies of Information Systems Engineering started during the academic year 2014/2015, and in 2015/2016, a study programme in Information Engineering at undergraduate and master level was accredited, as well as Information and Analytic Engineering at the master level academic studies.

Master studies are organized at all study programmes after completing undergraduate academic studies, as well as at study programmes: Mathematics in Engineering; Energy Management; Logistics Engineering; Innovation Engineering; Digital Technology, Design and Production in Architecture and Urban Planning; Industrial Engineering – Advanced Engineering Technologies; Industrial Engineering – Development and Product Lifecycle Management; Planning and Management of Regional Development, as well as Treatment and Water Protection (TEMPUS programme), which rounds off the educational activities at the Faculty. Faculty of Technical Sciences offers a very prominent educational profile for prospective engineers, which ranks it among the most developed institutions in the field of technology in our country.

Organization

Faculty of Technical Sciences is organized as a unique complex institution comprising smaller organizational units such as departments, chairs, research centres, registrar's offices, offices, etc. with appropriate scientific fields and laboratories.

Chairman of the Faculty of Technical Sciences Council
Prof. Platon Sovilj, Ph.D.

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Student Vice Dean
Marko Starović

PHOTO: Media center FTS

Activities

PHOTO: Branislav Stojanović

Faculty of Technical Sciences provides higher education in five areas, namely: technical sciences and engineering, mathematics and natural sciences, arts and humanities, arts, as well as medical sciences in the following fields: Mechanical Engineering (Production Engineering; Machinery and Construction Engineering; Energy and Process Engineering; Technical Mechanics and Design in Engineering); Electrical and Computer Engineering (Power, Electronic and Telecommunication Engineering; Computing and Control Engineering; Applied Software Engineering; Measurement and Control; Software Engineering and Information Technologies; Power Engineering - Renewable Energy Sources); Civil Engineering; Traffic Engineering (Traffic and Transport Engineering; Postal Services and Telecommunications); Architecture (Architecture; Digital Technology, Design and Production in Architecture and Urban Planning); Industrial Engineering and Engineering Management (Industrial Engineering; Industrial Engineering - Advanced Engineering Technologies; Industrial Engineering - Product Lifecycle Management; Engineering Management; Energy Management); Environmental Engineering and Safety at Work (Environmental Engineering; Safety at Work, Risk and Fire Protection Management); Geodesy Engineering (Geodesy and Geomatics); Interdisciplinary studies, such as Mechatronics; Applied Mathematics (Mathematics in Engineering); Graphic Engineering and Design; Logistics Engineering (Logistics Engineering and Management); Regional Policy and Development (Planning and Management of Regional Development); Biomedical Engineering; Scene Architecture, Technique and Design; Treatment and Water Protection (Treatment and Water Protection Engineering); Energy Technologies (Clean Energy Technologies); Computer Graphic (Animation in Engineering); Energy Efficiency in Construction; Information Systems Engineering; Information Engineering (Information Engineering and Information and Analytical Engineering).

The Faculty's activities are threefold: education, research, and applied research.

Educational activity

PHOTO: Branislav Stojanović

Since the academic year 2005/2006, educational activities are delivered through the new structure of study programmes and modules organized in three cycle degree studies:

Undergraduate studies – First cycle studies are:
- Undergraduate academic studies,
- Undergraduate professional studies.

Second cycle studies are:
- Graduate academic studies – Master,
- Specialist academic studies,
- Specialist professional studies,
- International Master Studies – Master of Business Administration – MBA studies.

Third cycle studies are:
Doctoral academic studies.

Academic studies are organized as follows:
- **Undergraduate academic studies (First cycle studies)** – last for four years (worth at least 240 ECTS) and after graduation a candidate is awarded a Bachelor of Science with Honours degree in engineering in a particular field of studies;
- **Graduate academic master studies (Second cycle studies)** – depending on the completed undergraduate study programme, last for one year (worth at least 60 ECTS), or 2 years (worth 120 ECTS). A candidate is awarded a Master degree of science in engineering or Master degree in Arts in the particular field of studies;
- **Graduate academic specialist studies (Second cycle studies)** – depending on the completed undergraduate study programme, last for one year (worth at least 60 ECTS), or 1.5 years (worth 90 ECTS). A candidate is awarded a specialist degree of science in engineering in the particular field of studies;
- **Doctoral academic studies (Third cycle studies)** – last for three years and are worth at least 180 ECTS. A candidate is awarded a Doctoral degree of science in engineering in the particular field of studies.

Professional studies are:
- **Undergraduate professional studies (First cycle studies)** – last for three years and are worth at least 180 ECTS. A candidate is awarded a Bachelor degree in applied engineering in the particular field of studies;

Specialist professional studies (First cycle studies) – last for one or two years and are worth at least 60 ECTS, or 120 ECTS. A candidate is awarded a Specialist degree in applied engineering in the particular field of studies;

International practice-oriented master's studies (Second cycle studies) – Master of Business Administration – MBA, last for two years and are worth at least 120 ECTS. A candidate is awarded a Master degree in business management.

From its establishment until 1st January 2019, 19,776 students obtained their Bachelor and Master degree in engineering at the Faculty of Technical Sciences. The total of 9,702 students obtained the diploma of Bachelor in engineering, of which 3,399 in the field of Mechanical Engineering, 3,938

in the field of Electrical and Computer Engineering, 833 in Civil Engineering, 706 in Traffic Engineering, 395 in the field of Architecture, 320 in the field of Industrial Engineering and Management, 88 in the field of Graphic Engineering and Design and 23 students in the field of Environmental Engineering. So far 10,225 candidates have completed Graduate academic studies - Master; 569 in the field of Mechanical Engineering, 2,604 in the field of Electrical and Computer Engineering, 741 in the field of Civil Engineering, 901 in the field of Traffic Engineering, 1,062 in the field of Architecture, 2,478 in the field of Industrial Engineering and Management, 574 in the field of Environmental Engineering, 48 in the field of Mathematics in Engineering, 275 candidates in the field of Geodesy and Geomatics, 625 candidates in interdisciplinary studies of Graphic Engineering and Design, 231 in interdisciplinary studies of Mechatronics, 33 in interdisciplinary studies of Regional Policies and Development, 10 in interdisciplinary studies of Water Treatment and Protection, 20 in interdisciplinary studies of Disaster Risk Management and Fire Safety, 14 in interdisciplinary studies of Scene Architecture, Technique and Design, 31 candidate in interdisciplinary studies of Information Systems Engineering, 1 candidate in interdisciplinary studies of Logistics Engineering and Management, 7 candidates in interdisciplinary studies of Biomedical Engineering, and 1 candidate in interdisciplinary studies of Animation in Engineering.

At the Faculty of Technical Sciences 930 candidates obtained Master Degree in Engineering: in the field of Mechanical Engineering 289, in the field of Electrical and Computer Engineering 294, in the field of Civil Engineering 43, in the field of Architecture 27, in the field of Traffic Engineering 60, in the field of Industrial Engineering and Management 159, in the field of Environmental Engineering 45, in the field of Graphic Engineering and Design 7, and in Mathematics in Engineering 6 candidates.

At the Faculty of Technical Sciences 929 candidates obtained PhD degrees in Engineering: in the field of Mechanical Engineering 197, in the field of Electrical and Computer Engineering 313, in Civil Engineering 51, in Traffic Engineering 51, in the field of Architecture 48, in the field of Industrial Engineering and Management 165, in the field of Environmental Engineering and Safety at Work 48, in the field of Geodesy and Geomatics 5, in the field of Graphic Engineering and Design 20, in the field of Mechatronics 12, and in the field of Mathematics in Engineering 19 candidates.

According to the Law on Higher Education and the Decision of the Educational and Scientific Council of the Faculty from 05/28/2003, 352 engineers obtained the diplomas of the first cycle studies (sixth level of education) and 599 candidates received the Diploma of a Specialist in Engineering in a particular field of science.

The Faculty was the first in this region to issue Diploma Supplements in 2004, even before the Bologna Declaration was signed. Issuing Diploma Supplements to students in Serbian and English has greatly facilitated the mobility and employment of our students in Europe and worldwide. Diploma Supplement is a document accompanying a higher education diploma, providing a standardized description of the nature, level, context, content and status of the studies attended and completed by its holder.

Based on the recommendations of the University (and at the initiative of FTS), the Rules on completion of studies and acquisition of titles by the Law on Higher Education were adopted. This allowed the students to move into a new system of studies, and if they won 270 credits, finish their studies after the defence of Master thesis which is worth 30 credits, thus acquiring the total of 300 ECTS. So far, 4,185 candidates completed their studies in this way and 56 of them enrolled in first doctoral studies which began in the academic year 2006/07. In 2018/19 the 13th generation was enrolled amounting to 1,575 students of doctoral studies.

Faculty of Technical Sciences was the first faculty in Serbia that enabled students who completed the study according to the old Law on University to replace their diplomas with a new Master's degree according to the Law on Higher Education. So far 1, 355 diplomas have been replaced in this way.

In May 2008 the Faculty of Technical Sciences received the first Decision on the accreditation of the Faculty as a higher education institution and in April 2013 the Decision on re-accreditation.

At the beginning of 2013, the Faculty accredited 88 study programmes of academic and professional studies. During 2014, the Faculty also accredited the study programme of Information Systems Engineering at the undergraduate and master level. Three new study programmes were accredited at the beginning of 2015: Information Engineering (UAS, MAS) and Information and Analytic Engineering (MAS). Master level academic study programme of Innovation Engineering was accredited in 2016.

During 2019, the Faculty of Technical Sciences, in accordance with the Law on Higher Education, should submit the documentation for the reaccreditation of the institution, a part of the existing study programmes, as well as for the accreditation of new study programs. The plan is to accredit 88 study programmes of academic and professional studies at all three levels of study (undergraduate, graduate, specialist and doctoral). As a part of the planned number of study programs for the accreditation, three new study programs at the master level of professional studies are prepared, as new types of the second level studies.

Within the cooperation with other higher education institutions in the Republic of Serbia, Faculty of Technical Sciences has accredited joint degree programmes with the Technical Faculty in Zrenjanin, and the Faculty of Mechanical Engineering in Kraljevo, University of Kragujevac.

Academic Studies

(Undergraduate – UAS, master – MAS, specialist – SAS, Doctoral – DAS)

Studies are organized in Serbian and in English (with the accreditation from 2013, the Faculty can organize educational activities in Serbian and English at all levels of academic studies: undergraduate, master and Doctoral studies) **in the following fields:**

MECHANICAL ENGINEERING

- **Production Engineering** (UAS, MAS);
- **Mechanization and Design Engineering** (UAS, MAS);
- **Engineering and Process Engineering** (UAS, MAS);
- **Technical Mechanics and Design** (UAS, MAS);
- **Mechanical Engineering** (DAS).

ELECTRICAL AND COMPUTER ENGINEERING

- **Power, Electronic and Telecommunications Engineering** (UAS, MAS, SAS, DAS);
- **Computing and Control Engineering** (UAS, MAS, DAS);
- **Software Engineering and Information Technologies** (Novi Sad (UAS; MAS));
- **Applied Software Engineering** (UAS, MAS);
- **Measurement and Regulation** (UAS, MAS).

CIVIL ENGINEERING

- **Civil Engineering** (UAS, MAS, DAS).

TRAFFIC ENGINEERING

- **Traffic and Transportation** (UAS, MAS);
- **Postal Traffic and Telecommunications** (UAS, MAS);
- **Traffic Engineering** (DAS).

ARCHITECTURE

- **Architecture** (UAS, MAS, SAS, DAS),
- **Digital Technology, Design and Production in Architecture and Urban Planning** (MAS).

INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT

- **Industrial Engineering** (UAS, MAS, SAS);
- **Engineering Management** (UAS, MAS, SAS);
- **Industrial Engineering - Advanced Engineering Technologies** (MAS);
- **Innovation Engineering** (MAS);
- **Industrial Engineering / Engineering Management** (DAS).

ENVIRONMENTAL ENGINEERING AND SAFETY AT WORK ENGINEERING

- **Environmental Engineering** (UAS, MAS, SAS, DAS);
- **Safety at Work Engineering** (UAS, MAS, DAS);

GEODESY

- **Geodesy and Geomatics** (UAS, MAS, SAS, DAS).

INTERDISCIPLINARY FIELDS

- **Graphic Engineering and Design** (UAS, MAS, DAS);
- **Mechatronics** (UAS, MAS, DAS);
- **Computer Graphics** (Animation in Engineering) (UAS, MAS, DAS);
- **Biomedical Engineering** (UAS, MAS);
- **Scene Architecture, Technique and Design** (UAS);
- **Energy Technologies (Clean Energy Technologies)** (UAS, MAS);
- **Information Systems Engineering** (UAS, MAS);
- **Information Engineering** (UAS, MAS);
- **Information and Analytical Engineering** (MAS);
- **Water Treatment and Protection** (Water Treatment and Protection Engineering) (MAS);
- **Disaster Protection and Fire Safety Engineering** (Risk Management and Fire Safety) (UAS, MAS).
- **Scene Design** (Scene Architecture and Design) (MAS);
- **Urban Planning and Regional Development** (Regional Development Planning and Management) (MAS);
- **Applied Mathematics** (Mathematics in Engineering) (MAS, DAS);
- **Energy Efficiency in Building Construction** (SAS);
- **Scene Design** (DAS);
- **Technical Mechanics** (DAS).

Professional Studies

(Undergraduate – UPS, specialist – SPS, master professional – MPS, Master academic studies - MAS, Doctoral academic studies – DAS)

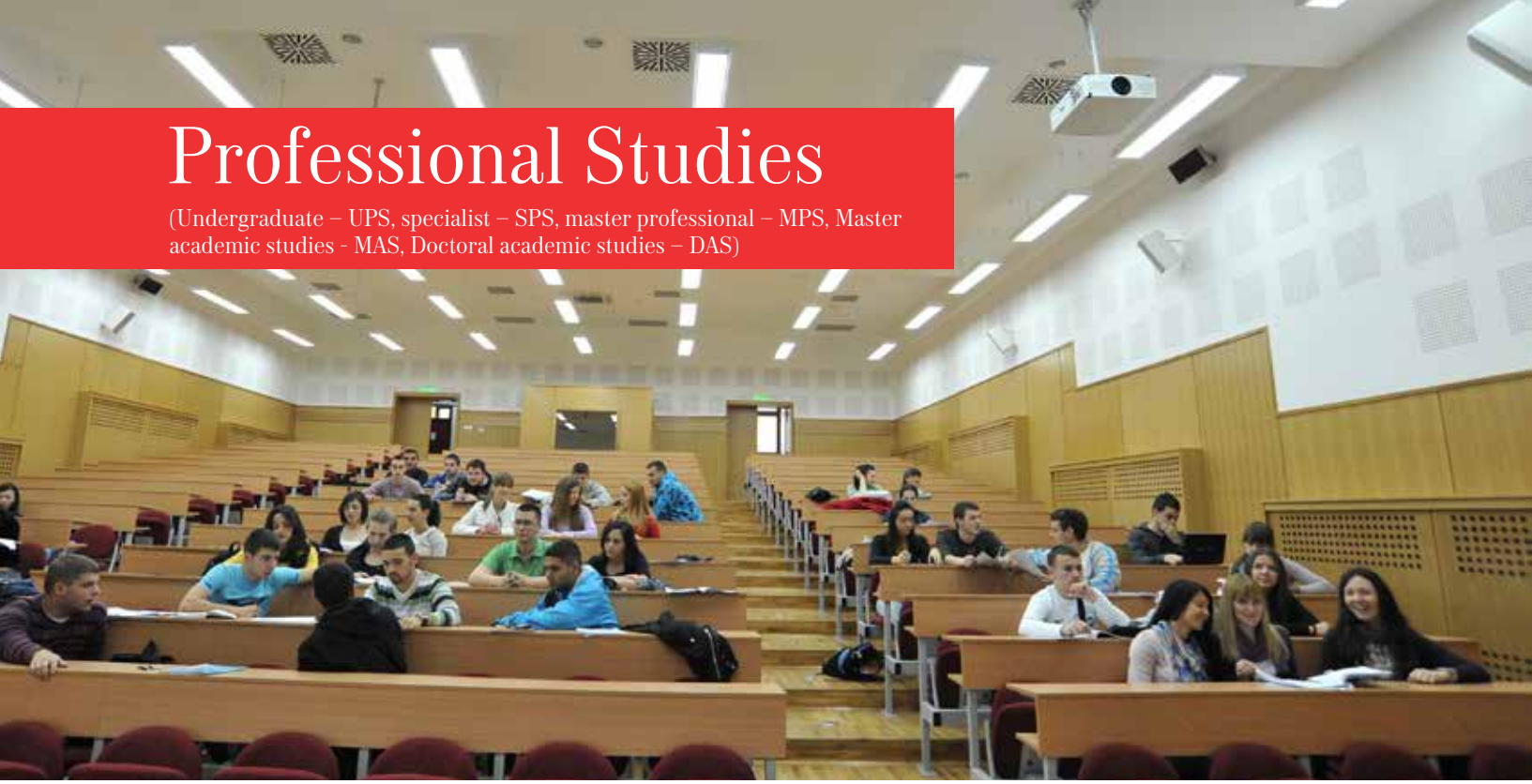


PHOTO: Branislav Stojanović

ELECTRICAL AND COMPUTER ENGINEERING
- **Power Engineering – Renewable Energy Sources** (UPS);
- **Electronics and Telecommunications** (UPS);
- **Software and Information Technologies** (UPS);
- **Power, Electronic and Telecommunications Engineering** (SPS).

INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT
- **Engineering Management** (SSS);
- **Engineering Management - MBA** (International Practically Oriented Master Studies) (SPS).

The accreditation process, apart from the above mentioned, also included the following study programmes:

- **Electrical Engineering** (MPS)
- **Engineering Management – MBA** (MPS)
- **Production Engineering** (MPS)
- **Scene design** (Scene architecture and design) (MAS)
- **Information Systems Engineering** (DAS)
- **Biomedical engineering** (DAS)
- **Risk Management and Fire Safety Engineering** (DAS)

Scientific Research

Scientific activities at the Faculty of Technical Sciences are oriented primarily to the realization of research projects funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia and the Provincial Secretariat for Higher Education and Scientific Research of Autonomous Province of Vojvodina. The Faculty participates in several European research projects (H2020, IPA, Eureka!, Cost, etc.). These are projects or subprojects in the field of basic research, innovative projects and technological development projects.

On 19th February 2007 the Faculty received the Decision on accreditation of scientific activities in all scientific fields that are studied at FTS. The Faculty received the Decision on the reaccreditation in 2011 and then again in 2015.

Centre of Excellence for Vibro-Acoustic Systems and Signal Processing (CEVAS) was founded at the Faculty of Technical Sciences in October 2014 and on 18th May 2015 this Centre was given the status of CENTRE OF OUTSTANDING VALUES by the decision of the National Council for Scientific and Technological Development of the Republic of Serbia.

The activities of CEVAS are primarily scientific and are aimed at uniting the work of three research groups from the Faculty of Technical Sciences in Novi Sad:

- Group for non-linear dynamics and oscillations;
- Group for acoustics and speech technologies;
- Group for biomedical signal processing.

The scientific and research activities at the Faculty are carried out in modern laboratories and computer centres. Each year the professors and assistants from the Faculty publish over 200 scientific papers in leading international and national journals and present them at international conferences in the country and abroad. FTS publishes the following journals:

- Advanced Technologies and Materials (former: Journal for Technology of Plasticity);
- Computer Science and Information;
- Journal of Mechanical Engineering Design;
- International Journal of Industrial Engineering and Management (IJIEM);
- Journal of Graphic Engineering and Design;
- Machine Design;
- Proceedings of the Faculty of Technical Sciences;
- Journal of Production Engineering.

In order to promote science and make it more popular with general public, the Faculty has been involved in the realization of international project H2020 "Friend to Understand, Friend2U" and its central event, The Night of Researchers.

Professors, assistants and students from FTS are members of numerous professional and scientific organizations at the national and international level which have their branches at the FTS:

- IEEE Joint Chapter PELS/IES/IAS;
- IEEE Student Branch;
- ETRAN - Society for Electronics, Telecommunications, Computers, Automatic Control and Nuclear Engineering;
- CIGRE – Serbian National Committee CIGRE;
- CIRED - The International Conference on Electricity Distribution CIRED;
- EPE Association – European Power Electronics and Drives Association;
- TEAM International Society – Technique, Education, Agriculture and Management;
- WCTRS – World Conference on Transport Research Society;
- FIG – International Federation of Surveyors;
- Union Internationale des transports publics sciv;
- Open Geospatial Consortium;
- OISTAT – International Organization of Scenographers Theatre Architects and Technicians;
- IWWG – International Waste Working Group;
- BVL – Bundesvereinigung Logistik;
- Crossref – Publishers International Linking Association, Inc.;
- IATEFL – International Association of Teachers of English as a Foreign Language;
- UITP – Union Internationale des Tansports Publics
- Microsoft Imagine;
- OEA Association of Organic and Printed Electronics.

Strategic Directions of Cooperation with Industry

The strategic directions of cooperation with industry are oriented to the following areas:

- Defining the needs of the economy for professional profiles, educated by the Faculty;
- Coordination and direction of scientific and research work of the Faculty in accordance with a long-term programs of industry development;
- Increase of efficiency of applied research of the Faculty in solving current problems of economy.

Faculty of Technical Sciences has currently signed more than 320 contracts with various commercial organizations.

The Faculty offers its services in resolving the current problems of the economy in the following areas:

- Development of new products and production programmes;
- Development of new technologies;
- Development of technological systems in the area of machining, assembly, material handling, control, etc.
- Development of information - management systems;
- The design of complex high-rise buildings, civil engineering structures and hydro structures;
- Saving energy, rational use and quality of electricity;
- Revitalization of existing technologies and technological systems;
- Environmental protection;
- Analysis of safety at work;
- Diagnostics, expertise and maintenance;
- Architecture and urban design;
- Projects of traffic and transport systems;
- Projects of energy, electronics and telecommunications;
- Projects of disaster risk management;
- Geoinformation technologies and systems;
- Organizing seminars for permanent training of experts for the use of new techniques and technologies in the industry;
- Expertise in intellectual property protection.

PHOTO: GRID center

Computing Centre

PHOTO: Branislav Stojanović

Computing Centre at the Faculty of Technical Sciences in Novi Sad was established in order to provide support to the process of modernization of education activities and research. The Centre is located on the third floor of the teaching block in the Faculty building. The capacity of the Centre is continuously increasing with the special focus on regular updating and modernization of equipment. The Centre comprises 21 laboratories:

L1 – General purpose computer laboratory (32 workstations);
L2 – Computer laboratory – Samsung Apps (16 workstations);
L3 – Computer laboratory – Samsung Apps (21 workstations);
L4 – General purpose computer laboratory (16 workstations);
L5 – General purpose computer laboratory (21 workstations);
L6 – General purpose computer laboratory (16 workstations);
L7 – Internet laboratory available to students 24/7 (10 workstations);
AR1 – General purpose computer laboratory (12 workstations);
AR4 – General purpose computer laboratory (12 workstations);
AR5 – General purpose computer laboratory (12 workstations);
V3-5 – General purpose computer laboratory (16 workstations);
D4-a – General purpose computer laboratory (16 workstations);
JUG-P01 – General purpose computer laboratory (16 workstations);
JUG-P02 – General purpose computer laboratory (16 workstations);
JUG-P03 – General purpose computer laboratory (24 workstations);
JUG-P04 – General purpose computer laboratory (24 workstations);
JUG-P05 – General purpose computer laboratory (32 workstations);
JUG-101 – General purpose computer laboratory (16 workstations);
JUG-104 – General purpose computer laboratory (16 workstations);
JUG-110 – General purpose computer laboratory (16 workstations);
NB-307 – General purpose computer laboratory (22 workstations).

Other computer laboratories

In addition to Computing Centre, there are 20 other computer laboratories equipped for computer laboratory practical classes. They have between 12 and 32 workstations. A computer room with 10 workstations which is not used for teaching purposes is available to students 24/7. The Faculty of Technical Sciences has more than 100 modern laboratories which are used for:

- students' education,
- research activity, and
- providing services to third parties.

Scientific Conferences

PHOTO: Zoltan Corba and Darija Medvecki

The Faculty, i.e. its Departments, deal with organizing scientific and professional conferences. The success of these activities by the Faculty is evident in the realization of 15 continuous conferences:

- IS – Industrial Systems, Novi Sad (every three years since 1975, last conference held in 2017);
- MMA – Flexible Technology with International Participation, Novi Sad (every three years since 1976, last conference held in 2015);
- International Symposium Power Electronics – Ee, Novi Sad (1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019);
- Development Trends – TREND, with diverse topics: "Information Technologies in Power Engineering", Novi Sad (1994); "Electric Vehicles", Novi Sad, (1996); "New Technologies in Electric Energy Distribution", Kopaonik, Novi Sad (1997, 1998, 1999, 2000, 2001); "University and Scientific Parks", Kopaonik, (2002); "The Bologna Process and Faculties of Engineering", Kopaonik, (2003); "Integrated University and Engineering Science", Kopaonik (2004); "What Does the New Law on Higher Education Bring", Kopaonik (2005); "The Bologna Process and the Application of the New Law", Kopaonik (2006); "Accreditation of the Bologna Studies", Kopaonik (2007); "Efficiency and Quality of the Bologna Studies", Kopaonik (2008); "Doctoral Studies in Serbia, Region and the EU", Kopaonik (2009); "Bologna 2010: Situation, Dilemmas and Perspectives", Kopaonik (2010); "Europe 2020: Knowledge-Based Society", Kopaonik (2011); "Internationalisation of Universities", Kopaonik (2012); "University at the Market", Maribor, Pohorje, Slovenia (2013); "Development Potential of Higher Education', Kopaonik (2014); "University in Changes", Zlatibor (2015); "New Technologies in Education", Zlatibor (2016), "Position of Higher Education and Science in Serbia", Zlatibor (2017), "Digitization of Higher Education", Kopaonik (2018), "The Quality of Higher Education", Kopaonik (2019).
- INDIS – Industrial Building: Planning, Design and Building, Novi Sad (every three years since 1976, last conference held in 2015). Since 1997 it grew into an international conference;
- Conference on Contemporary Construction Practice (annual), Novi Sad;
- International Symposium on the Prevention of Traffic Accidents on Roads, Novi Sad (every two years since 1991, last symposium held in 2018);
- Conference DOGS (Digital Processing of Speech and Images), (2008, 2010, 2012, 2014, 2016, 2017, 2019);
- PSU-UNS International Conference "Energy and Environmental Protection", Hat Yai, Songkla, Thailand (2003, 2007, 2011, 2015), Novi Sad (2005, 2009, 2013, 2017);
- Construction, Modelling and Design – KOD, Palic (2006), Novi Sad (2008), Balatonfüred, Hungary (2014, 2016);
- GRID – Graphic Engineering and Design, Novi Sad (2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018);
- International Students Competition in Hardware and Software (H&S), Novi Sad (2005, 2007, 2009, 2011, 2015, 2017), Banja Luka (2006, 2008, 2010, 2011, 2015);
- ETIKUM, organized annually in November, and dedicated to the memory of the Prof. J. Hodolič, Ph.D.

