

University of Novi Sad



Faculty
of Technical
Sciences







University of Novi Sad



Faculty of
Technical
Sciences

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TECHNICAL DESIGN:

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Tijana Pokrajac

Bojana Bokan

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Novi Sad	5
University of Novi Sad	6
Faculty of Technical Sciences in Novi Sad	7
Activities	10
Educational activity	11
Academic studies	12
Professional studies	13
Research activity	14
Applied research	15
Computing center	16
Conferences	17
Personnel structure	18
International cooperation	19
The library at the Faculty of Technical Sciences	20
Publishing activities	21
Registrar's Office	22
Students' Web Service	23
Student Vice Dean / Student Parliament	24
Students' activities	25
Marketing Office at the Faculty of Technical Sciences	29
International Cooperation Office of the Faculty of Technical Sciences	30
Faculty of Technical Sciences Website	31
Departments	32
Production Engineering	33
Mechanization and Design Engineering	37
Energy and Process Engineering	40
Technical Mechanics	43
Power, Electronic and Telecommunication Engineering	45
Computing and Control Engineering	54
Civil Engineering and Geodesy	58
Traffic Engineering	62
Architecture and Urban Planning	64
Industrial Engineering and Management	66
Graphic Engineering and Design	70
Environmental Engineering and Safety at Work	72
Fundamental Disciplines in Engineering	75
Organizational Structure of the Faculty	77

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 in 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 especially important institution.



University 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 founded on 28th June 1960 and it is 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, 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-research workers, the central student restaurant, Centre for Physical Culture with different sport fields, university student organizations and other scientific, technical, informational, cultural and sports organizations. 40,000 students are studying at the University and thus, it employs more than 3,000 teachers, associates and technical staff. Faculty of Technical Sciences is the largest faculty of the University of Novi Sad.



Faculty of Technical Sciences

in Novi Sad



Background

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 was regarded as a part of 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. Establishment of the Department of Electrical Engineering as well as the Department of Civil Engineering brought about the change of its name into the Faculty of Technical Sciences on 22nd April 1974. In 1979/80 academic year started the studies in the area of traffic engineering, and in 1996/97 the first generation of students of architectural engineering was enrolled. In academic year 1999/2000 several different studies for the new professional profile were introduced: Industrial Engineering

and Engineering Management (the first generation of students of Industrial Engineering was enrolled in 1969, but within the Department of Mechanical Engineering), Graphic Engineering and Design, and Environmental Engineering. Study programme for Postal Services and Telecommunications were introduced at the Department for Traffic Engineering in 1999/2000. Interdisciplinary studies of Mechatronics were established in 2002/03 academic year. In 2006/07 academic year the first generation of students of 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 2007/08 academic year. 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 2011/2012 academic year 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 Indija; the same study programme was also introduced at the Faculty Department in

Loznica in 2012/2013 academic year. In 2013/2014 academic year the following study programmes will be established: Biomedical Engineering, Measurement and Control, Clean Energy Technologies, Stage Architecture, Engineering and Design, Electric Power 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.

Master studies are organized at all study programmes after finishing undergraduate academic studies as well as at study programmes: Mathematics in Engineering; Energy Management; Logistic Engineering, Digital Technology, Design and Production of Architecture and Urban Planning, Industrial Engineering - Advanced Engineering Technology, 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 of 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 offices, etc. for appropriate scientific fields and laboratories.





Chairman of the Faculty of Technical
Sciences Council:
Prof. Branislav Borovac, Ph.D.



Dean of the Faculty
of Technical Sciences:
Prof. Rade Doroslovački, Ph.D.



Dean's Adviser
Prof. Ilija Kovačević, Ph.D.



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Vice Dean for Investments and
Cooperation with Industry:
Prof. Srđan Kolaković, Ph.D.



Vice Dean for Finances
and Development:
Prof. Vladimir Katić, Ph.D.



Student Vice Dean:
Igor Graić



Secretary:
Ivan Nešković, B.Sc.