There are also around fifteen other international and domestic conferences every year.

PHOTO: Department archive

Personnel Structure

In the first academic year 1960/61, the Faculty started working with seven (two full-time and five part-time) teachers and 17 associates, organized in 11 Chairs. Nowadays, by the end of 2018, the overall number of 1,252 employees was employed at the Faculty of Technical Sciences. The Faculty has 941 employees in the teaching process (full professors, associate professors, assistant professors, senior lecturers, teaching associates, assistants, etc.) as well as 311 employees who are non-teaching staff.

PHOTO: Media center FTS

International Cooperation

The Faculty of Technical Sciences is strongly involved in the cooperation with a large number of scientific institutions worldwide, within the scope of its activities. The professors of the Faculty have been invited to deliver lectures at a number of universities in the most developed countries of the world, including Japan, the USA, and the European Union countries. Significant achievements have been made in the international cooperation, resulting into over 200 realized international projects. During the last several years, large international projects have started to be realized from the programmes: ERASMUS+ (EU), CEEPUS (EU), WUS (Austria), INTERREG (EU), SCOPES (SWITZERLAND), H2020 (EU), EUREKA!, COST.

The Faculty is a place where numerous branches of important world organizations are formed and developed: IEEE (Institute of Electrical and Electronic Engineers) – Joint Chapter of Industrial Electronics, Industry Application and Power Electronics, IIM Euro – International Graduate School for Industrial Engineering and Management, ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, and other.

On the basis of bilateral agreements, the Faculty of Technical Sciences has the cooperation with the following universities: Technical University (TU) Budapest, TU Kosice, Polytechnic School Timisoara, TU Bratislava, TU Prague, TU Thessaloniki, TU Munich, TU Stuttgart, TU Vienna, UBI Brussels, University of Aveiro (Portugal), TU Lodz, University of Liege, National Technical University of Athens, Polytechnic University of Madrid, University of Limerick (Ireland), Galway – Mayo Institute of Technology (Ireland), University of Lugano – Switzerland, Free University of Berlin, University of Sheffield, University of Manchester, University of Porto, University of Aveiro, University of United Nations in Bonn, University of Tuzla, University of Skopje, University of Maribor, University of Ljubljana, University of Zenica, University of Srpsko Sarajevo, University of Banja Luka, University of Aegian in Athens (Greece), TU Bari (Italia), Polytechnic University in Milan (Italia), TU in Riga (Latvia), Vilnius College of Technologies and Design (Lithuania), TU in Vilnius (Lithuania), Budapest University of Technology and Economics (Hungary), Obuda University in Budapest (Hungary), Polytechnic School of Professional Studies in Heidelberg (Germany), University of Applied Sciences in Ulm (Germany), Bialystok University of Technology (Poland), TU Gliwice (Poland), University of Liechtenstein, Wroclaw University of Technology (Poland), Transylvania University in Brasov (Romania).

In the last ten years, the cooperation has been established with non-European universities as well, like the University “Prince of Songkla“ Hat Yai –Thailand, University of Shangai – China, Ohio State University – USA, University of New Hampshire – USA, University of Delaware – USA, Lakehead University – Canada, University of Free State Bloemfontein – Republic of South Africa, Indian Institute of Technology Roorkee – India, The University of Auckland – New Zealand, “National Chung Cheng University“, Taiwan.

Library at the Faculty

PHOTO: Media center FTS

The library at the Faculty of Technical Sciences has existed since the establishment of the Faculty for Mechanical Engineering. It has comfortable facilities fulfilling all librarian standards. There is a working area of 176 m2, storage facility of 126 m2 and the reading facility of 176 m2. Students' reading room is located in the comfortable air-conditioned ambient and it has 105 seats. In the working area, there are contemporary magazine issues, manuals and encyclopaedias. During 2008, the library was completely renovated, so today it has the same appearance and conditions for working and studying as the libraries of prominent faculties and universities. The library funds mainly comprise professional literature. There are numerous textbooks, additional textbooks, practical books, manuals, encyclopaedias and dictionaries necessary for work. The library fund comprises app. 55,000 books, half of which are issued by foreign publishers. There are approximately 1,500 periodical issues. The library stores 9,363 graduation theses, 9,986 Master's theses, 9,933 Bachelor theses, 607 Specialization theses, 1,021 MSc theses and 10,037 Doctoral Dissertations. To meet the demands of the users, the library utilizes an advanced service of inter-library exchange with other libraries in the country, and via Matica srpska, with libraries abroad as well. Information on library material can be obtained by phone, computer, catalogues or by free access to bookshelves with the professional aid from librarians. Information is also available on the Faculty website www.biblioteka.ftn.uns.ac.rs.

The University Library Informational System (ULIS) is being built on the basis of information needs, expressed by students, teachers, scientific workers and experts who use library funds for permanent education as well as research and professional work. The task of ULIS is to help the development of educational and research processes, enabling faster transfer of scientific knowledge and scientific and technical information.

The Library at the Faculty of Technical Sciences, as well as all libraries from scientific state institutions in Serbia, is linked to the academic network enabling permanent access to the KoBSON services. KoBSON is used to search electronic magazines, books, index bases, foreign Doctoral dissertations and the catalogue of printed journals in the libraries across Serbia.

Electronic journals in full text are available over publishers' websites. In Serbia, over 35,000 journals are available. Electronic services to be accessed include the following: EBSCO, Cairn.info, Free Medical, HeinOnline, JSTOR, High Wire, Project MUSE, TEEAL, Cambridge University Press, Oxford Journals, Emerald Publishing, American Chemical Society, American Physical Society, American Psychological Association, Institute of Physics Publishing, SAGE Publishing, ASME Transaction Journals, Springer/Kluwer, Science Direct, Wiley Interscience.

In time, the Library is to grow into a contemporary information and library centre equipped with the most modern technology, enabling links to worldwide library and information systems.

Publishing Activities

PHOTO: Media center FTS

Faculty has observed the demand for developing the publishing activities right after the foundations, since textbooks for a great number of courses were lacking. In order to solve the problem, the Faculty established a Committee for Publishing Activities, which ensured, until 1970s, the publishing of a larger number of students' books, and the publishing of textbooks in cooperation with 'Naučna knjiga' from Belgrade. Independent publishing activities at the Faculty were developed on establishing the Institute for Mechanical Engineering and launching the Collected papers of the Faculty of Mechanical Engineering. The first Collected Papers were published in 1965. However, only at the beginning of 1970s, following the foundation of the Printing house, the Faculty began to develop its publishing activities more intensively and directed it to publishing textbooks exclusively. Apart from the Faculty, there were also certain Institutes which developed an intensive publishing activity in the late 1970s, and directed it to publishing books from the professional fields of interest to them. Hence, the Institute for Industrial Systems, until 1985, published 19 books and textbooks, 8 monographs and 6 manuals.

In the mid-1990s, the Faculty decided to have a more organized approach to publishing. In 1996, in cooperation with the publishing house "Stylos", the edition "Technical Sciences" was established, and since 2001 the Faculty has independently edited and printed books from that edition. In the edition, basic and supplementary textbooks for students have been printed. The edition "Technical Sciences" was divided in 2002 into two editions: "Technical Sciences – Textbooks" and "Technical Sciences – Monographs", and since 2010 the edition "Technical Sciences – Translations" has been established. Following the constant development of the Faculty, primarily in the development of the teaching process, another demand occurred to establish an edition for publishing textbooks in English. Hence, in 2014, a new edition was founded "Technical Sciences – Textbooks (in English)". In 2015, two new editions were established: "Art and Science – Textbooks" and "Art and Science – Monographs". The foundation of these new editions is the answer to the demand of new study programmes (Architecture and Urban Planning, Scene Design, Graphic Engineering and Design, Animation in Engineering), as well as a number of courses containing artistic content and demanding for this new editions as a more thorough recognition element. Edition editors were Faculty deans: prof. Dušan Petrovački, Ph.D., until 1998, prof. Ilija Ćosić, Ph.D. from 1998 to 2012, and from 2012 the editor-in-chief is prof. Rade Doroslovački, Ph.D.

Until now, 760 textbooks have been published in the edition "Technical Sciences – Textbooks"; 78 monographs have been published in the edition "Technical Sciences – Monographs"; three books have been translated and published within "Technical Sciences – Translations"; in the edition "Technical Sciences – Textbooks" 9 textbooks have been published in English; as well as two textbooks in the edition "Art and Science – Textbooks".

Registrar's office

PHOTO: Media center FTS

Registrar's office with twenty employees in the newly adapted space at the ground floor of the Educational block continually manages the students' academic activities during studies and occasionally even later.

The office is organized around twelve separate counters with employees working with students from different study programmes. In addition to this, there is a front desk in the entrance hall which is open all day to provide the necessary information, certificates and documentation to students.

Organization is made according to the level of study, with different employees handling first and second and different employees in charge of the third level studies.

Registrar's office can be contacted through the Faculty web site:

http://ftn.uns.ac.rs/

Registrar's office is available to students at any time and makes every effort to minimize the time required by the students to complete administrative procedures. For that purpose is introduced Students' Web Service.

Students' web service

PHOTO: Branislav Stojanović

Application for examinations through web service started at the Faculty of Technical Sciences in the academic year 2005/06. Since then it is possible to apply for examinations from students' homes or any other location without coming to the registrar's office and waiting in a queue as long as one has enough financial assets at one's card.

In order to use the web service a student has to be enrolled for that school year. At enrolment a student opens a web account, gets personal identification used with a password and a number for making payments for the Faculty.

A student can make or cancel an exam application up to two days ahead of the examination date. When the application is completed, the list of applicants is sent electronically to the course teacher who will electronically return the file to the registrar's office once the exam is completed.

The introduction of students' web service has also enabled students to electronically register for the courses, view a list of courses they have completed together with the grades as well as the state of their financial card.

The students can also choose their elective courses using this service.

Students enrolled in the first year of studies complete the form (the so-called SV20 form) with their personal data and information about their parents which is then sent to the Provincial Bureau of Statistics. At enrolment the students are assigned a student number and provided with the instructions for using the web service.

Senior year students are required to periodically update their personal data.

Student vice dean

PHOTO: Sava Simić

Student Vice Dean is one of the people at the Faculty of Technical Sciences who take care of the rights and interests of students. The function was first introduced in 1973 and reestablished at the beginning of the 2002/2003 academic year. Student Vice Dean participates in the work of all boards at the Faculty (Education Scientific Council, Faculty Council) where he represents students' views, presents and handles problems, contributes to the improvement of the educational process, etc.

Student Parliament

Student Parliament was first mentioned as a form of student organization in the 2002 Law on Higher Education. The reason for forming a student parliament lies in the fact that, due to a large number of student organizations, faculties and universities could no longer identify with ease the legitimate representatives of students and student organizations, which needed to be recognized as partners in solving problems in the educational process and in selecting students' representatives for the organs and bodies of a faculty/university. Student parliament, a form of student organization through which all students of a higher education institution exercise their active and passive voting right, can be considered the only completely legitimate representative of students, a partner in solving problems and in electing student representatives in the organs and bodies of the institution

The Law on Higher Education from 2005 states that student parliament is a body of a higher education institution, like Education Scientific Council. During the phase of the preparation of the Law it was agreed that student parliament will be regulated in more details by the Law on Students' Organizations, which has not been the case until today, despite several initiatives and working groups formed by the Ministry of Education.

Even though the Law on Students' Organization has not been passed yet, in accordance with the deadlines set by the Law on Higher Education, all higher education institutions in Serbia were obliged to establish all bodies and organs, including the Student Parliament, by the end of 2006, i.e. no longer than three months after passing the Act on Reorganization.

The Student Parliament at the Faculty of Technical Sciences has 30 members. In the Student Parliament the membership distribution among the Departments of the Faculty is as follows: Mechanical Engineering 3; Power, Electronic and Telecommunications Engineering 4; Computing and Control Engineering 4; Civil Engineering 3; Geodesy 1; Traffic Engineering 3; Architecture 3; Industrial Engineering 1; Engineering Management 3; Graphic Engineering and Design 1, Environmental Engineering and Work Safety Engineering 2; Mechatronics 1; Applied Software Engineering 1 and one member is a disabled person.

Students' activities

PHOTO: Lazar Mladenović

At the Faculty of Technical Sciences, students build friendships with other technical faculties and polytechnic schools in the country and abroad, and they all together organize traditional meetings and competitions for students of engineering, well known as "-ijade": "Mašinijada" (for students of Mechanical Engineering),"Elektrijada" (for students of Electrical Engineering), "Saobraćijada" (for students of Traffic Engineering), "Građevinijada" (for students of Civil Engineering), "Menadžerijada" (for students of Management Engineering), "Zaštitijada" (for students of Environmental Engineering) and "Arhitekturijada" (for students of Architecture).

An important segment of these meetings are competitions in knowledge and sports where the students from our Faculty always have significant results. These meetings also have international character, and in the future, the participation is expected from many European countries. Apart from competitions, these meetings serve to organize visits to cinemas, theatres, scientific fairs and sports events, with significant discounts. Special emphasis is placed on public discussions where students discuss diverse topics, both those concerning studies and those not linked to faculties, but always in students' focus of attention.

International cooperation and students' mobility, as well as professional improvements abroad, are rather intensive. Besides, students at the Faculty have participated in the organization of one of the largest cultural and artistic projects in the country in the last ten years. Beginning with the first festival, EXIT NOISE SUMMER FEST 2000, which lasted for a hundred days and where 34 concerts, 12 plays, 38 parties, over 120 film projections, 20 public discussions and 11 performances were held, our students have taken active participation since 2003 in the organization of EXIT as worldwide recognized festival, as well as in other cultural projects.

At the Faculty of Technical Sciences, the following students' organizations are active:

- Student Council of FTS;
- Student Union of FTS;
- Student Association of FTS;
- IAESTE;
- EESTEC LC, Novi Sad;
- IEEE – Student Branch, Novi Sad;
- ESTIEM;
- BEST;
- AEGEE;
- Student Enterprise FTS;
- ASHRAE;
- Novi Sad Association of Students with Disability – NSUSI

Students' Alliance of FTS

Students' Alliance is a democratic, syndicate student organization ensuring and protecting students' rights. Its main task is to increase students' standard (dormitories, students' canteens), advance studying conditions (examination passing, literature), organize "-ijade", public discussions, concerts, cinema goings, theatre goings, fair goings, with discounts for their members.

Student Union of FTS

SUFTN is a member of Student Union of Serbia, the only worldwide acknowledged student organization from our country. Ever since 1997, via cultural projects like "Noise Spring Party", "Fist in the Head" or EXIT, the Union fights for returning the Faculty into the core of cultural happenings in the city. SUFTN also introduces educational projects (computer schools and language schools) and deals with the issues of students' standard.

Student Association of FTS

Student Association of FTS was established in January 2006 and it is a member of the Student Association of Novi Sad. Its main objectives and tasks are linked to qualitative lecturing and studying conditions, efficient educational and scientific system, increasing students' standards and protecting their rights, qualitative information, cooperation with similar student organizations in the country and abroad, and efficient realization of the rights of students who graduated from the faculty.

IAESTE Novi Sad

Students' organization for international cooperation IAESTE (International Association for the Exchange of Students for Technical Experience) is responsible for students of economic, technical, technological, and natural sciences, primarily dealing with the organization of internships abroad.

EESTEC LC Novi Sad

Electrical Engineering Students European Association– Local Committee Novi Sad. Main tasks and objectives of this organization are organizing meetings for the students of electrical engineering in Europe for building friendships, professional advancements and possible aid in job finding abroad, communication with students of electrical engineering around Europe, publishing, and cooperation with other institutions.

IEEE - Student Branch, Novi Sad

In March 2002, students of electrical engineering established a student branch of the global association of electrical engineers - IEEE. Thus, they opened the road for easier participation in scientific and professional high quality conferences worldwide, as well as for frequent meetings and communication with the colleagues abroad.

ESTIEM, Novi Sad

European Students of Industrial Engineering and Management is the association existing at 80 universities within 31 European states. Since 2003, there is a local group at the Faculty of Technical Sciences as well. ESTIEM offers activities on national and European level including several competitions (TIMES with topics related to engineering and management, FTN Challenge, FTN Challenge Junior, etc.) and events such as VISION PROJECT, a series of seminars organized all over Europe by local groups, ESTIEM MAGAZIN, Europe 3D, Summer School, etc.

BEST

Board of European Students of Technology - BEST Novi Sad is one of 94 interconnected student groups of the Association of engineering students from Europe. Its mission is to help students through organizing academic courses, engineering competitions and providing career support. The members can also advance their skills in areas such as company and public relations, project development, writing scientific papers, etc.

AEGEE

AEGEE (Association des États Généraux des Étudiants de l'Europe) is European students' forum, one of the largest student organizations in Europe. It is present in 200 cities in 40 European countries. It exists in Novi Sad since 1997. AEGEE supports the development of democratic ideas, offers mobility opportunities to students of all areas and development of their personal abilities. This is achieved through intercultural exchange programmes, projects, trainings and activities which offer informal education.

FTS Student Enterprise

Student Enterprise developed in 2012 from a pilot project at the Department for Industrial Engineering and Management and from 2016 it is organized as student association SPINS (Student Association of Engineers Novi Sad). Its mission is gaining practical experience, recognizing and expanding the possibilities, aspirations and aptitudes of students through the team work. It strives to create the high quality values recog-

nizable on the market through the integration of the departments, development of communication, initiative and student ambition. The main goal of this enterprise is the best possible preparation of students for the future.

ASHRAE Student Branch

University of Novi Sad ASHRAE Student Branch was established at the Department of Energy and Process Engineering in 2009. The student branch is a non-profit student professional organization that functions as a part of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers), the biggest professional organization dedicated to technological advancement and innovations in the field of heating, ventilation, air conditioning and refrigeration in the world.

Novi Sad Association of Students with Disability – NSUSI

It has a vision: A society without discrimination.

And it has a mission: Active action is intended for striving towards the surrounding in which the conditions for living and education will be equal for everyone.

It works on:

- Providing free tuition for all students with disability whose degree of disability is over 50%, i.e. 60 % and more;
- Providing scholarships by the Ministry of Education and Sports of the Republic of Serbia for all students whose studies are financed from the budget of the Republic, in cooperation with the Association of Students with Disability in Belgrade;
- Providing adequate conditions for accommodation in students' dormitories for students with disability;
- Personal assistance as an organized means for supporting students with disability by assisting them in performing diverse life activities and personal assistance in education (if the student is not able to hear or see, that is, to read, write or speak on their own);
- Providing adequate literature for students with sight disability and inadequate physical abilities.

"Mašinac" Student Society

When Student cooperative "Mašinac" and Engineering Students' Club (KST) were started at the Faculty of Technical Sciences in 1971 they organized performances by popular musicians, theatre groups, forums and literary evenings. Today the basement of the main Faculty building provides space for students" club "Mašinac" which offers pleasant atmosphere and low prices, "Mašinac" canteen, photo club, binding shop etc.

"Tehničar" Sports Association

"Tehničar" Sports Association was founded in 2006 with the aim to organize, promote and develop sports and sports activities of students and employees at the Faculty. We are proud to say that a large number of students have participated in this association: amateurs but also top athletes who won a large number of trophies at student competitions, popular "ijada" competitions, as well as numerous other competitions at the local, provincial and national level.

Selection of Best Student Projects

Together with the University of Novi Sad, the Faculty of Technical Sciences organizes annual competition for the best student paper/project. The best students at the Faculty obtain adequate awards for their success each year. Students of Electrical Engineering and Computing have been often the winners of the competition for the prestigious award "Mihajlo Pupin" organized by the Matica Srpska.

Faculty of Technical Sciences Proceedings

Since 2008, the magazine issued by the Faculty of Technical Sciences, entitled "Faculty of Technical Sciences Proceedings" has been reestablished, enabling students to publish their scientific and professional papers realized as a result of their research during the elaboration of their graduation Master thesis. It is a unique magazine published 10 times per year and delivered free-of-charge to students during the promotion of graduate engineers – Masters.

PHOTO: Sava Simić

PHOTO: Branislava Sogorović

Project: “Bicycling to Faculty”

“Bicycling to faculty” is a project realized by the students of the Faculty of Technical Sciences with the aid of Provincial Secretariat for Sport and Youth, with the objective of popularizing bicycle traffic as an ecological (sustainable), healthy and feasible means of transportation for students at the University of Novi Sad. The project was introduced on May 18, 2009 during the celebration of 49th anniversary of the Faculty of Technical Sciences.

Marketing Office

PHOTO: Dalija Žigić

This office has the task to prepare and present necessary data for qualitative information to everyone interested in the Faculty, to identify and evaluate market demands in the region and to present propositions for improving the work of the Faculty. This office has three full-time employees and a team of about 180 creative students who are given the opportunity to present their talents and knowledge and to obtain useful experience and references helpful for their further professional engagement.

All activities of the Office have the objective to strengthen the institutional image and improve the reputation of FTS. Marketing Office has won the award for the best marketing performance in the domain of non-profit institutions in Serbia in 2004.

At the time of increasing competition, the activities related to the enrolment are of great importance for the Faculty. These activities include the creation of enrolment campaigns, preparation of promotional printed and electronic materials, preparation and realization of promotions in secondary schools, online communication with prospective students via social networks Facebook, Twitter and Instagram, realization of the advertising strategy throughout the year, preparation and support during the enrolment, analysis of results and process improvement, as well as maintenance of Internet presentations intended for the enrolment. In addition to enrolment activities, Marketing Office organizes various events: professional conferences, seminars, fair presentations, promotions of Master engineers, welcoming the first year students, Open-day at the Faculty, FTS hackathon and so on.

Marketing Office prepares and implements the online strategy of the Faculty of Technical Sciences on the Internet and on social networks. Related to the enrolment activities, each year a new Facebook group is created for the new generation of interested secondary school students, called "I'LL BE A FTS STUDENT - ENROLLMENT" run by the employees in the Marketing Office in collaboration with students from the Marketing team. The contribution to the better communication with both internal and external public also includes the development of and updating the Internet page FTS ENROLLMENT (www.ftn.uns. ac.rs/upis), and social networking using Facebook website: Faculty of Technical Sciences - Novi Sad, Twitter account: FTN_NS, Instagram account: FTN_NS and LinkedIn profile: Faculty of Technical Sciences, University of Novi Sad.

Employees at the Marketing Office are also members of the editorial office "FTS newspaper" and support the process of newspaper preparation.

FTS newspaper

Continuing the tradition of the student newspaper " Mašinac ", which was read for the first time by freshmen students in 1971, the Faculty of Technical Sciences issues "FTS newspapers". Newspapers present an informative quarterly paper where students and employees can learn about the events at the Faculty. "FTS newspapers" can be found in the paper version on the desks in the lobby, as well as in the electronic version at the website of the Faculty.

Media centre

Improving the teaching process is a priority at the Faculty of Technical Sciences. The role of the media in terms of the Internet, electronic (video, audio) and print media is of great importance, as well as the support to the planned modernization of the teaching process. The increasing presence and accessibility of the Internet enable new forms of knowledge transfer to students, and promote the results of research and the cooperation with the industry.

Media Centre at the Faculty of Technical Sciences, at the Department of Industrial Engineering and Management, provides a basis for determining the activities, processes and their liaisons by establishing connections to all other organizational units at the Faculty.

Media Centre realizes the following activities: production of video and audio media products (short video and audio reports; interviews; lectures; scientific, educational and documentary productions; promotional videos, etc.) in order to improve communication with key interest groups, as well as recording or preparation of materials to support the educational process within the existing study programmes.

A special segment of the activities includes distance learning, which implies recording video materials, lectures and training courses, and uploading that content onto the platforms for distance learning in order to make it more accessible to students.

The Faculty maintains a meaningful communication with businesses that surround it, its founder and media companies interested in its development; this communication is largely responsible for the image of the institution in the region, but also in the context of the Faculty as well.

Media Centre presents the created video materials on the *YouTube* channel: Medija centar FTN.

PHOTO: International Relations Office

International Cooperation Office

The knowledge society is becoming ever more competitive. Established social networks and contacts, as well as the exchange of experience and knowledge are shifted to the global level. In the sphere of higher education in Serbia, the mobility and exchange of both students and teaching and non- teaching personnel is what contributes to the significant development of higher education institutions over the past few years.

The Faculty of Technical Sciences, as a faculty committed to further improvement of the curriculum in accordance with the requirements of the Bologna Declaration, aims to enable its students to acquire professional and life experience through student and staff exchange, but also to offer colleagues from abroad, who decide to spend a semester or two at our faculty, a wide spectrum of knowledge and to be a cordial host. Keeping in mind that this work has been done within several offices of the Faculty, making the central office for international support formal was needed in order to unite all coordination jobs related to international activities of the Faculty of Technical Sciences. International Cooperation Office was established in 2010. Since then and along with the support of the International Cooperation Office of the University of Novi Sad, it has promoted exchange programmes, actions and funds with an objective to improve the number of applications coming from the Faculty of Technical Sciences. The office has also successfully established cooperation with the partners from Europe and beyond, participating in numerous projects with an objective to improve the higher education system in Serbia. Apart from that, it carries out control and application entries for international projects in the data base of the University of Novi Sad. The creation of this office has enabled the centralization of the existing and the easier establishment of new contacts with international partners, thus enabling a more efficient exchange of contacts between the Faculty departments. All stated activities of the international Cooperation Office aim to contribute to the recognition of the Faculty of Technical Sciences at the international level.

The mission of the International Cooperation Office of the Faculty of Technical Sciences is to actively participate in international projects, to establish and enhance scientific- research cooperation with institutions from abroad, to promote student and staff mobility and to improve their skills necessary for work and communication with the colleagues from other countries.

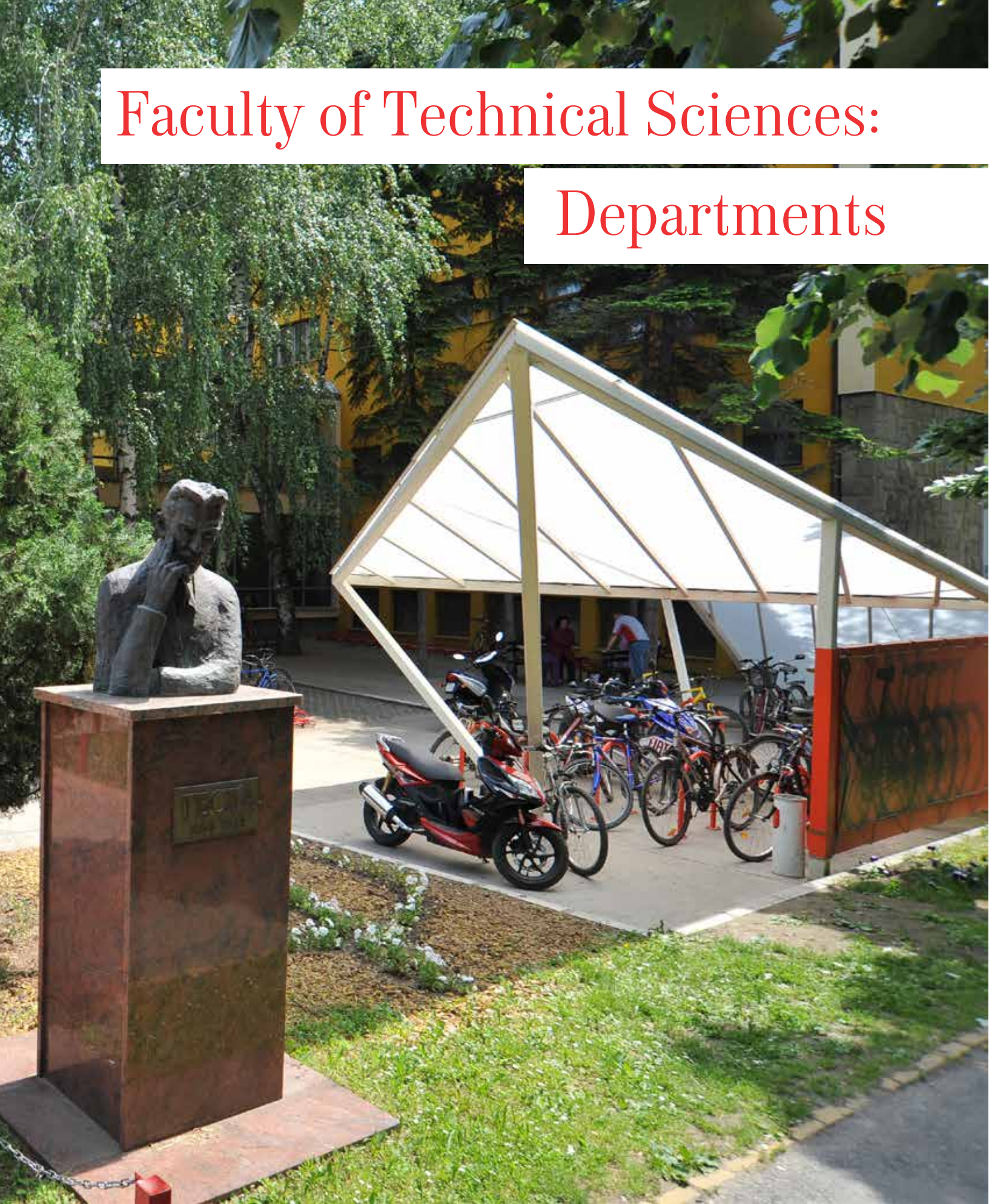
The goal of the International Cooperation Office is to ensure progress of the Faculty of Technical Sciences in the field of international cooperation primarily through:

- Connection with educational institutions abroad in order to establish scientific and technical cooperation;
- Coordination of international activities of the Faculty;
- Training for applying to international projects;
- Preparation of necessary documentation during the application process of the Faculty to international projects;
- Support to departing and arriving students and teaching and non-teaching personnel in mobility programmes.

PHOTO: Branislav Stojanović

Faculty of Technical Sciences:

Departments



Production Engineering

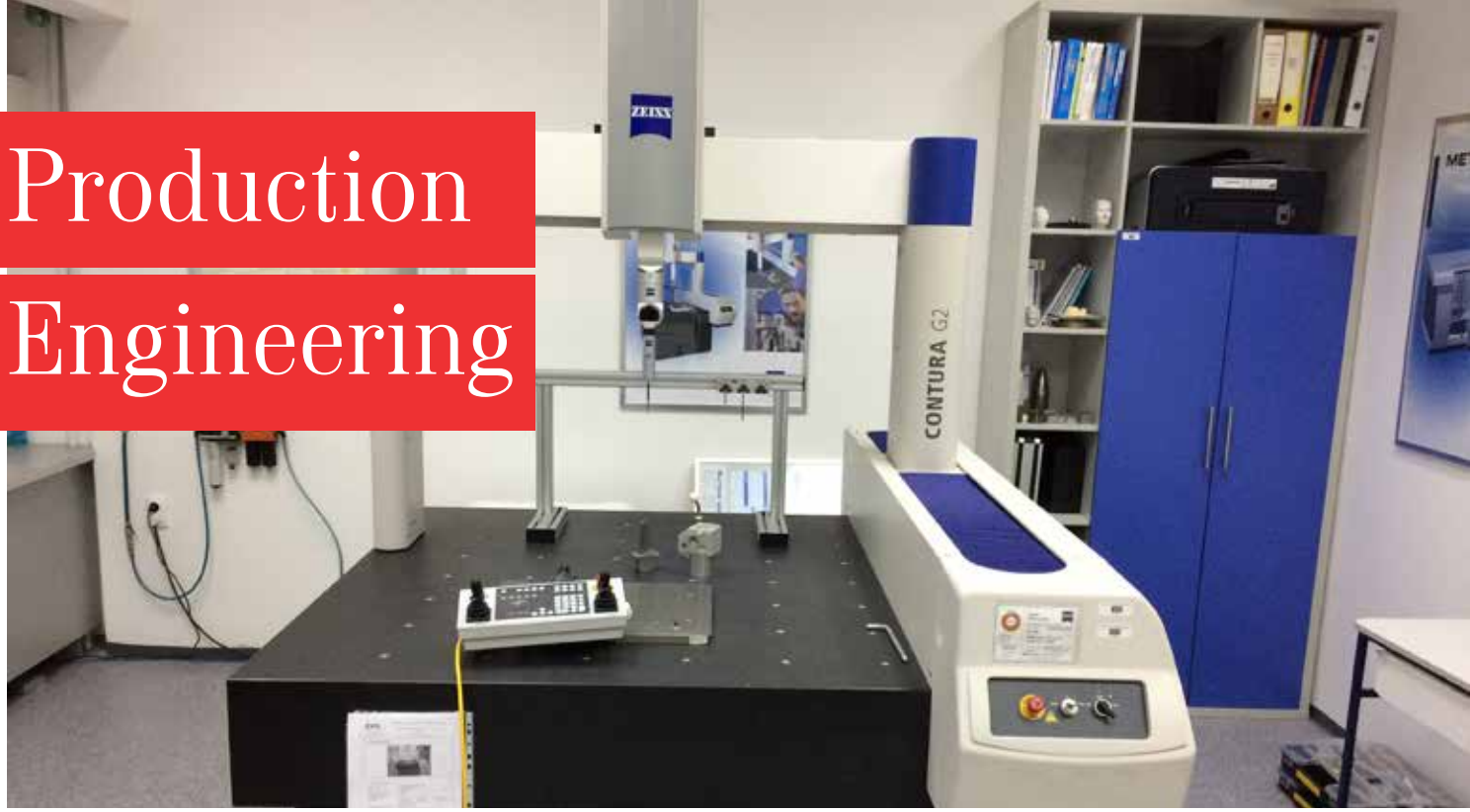


PHOTO: Branko Šurbac

PHOTO: Media center FTS

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Studies

The studies at the Department of Production Engineering at the Faculty of Technical Sciences in Novi Sad are divided into three cycles:

FIRST CYCLE STUDIES – Undergraduate Academic Studies last for four years (eight semesters) and students are obliged to obtain 240 ECTS (European system of accreditation points), including the final paper, which is worth 6 ECTS.

SECOND CYCLE STUDIES – Graduate Academic - Master's Studies last for one year (two semesters) and are the continuation of the undergraduate academic studies (worth additional 60 ECTS). After completing the second cycle of studies each student has obtained no less than 300 ECTS.

In the course of the second cycle studies, the student can choose between 3 modules (study groups):

- Computer Aided Technologies
- Modern Technologies of Material Forming
- Modern Technologies of Plastic Forming

THIRD CYCLE STUDIES - Doctoral Studies last for three years (six semesters) and are the continuation of the graduate master's studies. The student is obliged to obtain 180 ects, so that after completing the doctoral studies the student has obtained at least 480 ECTS in total.

PHOTO: Cvijetin Mladenović

Machining Centre

Goal and result of the Production Engineering study programme

The goal of the programme is to educate and enable experts in the field of production engineering to work in different and ever-changing demands of the profession. The study programme is constructed to give students different levels of ability when it comes to designing and constructing, maintaining and exploiting production lines and machinery. The programme also familiarizes the students with the necessity to develop the appropriate programme tools and equipment for their functioning, simulation, connecting and coordination. This goal is achieved by studying at the academic studies in two cycles of study:

Undergraduate Academic Studies – Bachelor with Honors: students have obtained the required level of understanding the most important principles and methods in the field of production engineering and the ability to independently advance their knowledge. The knowledge of the students who have completed the undergraduate academic studies is equivalent to 'the textbook knowledge' (to the information they can obtain by learning from a textbook), but they also become familiar with some more complex aspects of the subject, based on the up to date research in certain fields of production engineering.

Atomic force microscope

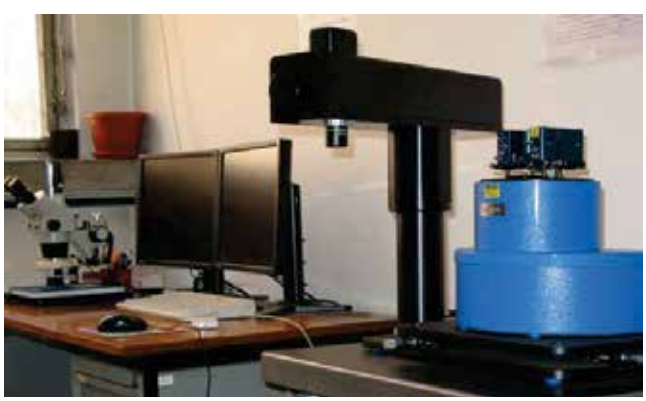

PHOTO: Aleksandar Miletić

Graduate Academic Studies – Master: the students who have completed this cycle of studies should have the level of knowledge and understanding of the subject which will enable them to develop and pass on their own original ideas and solutions via research and the application of that knowledge in practice. At the end of the studies, students have a broad, detailed and comprehensive level of knowledge and understanding in one or more specialized fields of production engineering.

Organization of the Department

The Department for Production Engineering is, organization wise, divided into five sub-departments:

- Chair of Machining
- Chair of Computer Aided Technological Systems and Design
- Chair of Materials and Joining Technologies
- Chair of Forming Technologies and Surface Engineering and
- Chair of Metrology, Quality, Equipment, Tools and Ecological- Engineering Aspects.

The department has several laboratories at its disposal:

- Laboratory for Conventional Processing Methods
- Laboratory for Technological Processes, Optimization of Technological Processes and Virtual Design
- Laboratory for Machine Tools
- Laboratory for Tribology, Maintenance and Cutting Tools
- Laboratory for Metrology, Quality and Equipment
- Laboratory for CIM Systems
- Laboratory for Material Testing
- Laboratory for Joining Technologies
- Laboratory for Thermal Processing and Surface Engineering
- Laboratory for Casting
- Laboratory for Plastic Deformation Technology
- Laboratory for Virtual and Rapid Prototype Design

Department personnel

The Production Engineering Department has 51 employees:
27 professors
7 laboratory technicians
1 administrative assistant
1 research associate
9 assistants
4 teaching associates
2 research assistant trainees

Scientific research

Within the scientific-research work at the Department of Production Engineering, over 200 scientific-research projects have been carried out to this day and more than 1600 scientific and expert papers have been presented in the country and abroad.

The scientific-research work is carried out in cooperation with the Ministry of Science, Technology and Development of the Republic of Serbia, Provincial Secretariat for Science and Technological Development of the Autonomous Province of Vojvodina, and with international institutions and associations.

The following projects are currently being carried out by the employees from the Department of Production Engineering:

1. PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT IN THE PROJECT CYCLE 2011 – 2018:

- Application of the Artificial Intelligence Method in Research and Development of Production Processes TR 35015, project coordinator: Professor Pavel Kovač, Ph.D.;
- Modern Approach in Development of Special Solutions for Bearing Assemblies in Mechanical Engineering and Medical Prosthetics TR 35025, project coordinator: Professor Milan Zeljković, Ph.D.;
- Research and Development of the Methods of Modeling and Procedures of Production of Dental Restorations by Application of Modern Technologies and Computer Aided Systems TR 35020, project coordinator: Associate Professor Đorđe Vukelić, Ph.D.;
- Physics and Chemistry with Ion Beams II45006, project coordinator: Professor Branko Škorić, Ph. D.;

Hydraulic Dynamic Testing Machine

PHOTO: Miroslav Dramićanin

- Development and Application of Multifunctional Materials Based on Domestic Raw Materials by Modernization of Traditional Technologies III 45008.

2. PROJECTS FUNDED BY THE PROVICE:

- Development of nanostructured coatings for the purpose of improving the quality of pressure molding tools, AP Vojvodina, coordinator: Professor Branko Škorić, Ph.D.;

3. INTERNATIONAL PROJECTS:

- Research on the workability of austenitic cast iron with high content of chromium, SK-SRB-2016-0036, intergovernmental program of scientific and technological cooperation between the Republic of Serbia and the Slovak Republic for 2017-2018 years, coordinator: Professor Pavel Kovač, Ph.D.;
- Integration of artificial intelligence methods into innovative milling processes, SKSRB-2016-0045, intergovernmental program of scientific and technological cooperation between the Republic of Serbia and the Slovak Republic for 2017-2018 years, coordinator: Professor Marin Gostimirović, Ph.D.;
- CEEPUS, Network: CIII-RS-0507-06-1617, Research, Development and Education in Precision Machining, the project manager: professor Pavel Kovač, Ph.D.;
- CEEPUS, Network: CIII-SK-0701-05-1617, Engineering as Communication Language in Europe, the project manager: Assistant Professor Borislav Savković, Ph.D.;
- CEEPUS, Network: CIII-RO-0013-12-1617, Teaching and Research of Environment-oriented Technologies in Manufacturing, the project manager: Professor Milenko Sekulić, Ph.D.;
- CEEPUS, Network: CIII-RS-0813-04-1617, Research, Development and Education in Nonconventional processes, the project manager: professor Marin Gostimirović, Ph.D.;
- CEEPUS, Network: CIII, Applications and diagnostics of electric plasmas, (the project manager: Professor Branko Škorić, Ph.D.;
- CEEPUS, Network: CIII, Concurrent Product and Technology Development - Teaching, Research and Implementation of Joint Programs Oriented in Production and Industrial Engineering, the project manager: Assistant Professor Mladomir Milutinović, Ph.D.;
- CEEPUS, Network: CIII-PL-0007-12-1617, Research on modern systems for manufacture and measurement of components of machines and devices - stage II, the project manager: Associate Professor Igor Budak, Ph.D.;
- CEEPUS, Network: CIII-RO-0013-12-1617, Teaching and Research of Environment-oriented Technologies in Manufacturing, the project manager: Assistant Professor Boris Agarski, Ph.D.;
- CEEPUS, Network: CIII-SK-0030-12-1617, From preparation to development, implementation and utilisation of joint programs in study area of production engineering - Contribution to higher flexibility, ability and mobility of students

in the Central and East European region, the project manager: Associate Professor Đorđe Vukelić, Ph.D.;
- CEEPUS, Network: CIII-CZ-0201-09-1617, Knowledge Bridge for Students and Teachers in Manufacturing Technologies, the project manager: Associate Professor Igor Budak, Ph.D.;
- CEEPUS, Network: CIII-PL-0901-03-1617, Teaching and Research in Advanced Manufacturing, the project manager: Ivan Matin, Ph.D.

European Union Projects

- Solutions for Critical Raw Materials Under Extreme Conditions
- Solutions for Critical Raw Materials Under Extreme Conditions (CRM-EXTREME) CA COST Action CA15102

Programme of economic support

Department of Production Engineering has carried out 500 projects in cooperation with different economic entities:

- Design of factories, and factory lines in the field of production engineering;
- Developing technologies for manufacturing of new products;
- Revitalization of the existing technology and equipment;
- Development and application of modern software design solutions;
- Management and improvement of production processes from the quality aspect;
- Service quality control;
- Testing material characteristics;
- Expert work related to particular production problems, machine break downs etc.;
- Conducting forensic analysis for the needs of the Court and other organizations in the economy.

PHOTO: Miroslav Dramićanin

Coordinate measuring machine

Mechanization and Construction Engineering

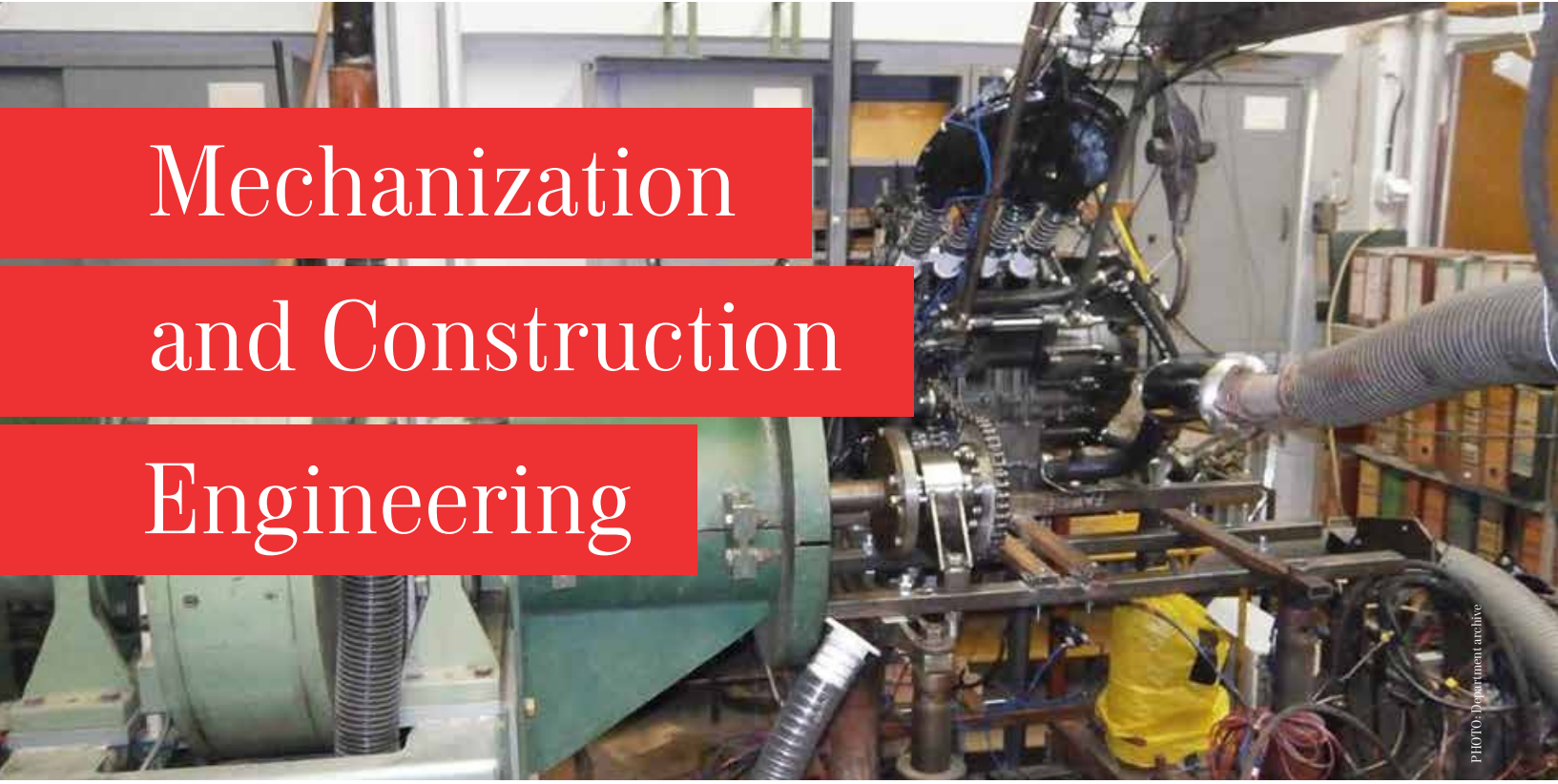

PHOTO: Department archive

PHOTO: Media center FTS

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Head of Department:
Prof. Dragan Ružić, Ph.D.

Studies

The studies at the Department of Mechanization and Construction Engineering at the Faculty of Technical Sciences in Novi Sad are divided into three cycles:

FIRST CYCLE STUDIES – Undergraduate Academic Studies last four years (eight semesters) and students are obliged to obtain 240 ECTS (European Credit Transfer and Accumulation System) credits, including the final paper, worthing 15 ECTS credits.

SECOND CYCLE STUDIES – Graduate Academic – Master's Studies last one year (two semesters) and represent a continuation of the undergraduate academic studies, while a student is obliged to obtain additional 60 ECTS, so that upon completing the second cycle studies, a total of 300 ECTS credits are obtained.

In the course of the second cycle of studies, a student can choose among 3 modules (study groups):

- Mechanical Structures, Transport Systems and Logistics;
- Automotive Engineering;
- Agriculture and Food Production,

with several elective subjects within the same study group, preparing a student for direct inclusion in the desired branch of industrial sector in the country or abroad. The elected group of subjects – module is stated in the Diploma Supplement.

THIRD CYCLE STUDIES – Doctoral Studies last three years (six semesters) and are a continuation of the Graduate Academic Studies. A student is obliged to obtain 180 ECTS, so that after completion of the Doctoral studies, a total of 480 ECTS credits are obtained.

Department Structure

At the Department for Mechanization and Construction Engineering, classes are carried out at three Chairs:

- Chair of Mechanical Structures, Transport Systems and Logistics;
- Chair of Engines and Vehicles;
- Chair of Machine Elements, Machine and Mechanism Theory and Agricultural Engineering.

Personnel Potential of the Department

Nowadays, at the Department of Mechanization and Construction Engineering, 38 workers have been employed, according to the following structure:

teachers: 20
lab technicians: 4
administrative associates: 4
associates: 10

The following projects are currently being carried out:

Projects of the Ministry of Education, Science and Technological Development for the project cycle 2011-2018:

- Improving the Quality of Tractors and Mobile Systems in order to Increase Competitiveness, Land and Environment Conservation (project leader: Asst. Prof. Dragan Ružić, Ph.D.), project No: TR 31046, 2011-2018;
- Investigation of Vehicle Safety as a Cybernetic System: Driver-Vehicle-Environment (project leader: Asst. Prof. Dragan Ružić, Ph.D.), project No: TR 35041, 2011-2018;
- Application of Informational Technology in Serbia – from Machine Monitoring to Networking System with the EU Environment, (project leader: Prof. Milosav Georgijević, Ph.D.), project No: TR 35036, 2011-2018;
- Research and Development of a New Generation of High-Energy Wind Power Generators, (project leader: Asst. Prof. Milan Rackov, Ph.D.), project No: TR 35005, 2011-2018;
- Theoretical-experimental Research on Dynamics of Transport Mechanical Systems, (project leader: Asst. Prof. Radomir Đokić, Ph.D.), project No: TR 35049, 2011-2018.

Photo: Department Archive

Scientific Research

Scientific research is carried out within the projects of the Ministry of Education, Science and Technological Development of the Republic of Serbia, the Provincial Secretariat for Science and Technological Development and within other projects, carried out by international institutions and associations. So far, about 130 scientific research projects and topics have been implemented. The department has 9 laboratories at its disposal, out of which 5 are used for educational purposes and scientific research.

International Projects

- CEEPUS CIII-RS-0304 – Technical Characteristics Researching of Modern Products in Machine Industry (Machine Design, Fluid Technics and Calculations) with the Purpose of Improvement of Their Market Characteristics and Better Placement on the Market (project leader: Asst. Prof. Milan Rackov, Ph.D.)
- CEEPUSCIII-PL-0033 – Development of Mechanical Engineering (design, technology and production management) as an Essential Base for Progress in the Area of Small and

PHOTO: Department archive

Medium Companies' Logistics – Research, Preparation and Implementation of Joint Programmes of Study (project coordinator: Asst. Prof. Milan Rackov, Ph.D.)

- CEEPUS CIII-BG-0722 – Computer Aided Design of Automated Systems for Assembling (coordinator: Asst. Prof. Milan Rackov,Ph.D.)
- CEEPUS CIII-BG-0703 – Modern Trends in Education and Research on Mechanical Systems – Bridging Reliability, Quality and Tribology (project coordinator: Asst. Prof. Milan Rackov, Ph.D.)

Programme for Supporting Industry

The Department of Mechanization and Construction Engineering has completed more than 400 projects, carried out in direct cooperation with different companies in industry. The fields of cooperation between the Department and the industry are:

- Design, construction and technical supervision over the operation of machines, vehicles, devices and equipment, metal structures, technological lines, etc.;
- Quality testing and preventive and periodical inspections of machines and devices from the point of view of safety and health care;
- Experts, court experts and consulting services;
- Vibration diagnostic measurements and expertise according to the world-recognized license – Mobius Institute;
- Tensometric tests of supporting constructions of cranes and excavators, pillars of cableway installations, towers of drilling installations in the oil industry and so on;
- Vehicle testing and control of the installation of devices for vehicles using alternative fuels under the authority of the Agency for Safety of Transport of the Republic of Serbia, testing vehicles for the transport of dangerous materials;
- Vocational training courses, and seminars.

Miscellaneous

In 2017, a student project of creating a mobile educational platform in the form of a hybrid vehicle – HERMES – was started. The project is being developed by a group of students from the Department, under the leadership of Asst. Prof. Boris Stojić, Ph.D. and in cooperation with Chair of Power Electronics and Converters from the Department of Power, Elecronic and Telecommunication Engineering.

The Department organizes and financially participates in several types of professional trips for students of the Department during the course of the study.

Professional trips are organized in a local business environment with the aim of mastering a part of the learning material from particular subjects and visiting significant companies in the field of mechanical engineering. In addition, we organize tours to leading European companies (BMW, Liebher, Siemens, ...) for students of the last year of the undergraduate and master studies to get acquainted with business operations.

PHOTO: Department archive

Energy and Process Engineering

PHOTO: Department archive

PHOTO: Media center FTS

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Head of Department
Prof. Miroslav Kljajić, Ph.D.

Studies

Energy and Process Engineering is an area that deals with energy flows at the level of process, resources, construction and installation, performances, energy-efficient transformation, distribution and usage, techniques of management, etc. Nowadays, Energy and Process Engineering is a discipline that creates a challenge for engineers in the circumstances of diminishing conventional energy sources, introducing the new energy technologies and resources, more stringent requirements in regard to energy performance, fight against climate change and other circumstances.

STUDY OBJECTIVES AND EXPECTATIONS: The Department of Energy and Process Engineering develops theoretical and practical knowledge that enables future engineers to respond to the contemporary challenges. The study programme provides theoretical basics and practical knowledge necessary for understanding thermo-technical and process plants, energy and process equipment and devices, gas and oil technology, modern techniques for managing energy flows and resources. Students learn to apply the basic technical principles for describing and analyzing the ways of using energy in different fields and disciplines, aiming to become qualified for creating qualitative assessments and recommendations in order to improve existing energy solutions in terms of greater energy efficiency, environmental protection and meeting energy needs in a sustainable way.

ORGANIZATION OF THE STUDIES: The Studies at the Department of Energy and Process Engineering are organized in the following way:

1. Undergraduate academic studies last four years (eight semesters), with an obligation to obtain 240 ECTS, including final paper, worth 7 ECTS credits;

2. Master studies are a continuation of the undergraduate academic studies, last one year (two semesters), and are worth additional 60 ECTS credits. After completing the second cycle of studies, a student obtains a total of 300 ECTS credits.

   Starting from the third year of study, a student has the opportunity to focus more closely to certain narrow areas by choosing among five packages of elective subjects:

   1. Thermal power engineering
   2. Process engineering
   3. Hydro pneumatic engineering
   4. Gas and oil technology
   5. Energy flow management.

   By successfully defending his/her master's thesis, a graduate student fulfils the first necessary condition for obtaining 2 of 3 existing licenses (licenses: 330 and 332) for mechanical engineers in Serbia.

3. Doctoral academic studies are a possible continuation of the graduate academic studies. These studies last three years (6 semesters); after the realization of the curriculum, additional 180 ECTS credits are awarded, in which the preparation of the doctoral dissertation is included. Having completed the doctoral academic studies, a student obtains a total of 480 ECTS credits.

Department Structure

The Department of Energy and Process Engineering consists of three Chairs:

- Chair of Thermal Engineering
- Chair of Process Engineering
- Chair of Fluid Mechanics and Hydraulic Pneumatic Systems.

Nowadays, at the Department of Energy and Process Engineering, 28 employees have been employed, according to the following structure: teachers: 16; lab technicians: 2; administrative associates: 1; associates: 5; researchers: 4.

The Department has a rich tradition in laboratory activities. Over 40 years, the scientific research has been carried out; laboratory exercises have been performed within a range of subject fields; simple measurements and analyses have been conducted within master papers and doctoral dissertations; measuring devices and other equipment have been prepared for cooperation with industry, etc. Even today, the Department is striving to maintain such a status, but it also tends to further develop in the direction of introducing new methods of work, expanding the field of practical research and raising the quality of work. The Department has 3 types of laboratories.

LABORATORIES FOR MEASUREMENTS AND TESTS are designed to perform thermo-technical tests and exercises in the classroom. They are equipped with measuring and acquisition equipment and are adapted to perform various analyses, experiments, testing and other scientific research activities. In these laboratories, students have the opportunity to get acquainted with the measuring and control devices, i.e. they can handle the equipment, make adjustments and preparations for measurements, compare methods and results, analyse measurement errors, process data, and so on.

PHOTO: Department archive

LABORATORIES FOR THERMO TEHNICAL ANALYSES are intended for computer modelling, development of specific simulation and optimization analyses, processing of measurement results and the like. IT-equipped, these laboratories enable the integration of existing measurement equipment into modern software tools. This greatly enhances

PHOTO: Department archive

the research approach and expands the possibilities of analysing thermo-technical and process problems.

LABORATORIES FOR THERMO TEHNICAL STUDIES are designed for the needs of PhD students and their research. These laboratories are adapted for teamwork, consultations, analyses, enabling students to work with enthusiasm thanks to availability of literature, computer tools and other resources. The laboratories are of modular concepts, so that they can be adapted to different activities.

Within this laboratory, the Department has founded the ASHRAE Student Branch (the branch of international ASHRAE organization, www. Ashrae.org).

Photo: Department Archive

Scientific Research

Much importance is attached to activities in scientific research, which takes place through leadership and active participation in a large number of national and international scientific projects. Special attention is paid to international cooperation, which involves participation in international projects, hosting and study stays at foreign institutes and universities, organizing of scientific and professional meetings, visiting colleagues abroad, international exchange of PhD students, etc.

Scientific research at the Department has been fostered over 40 years, encompassing applied and developmental research. During this period, the following results were achieved:

- Over 80 scientific research projects, in which the Department was a leader or participated in elaboration, were completed. In the last 5 years, a total of 13 projects were implemented, out of which 2 FP7 projects; 2 IPA projects; 2 projects were financed by other international organizations, 5 projects were financed by the Ministry of Education, Science and Technological Development; and single project was financed by the Provincial Secretariat for Science and Technological Development and the City of Novi Sad, respectively.
- Over 1,100 bibliographic units have been published: monographs, textbooks and other books, scientific papers or press releases and one recognized technical solution. Of that, two monographs abroad and over 90 papers in the magazines on the SCI list.

The teachers of the Department have participated in the design or management of 47 EU and other international projects. They are members of numerous scientific and professional associations in Serbia and abroad, and some of them are also registered as EU experts.

Cooperation with Industry

The Department has been in partnership relation with industry sector, supporting its development programmes for many years – since 1965. During that period, the support of the Department to our industry was realized through:

- Field experimental measurements, which include: warranty tests, functional checks, determination of energy and process characteristics in building design and construction and industry, etc.
- Energy rationalization programmes and increased energy efficiency (for industrial plants, buildings, etc.);
- Introduction of energy management in industry and building design and construction (development of access, transfer of knowledge and experience, good practices, etc.);
- Technical studies and feasibility studies, conceptual and main stream projects; development of demonstration projects, expertise and implementation (assistance in project development and pilot plants, monitoring and verification of energy performance, etc.);
- Engineering affairs (project preparation, design, supervision, commissioning, as well as audits of various projects);
- Designing and realization of special educational courses for innovation of knowledge in the field of thermal power engineering (preparation of materials, conducting courses, preparation of campaigns for promotion of energy efficiency, organization of courses, seminars, forum conferences etc.);
- Development of strategic documents, support to the introduction of energy management in local governments (energy policy creation, energy planning, energy efficiency programmes, balancing, etc.);
- Promotion of efficient and clean energy technologies and renewable energy sources (potential analysis, elaboration of feasibility studies, control of realization, etc.);
- Software engineering in thermal engineering (developmental and application modelling, optimization, etc.).

Projects of the European Union:

- Adaptive Facades Network TUD COST Action TU140;
- Overcoming Barriers to Nanofluids Market Uptake;
- European network for shallow geothermal energy applications in buildings and infrastructures (GABI) TUDCOST ActionTU1405;
- Overcoming Barriers to Nanofluids Market Uptake (NANOUPTAKE) CA COST Action CA15119.

Technical Mechanics

PHOTO: pixabay.com

PHOTO: Private archive

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Prof. Livija Cvetićanin, Ph.D.

About the Department

The Department of Technical Mechanics educates students at the bachelor's with honours and master's degrees in mechanical engineering, as well as doctorate degree in technical sciences in the field of technical mechanics. The curriculum and the Department's programme are in line with the requirements of today's rapid and intensive technical and technological development and the 4th Industrial Revolution promoted by Strategy 4.0. The Department is oriented towards the training of professionals who want to acquire knowledge from general mechanical engineering and find their place and affirmation not only in large, but also in small and medium-sized enterprises for which there is an increasing need, not only in our country but also in the world.

Mechanical engineers, completing the study programme of this department, acquire a wide knowledge of fundamental engineering sciences using modern computer tools and IT technologies, that enable them to monitor new technologies, but also to provide new innovative solutions and products.

This Department should give a response to the challenge of engineering, which is to transform new technical discoveries into commercial reality through a clear application of accumulated scientific knowledge, practical engineering experience and problem solving skills. The Department provides excellent background for analyzing and solving the most general problems that a mechanical engineer encounters in his/her everyday practice, as well as for continuing education up to the aca-

demic degree of the Doctor of Science. The above mentioned facts are based on the application of contemporary physical and mathematical theories in modelling of real systems, the use of modern computer tools, and the interpretation of results in an acceptable form.

Studies

The concept of the curriculum and the Department's programme is to give priority to the basic engineering disciplines in mechanical engineering, but also to bring them into line with new scientific attainments, in the first place, engineering and technology.

Nowadays, the manufacture is focused on the production of parts by 3D printing; many companies are making a switch to nanotechnology; apart from manufacturing macro parts, manufacturers are producing micro mechanical systems; information technologies are being used as a result of the previous – third industrial revolution, reflected in the field of communication among people; the plans and programmes have been upgraded in order to improve the quality of knowledge, enabling prosperity for future generations of mechanical engineers. During the studies, a special emphasis is given to fundamental, theoretical sciences such as: physics, mathematics, mechanics, fluid mechanics, thermodynamics, the basics of automatic control as well as the basics of programming and computer engineering.

Students educating according to our Department's study programme, receive common knowledge in the fields of mechanical engineering such as manufacturing engineering, construction, mechanization and thermo-technical engineering. Therefore, a number of courses that are essential and fundamental in the field of mechanical engineering, such as mechanical materials, construction basics, machine elements and production technologies are included in the curriculum. Applying the knowledge of mechanics and management, students are able to learn the theory of mechanisms, the basics of robotics and mechanics. After mastering the materials from the continuum mechanics, fluid mechanics and thermodynamics, students concentrate on hydro-pneumatic systems, as well as the dynamics of pumps and fans.

The study programme also includes courses for researching the possibilities of eliminating the major pollutants of living and working environment: noise and vibration. Using the knowledge of Oscillation Theory, which is thoroughly studied within this study programme, future engineers are in a position to become experts in the field of machine and plant vibro-dygnostics. In addition, by upgrading the knowledge of mechanical engineering and programming, i.e. information technology, students acquire the knowledge in physical-cybernetic systems that establish connection, control and management on a human-machine relationship.

The curriculum is updated with the use of digital teaching aids. Regarding teaching innovations, the Ministry of Education, Science and Technological Development of Serbia gives a great support to Department through the following projects:

1. Multimedia and Interactive Teaching and Learning of Engineering Mechanics, 2017-2018.
2. Innovation of a Group of Subjects in the Field of Engineering Mechanics through the Use of IT Technology, Creation of Multimedia Content and Cooperation with Industry, 2018-2019, which also enables online teaching via http://www.mech-in-ns.ftn.uns.ac.rs/

Scientific Research

The Department of Technical Mechanics is associated with a large number of scientific papers, published in foreign journals, as well as a high level of citation. The concrete results can be found at http://mechanics.ftn.uns.ac.rs/publications/index.html

Some of these papers belong to research results financed by the Province, the Republic and international organizations.

Personnel Potential of the Department

Nowadays, at the Department of Technical Mechanics, 17 workers are employed according to the following structure:

teachers: 10
associates: 6
administrative associates: 1

Power, Electronic and Telecommunication Engineering

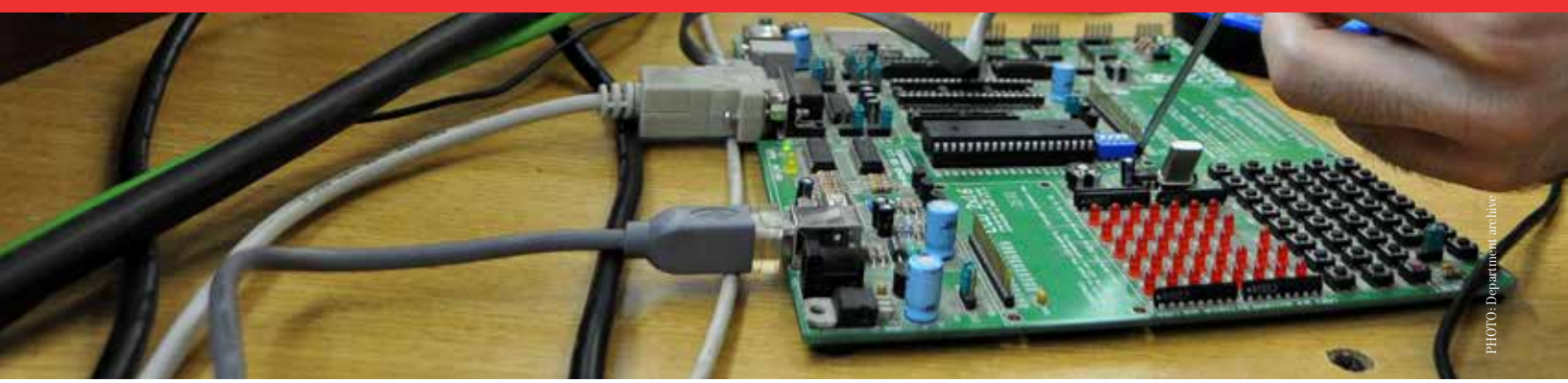

PHOTO: Department archive

PHOTO: Media center FTS

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Head of Department:
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About the Department

The Department of Power, Electronic and Telecommunication Engineering plays a leading role in the technological development of Vojvodina and Serbia by educating highly competent engineers and researchers and providing new fundamental and applied knowledge in the field of electrical engineering and information technologies in accordance with the highest European standards.

Studies

The Department has accredited the following study programmes:

FIRST CICLE STUDIES – Undergraduate academic studies in Power, Electronic and Telecommunication Engineering last four years (eight semesters), requiring 240 ECTS (European Credit Transfer and Accumulation System) credits. On completion, a student receives a Bachelor's degree with Honours in electrical and computer engineering. The first year of the undergraduate academic studies is common to all students. After that, students can choose among five modules:

- Power Engineering – Electrical Power Systems: production, transmission, distribution and electric power consumption;

- Power Engineering – Power Electronics and Electric Machines: electric motor drives control, applied power electronics, electrical installations and plants, electric power quality and renewable energy sources;
- Microcomputer Electronics: microprocessor and computer electronics, computer hardware, hardware and software integration, discrete systems and algorithms, design of analogue and digital integrated circuits, micro and nano electronics, optoelectronics, applied electronics, microwave technology;
- Communication Technologies and Signal Processing: telecommunication signals and systems, mobile communications, design and development of communication software, digital audio and video signal processing, images and biomedical signals, audio and video technologies, speech technologies;
- Measurement Systems: sensors and measuring converters, biomedical instrumentation, measurements in industry, measuring systems and precise measurements.

In 2013, the Department started the new study programmes:

- Applied Software Engineering, lasting four years (eight semesters), with the obligation to acquire 240 ECTS (European Credit Transfer and Accumulation System) credits, whereupon a student receives a Bachelor's degree with Honours in electrical and computer engineering.
- Measurement and Regulation, lasting four years (eight semesters), with the obligation to acquire 240 ECTS (European Credit Transfer and Accumulation System) credits, whereupon a student receives a Bachelor's degree with Honours in electrical and computer engineering.

PHOTO: Department archive

SECOND CICLE STUDIES – Master Academic Studies in Power, Electronic and Telecommunication Engineering, lasting one year (two semesters), represent a continuation of the undergraduate academic studies (worth additional 60 ECTS credits). After completing these studies, a student acquires a total of 300 ECTS credits, receiving a Master's degree in electrical and computer engineering. Within this study programme, a student can choose among the following study modules:

- Power Engineering – Electrical Power Systems
- Power Engineering – Power Electronics and Electric Machines
- Power Engineering – Distributed Energy Resources
- Measurement Systems
- Telecommunication Systems
- Signal Processing
- Embedded Systems and Algorithms
- Microelectronics
- Applied electronics

Master Academic Studies in Applied Software Engineering last one year (two semesters) and represent a continuation of the undergraduate academic studies (worth additional 60 ECTS credits). Upon completion of these studies, a student acquires a total of 300 ECTS, receiving a Master's degree in electrical and computer engineering.

Master Academic Studies in Measurement and Regulation last one year (two semesters) and represent a continuation of the undergraduate academic studies (worth additional 60 ECTS credits). Upon completion of these studies, a student acquires a total of 300 ECTS credits, receiving a Master's degree in electrical and computer engineering.

THIRD CYCLE STUDIES – Doctoral Academic Studies in Power, Electronic and Telecommunication Engineering last three years (six semesters) and represent a continuation of master studies (worthing additional 180 ECTS credits). After completion of the doctoral studies, a student attains a total of 480 ECTS credits, receiving a Ph.D. degree in electrical and computer engineering.

Specialist Academic Studies in Power, Electronic and Telecommunication Engineering, lasting a year and a half (three semesters), represent a continuation of master academic studies, with the obligation to acquire additional 90 ECTS credits. Upon completion of these studies, a student attains a total of 390 ECTS credits, receiving a degree of Specialist in electrical and computer engineering.

Undergraduate Professional Studies in Power Engineering – Renewable Sources of Electrical Energy last three years (six semesters), with the obligation to acquire 180 ECTS credits. Upon completion of these studies, a student receives a degree of Bachelor of Applied Studies in Electrical and Computer Engineering.

Undergraduate Professional Studies in Electronics and Telecommunications last three years (six semesters), with the obligation to acquire 180 ECTS credits. Upon completion of these studies, a student receives a degree of Bachelor of Applied Studies in Electrical and Computer Engineering.

Specialist Professional Studies in Power, Electronic and Telecommunication Engineering last one year (two semesters) and represent a continuation of the undergraduate professional studies (worthing additional 60 ECTS credits). Upon completion of these studies, a student acquires a total of 240 ECTS credits, receiving a degree of Specialist of Applied Studies in Electrical and Computer Engineering.

Department Structure

Within the Department, there are six chairs:

- Chair of Electric Power Engineering and Applied Software Engineering;
- Chair of Power Electronics and Converters;
- Chair of Electronics;
- Chair of Telecommunications and Signal Processing;
- Chair of Electrical Measurements;
- Chair of Theoretical Electrical Engineering.

Within the Department, five centres were established, that successfully perform their international activities:

- Centre for Integrated Microsystems and Components;
- Regional Center for Biosensing Technology (Biosense);
- Metrology Centre;
- Centre for Renewable Resources and Quality of Electricity;
- Centre for Intelligent Communication, Networking and Information Processing (iCONIC).

Personnel Potential of the Department

Nowadays, at the Department of Power, Electronic and Telecommunication Engineering there are 196 employees, such as follows:

teachers: 92
lab. technicians: 15
administrative associates: 4
researchers: 14
associates: 64
scientific titles: 7.

Scientific Research

In cooperation with the Ministry of Education, Science and Technological Development of the Republic of Serbia, the Provincial Secretariat for Science and Technological Development and through international projects funded by the European Union, the Department has equipped its laboratories with modern research equipment used for educational purposes and experimental research.

PHOTO: Department archive

The results of scientific research are published in prestigious international journals and exhibited at meetings of international and national importance. In the last five years, the members of the Department published a large number of papers in renowned international journals (with an impact factor) and a number of international conferences.

The Department is the organizer of scientific symposia and conferences, such as Power Electronics, TREND, Digital Speech and Image Processing and Electrical Engineering in Medicine.

Accredited Laboratories

Laboratory for Metrology, accredited by the Accreditation Body of Serbia, for the calibration of instruments, for measuring electrical quantities (DC and LF) and temperatures, as well as Laboratory for Electromagnetic Compatibility, also accredited by the Accreditation Body of Serbia.

Regional Development

The Department of Power, Electronic and Telecommunication Engineering is the leading developmental and research institution for promoting entrepreneurship and transfer of modern technologies to industry and regional development. Members of the Department are the founders of over ten companies in-

PHOTO: Department archive

cluding: Schneider Electric DMS NS, AlfaNum, Zesium and Typhoon HIL.

Schneider Electric DMS NS, with its 1100 employees and the export of software and technology to all continents, is particularly worth mentioning.

Ten years ago the Department initiated the promotion of entrepreneurship which developed into a national competition for the Best Technology Innovation.

International and National Projects

Let us mention some of the projects, headed or participated by the professors and associates of the Department.

1. PROJECTS OF THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT FOR THE PROJECT CYCLE 2011 -2019:

1.1. BASIC RESEARCH

1. Interdisciplinary Research on the Quality of Verbal Communication, (Asst. Prof. Milan Sečujski, Ph.D.), Project No: 178027, 2011-2019.

1.2. TECHNOLOGICAL DEVELOPMENT

1. Development of an Information Network for the Continuous Testing of Electromagnetic Fields, (project leader: Prof. Nikola Đurić, Ph.D.), project No: TR 32055, 2011-2019;

2. Development of Dialogue Systems for Serbian and other South Slavic Languages, (project leader: Prof. Vlado Delić, Ph.D.), project No: TR 32035, 2011-2019;

3. Development of Multi-variable Methods for Analytical Support to Biomedical Diagnostics, (project leader: Prof. Dragana Bajić, Ph.D.), project No: TR 32040,2011-2019;

4. Measurements in the Concept of "Smart" Distribution Network (project leader: Prof. Zoran Mitrović, Ph.D.), project No: TR 32019, 2011-2019;

5. Innovative Electronic Components and Systems Based on Inorganic and Organic Technologies Embedded in Goods and Consumer Goods (project leader: Prof. Ljiljana Živanov, Ph.D.), project No: TR 32016,2011-2019;

6. E-Speech Therapist, (project leader: Ivan Jokić), project No: TR32032, 2011-2019.

7. Paper-based Wireless Sensors for Meat Quality Monitoring, SERBIA-CHINA.

1.3. INTEGRAL AND INTERDISCIPLINARY RESEARCH

1. Smart Electricity Distribution Networks Based on the Distribution Management System and Distributed Production, (project leader: Prof. Dragan Popović, Ph.D.), project No: III-42004, 2011-2019;

2. Joint Research on the Measurement and Impact of Ionizing UV Radiation in the Field of Medicine and Environmental Protection, (project coordinator: Ljubica Župunski, Bachelor with Honours in molecular biology), project No: III-43011, 2011-2019;

3. Development of Sensor Methods and Monitoring Systems for Water, Air and Soil Quality, (project leader: Asst. Prof. Vladimir Rajs, Ph.D.), project No: III-43008, 2011-2019;

4. Digital Media Technologies and Socio-Educational Changes, (project leader: Prof. Željen Trpovski, Ph.D.), project No: III-47020, 2011-2019;

5. Optoelectronic Nanodimensional Systems - Path to Application, (project leader: Asst. Prof. Dalibor Sekulić, Ph.D.), project No: III-45003, 2011-2019;

6. Research and Development of a Platform for Scientific Support in the Decision-making and Management of Scientific and Technological Development in Serbia, (project leader: Prof. Vojin Šenk, Ph.D.), project No: III-47005, 2011-2019;

7. Synthesis of Nanopowders and Processing of Ceramics and Nanocomposites with Specific Electrical and Magnetic Properties for Application in Integrated Passive Components, (project leader: Prof. Mirjana Damnjanović, Ph.D.), Project No: III-45021, 2011-2019;

8. Research on Climate Change and its Impact on the Environment – Impact Monitoring, Adaptation and Mitigation, (project leader: Prof. Vesna Spasić Jokić, Ph.D.), project No: III-45007, 2011- 2019;

9. Integrated Systems for Detection and Estimation of Fire Development by Monitoring Critical Parameters in Real Time,

PHOTO: Department archive

(project leader: Prof. Vojin Šenk, Ph.D.), project No: III-44003, 2011-2019;

10. Biosensing Technology and Global System for Continuous Research and Integrated Management of Biosystems (project leader: Prof. Uranija Luburić Kozmidis, Ph.D.), project No: III-43002, 2011-2019;

11. Development and Optimization of Infrastructure for Recharging Electric and Hybrid Vehicles in Urban and Tourist Areas in Serbia and Montenegro, SERBIA–MONTENEGRO.

2. PROVINCIAL PROGRAMME

1. Central audio library of the University of Novi Sad (CABUNS);
2. Microtubules as biological nanowires and pathways for nanomotors – a step towards applications in nanotechnologies and biomedicine;
3. Optimization of the methotrexate pharmacokinetics for individualizing the treatment of leukemia using a fractional calculus and microfluidic electronic device;
4. Development of a system for precise control of microwave extraction parameters in order to increase the yield and prevent the degradation of targeted compounds;
5. Monitoring of heavy elements in soil and post-flood plants based on innovative in-situ sensors;
6. Characteristics and electrical properties of doped amorphous chalcogenide materials and nanostructural ceramics.

3. INTERNATIONAL PROJECTS

COST

1. Citizen Science to Promote Creativity, Scientific Literacy and Innovation throughout Europe, (project leader: Prof. Imre Lendak, Ph.D.).
2. European Network for Game Theory, (project leader: Prof. Dejan Vukobratović, Ph.D.), project code: GAMENET.
3. Inclusive Radio Communication Networks for 5G and Beyond, (project leader: Prof. Dragana Bajić, Ph.D.)
4. Open Multiscale Systems Medicine, (project leader: Prof. Tatjana Lončar Turukalo, Ph.D), project code: OpenMultiMed.
5. European Network for Innovative Uses of EMFS and Biomedical Applications, (project leader: Prof. Nikola Đurić, Ph.D.), project code: EMF-MED.

Projects of the European Union:

H2020

1. Sensors and Intelligence in Built Environment, (project leader: Prof. Dejan Vukobratovic), project code: SENSIBLE.
2. Cost-effective microfluidic electronic devices for optimal drug administration based on fractional pharmacokinetics (project leader, Prof. Goran Stojanović, Ph.D.), project code: MEDLEM.
3. Innovative Network for Training in Water and Food Quality Monitoring Using Autonomous Sensors and Intelligent Data Gathering and Analysis, (project leader: Prof. Goran Stojanović, Ph.D.), project code: AQUASENSE.

Erazmus+ KA2

1. Students' Mobility Capacity Building in Higher Education in Ukraine and Serbia, (project leader: Prof. Goran Stojanović, Ph.D.), project code: MILETUS.
2. Information Security Services Education in Serbia, (project leader: Prof. Imre Lendak, Ph.D.), project code: ISSES.
3. Boosting the Telecommunications Engineer Profile to Meet Modern Society and Industry Needs, (project leader: Prof. Vlado Delić, Ph.D.), project code: BENEFIT.

IPA (CRO-SER)

1. Active Sensor Monitoring Network and Environmental Evaluation for Protection and Wise Use of WETLANDS and other Surface Waters (project leader: Asst. Prof. Jelena Radić, Ph.D.), project code: SenSWetlands.

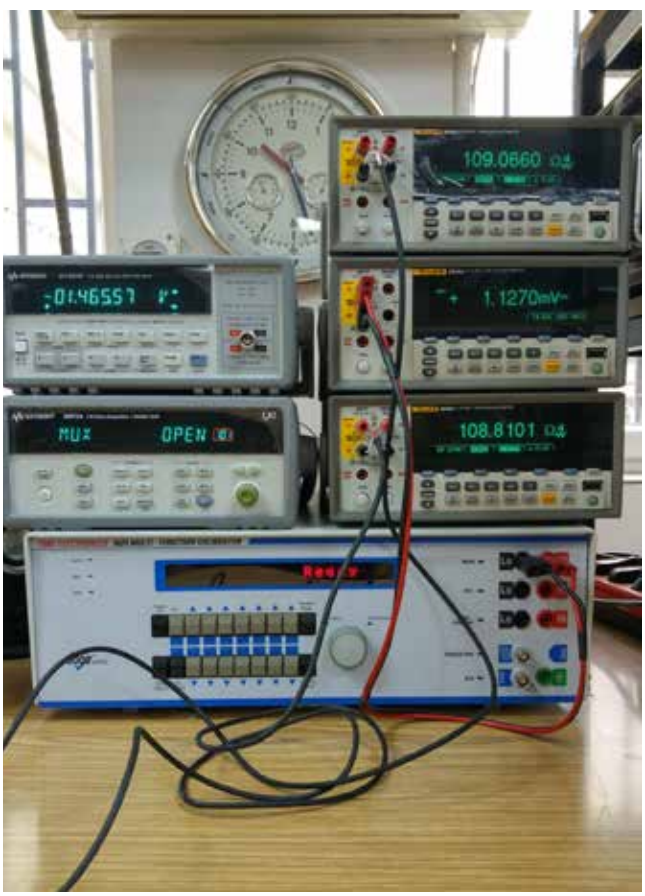

PHOTO: Department archive

Computing and Control Engineering

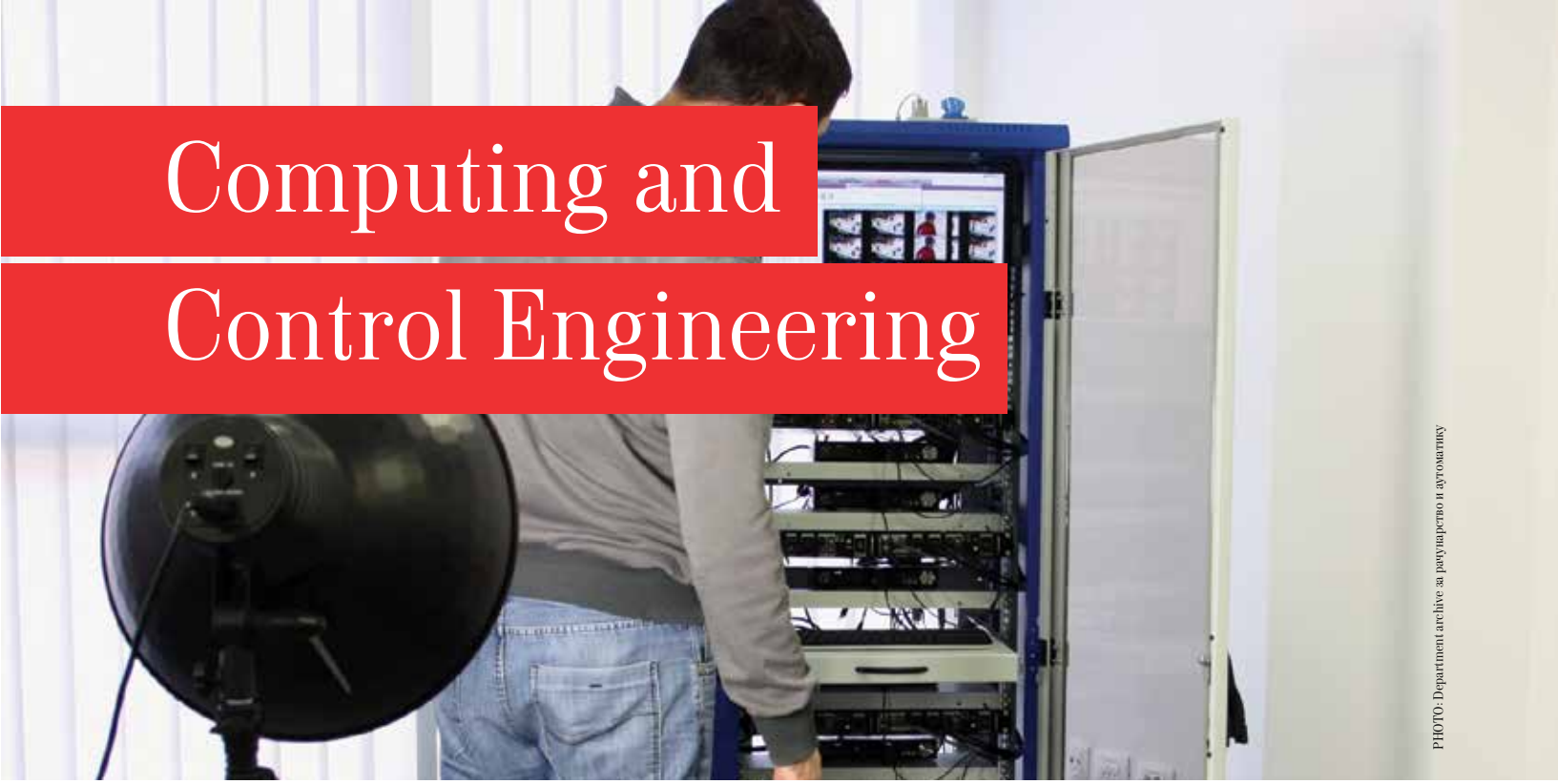

PHOTO: Department archive за рачунарство и аутоматику

PHOTO: Media center FTS

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Head of Department
Assistant Professor Miodrag Djukic, Ph.D.

About the Department

The Department of Computing and Control Engineering has been instrumental for the high-paced and high-quality development of computing in Novi Sad which has been notable in the city in the last twenty years. Since its inception, the Department has had the education of top-level engineers in the field of computer and control engineering as the main goal. This has been achieved through dedicated teaching and intensive cooperation with the industry. By participating in significant research projects, as well as by putting emphasis on practical experience, the Department has developed its top quality teaching staff and a relevant knowledge base. Numerous students who graduated from this Department have made their contribution in making Novi Sad and the Faculty of Technical Sciences into distinguishable centres of computing (popularly called «IT») in Serbia, and beyond.

Studies

Academic studies at the Department of Computing and Control Engineering at the Faculty of Technical Sciences in Novi Sad are organized into three study programmes: Computing and Control Engineering, Software Engineering and Information Technologies, Biomedical Engineering, Information Engineering and Information and Analytical Engineering which are divided in three cycles:

Photo: Department archive

FIRST CYCLE STUDIES – Undergraduate Academic Studies last four years (eight semesters) and students are expected to obtain 240 ECTS (European Credit Transfer System) while undergraduate professional studies last three years and are worth 180 credits.

SECOND CYCLE STUDIES – Master Academic Studies last one year (two semesters) and are a continuation of the undergraduate academic studies with the obligation to obtain 60 ECTS. Upon a successful completion a student acquires the title of Master engineer in the field of electrical and computer engineering and acquires a total of 300 ECTS.

THIRD CYCLE STUDIES – Doctoral Studies last three years (six semesters), are the continuation of master studies and are worth 180 ECTS. The studies are designed to introduce students to scientific and research work in the chosen field. After completing the Doctoral studies the student has obtained 480 ECTS in total.

The study program **Computing and Control Engineering** (at all three levels) is the basic, oldest and largest study program of the Department. It provides a large scope of knowledge, and the student has the opportunity to improve in three areas:

- Computer engineering and computer communications;
- Applied Computer Science and Informatics and
- Automatic control and system engineering.

In addition to academic studies, within the Department of Computer and Control Engineering there are also professional studies organized as a programme of undergraduate professional studies of **Software and Information Technologies**. The studies at this programme last three years (six semesters), and the students are obliged to obtain at least 180 ECTS in the process.

The intensive development of computer and control engineering, along with the significant strengthening of the multidisciplinary approach to other research fields, is monitored through the professional activities at the Department and its studies of automation and control engineering but also at other study programmes of the Faculty of Technical Sciences. By monitoring this development and real needs of the society, the Department makes constant innovations in the current study programmes and creates new study programmes. Consequently, new study programmes have been developed and implemented in the last five years. The new programmes are:

- Software Engineering and Information Technologies – Undergraduate Academic Studies and Graduate Academic Studies – Master
- Biomedical Engineering – Undergraduate Academic Studies and Graduate Academic Studies – Master (an Interdisciplinary Study Programme)
- Information Engineering – undergraduate academic and master academic studies;
- Information and Analytical Engineering - master academic studies;

while in cooperation with the Department of Civil Engineering and Geodesy we have a programme **Geodesy and Geomatics (Geodesy and Geoinformatics)**, at the undergraduate, master and doctoral level.

In addition, doctoral level studies of **Biomedical Engineering** have entered the accreditation process and there are plans for the accreditation of a new undergraduate academic study programme of **Computer engineering**.

Independently from the higher education system, additional educational training is carried out at the Department through the following specialized centres:

- **Cisco Networking Academy** - offers Cisco training and certificates;
- **Automation Training Centre** – training in cooperation with Schneider, Siemens, Danfoss and Nivelco);
- **IoT Summer School** – training in the area of Internet of Things;
- **Raspberry Pi Summer School** - training for work on embedded computer systems illustrated using Raspberry Pi platform;
- **Android Summer School** – training in the development and implementation of Android based applications in multimedia devices;
- **TI**, **Xilinx**, **Altera**, **Intel**, **Cadence**, **Synopsis Academic Program Members** – additional schools and training programmes in the areas of FPGA, DSP and parallel programming;
- **EPLAN** – authorized training centre for educating EPLAN Software & Services company users.

Organization of the Department

The Department of Computing and Control Engineering is comprised of three constituent parts: The Automatic Control, Geomatics and Systems Engineering Unit, The Computer Engineering and Computer Communications Unit, and The Applied Computer Science and Informatics Unit.

- The Automatic Control, Geomatics and Systems Engineering Unit focuses in its scientific research on the fields of: automatic control and systems engineering, intelligent systems and decision support systems, biomedical engineering, and geo-information systems and technologies.
- The Computer Engineering and Computer Communications Unit focusses in its scientific research on the fields of computer architecture and computer networks, real time programming, computer based systems, FPGA technology, multimedia systems, automobile and cell phone industry software, system software tools (compilers, assemblers and linkers) as well audio and video signal processing software.

- The Applied Computer Science and Informatics Unit focusses in its scientific research on the fields of programming languages and translators, operating systems, parallel and distributed systems, web programming, software engineering, information systems, e-business, intelligent systems and soft computing, network security and legal informatics.

Within the Department there are 16 modern and well equipped laboratories. In 2019 three new laboratories are planned to start working with students: Laboratory for Digital Forensics, Automotive Software Design Laboratory and Laboratory for Testing, Calibration and Diagnostics with Hardware-in-the-Loop.

In addition the Department organizes the activities of the Centre for Geo-Information Technologies and Systems, whose activities, in the most general terms, include the management of spatial resources. The Centre has the following organizational-technological units: Department for System Support, Laboratory for Acquisition, Processing and Presentation of Geo Spatial Data, Laboratory for Sub Terrestrial Detection, and Laboratory for GIS and Software Development.

Department personnel potential

The Department of Computing and Control Engineering currently has 193 employees, according to the following structure:
teachers: 73
laboratory assistants: 12
administrative staff: 3
teaching and research associates: 105

Scientific and research activities

Several hundred scientific research projects have been carried out at the Department up to this day. A significant number of articles have been published in eminent international journals and several hundred scientific papers have been presented at conferences and symposia in the country and abroad. The following projects are currently being carried out:

1. PROJECT FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT:

1.1. Projects from the fundamental research programme

- Computer mechanics in the theory of constructions, (project coordinator: Prof. Miroslav Hajduković, Ph.D.); project code: OI 174027.

1.2. Integral and interdisciplinary research projects

- Infrastructure for Technology Aided Learning in Serbia (project coordinator: Prof. Branko Milosavljević, Ph.D.), project code: III 47003.
- Intelligent Systems for Software Product Development and Model Based Business Support (project coordinator: Prof. Ivan Luković, Ph.D.), project code: III 44010.
- Development of Digital Technologies and Networked Services in Systems with Inbuilt Electronic Components, (project coordinator: Prof. Miodrag Temerinac, Ph.D.), project code: III 44009.
- Application of biomedical engineering in preclinical and clinical practice, III 41007.

1.3. Projects from the technological development programme

- Development of Software Tools for Analysis and Improvement of Business Processes, (project coordinator: Prof. Dragan Ivetić, Ph.D.), project code: TR 32044;
- Development of an intelligent control-management system for increasing the energy efficiency of buildings, (project coordinator: Prof. Filip Kulić, Ph.D.), project code TR 33013;
- Development of a platform for education in the field of embedded electronic systems, (project coordinator: Prof. Ilija Bašičević, Ph.D.); project code: TR 32030;
- Intelligent Supervisory-Control System for Early Detection and Elimination of Unwanted States and Changes on the Devices, Equipment and Processes, (project coordinator: Prof. Zoran Jeličić, Ph.D.), project code: TR 32018
- State and Structure Modelling of Slope Processes by Application of GNSS and Laser and Georadar Scanning Technologies, (project coordinator: Prof. Miro Govedarica, Ph.D.), project code: TR 37017;
- Development of Program Support for Data Compression Based on Computer Intelligence Methods, (project coordinator: Prof. Dragan Kukolj, Ph.D.), project code: TR 32034;
- Development of Methodology for Software Testing in Multimedia Systems, (project coordinator: Prof. Nikola Teslić, Ph.D.), project code: TR 32014;
- Program Support and Tools in Multicore Systems, (project coordinator: Prof. Miroslav Popović, Ph.D.), project code: TR 32031;
- Development of methodology and software for assessing the quality of video signals in multimedia systems, (project coordinator: Assistant prof. Jelena Kovačević, Ph.D.); project code: TR 32029;
- Development of interactive services for home appliances; (project coordinator: Prof. Milan Bjelica, Ph.D.), project code: TR 32041;
- Autonomous sensor networks with distributed control (project coordinator: Prof. Dragan Samardzija, Ph.D.), TR 36029;
- Development of multivariable methods for analytical support of biomedical diagnostics; project code TR 32040;
- Energy systems in public buildings, TR 33058.

2. International projects

- 3D Content Creation, Coding and Transmission over Future Media Networks, 3D-ConTourNet
- Modernizing GEOdesy education in WEstern Balkan with focus on competences and learning outcomes (GEOWEB)
- Embedded Computer Engineering Learning Platform – E2LP 317882 FP7-PEOPLE
- Transactional Memories: Foundations, Algorithms, Tools, and Applications (Euro-TM) ICT COST Action IC1001
- Western Balkan Academic Education Evolution and Professional's Sustainable Training for Spatial Data Infrastructures (BESTSDI)
- Development and implementation of system for performance evaluation for Serbian HEIs and system (PESHES)
- Information Security Services Education in Serbia (ISSES) - Erasmus+
- Modernizing Laboratories for Innovative Technologies (DRIVE) - Interreg IPA CBC HR-RS.

International academic cooperation

The Department cooperates with several universities around the world (Berlin, Freiburg, Ghent, Manchester, Wien, Sheffield, Pereira, Istanbul, Szeged, Bucharest, Shanghai, and Alcala) with which it exchanges the teaching staff, students and commonly defines research projects. Furthermore, numerous visiting professors from universities in Oakland, Sidney, Birmingham (Alabama), Manchester, Maribor and Aalborg (Denmark) often teach at the Department. Also, the Department teaching staff often gives visiting lectures at other universities in the country and abroad.

Business activities in the Science and Technology Park

The teaching staff at the Department is the founder of one of the oldest companies in the Science and Technology Park at the Faculty of Technical Sciences which has developed into Research and Development Institute RT-RK and employs about 900 engineers on the projects with the leading partners at the world market in the field of consumer electronics, embedded systems and automotive software. The company laboratories, with their up to date technology and research topics, participate in the scientific research work at the Department, allowing the students, via grant programmes, to go through additional practice work in modern technologies in the leading international companies.

Publishing

The Computing and Control Engineering Department is one of the founders of the international journal called 'Computer Science and Information Systems (ComSIS, www.comsis.org). The journal has been included in the Thomson Reuters Journal Citation Reports and SCI Expanded List. Its 2017 impact factor is IF5 =0.675.

Also, the Department of Computing and Control Engineering is one of the founders and coordinators of the IEEE Chapter of Consumer Electronics in IEEE Section for Serbia and Montenegro.

Programme of industry support

The Department has so far carried out several hundred projects in close cooperation with national companies: Sintelon, Potisje, Polet, VTI, Iritel, EI-Pupin, DKTS, NIS, Srbijagas, Viktorija grupa, Republic Geodetic Authority, Carlsberg Serbia, PC Water and Sewage Company, PC Informatika etc.

International cooperation

The Department is well known for its international cooperation. The Department primarily has cooperation with universities from Germany, Belgium, Denmark, Greece, Great Britain, the USA and China. In addition, the Department cooperates with the most outstanding international companies: MIPS, Google, Loewe, Marvel, Nagra, IBM, Intel, NEC, Qualcomm, ABB, Cisco Systems, Allied Telesyn, Philips, Cirrus Logic, Trident, Zoran, Schneider, Siemens, Danfoss and Feedback.

PHOTO: Department archive

Civil Engineering and Geodesy

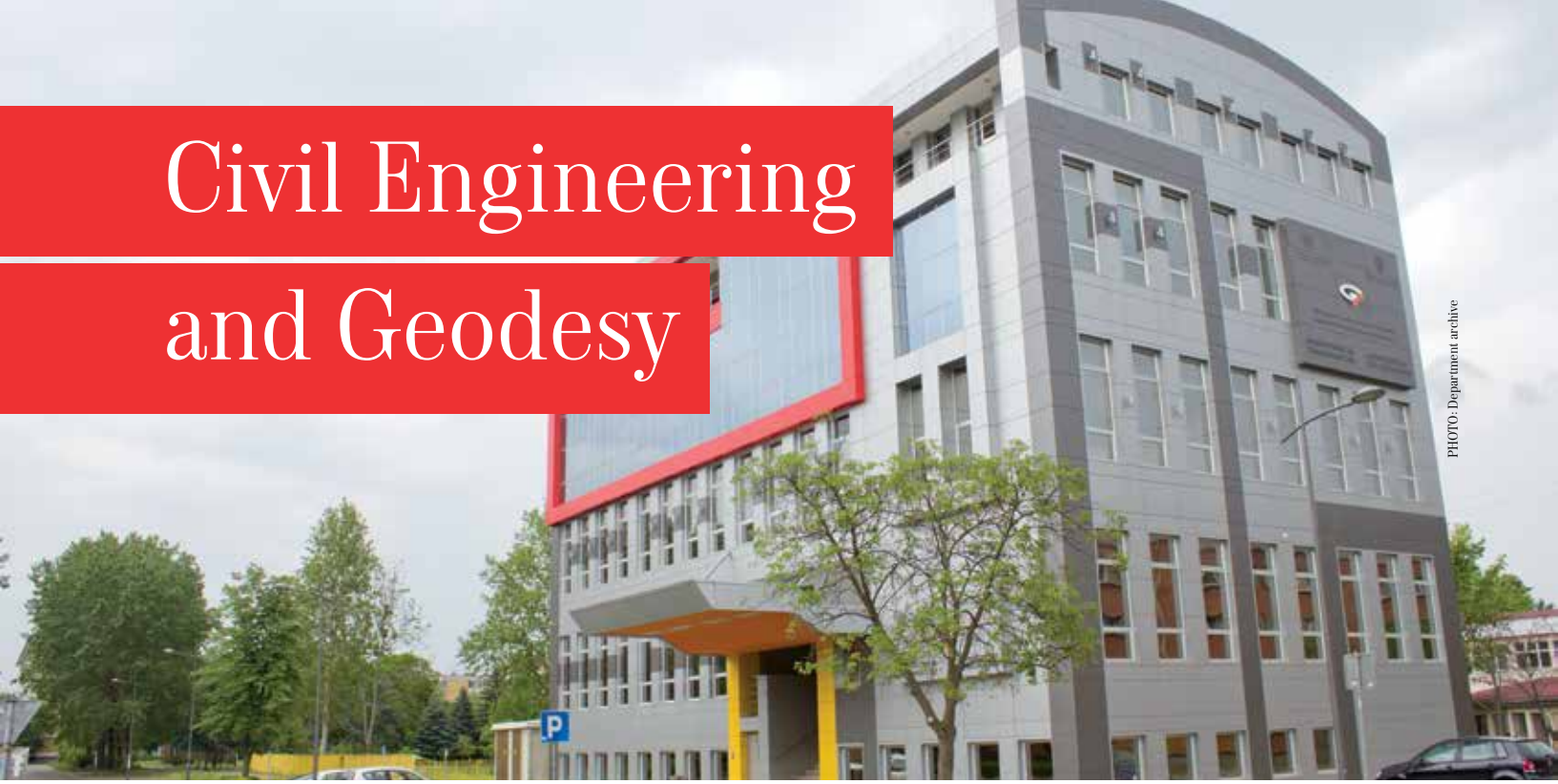

PHOTO: Department archive

PHOTO: GRID center

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Head of Department
Prof. Vlastimir Radonjanin, Ph.D, civil engineer

The Department of Civil Engineering and Geodesy organizes the following study programmes:

- Civil engineering
- Geodesy and geomatics
- Disaster risk management and fire safety.

Studies in **Civil Engineering** are conducted as:

- Undergraduate academic studies;
- Master academic studies;
- Doctoral academic studies.

FIRST CYCLE STUDIES – Undergraduate Academic Studies for obtaining the degree of a Bachelor with Honours in Civil Engineering last for four years (240 ECTS credits). First three years are the same for all students, while in the fourth year, according to their preferences, student select one of the following modules (study groups):

- Structures
- Hydraulic engineering
- Roads, railways and airports.

The outcome of the learning process is the knowledge that enables students to use professional literature, apply their knowledge in solving practical problems occurring in their profession, and the knowledge that enables them to continue their studies if they decide to do so. In the study group Structures the emphasis is placed on the fundamentals of designing and building concrete, metal, masonry and wooden structures. In the Hydraulic engineering study group students are taught

about the basic principles in designing hydraulic engineering systems in the areas of water supply, sewerage, melioration, etc. In the study group Road students acquire basic knowledge in road design. Within the selected study group, students have obligatory and elective courses. Elective courses are chosen from the group of proposed courses. Teaching is performed in the form of lecturing and practice. At lectures, using the adequate didactic equipment, students are introduced to the course material with necessary explanations contributing to better understanding of course content. At practice classes, accompanying the lectures, concrete tasks are solved and examples are presented to illustrate the course content in more details. Practice classes can be auditory, laboratory, computer and computing classes. Obligatory professional practice (internship) is completed by students in construction companies of their personal choice. During the semester, professional excursions are organized – visits to characteristic facilities, concrete factories, construction fairs, etc.

SECOND CYCLE STUDIES – Master Academic Studies, for obtaining the degree of the Master in Civil Engineering, last for one year (60 ECTS credits). In accordance with their preferences, students select one of the following modules (study groups):

- Structures
- Hydraulic engineering
- Roads, railways and airports
- Organization and Technology of Building.

The study programme in Master Academic Studies in Civil Engineering presents the continuation of the study programme of Undergraduate Academic Studies in Civil Engineering at the Faculty of Technical Sciences, University of Novi Sad. More precisely, this programme should enable the students, within the selected study group, to additionally concretise their knowledge based on understanding basic principles applied in diverse areas of civil engineering, to master additional professional knowledge for the realization of contemporary solutions in construction, to obtain the ability to integrate knowledge that is to be applied in each individual case and to be introduced into research work.

THIRD CYCLE STUDIES – Doctoral Academic Studies for obtaining the degree of the Doctor of Science in Civil Engineering (180 ECTS credits) last for three years. The outcome of the learning process is the knowledge that enables the students to become capable of individual scientific and research work in the field of Civil Engineering. The research interest is decided by students when selecting the courses they will take, attend and pass and which contribute to a more profound knowledge and understanding of the area (topics) related to their Doctoral dissertation. Elective courses are chosen from the groups of proposed courses at the study programme. Lectures from obligatory or elective courses can be group classes or individual (tutorial).

Studies in the field of **Geodesy and geomatics** are conducted as:

- Undergraduate academic studies;
- Master academic studies;
- Doctoral academic studies.

FIRST CYCLE STUDIES – Undergraduate Academic Studies in Geodesy and Geomatics in the field of Geodesy Engineering for obtaining the degree of a Bachelor with Honours in Geodesy last for four years (240 ECTS credits), and the study programme is realized in the cooperation with the Department of Computing and Control Engineering. The programme is organized to educate engineers for obtaining enough practical knowledge for working in practice, and at the same to enable further education at the adequate Master, or later Doctoral studies. Current situation and especially, trends in the development in the field of geodesy, geomatics and geoinformatics present the basis for defining the structure and the content of the study programme. Hence, a majority of courses in junior years of studies are structured as to provide the necessary knowledge in fundamental and theoretic courses that will set the bases for understanding geodesy and geoinformatics based on the principles of physics, mathematics, electrical engineering, and bases of computer science and computer technology. Senior years are intended for specialization courses that provide professional and applicative knowledge in special fields of interest.

SECOND CYCLE STUDIES – Master Academic Studies in Geodesy and Geomatics last for one year (60 ECTS credits). This study programme is developed within two basic technical sciences: geodesy and geoinformatics. Academic degree obtained is a Master in Geodesy. The programme is structured to educate graduate engineers to obtain enough knowledge for working in practice, and at the same time to enable further education at the adequate Specialist or Doctoral studies. The programme structure enables students to acquire the profound knowledge in the selected field of interest, i.e. to acquire knowledge that enables students to use professional literature, apply knowledge on problems occurring in profession and to enable, for those who want it, the continuation of their studies.

THIRD CYCLE STUDIES – Doctoral Academic Studies in Geodesy and Geomatics last for three years and are allocated at least 180 ECTS credits. On completing the Doctoral studies, the candidate obtains the degree of a Doctor of Science in Geodesy. The outcome of the learning process is the knowledge that enables students to become capable for individual scientific and research work. Doctoral academic studies in Geodesy and Geomatics last for three years and are allocated at least 180 ECTS credits. 90 ECTS credits are obtained by passing course examinations, 30 ECTS credits by passing theoretical bases for Doctoral dissertation, and 60 ECTS credits are obtained by writing and defending the Doctoral dissertation. Doctoral studies cannot last longer than 10 years.

The study programme in **Disaster Risk Management and Fire Safety** is an interdisciplinary, multidisciplinary and transdisciplinary (IMT) science and is organized as:

- Undergraduate academic studies;
- Master academic studies;
- Doctoral academic studies.

FIRST CYCLE STUDIES – Undergraduate Academic Studies in Disaster Risk Management and Fire Safety last for four years and are allocated at least 240 ECTS credits. The academic degree obtained on completion of these studies is a Bachelor with Honours in Disaster Risk Protection and Fire Safety. On enrolling the third year, students have the possibility, according to their own interests and wishes, to attend not only the obligatory courses but also the elective ones. Diversities in the content of elective courses enable students to obtain detailed knowledge in two sub-fields: disaster risk management and fire safety management. The programme incorporates segments of disaster risk management and fire safety, power engineering, electrical engineering, mechanical engineering, management, architecture, civil engineering together with fundamental disciplines such as mathematics, chemistry, physics and other disciplines, in order to form a multidisciplinary basis of the study programme. The outcome of the learning process includes knowledge, skills and competencies that enable students to apply the acquired knowledge for solving problems occurring in profession, practice, and research, using theoretical knowledge from professional literature and the possibility to continue education at Master academic studies.

SECOND CYCLE STUDIES – Master Academic Studies in Disaster Risk Management and Fire Safety last for one year and are allocated 60 ECTS credits. The academic degree obtained is a Master in Disaster Risk Protection and Fire Safety. The outcome of the learning process is the knowledge that enables students to use professional literature, apply knowledge on problems occurring in profession, and, if they want to, continue the studies. Teaching process includes lectures and practice classes. During the teaching process, the emphasis is on individual and research work of students, as well as their increased personal involvement into the teaching process. The study program has been innovated in cooperation with renowned European universities (Danish Technical University, University of Lund, University of Alborg, University of Zilina) during the Erasmus + project Knowledge for Resilience Society (K- FORCE, 2016-2019) and the universities in the region (Bosnia and Herzegovina, Albania, Macedonia), which enables the mobility of teachers and students.

THIRD CYCLE STUDIES - Doctoral Academic Studies in Disaster Risk Management and Fire Safety last for three year and are worth 180 ECTS credits. The academic title obtained is a doctor of science - Disaster Risk Protection and Fire Safety. The aim of the study program is to educate the professional in accordance with the contemporary trends in the development of appropriate scientific disciplines in the world. Special emphasis is placed on developing student awareness for the needs of personal contribution to the development of the society as a whole by engaging in the development of the preparedness and resilience of the society to hazard and risk prevention, as well as reducing the hazardous consequences of natural disasters and fires. The study program was developed in cooperation with renowned European universities (Danish Technical University, University of Lund, University of Alborg, University of Žilina) during the Erasmus + project Knowledge for Resilience Society (K-FORCE, 2016- 2019) and the universities in the region (Bosnia and Herzegovina, Albania, Macedonia), and enables the mobility of teachers and students.

Department organization

In addition to the Department head, the Department management team also includes:

- Prof. Mirjana Laban Ph. D., assistant head in charge of scientific research activities
- Prof. Igor Pesko, Ph.D., assistant head in charge of educational activities

The teachers and associates at the Department of Civil Engineering and Geodesy are organized and divided into five Chairs heading the teaching processes:

- Chair of Structures,
- Chair of Building Organization and Technology
- Chair of Building Materials, Assessment and Repair of Structures
- Chair of Hydraulic engineering and Geodesy
- Chair of Geotechnics and Road Networks.

Department Personnel

Today, the personnel of the Department of Civil Engineering and Geodesy has 65 employees of the following structure:

teachers: 37
laboratory assistants: 2
administrative assistants: 4
researchers: 2
teaching and research associates: 20

PHOTO: Department archive

Important results

Related to the existing staff potential and the equipment at the Department of Civil Engineering and Geodesy, significant results have been obtained in the following fields of construction:

- Structure assessment, repairs and maintenance;
- Developing and applying contemporary building materials;
- Introducing European standards into national construction;
- Aseismic calculations for structures;
- Introducing the construction project management system;
- Analysing conditions of hydrotechnic systems and structures;
- Geotechnical analyses on the stability of soil and facilities;
- Developing traffic infrastructure base and systematisation.

PHOTO: Department archive

Scientific and research work

Within the research fields at the Department of Civil Engineering and Geodesy, over 70 scientific and research projects have been realized and more than 4,000 scientific and professional papers have been presented in the country and abroad.

PHOTO: Department archive

The scientific and research work at the Department has been carries out in 13 different areas:

- Structural theory,
- Structures in construction,
- Geotechnics,
- Road networks,
- Technology and organization of building and management,
- Building construction- structures and technologies,
- Architecture technologies, design and installations,
- Construction materials, structure assessment and repair,
- Energy efficiency,
- Disaster Risk Management and Fire Safety,
- Hydraulic engineering,
- Geodesy and
- Water treatment and protection.

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT FOR THE PROJECT CYCLE STARTED IN 2011:

- Development and application of the overall approach to designing new structures and safety assessment of the existing structures for reducing seismic risk in Serbia;
- Researches on the possibility for the application of waste and recycled materials in concrete composites, with the evaluation on the impact on environment, in order to promote sustainable construction in Serbia;
- Development of the system to support the decision-making process for the demands of integral management of water resources in a watershed;
- Development of the hydro-information system for drought monitoring and early announcement;
- Research on the influence of traffic vibrations on high buildings and people in the sense of sustainable city development;
- Improvement in the energy efficiency of buildings in Serbia and improvement of national regulation capacities for their certification;
- Technical and economic measures for increasing the efficiency of irrigation and drainage.
- Development of the hydro-information system for drought monitoring and early announcement.

PROJECTS FUNDED BY THE PROVINCIAL SECRETARIAT FOR HIGHER EDUCATION AND SCIENTIFIC AND RESEARCH ACTIVITIES, APV VOJVODINA

- Development of a model of assessing the state and reliability of existing roadway bridges and watercourses in the AP of Vojvodina from the aspect of load capacity;
- The influence of the type of aggregate on the basic properties of cement composites with ash resulting from combustion of biomass.

PHOTO: Department archive

PHOTO: Department archive

INTERNATIONAL PROJECTS

- Knowledge FOr Resilient soCiEty (K-FORCE);
- Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders (SWARM);
- IF4TM, PoC project Robust low-cost fiber-optic 2D deflection sensor;
- Interreg IPA Croatia-Serbia Agricultural Waste - Challenges and Business Opportunities;
- Fire safe use of bio-based building products FPS COST Action FP1404;
- Towards the next generation of standards for service life of cement-based materials and structures COST ACTION TU1404;
- PROGRAMME OF SCIENTIFIC AND TEDCNOLOGICAL COOPERATION BETWEEN THE GOVERNMENTS OF MONTENEGRO AND THE REPUBLIC OF SERBIA FOR 2019-2020. Applying Waste Materials for Eco- concrete ECO-AWAKE.

Programme for industry support

The programme for industry support, includes among other aspects, the following:

- Research work and elaborates in the field of geomechanics, geotechnics and foundations;
- Recording and manufacturing surveying bases;
- Field (non-destructive and destructive) testing of materials and structures (bridges, crane beams, stands, roof structures, reinforcement, etc.);
- Standard laboratory research on main types of building materials (binders, mortars, concrete, construction ceramics, concrete masonry, etc.);
- Elaborating recipes for plain and special kinds of concrete and concrete design for all types of building structures;
- Diagnosing, condition assessments and project elaborations for repairing building structures;
- Elaborating architectural and construction designs for all types of high building structures, hydro-structures and construction facilities;
- Designing hydrotechnic systems for water supply and sewerage in towns and industry, systems for river regulation and building navigable channels, systems for flood protection,
- hydro amelioration systems for draining and irrigating agricultural areas, systems for protecting and arranging surface and for underground waters;
- Designing projects for building organization and technology for all types of building structures;
- Technical projects in construction;
- Elaborating documentation for improving business in construction companies;
- Elaborating preliminary feasibility studies and building feasibility studies for all types of building structures;
- Expertise and studies;
- Engineering of the overall building processes for all types of structures;
- Forensic testimonies in the field of construction;
- Supervising manufacturing building structures and systems;
- Technical acceptance of all types of building structures.

Traffic Engineering

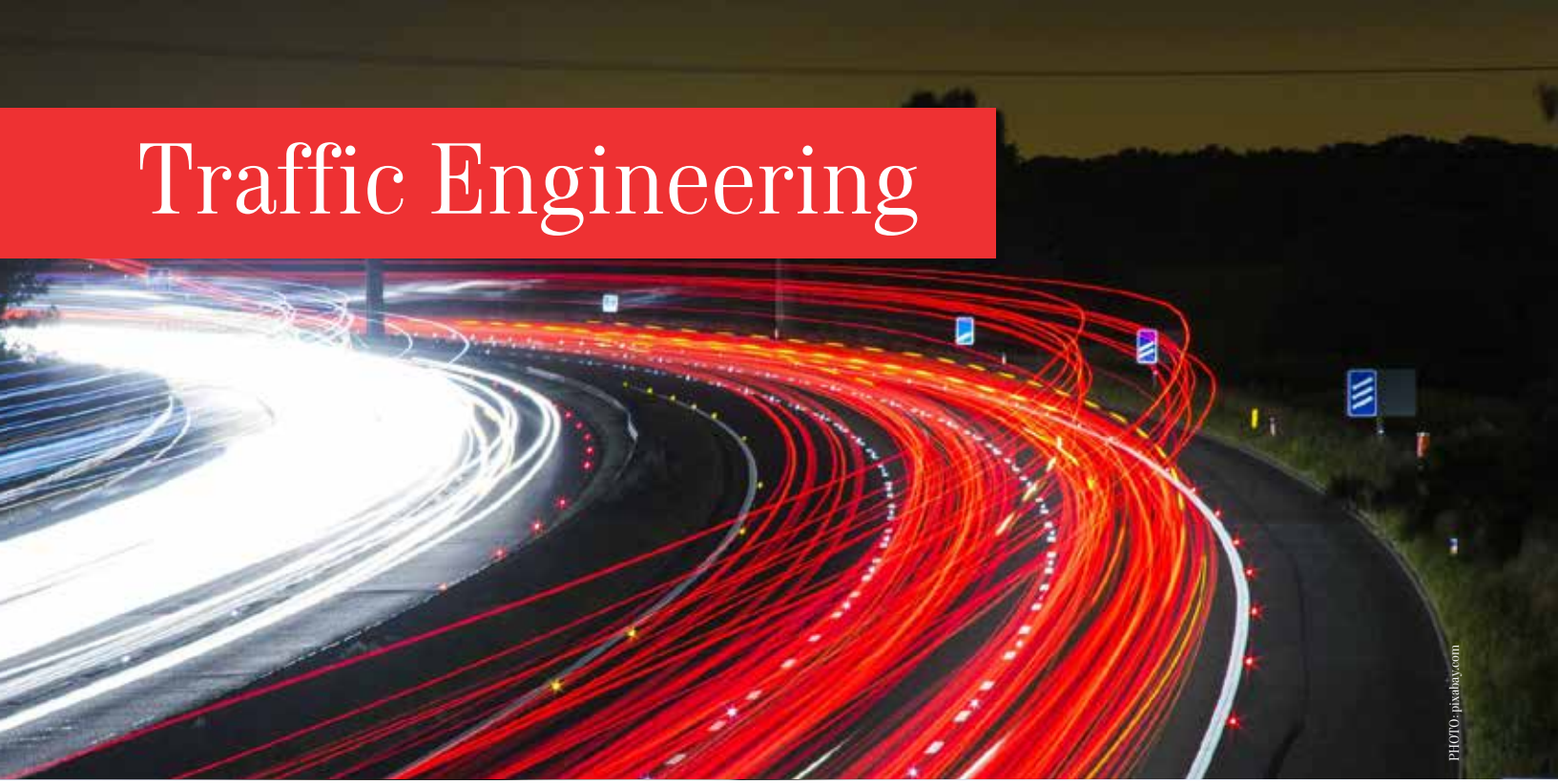

PHOTO: pixabay.com

PHOTO: Media center FTS

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Head of Department
Prof. Dragan Jovanovic, Ph.D.

About the Department

The Department of Traffic Engineering consists of four chairs:

- Chair of Roadway Traffic Systems;
- Chair of Technologies of Transport and Logistics Systems;
- Chair of Logistics and Intermodal Transport;
- Chair of Postal Traffic and Communications.

Department:

- Prof. Gordan Stojić, Ph.D.- associate for educational affairs
- Prof. Todor Bačkalić, Ph.D. - associate for financial affairs
- Prof. Marinko Maslarić, Ph.D. - associate for science and international cooperation
- Prof. Vuk Bogdanović, Ph.D. - associate for cooperation with industry
- Ana Vajda - administrative and technical secretary

Studies

Until now, 1.929 students have completed their studies at the Department of Traffic Engineering, out of which 51 have received the titles of Bachelor, 511 have obtained the titles of Bachelor with honours, 660 have obtained Master degree and 707 graduated from this Department according to old study programmes. In addition, 45 students have obtained old Master of Science degrees and 24 candidates obtained PhD degrees. There are about 1.050 students currently enrolled at all study programmes of the Department of Traffic Engineering.

The studies at the Department of Traffic Engineering of the Faculty of Technical Sciences in Novi Sad are divided into three cycles.

FIRST CYCLE STUDIES - undergraduate academic studies last four years (eight semesters) with obligation of obtaining 240 ECTS (European Credit Transfer System), including the final paper which is awarded 15 ECTS in ECTS system.

At enrolment, a student is enters one of the following study programmes: Traffic and transport engineering and Postal traffic and telecommunications. After the completion of the fourth year, a student obtains a title of Bachelor with honours in traffic engineering.

SECOND CYCLE STUDIES: – master academic studies last one year (two semesters) and are a continuation of undergraduate academic studies awarded additional 60 ECTS in ECTS system.

Having completed the second cycle studies, a student obtains Master degree in traffic engineering.

Third cycle studies - doctoral academic studies last three years (six semesters) and are the continuation of master academic studies (they are worth additional 180 ECTS in ECTS system).

Areas of scientific research

The Department of Traffic Engineering carries out scientific research activities as well as research and development studies and services in the following areas, as required by economic and non-economic systems and enterprises:

- • planning and organization of transport;
- management processes in transportation;
- engineering, consulting and marketing in the field of transport;
- design services in the field of traffic regulation and elaboration of technical documentation;
- traffic safety;
- storage technology and capacity;
- organization of postal traffic.

The members of the Department of Traffic Engineering have realized a great number of scientific studies and development projects for the needs of transportation industry and noneconomic systems in the field of traffic safety and control, traffic lines, technology of transport, development of means of transport, management and logistics of companies and other fields. The Department of Traffic Engineering continuously conducts research in the following areas: traffic safety, traffic regulation and control, expertise in the field of traffic accidents, public transport of passengers and goods, and research in the field of logistics and postal traffic.

Industry support programme

In recent years, the Department of Traffic Engineering has been involved in the implementation of studies, projects and expertise from various fields of transport, contributing significantly to solving problems in the functioning of some regions, cities and enterprises, both in our country in the environment. In the previous period, some of the prominent projects were:

- Parking studies (Novi Sad, Niš, Valjevo, Užice, Bačka Palanka, Šabac);
- Study of public transport (Belgrade, Kragujevac, Banja Luka, Inđija, Sremska Mitrovica);
- Traffic studies (Novi Sad, Inđija);
- Plans for technical regulation of traffic (Ruma, Inđija, Brčko, Bijenjina, Banja Luka, Sarajevo);
- Projects of technical traffic regulation (Novi Sad, Sarajevo, Banja Luka);
- Projects of traffic regime changes (Novi Sad, Subotica, Apatin);
- Traffic and technical expertise (Novi Sad, Belgrade, Kragujevac, Leskovac, Zrenjanin, Jagodina, Kraljevo, Kruševac, Vranje, Niš, Sombor, Vršac, Beograd, Zaječar, Užice, Šabac, etc.)

The Department of Traffic Engineering has also been engaged by the Ministry of Education, Science and Technological Development in the implementation of four projects of national and regional importance in the field of road, water and rail transport. Currently there are activities focused on equipping of laboratory for traffic and transport engineering which is of great importance for the development of the Department of Traffic Engineering.

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT 2017

- Research of the technical, technological, personnel and organizational capacities of the railways of Serbia from the aspect of present and future requirements of the European,
- TR 36012
- Models of integration of transport system, TR 36024
- Development and application of optimization methods in the design of supply and distribution chains in the logistics distribution centre, TR 36030
- Reengineering the network of operators of the universal postal service with the organizational synergy of state and economy resources, TR 36040
- Development and implementation of a risk management model on corridors 7 and 10 from the aspect of improving the traffic system of Serbia, TR 36007

Architecture and Urban Planning

PHOTO: Department archive

PHOTO: Media center FTS

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Head of Department
Prof. Jelena Atanacković, Jeličić, Ph.D.

Department of Architecture and Urban Planning at the Faculty of Technical Sciences of the University of Novi Sad has a modern and open curriculum and syllabus based on the union of theory and practical experience, local influences and international trends. The field of architecture is viewed at the Department as a transdisciplinary field, with the dominant influences of art and technology in the contemporary social context.

As of the academic year 2005/2006, the studies have been in accordance with the Bologna Declaration; thus, all the courses are now one-semester long, and the studies are organized following the model 4+1+3. The study programmes at Department of Architecture and Urban Planning were accredited in 2007 as the first programmes in the field of architecture in Serbia while the study programmes in the field of scene design were accredited in 2013.

STUDIES

FIRST CYCLE STUDIES
Undergraduate Academic Studies last for four years, i.e. eight semesters. At the Department of Architecture and Urban Planning, there are two study programmes at undergraduate academic studies:

- Architecture,
- Scene Architecture, Technology and Design.

On completing the undergraduate academic studies in Architecture, and after defending their graduation thesis, a student obtains the degree of a Bachelor with Honours in

Architecture (BSc) and they are allocated 240 ECTS credits.

On completing the undergraduate academic studies in Scene Architecture, Technology and Design, a student obtains the

PHOTO: Department archive

PHOTO: Department archive

degree of a Bachelor with Honours in Scene Architecture, Technology and Design and are allocated 240 ECTS credits.

SECOND CYCLE STUDIES
Master Academic Studies last one year i.e. two semesters. Continuing their studies at the second cycle, the students decide on one of the four study programmes:

- Architecture,
- Regional Development Planning and Management,
- Stage Architecture and Design (in field of art),
- Digital Technologies, Design and Production in architecture and urban planning.

Within the study programme Architecture, students can decide on one of three modules: Design in Architecture and Urban Planning, Contemporary Theories and Technologies in Architecture, and Interior Design.

At the study programme Architecture, on completing the second semester and defending the Master thesis, a student obtains the degree of a Master in Architecture.

At the study programme Regional Development Planning and Management, on completing the second semester and defending the Master thesis, a student obtains the degree of a Master in Urban Planning and Regional Development.

At the study programme Scene Architecture and Design, on completing the second semester and defending the Master thesis, a student obtains the degree of a Master Artist in Scene Design.

At the study programme Digital Technologies, Design and Production in Architecture and Urban Planning, on completing the second semester and defending the Master thesis, a student obtains the degree of a Master in Digital Design in Architecture.

THIRD CYCLE STUDIES
Doctoral Academic Studies last for three years, and students decide between the study programme Architecture and the study programme Scene Design (in field of art). Lectures are held in first two years (four semesters), and during the third year (fifth and sixth semester) the candidates for the PhD diploma elaborate on their Doctoral Dissertation. At the study programme Architecture, on elaborating and defending the Doctoral dissertation, the candidate obtains the degree of a Doctor of Science in Architecture. At the study programme Scene Design, on elaborating and defending the Doctoral artistic project the candidate obtains the degree of a Doctor of Art in Scene Design.

ORGANIZATION OF THE DEPARTMENT

The Department of Architecture and Urban Planning is organized in the following way:

- Chair of architecture and urban planning;
- Chair of theory and interpretation of space in architecture and urban planning;
- Section for art and design which encompasses two chairs:
- Chair of scene design
- Chair of art

Today, the Department of Architecture and Urban Planning has 75 teachers, associates and researchers. Every year, employees and numerous students participate in various national and international professional meetings, congresses, symposiums and conferences, as well as summer schools and professional workshops. They also participate in the exchange programmes with other universities within Erasmus +, CEEPUS and other programmes. Among the results of this kind of activity are numerous awards at international and national competitions, which were won by employees and students of the Department of Architecture and Urban Planning.

PHOTO: Department archive

PHOTO: Department archive

LABORATORIES AND CENTERS

Within the Department of Architecture, there are the following laboratories:

- Laboratory for theories and interpretations of space in architecture and urban planning,
- Laboratory for interactive architectural visualization,
- Laboratory for digital fabrication in architecture,
- "Borislav Gvojic" scene laboratory - SCEN_Lab
- Art laboratory "Bogdanka Poznanović"

and centres:

- Centre for contemporary architecture and urbanism,
- Centre for stage design, architecture and technology,
- Centre for Digital Design.

SCIENTIFIC AND RESEARCH WORK

At the Department of Architecture and Urban Planning the scientific and research activity is carried out in cooperation with the Ministry of Education, Science and Technological Development of the Republic of Serbia, the Provincial Secretariat for Higher Education and Scientific and Research Activities as well as through international projects. The results of the research work conducted by professors and associates are published in national and international journals, monographs and at international and national conferences and presented at international exhibitions.

INTERNATIONAL AND NATIONAL PROJECTS

The Department of Architecture and Urbanism has actively participated in a number of international and national projects with the following projects being currently implemented:

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT FOR THE 2011 – 2018 PROJECT CYCLE: - Projects from the programme of technological development:

1. Optimization of architectural and urban planning and design in the function of sustainable development of Serbia, TR 36042 (project coordinator: Prof. Nađa Kurtović Folić, Ph.D.);
2. Technical and technological condition and potentials of buildings of Cultural Centres in the Republic of Serbia, TR 36051 (project coordinator: Prof. Radivoje Dinulovic, Ph.D.).

INTERNATIONAL PROJECTS

1. CEEPUS: URBAN INNOVATIONS NETWORK (project coordinator for the FTS: Assistant Prof. Milena Krklješ, Ph.D.).
2. DANUrB - Danube Urban Brand - a regional network building through tourism and education to strengthen the "Danube" cultural identity and solidarity - Interreg Danube Transnational Programme DTP 1-1-249-2.2 (project coordinators Prof. Milena Krklješ, Ph.D. and Prof. Darko Reba, Ph.D.).
3. V4Participation – Fostering Education on Participatory Processes in Urban and Regional Planning, funded by International Visegrad Fund, project coordinators Prof. Milica Kosterš, Ph.D.)
4. Monitoring, forecasting and development of online public early warning system for extreme precipitations and pluvial floods in urban areas in the Hungarian-Serbian cross-border region - URBAN-PREX, Interreg-IPA CBC Hungary-Serbia Programme, in coordination with The Faculty of Sciences in Novi Sad (project coordinator for FTS: Ivana Bajšanski).

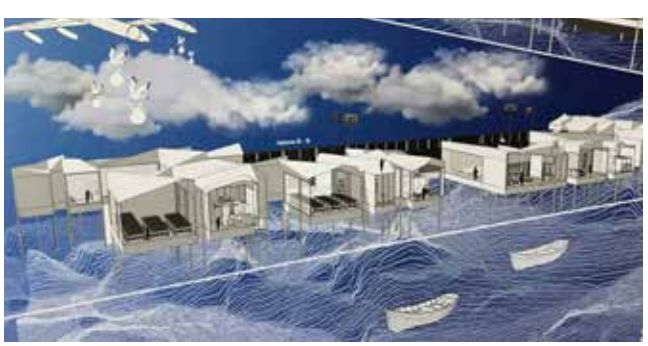

PHOTO: Department archive

Industrial Engineering and Management

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PHOTO: Media center FTS

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Head of the Department
prof. Dubravko Ćulibrk, Ph.D.

About the Department

The Department of Industrial Engineering and Management has evolved from the Chair of Advancement of Industrial Production, established in 1960 as a part of the Faculty of Mechanical Engineering in Novi Sad. Academician Dragutin Zelenović is the founder of the School of Industrial Engineering and Management in Novi Sad. Today, the Department has over 145 employees and more than three thousand students. Teaching activity is carried out by the professors from a number of prestigious universities worldwide, who are simultaneously involved in teaching at Massachusetts Institute of Technology, USA, Donghua University, PR of China, Skolkovo Tech, Russia, Fraunhofer Institute, Germany, University of Maribor, Slovenia, etc. An innovative approach to work and uncompromising orientation towards quality, enables students to acquire competencies that quickly lead them to desired positions in different sectors of industry. Graduate engineers and master engineers are highly valued in the automotive industry, IT companies, food industry, as well as in the service industry. Having a wide range of subjects to choose from, students are able to respond to challenges imposed by modern large systems, as well as the challenges imposed by small family businesses. The degree acquired in the study programs of Industrial Engineering, Engineering Management, Mechatronics and Engineering of Information Systems enables their owners to work in all developed systems and countries such as the US, EU, PR of China, and Russia. Some of the engineers have continued their academic career, and today they are professors at prestigious universities. Students at the Department have the ElLab platform at their disposal for distance learning, which allows them to communicate and share information important for mastering the subject matter with the available materials in all digital forms and at any place.

Economic organizations in partnership with the development teams formed at the Department are successful in solving a great number of challenges imposed by the market of the new era, offering many examples that enable students to be ready for being quickly involved in real work processes. A large number of companies provide opportunities for implementation of student practice, often paid at jobs chosen by students.

Photo: Branislav Stojanović

Studies

ACADEMIC STUDIES

FIRST CYCLE STUDIES - undergraduate academic studies, lasting four years (eight semesters), with the obligation to acquire 240 ECTS credits.

When enrolling, students choose one of the following four study programs:

1. Industrial engineering with fields chosen by the student during the course of studies:

- Design, organization and management of systems;
- Automation;
- Information-management and communication systems;
- Quality and logistics.

2. Engineering management with fields chosen by the student during the course of studies:

- Enterprise organization and management,
- Innovation management and technological entrepreneurship,
- Project management,
- Investment management and risk management,
- Information management,
- Quality and logistics management,
- Industrial marketing and media engineering,
- Human resource management.

3. Mechatronics with fields chosen by the student during the course of studies:

- Mechatronics, robotics and automation,
- Mechatronics in mechanization.

4. Information Systems Engineering.

SECOND CYCLE STUDIES - Graduate academic Master´s studies, lasting one year (two semesters) represent the continuation of undergraduate academic studies (60 ECTS credits).

In addition to the continuation of studies on selected courses from undergraduate studies, students can also choose the following study programs:

- Advanced engineering technologies,
- Innovation engineering.

THIRD CYCLE STUDIES - Doctoral academic studies last for three years (180 ECTS). The enrollment in these studies is open to students who have previously acquired 300 ECTS credits in the appropriate fields.

Students can enrol in the following study programs:

- Industrial engineering / Engineering management,
- Mechatronics.

The Department also organizes specialist academic studies lasting one and a half year (three semesters):

- Industrial engineering,
- Engineering management,
- Mechatronics.

SPECIALIST PROFESSIONAL AND MASTER STUDIES

One-year specialist professional studies are conducted at the following study program:

- Engineering management (with elective groups - modules: communication management, human resources management, operational audit and controlling, investment management, health management, project management).

These studies provide the acquisition of contemporary, immediately applicable knowledge. To enroll, students are required 180 ECTS credits earned previously in professional or academic studies.

Professional master studies

- Business Management - MBA / MBM - Master of Business Administration / Master of Business Management provide the necessary knowledge required to solve specific problems occurring in the business environment and raise the level of competence in the field of managing business and service systems and their elements. They last two years during which students earn 120 ECTS credits.

Photo: Branislav Stojanović

Organization of the Department

The Department of Industrial Engineering and Management consists of four Chairs:

- Chair for production systems, organization and management,
- Chair for mechatronics, robotics and automation,
- Chair for information and communication systems,
- Chair for quality, efficiency and logistics.

The Chairs have at their disposal the following laboratories:

- Laboratory for production and assembly systems,
- Laboratory for production systems management,
- Laboratory for service engineering,
- Laboratory for educational technologies,
- Laboratory for media systems,
- Laboratory for catastrophe risk management,
- Laboratory for robotics and mechatronics;
- Laboratory for movement recording and analysis;
- Laboratory for automation and programmable logic controllers,
- Laboratory for intelligent systems and artificial intelligence,
- Laboratory for computer integrated systems,
- Laboratory for information-communication systems,
- Laboratory for information systems engineering,
- Laboratory for quality, logistic support and maintenance.

Personnel potential of the Department

Today, the Department of Industrial Engineering and Management has 145 employees, of which 79 are professors, 9 laboratory assistants, 3 administrative associates, 11 researchers, and 43 associates.

Scientific research

The Department organizes research work in the following fields of studies:

- Research in the field of technological production, organization and management structures of industrial systems,
- Research in the field of mechatronics, robotics and automation,
- Research in the field of application of information and communication technologies in work processes,
- Research in the field of quality, effectiveness and integral system support and logistics,
- Research in the field of application of modern concepts of Industry 4.0,
- Research in the field of application of new technologies in the education of engineers,
- Research in the field of identification technologies.

The research is carried out through one-year and long-term projects funded by the Republic Ministry of Education, Science and Technological Development and the Provincial Secretariat for Science, Higher Education and Technological Development of APV, as well as through a number of international projects.

The international scientific cooperation of the Department of Industrial Engineering and Management is realized through the H2020, TEMPUS, WUS, and CEEPUS projects. Among the rich production and participation in national and international projects, the following projects are currently managed by researchers from the Department:

- Developing software for managing the overhaul and installation of brake systems in rail vehicles, project code TR35050;
- Developing robots as a means to help overcome developmental difficulties in children, project code IIII44008;
- Improving Serbia's competitiveness in the process of joining the European Union, project code IIII47028;
- Mastering innovation in Serbia through the development and implementation of interdisciplinary post-graduate curricula and innovation management, project code 544278-TEM-PUS-1-2013-RS-TEMPUS-JPCR;
- Idea Lab fostering student entrepreneurship and open innovation in the University - Industry collaboration, project code 544373-TEMPUS-1-2013-RS-TEMPUS-JPHES;
- Implementation of the Internet of Things on Traceability Systems in the Supply Chain of the Food Production Industry, project code 451-03-01765 / 2014-09 / 09;
- Application of multi-sensor technology for obtaining integrated information system of traceability of quality fresh food products in the cold chain;
- Application of IoT technologies in order to increase the quality of identification and tracking of animals;
- Strengthening competitiveness and stimulating the development of organic agriculture - a comparative study between Montenegro and Serbia;
- Information system to support collaborative courier services in urban areas of Serbia;
- Two handed management of physical interaction between humans and robots for use in rehabilitation and industry;

- Intelligent automation for competitive advantage, project code CII-RS-0065-10-1516.
- Intelligent Automation for Competitive Advantage, ознака пројекта CII-RS-0065-10-1516.

The team of researchers from the Department is implementing the most comprehensive research of European manufacturing potentials - European Manufacturing Survey – managed by the Fraunhofer ISI, Karlsruhe.

The Department of Industrial Engineering and Management publishes an international journal: *International Journal of Industrial Engineering and Management (IJIEM)* indexed in the SCOPUS database.

Since 1975, the international scientific conference known as "Industrial Systems" has been organized on a triennial basis.

The iDEAlab has also resulted from the TEMPUS project; it is a unique creative space for work that offers innovative training programs for encouraging creativity and entrepreneurial spirit, support in realization of students´ innovative ideas through the period of pre-incubation in the space itself and the possibility of networking and mentoring by experienced entrepreneurs. The iDEAlab directs students' creativity and innovation, affirms their talent and knowledge influencing thereby the creation of a more meaningful connection between the University and the local community.

Resources of the iDEAlab are also used by students participating in the Student Enterprise, which consists of entrepreneurial students who further develop their ideas towards the final product. In the realization of projects, checking the knowledge and acquiring the first engineering experiences students are assisted by their professors and assistants. This concept has been highly acknowledged by both the participants and business organizations that are familiar with it, and mostly by engineers who once participated in the Student Enterprise project.

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT 2018

- Research and development of ambient intelligent service robots of anthropomorphic characteristics - TR 35003;
- Application of artificial intelligence methods in research and development of production processes - TR35015;
- Design, development and implementation of the new generation of ADI materials - TR34015;
- Intelligent robotic systems for extremely diversified manufacturing - TR35007;
- Digital media technologies and socio-educational changes - III47020;
- Research and development of a platform for scientific support in the decision-making and management of scientific and technological development in Serbia III;
- Development and application of new and traditional technologies in the production of competitive food products with added value for the domestic and world market - create wealth from the wealth of Serbia - III 46001;
- Automated systems for the identification and monitoring facilities in industrial and non-industrial systems - TR35001;
- Innovative electronic components and systems based on inorganic and organic technologies embedded in consumer goods and products - TR32016.

PROJECTS FUNDED BY THE PROVINCE OF VOJVODINA

- Marking and monitoring components / products in small production plants;
- Implementation of the IoT technology for monitoring fresh food products from Vojvodina;
- Collaborative-information platform in the function of e-agriculture and advisory service;
- Researching the causes of low productivity of service companies in the AP of Vojvodina
- Researching the possibilities of improving backward logistics in organizations in the territory of the Autonomous Province of Vojvodina.

PHOTO: Department archive

PHOTO: Department archive

Environmental Engineering and Safety at Work

PHOTO: Department archive

PHOTO: Media center FTS

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Head of the Department
Prof. Dejan Ubavin, Ph.D.

The Department of Environmental Engineering and Safety at Work was established in 1999 in response to the growing need for professional personnel in the field of environmental protection. In 2010, as a result of monitoring permanently the needs of society regarding the education of engineers, the Department expands its activities to the field of safety at work, and in 2012, along with the Department of Energy and Process Engineering, the study program of Clean Energy Technologies has been established. Studies at the Department of Environmental Engineering and Safety at Work at the Faculty of Technical Sciences in Novi Sad are divided into three cycles (undergraduate, master and doctoral).

Studies

FIRST CYCLE STUDIES - undergraduate academic studies last four years (eight semesters) with the possibility of earning 240 ECTS credits (European Credit Transfer System). When enrolling, students are able to choose one of the following study programs:

- Environmental engineering,
- Safety at work engineering,
- Clean energy technologies.

Upon the completion of the third year of study, students of Environmental Engineering choose one of the following fields:

1. Waste management and analysis of material flows,
2. Sustainable water management,

3. Air quality control,
4. Biosystem engineering.

SECOND CYCLE STUDIES - Master´s studies last one year (two semesters), where students earn 60 ECTS credits, that is, a total of 300 ECTS credits. At the Department of Environmental Engineering and Safety at Work, the following Master´s study programs are realized:

- Environmental engineering;
- Safety at work engineering;
- Clean energy technologies;
- Engineering of water treatment and protection - TEMPUS (two-year master studies, where students earn 120 ECTS credits and have the opportunity to obtain a "Double Degree" (degree from two universities), provided that they earn 30 ECTS credits at one of the 3 partner universities in Florence, Skopje or Tirana.

THIRD CYCLE STUDIES - doctoral studies last three years, and upon the completion of doctoral studies, the student earns a total of 480 ECTS credits. Study programs of doctoral studies at the Department are the following:

- Environmental engineering,
- Safety at work engineering.

Organization of the Department

The Department consists of two chairs:

- Chair of Environmental Engineering
- Chair of Biosystem Engineering.

Personnel potential of the Department

Today, the Department of Environmental Engineering and Safety at work has 47 employees. They are structured as follows:

- teachers: 18
- associates: 15
- scientific titles: 1
- researchers: 11
- laboratory assistants: 4
- administrative personnel: 1.

The Department of Environmental Protection and Safety at Work is equipped with four laboratories:

1. Laboratory for monitoring landfills, wastewater and air,
2. Laboratory for biosystem engineering,
3. Laboratory for chemistry,
4. Multifunctional laboratory for designing in the field of environmental protection "Prof. Dr Đorđe Bašić".

Laboratory for monitoring landfills, wastewater and air

The Department owns the accredited Laboratory for monitoring landfills, wastewater and air, which uses modern equipment for monitoring the state of the environment, including:

- Gas chromatograph with mass detector,
- Liquid chromatograph with DAD detector,
- Mobile gas chromatograph,
- Atomic absorption spectrometer,
- UV-Vis spectrophotometer,
- BPK detector,
- Multi parameter device for in situ determination of pH, O_2 and conductivity
- Multigase detector for determining the concentration of CH_4, CO_2, CO, H_2S, O_2 and gas flow measurement
- Reactors and equipment for the determination the energy potential of biogas recovered from biomass and waste.

SCIENTIFIC RESEARCH

Scientific research:

- Waste management and analysis of material flows,
- Monitoring the condition of the environment,
- Renewable energy from agricultural production,
- Biosystem engineering - agricultural engineering,
- Air quality control and improvement,
- Sustainable water management,
- Safety at work.

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT FOR THE PROJECT CYCLE 2011 - 2019:

- Developing new varieties and improving technologies for the production of oleaginous plant species for various purposes, (project manager: Prof. Milan Martinov, Ph.D.), project code TR 31025, 2011-2019;
- Improving and developing hygienic and technological procedures in the production of food products of animal origin in order to obtain quality and safe products which are competitive in the global market, (project manager: Prof. Jelena Radonić, Ph.D.), project code III 46009, 2011-2017;
- Researching and developing high-efficiency energy and environmental systems of polygeneration based on renewable energy sources, (project manager: Prof. Branka Nakomčić Smaragdakis, Ph.D.), project code III 42006, 2011-2017;
- Developing and improving technologies for the energy efficient use of various forms of agricultural and forest biomass in environmental friendly manner, with the possibility of cogeneration, (project manager: Prof. Milan Martinov, Ph.D.), project code III 42011,2011-2019;
- Reduction of air pollution from thermal power plants used by the Electric Power Industry of Serbia, (project manager: Prof. Dejan Ubavin, Ph.D.), project code III 42010, 2011-2017;
- Development and construction of demonstration plant for the combined production of thermal and electric energy with biomass gasification, TR 33049;

- Research and development of energy and environmentally high-efficiency polygeneration systems based on renewable energy sources, III 42006.

Projects funded by the Provincial Secretariat for Higher Education and Scientific Research for the Project Cycle 2016-2019:

- Development of a model for the prioritization of landfills for shutdown and rehabilitation in the AP of Vojvodina based on the environmental risk assessment (project manager: Prof. Dejan Ubavin, Ph.D.);
- Synthesis and application of new nanostructure materials for degradation of organic pollutants from landfill leachate in Vojvodina (project manager: Prof. Dragana Štrbac, Ph.D.);
- Sustainability of energy use of crop residues in the AP of Vojvodina.

International projects

Bilateral project:
- Development and evaluation of a management scenario for biowaste in Serbia taking energy utilization and sustainable phosphorous management in account, Bilateral scientific and technological cooperation between Serbia and Austria, 2016-2017 (project manager: Prof. Nemanja Stanisavljević, Ph.D.);
- Mobilization of corn cobs as an energy source and improvement of heat generators concerning environmental impacts (CoCoEnergy), Bilateral project with the Technical University in Hamburg funded by the Deutsche Bundesstiftung Umwelt (DBU), 2018-2020. (project manager: Prof. Milan Martinov, Ph.D.)

IMPULSE
- The New Cooperation Program for Higher Education - Analysis and design of waste management systems in the traction economies of Central and Eastern Europe (ADECEE) (project manager: Prof. Goran Vujić, Ph.D.);

COST
- Mining the European Anthroposphere (MINEA) - CACOST Action CA15115 (project manager: Ass. Prof. Nemanja Stanisavljević, Ph.D.)
- European network for innovative recovery strategies of rare earth and other critical metals from electrical and electronic waste (ReCreew) - ESEMCOST Action ES1407 (project manager: Ass. Prof. Bojan Batinić, Ph.D.);

CEEPUS
- CIII-SI-0905-02-1516 - Training and research in environmental chemistry and toxicology, (project manager at the FTS: professor emeritus Mirjana Vojinović Miloradov);

ERASMUS
- ICT Networking for Overcoming Technical and Social Barriers in Instrumental Analytical Chemistry Education NETCHEM (project manager at the FTS: professor emeritus Mirjana Vojinović Miloradov);

InterReg Danube Transnational Programme
- Transnational Cooperation to transform knowledge into marketable products and services for the Danubian sustainable society of tomorrow (Made in Danube) (project manager: Prof. Milan Martinov, Ph.D., 2017-2019);
- Transnational Cluster Cooperation active on Agro - food, based on the Smart Specialization Approach in the Danube region (DanubeS3Cluster) (project manager: Ass. Prof. Đorđe Đatkov, Ph.D.);
- Systematic Development of Bio-waste Management in Emerging Economies from a Life Cycle Perspective, Bilateral Scientific and Technological Cooperation between China and Serbia 2018-2019 (project manager: Prof. Nemanja Stanisavljević, Ph.D.)

COST
- CA15129, Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases (DiMoPEx) (project manager: Prof. Jelena Radonić, Ph.D.)

H2020
- Oasis Innovation Hub for Catastrophe and Climate Extremes Risk Assessment (H2020_Insurance) (project manager: Prof. Maja Turk Sekulić, Ph.D.).

Industry support programs

- Development of assessment and evaluation studies of strategic environmental impact;
- Monitoring the state of the environment;
- Regional and local waste management plans;
- Studies aimed at determining the quantities, composition and energy potentials of waste;
- Feasibility studies for the realization of projects in the field of environmental protection;
- Studies and preliminary projects in the field of renewable energy sources;
- Elaboration of project and planning documentation in the field of environmental protection;
- Studies on determining the potential and applicability of renewable energy sources in agriculture and rural areas;
- Professional support for the sustainable development of agriculture.

PHOTO: Department archive

Laboratory of the Department for environmental engineering

Graphic Engineering and Design

PHOTO: Department archive

PHOTO: GRID center

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Head of the Department
Prof. Dragoljub Novaković, Ph.D.

About the Department

The Department of Graphic Engineering and Design exists and advances for almost two decades. The strongest and the most up-to-date educational institutions in the field of graphic arts are situated in Germany. In the first years of its existence, the Department has sought to create conditions for German-type education in the graphic profession and cooperate with German institutions and companies, which are the leaders in the field at global level. We found a common interest in cooperation and they accepted us as a partner. Spatial capacities of the educational institution of graphic profession in Stuttgart itself are comparable to those of the entire FTS, with an enormous number of modern laboratories. One of the institutions that connect enterprises from the graphic industry in Germany is PrintPromotion, which has embraced us and allowed our young assistants to spend up to two months almost every year in research institutes in the German graphics industry. In educational sense, these were precious moments of getting new knowledge for our employees, knowledge that we transferred to our educational process. From the very establishment of the Department to the present day we enjoyed the continuous support of the faculty administration in our developmental efforts and efforts of being connected with other institutions. We managed to acquire a dysfunctional room beneath the faculty amphitheatre that we reconstructed and created a modern laboratory space. We also built a new part consisting of computer classrooms and measuring laboratories. Our cooperation with German companies gradually resulted in new laboratory equipment. We have invested heavily also in developing and purchasing laboratory equipment, so that today we can proudly say that we have the most modern laboratory in Southeast Europe. Consequently, we created conditions for educating students for the profession of graphic

PHOTO: Department archive

engineering and design. Much has been done for a short time of development, but there are many more things to do. We are satisfied with what has been accomplished, but with the implementation of new development plans, the satisfaction will be more complete. The constant and most important focus of the Department's development has been directed towards the quality of education and work with students. This is our utmost focus. Accordingly, in this new accreditation cycle, the number of students enrolled in the first year of study is limited, so that we can have more time to dedicate to each student. Luckily, in each enrolment cycle, we are highly ranked regarding the students' interest in enrolling in this Department, which enables us to have high-quality and valuable students. This commitment has lead to better results in teaching, which, on the other hand lead to higher success among students regarding their obligations. Another important focus has been directed towards the constant improvement of employees working at the Department, particularly through scientific research work, which resulted in a number of projects and papers published, among the others, in journals from the SCI list, given the specific nature of the profession. In order to achieve this goal, we are focused on the procurement of special laboratory equipment where we can conduct research, the results of which will be published in high-ranked scientific journals. An important factor of development is enabling our employees to visit the international centres of graphic profession. Currently, such visits are enabled by the CEEPUS, COST and ERASMUS projects. A constant focus has also been directed towards the international GRID symposium that we have been organizing since 2002. The last, ninth in a row symposium, had a record number of papers and participants from twenty countries. Considering the specific nature of profession, this is a great success. We are focused on the development of our JGED journal, which we established in 2010 in accordance with all international criteria, which establishes us in the world of scientific research, and is indexed in the SCOPUS database. We invest a considerable amount of effort to provide students with stays in high-quality world centres and we have good results in doing this. We are proud to say that we have exceptional young staff that has passed all levels of education in this profession at our Faculty. We also have an exceptional young staff from the field of arts. They reached the level of excellent teachers and scientific workers, and we are proud of them. Our principle is to retain the best individuals at the Faculty, who will be taking the profession further. They are committed to work and advancement, and as a rule of thumb, work and work alone bring results. During their studies, graphic and design engineers gain a lot of broad and high-quality knowledge. After the completion of studies, the acquired knowledge should be constantly improved. This is due to the extremely dynamic changes occurring in the development of technologies that nowadays take place in short intervals. Neglecting development simply will lead to inability to advance and work in the field. The graphics industry is specific in many ways. An international graphic achievement fair has been held

PHOTO: Department archive

every fourth year in Düsseldorf with an impressive number of participants exhibiting their equipment. New technologies are presented there and one can understand that competitiveness is impossible without keeping pace with the development. A large number of engineers who have studied in our study program hold key positions in the graphics industry in a fairly wide range of different activities. They are quick to adjust to the work, which means that they have acquired knowledge that provides them with a number of advantages. We also work in companies in many countries where they have obtained a doctoral degree and achieved success. Today, engineers of this profession are much sought after because we belong to the IT sector, where we achieve good results thanks to the extremely high quality software skills. This gives us a reason to be satisfied, but also obliges to permanently improve and offer new and up-to-date knowledge. This knowledge we offer to the graphic and creative industries through seminars and trainings.

PHOTO: Department archive

Studies

Studies at the Department of Graphic Engineering and Design of the Faculty of Technical Sciences are organized in three cycles. All cycles of academic studies consist of the graphic engineering and design study program.

FIRST CYCLE STUDIES - undergraduate academic studies last four years (eight semesters), and are worth of 240 ECTS credits.

SECOND CYCLE STUDIES - Master´s studies represent the continuation of undergraduate studies and last one year (two semesters), and in the European Credit Transfer and Accumulation System are worth of an additional 60 ECTS credits, which makes a total of 300 ECTS credits.

THIRD CYCLE STUDIES - Doctoral studies are the continuation of Master´s studies and last three years (six semesters), and in the European Credit Transfer and Accumulation System are worth of 180 ECTS credits, which, along with the previous cycles of study is worth a total of 480 ECTS credits.

Organization of the Department

The Department of Graphic Engineering consists of the Chair of Graphic Engineering and Design, Graphics Centre, and the GRID Laboratory. Opting for such type of organization resulted in a good cohesion unity that enables foreseen plans to be implemented successfully.

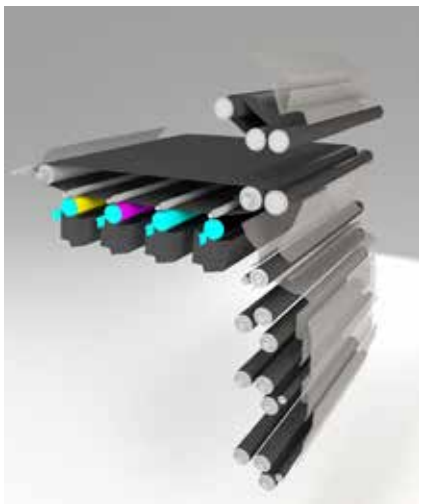
Personnel potential of the Department

Today, the Department of Graphic Engineering and Design has 31 employees of the following structure:
teachers: 17
laboratory assistants: 2
administrative associates: 1
teaching and research associates: 11

Scientific research

Through the Department of Graphic Engineering and Design, a number of projects, scientific and professional projects have been realized. Projects are carried out at the Department in cooperation with the Ministry of Education, Science and Technological Development of the Republic of Serbia and the Provincial Secretariat for Science and Technological Development, as well as through international projects.

PHOTO: Department archive



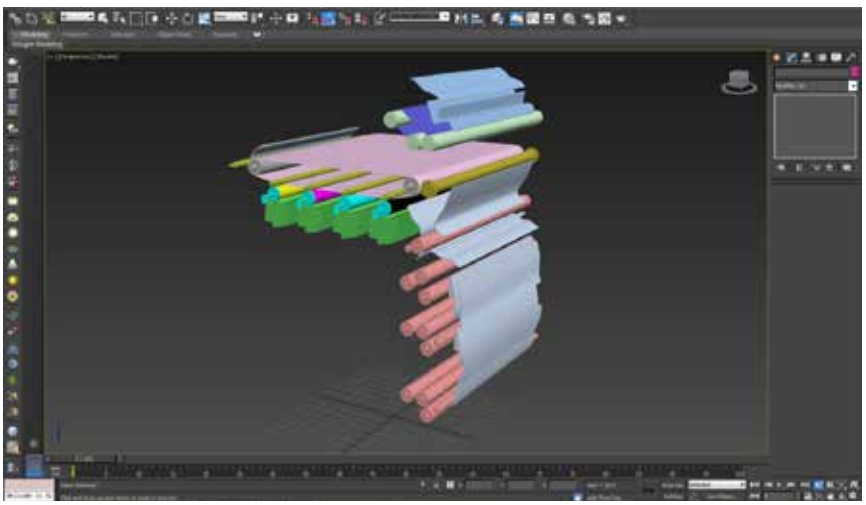


PHOTO: Department archive

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT 2018

- Development of a software model for the improvement of knowledge and production in the graphics industry TR35027,
- Development and innovation of the educational process of the study program of graphic engineering and design at the Faculty of Technical Sciences in Novi Sad.

Projects funded by the European Union:

- Active and intelligent fibre-based packaging - innovation and market introduction (ActInPak) FPS COST Action FP1405,
- Interdisciplinarity in research programming and funding cycles (INTREPID) TD COST Action TD1408,
- Transfer of Engineered Nanomaterials from Wastewater Treatment and Stormwater to Rivers COST Action ES1205,
- Research and Education in the Field of Graphic Engineering and Design CEEPUS, CIII-RS-074-06-1819
- Multidisciplinary Approach to Education and Research in the Field of Digital Media Production CIII-RS-1311-01-1819

Program for industry support

The department is oriented to direct cooperation with the economy through:

- providing consulting service;
- developing expertise;
- providing service in solving technical and technological problems;
- designing studies and development plans;
- designing and selecting modern equipment for the production process;
- developing and selecting modern software;
- providing laboratory service;
- joint research and development projects;
- educational activity through the preparation of personnel, specialization, professional courses, joint publications and professional practice for students of different cycles of studies and other agreed service of common interest.

* * *

For more information on the Department of Graphic Engineering and Design see: www.grid.uns.ac.rs

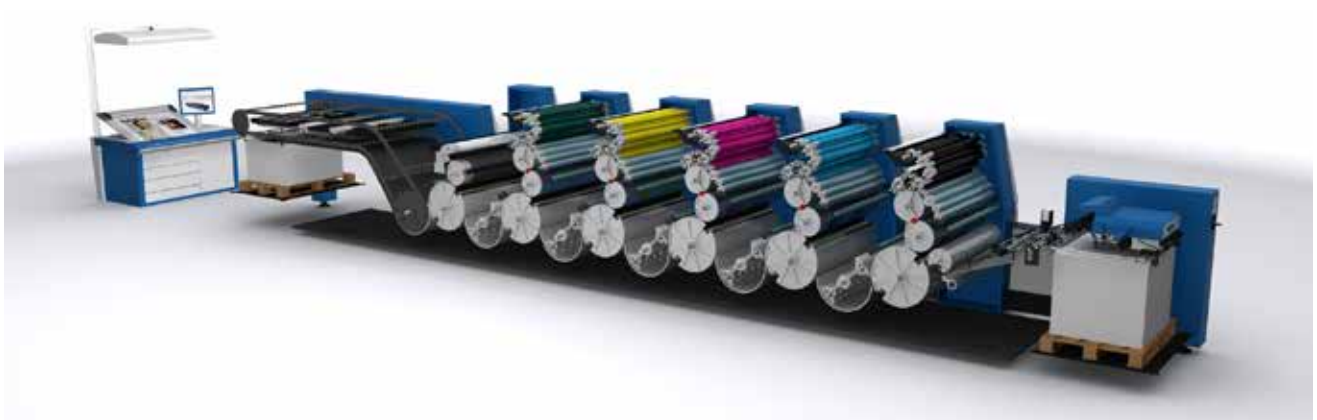


PHOTO: Department archive

Fundamental Disciplines in Engineering

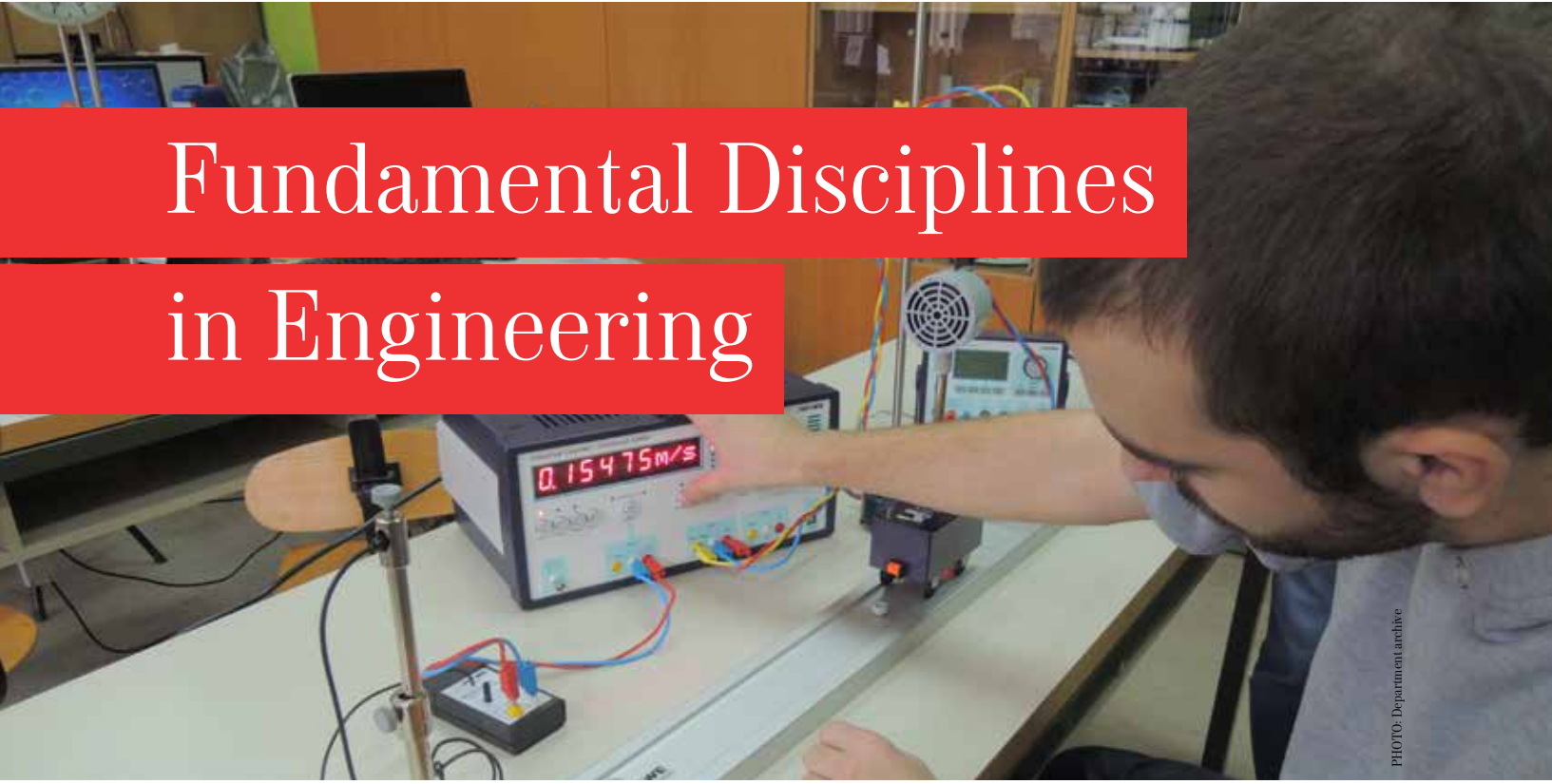


PHOTO: Department archive

PHOTO: Private archive

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E-mail: root@imft.ftn.uns.ac.rs
Web: http://imft.ftn.uns.ac.rs

Head of the Department
Prof. Mila Stojaković, Ph.D.

Organizational structure

The Department of fundamental disciplines in engineering is organized in the following four chairs:

- Chair of mathematics (head of the chair: Prof. Mila Stojaković, Ph.D.);
- Chair of physics (head of the chair: Prof. Uranija Kozmidis-Luburić, Ph.D.);
- Chair of social sciences (head of the chair: Ivana Mirović);
- Chair of animation in engineering (head of the chair: Prof. Ratko Obradović, Ph.D.);
- Laboratory of physics;
- Centre for mathematics and statistics (CMS).

Education

The Department participates in the teaching activity in all chairs in the process of education at undergraduate, master, doctoral, and specialist studies. Most subjects implemented by the Department are delivered in the first and second year of study. The Department also offers the following study programs:

Mathematics in engineering - master and doctoral academic studies;

Animation in engineering - undergraduate, master and doctoral studies;

Scientific research

The Department has a very successful creative work. It has three members within the ranks of the Serbian Academy of Sciences and Arts: academician Mirko Stojaković, who founded the Chair of Mathematics, academician Vojislav Marić, who was later the head of the Chair over a long period of time, and academician Miljko Satarić from the Chair of Physics.

PROJECTS FUNDED BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT 2017

- Physics of amorphous and nanostructured materials OI 171022;
- Mathematical models of non-linearity, uncertainty and decision-making OI 174009;
- Methods of functional and harmonic analysis and PDE with singularities OI 174024;
- New contributions to techniques of cryptology, image processing and algebraic topology for information security OI 174008;
- Numerical linear algebra and discrete structures OI 174019;
- Representations of logical structures and formal languages and their use in computing OI 174026;
- Transformation of Serbian social identity during the crisis and its impact on European integration OI 179052;
- Numerical methods, simulations and application OI 174030;
- Physics and chemistry with ion beams III;
- Development of new information and communication technologies, using advanced mathematical methods with the application in medicine telecommunications III 44006.

PROJECTS FUNDED BY THE EUROPEAN UNION:

- BETTY - Behavioural Types for Reliable Large Scale Software Systems ICT COST Action IC 1104;
- Color and Space in Cultural Heritage (COSCH) MPNS COST Action TD 1201.

International cooperation

International cooperation of the Department takes place through individual cooperation and contacts of its members with scientific institutions outside of Serbia. The most significant is the cooperation with the following institutions:

- University of Toronto, Canada;
- Tokyo Institute of Technology, Japan;
- University of Helsinki, Finland;
- Tel Aviv University, Israel;
- Dublin Trinity College, Ireland;
- Oxford Computer Laboratory, England;
- Dresden Technical University, Germany;
- Berlin Technical University, Germany;
- University of Auckland, New Zealand;
- Nijmegen University, The Netherlands;
- University of Montreal, Canada;
- University of Turin, Italy;
- Technical University, Romania;
- University of Debrecen, Hungary;
- Faculty of Economics in Budapest, Hungary;
- Faculty of Philosophy in Szeged, Hungary.

The Department has organized or co-organized many visits by world-renowned mathematicians, including:

- Prof. H.J. Zimmermann, University of Aachen;
- Prof. S.Todorčević, University of Paris;
- Prof. R. Mesiar, Slovakian Technical University;
- Prof. J. Miller, Trinity College, Dublin;
- Prof. H. G. Roos, Technical University of Dresden;
- Prof. B. de Baets, University of Ghent, Belgium;
- Prof. H. P. Barendregt, University of Neimengen, member of the Royal Netherlands Academy of Sciences.

Special emphasis is given to the successful cooperation of the Department with other departments of the Faculty of Technical Sciences, as well with Faculty of Sciences in Novi Sad, Institute of Mathematics of the Serbian Academy of Sciences and Arts in Belgrade, and Faculty of Philosophy in Novi Sad. This long–standing cooperation has resulted in numerous projects in the areas of theoretical and applied mathematics, physics and social sciences and several hundred publications in eminent international scientific journals.

Results of scientific research have been presented at numerous international scientific conferences in the form of plenaries and presentations.

In the laboratory of the Centre for Mathematics and Statistics, equipped with 16 computers, serious mathematical and statistical tests were carried out using the latest software packages. Results of these studies were published in renowned professional journals.

Cooperation with the economy

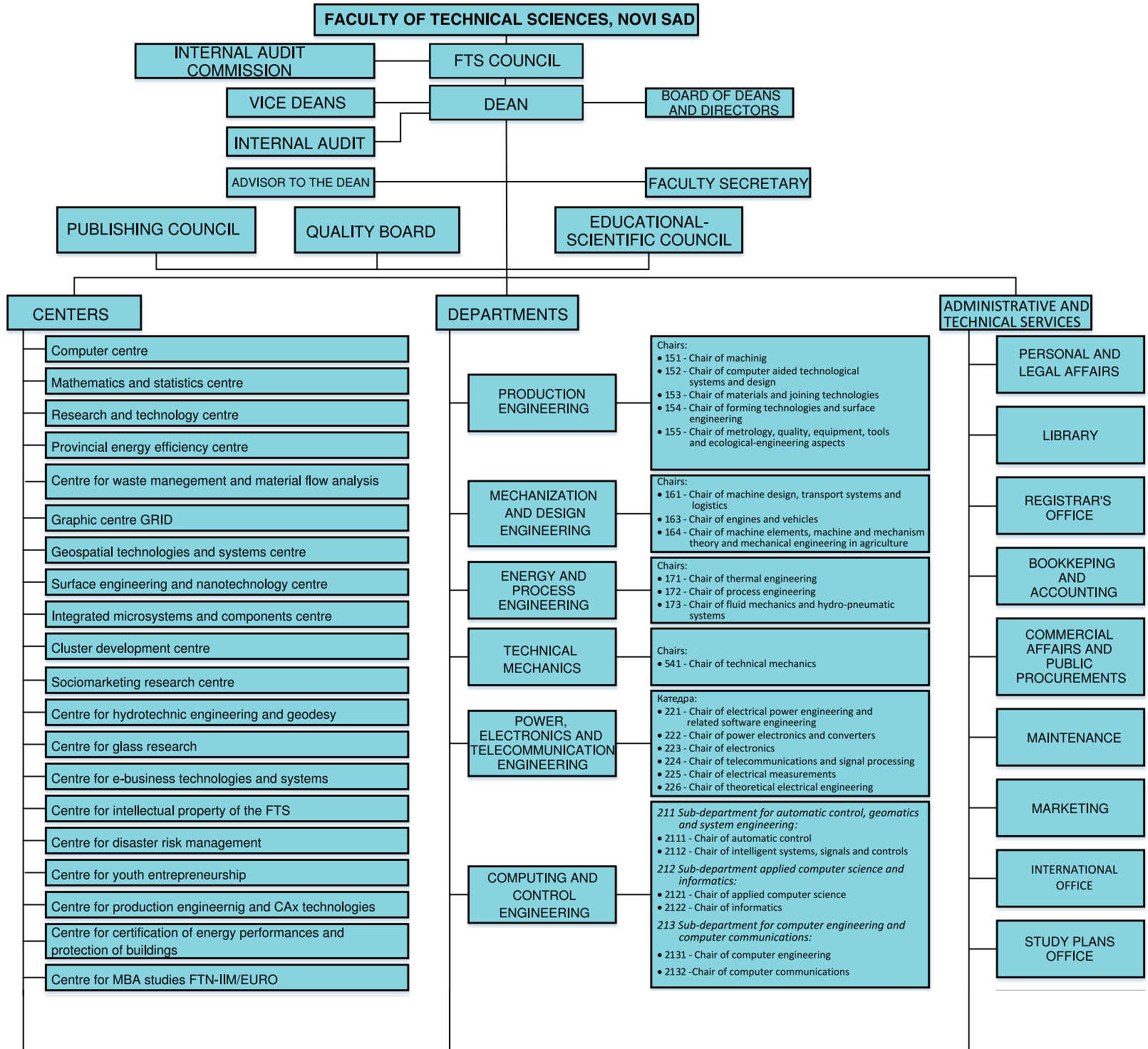
Cooperation with the economy has been realized through the Centre for mathematics and statistics, which provides service in the fields of education, programming, statistical data processing and application of mathematical models in various fields of practice.

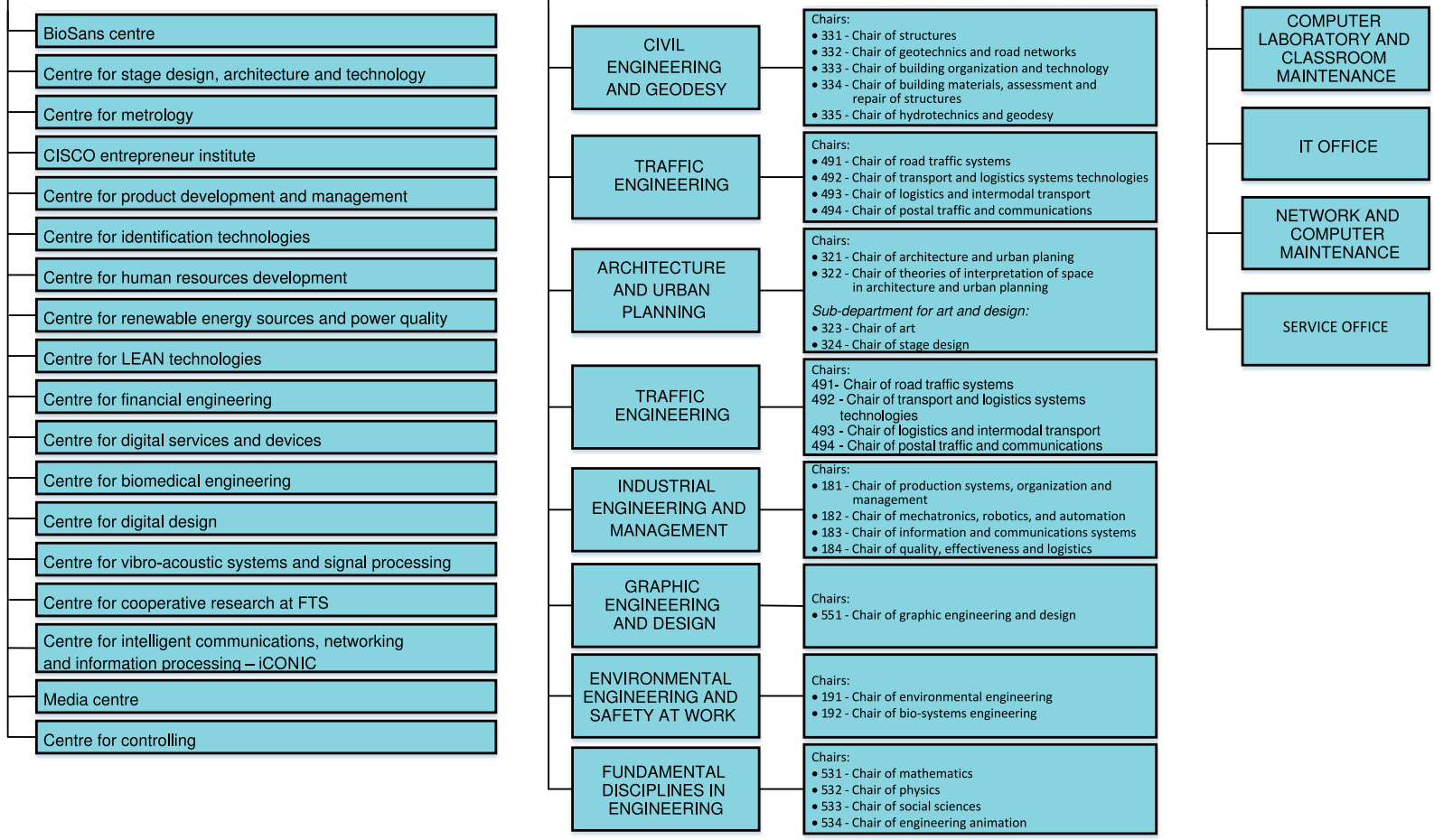
Publishing and research presentation

Publishing activity and research presentation of the Department is related to extremely rich teaching and scientific activity. Members of the Department are authors of more than a hundred of textbooks and scientific monographs.

Organizational Structure

PHOTO: Media center


FACULTY OF TECHNICAL SCIENCES, NOVI SAD
INTERNAL AUDIT COMMISSION
FTS COUNCIL
VICE DEANS
DEAN
BOARD OF DEANS AND DIRECTORS
INTERNAL AUDIT
ADVISOR TO THE DEAN
FACULTY SECRETARY
PUBLISHING COUNCIL
QUALITY BOARD
EDUCATIONAL-SCIENTIFIC COUNCIL
CENTERS
Computer centre
Mathematics and statistics centre
Research and technology centre
Provincial energy efficiency centre
Centre for waste manegement and material flow analysis
Graphic centre GRID
Geospatial technologies and systems centre
Surface engineering and nanotechnology centre
Integrated microsystems and components centre
Cluster development centre
Sociomarketing research centre
Centre for hydrotechnic engineering and geodesy
Centre for glass research
Centre for e-business technologies and systems
Centre for intellectual property of the FTS
Centre for disaster risk management
Centre for youth entrepreneurship
Centre for production engineernig and CAx technologies
Centre for certification of energy performances and protection of buildings
Centre for MBA studies FTN-IIM/EURO
DEPARTMENTS
PRODUCTION ENGINEERING
Chairs:
• 151 - Chair of machinig
• 152 - Chair of computer aided technological systems and design
• 153 - Chair of materials and joining technologies
• 154 - Chair of forming technologies and surface engineering
• 155 - Chair of metrology, quality, equipment, tools and ecological-engineering aspects
MECHANIZATION AND DESIGN ENGINEERING
Chairs:
• 161 - Chair of machine design, transport systems and logistics
• 163 - Chair of engines and vehicles
• 164 - Chair of machine elements, machine and mechanism theory and mechanical engineering in agriculture
ENERGY AND PROCESS ENGINEERING
Chairs:
• 171 - Chair of thermal engineering
• 172 - Chair of process engineering
• 173 - Chair of fluid mechanics and hydro-pneumatic systems
TECHNICAL MECHANICS
Chairs:
• 541 - Chair of technical mechanics
POWER, ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Катедра:
• 221 - Chair of electrical power engineering and related software engineering
• 222 - Chair of power electronics and converters
• 223 - Chair of electronics
• 224 - Chair of telecommunications and signal processing
• 225 - Chair of electrical measurements
• 226 - Chair of theoretical electrical engineering
COMPUTING AND CONTROL ENGINEERING
211 Sub-department for automatic control, geomatics and system engineering:
• 2111 - Chair of automatic control
• 2112 - Chair of intelligent systems, signals and controls
212 Sub-department applied computer science and informatics:
• 2121 - Chair of applied computer science
• 2122 - Chair of informatics
213 Sub-department for computer engineering and computer communications:
• 2131 - Chair of computer engineering
• 2132 -Chair of computer communications
ADMINISTRATIVE AND TECHNICAL SERVICES
PERSONAL AND LEGAL AFFAIRS
LIBRARY
REGISTRAR'S OFFICE
BOOKKEPING AND ACCOUNTING
COMMERCIAL AFFAIRS AND PUBLIC PROCUREMENTS
MAINTENANCE
MARKETING
INTERNATIONAL OFFICE
STUDY PLANS OFFICE


BioSans centre
Centre for stage design, architecture and technology
Centre for metrology
CISCO entrepreneur institute
Centre for product development and management
Centre for identification technologies
Centre for human resources development
Centre for renewable energy sources and power quality
Centre for LEAN technologies
Centre for financial engineering
Centre for digital services and devices
Centre for biomedical engineering
Centre for digital design
Centre for vibro-acoustic systems and signal processing
Centre for cooperative research at FTS
Centre for intelligent communications, networking and information processing – iCONIC
Media centre
Centre for controlling
CIVIL ENGINEERING AND GEODESY
Chairs:
• 331 - Chair of structures
• 332 - Chair of geotechnics and road networks
• 333 - Chair of building organization and technology
• 334 - Chair of building materials, assessment and repair of structures
• 335 - Chair of hydrotechnics and geodesy
TRAFFIC ENGINEERING
Chairs:
• 491 - Chair of road traffic systems
• 492 - Chair of transport and logistics systems technologies
• 493 - Chair of logistics and intermodal transport
• 494 - Chair of postal traffic and communications
ARCHITECTURE AND URBAN PLANNING
Chairs:
• 321 - Chair of architecture and urban planing
• 322 - Chair of theories of interpretation of space in architecture and urban planning
Sub-department for art and design:
• 323 - Chair of art
• 324 - Chair of stage design
TRAFFIC ENGINEERING
Chairs:
491- Chair of road traffic systems
492 - Chair of transport and logistics systems technologies
493 - Chair of logistics and intermodal transport
494 - Chair of postal traffic and communications
INDUSTRIAL ENGINEERING AND MANAGEMENT
Chairs:
• 181 - Chair of production systems, organization and management
• 182 - Chair of mechatronics, robotics, and automation
• 183 - Chair of information and communications systems
• 184 - Chair of quality, effectiveness and logistics
GRAPHIC ENGINEERING AND DESIGN
Chairs:
• 551 - Chair of graphic engineering and design
ENVIRONMENTAL ENGINEERING AND SAFETY AT WORK
Chairs:
• 191 - Chair of environmental engineering
• 192 - Chair of bio-systems engineering
FUNDAMENTAL DISCIPLINES IN ENGINEERING
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• 531 - Chair of mathematics
• 532 - Chair of physics
• 533 - Chair of social sciences
• 534 - Chair of engineering animation
COMPUTER LABORATORY AND CLASSROOM MAINTENANCE
IT OFFICE
NETWORK AND COMPUTER MAINTENANCE
SERVICE OFFICE