Activities



Faculty of Technical Sciences provides higher education in five areas namely: technical sciences and engineering, mathematics and natural sciences, arts and humanities as well as medical sciences in the following fields: Mechanical Engineering (Production Engineering, Machinery and Construction Engineering, Energy and Process Technology, Technical Mechanics and Design in Engineering); Electrical and Computer Engineering (Power, Electronic and Telecommunication Engineering, Computing and Control Engineering, Electric Power Software Engineering, Measurement and Control, Software Engineering and Information Technology, 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 Engineering); Interdisciplinary studies such as Mechatronics, Applied Mathematics (Mathematics in Engineering), Graphic Engineering and Design, Logistic Engineering (Logistic Engineering and Management), Regional Policy and Development (Planning and Management of Regional Development), Biomedical Engineering, Stage Architecture, Engineering and Design, Treatment and Water Protection (Treatment and Water Protection Engineering), Energy Technologies (Clean Energy Technologies), Computer Graphic (Animation in Engineering); Energy Efficiency in Civil Engineering.

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

Educational activity



Since 2005/2006 academic year, educational activities are carried out through the new structure of study programmes and modules organized on 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:

- **Undergraduate academic studies (First cycle studies)** – last for four years (worth at least 240 ECTS) and after graduation a candidate is awarded a Bachelor 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 in engineering or Master degree in Arts in 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 year (worth 90 ECTS). A candidate is awarded a specialist degree in engineering in 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 in engineering in 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 Bachelor degree in applied engineering in particular field of studies.
- **Specialist professional studies (Second cycle studies)** - last for one or two years and are worth 60 – 120 ECTS; a candidate is awarded a degree in applied engineering in particular field of studies – Specialist.
- **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.

Academic Studies

(Undergraduate – UAS, Graduate – GAS, Specialist – SAS, Doctoral – DAS)

The Faculty received new accreditation decision to organize courses taught in English at academic study programmes (undergraduate, master and doctoral studies).

The studies are organized in the following fields of science:

MECHANICAL ENGINEERING

- **Production Engineering** (UAS, GAS);
- **Mechanization and Construction Engineering** (UAS, GAS);
- **Power Engineering and Process Technique** (UAS, GAS);
- **Technical Mechanics and Design** (UAS, GAS);
- **Mechanical Engineering** (DAS)

ELECTRICAL AND COMPUTER ENGINEERING

- **Power, Electronic and Telecommunication Engineering** (UAS, GAS, DAS);
- **Power Software Engineering** (UAS, GAS);
- **Measurement and Control** (UAS, GAS);
- **Computing and Control Engineering** (UAS, GAS, DAS);
- **Software Engineering and Information Technology** (Novi Sad (UAS, GAS), and Department in Loznica (UAS))

CIVIL ENGINEERING

- **Civil Engineering** (UAS, GAS).

TRAFFIC ENGINEERING

- **Traffic and Transport Engineering** (UAS, GAS);
- **Postal Traffic and Telecommunications** (UAS, GAS);
- **Traffic Engineering** (DAS)

ARCHITECTURE

- **Architecture and Urbanism** (UAS, GAS, SAS, DAS);
- **Digital Technology, Design and Production in Architecture and Urban Planning** (GAS)

INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT

- **Industrial Engineering** (UAS, GAS, SAS)
- **Industrial Engineering – Advanced Engineering Technologies** (GAS);
- **Industrial Engineering – Development and Lifecycle Management** (GAS);
- **Engineering Management** (UAS, GAS, SAS);
- **Energy Management** (GAS);
- **Industrial Engineering/Engineering Management** (DAS)

ENVIRONMENTAL ENGINEERING AND SAFETY AT WORK

- **Environmental Engineering** (UAS, GAS, SAS, DAS);
- **Safety at Work** (UAS, GAS, DAS);
- **Environmental Engineering of Catastrophic Events and Fire** (Risk and Fire Protection Management) (UAS, GAS)

GEODESY

- **Geodesy and Geomatics Engineering** (UAS, GAS, SAS, DAS)

INTERDISCIPLINARY FIELDS OF STUDY

- **Graphic Engineering and Design** (UAS, GAS, DAS);
- **Mechatronics** (UAS, GAS, DAS);
- **Applied Mathematics** (Mathematics in Engineering) (GAS, DAS);
- **Logistic Engineering** (Logistic Engineering and Management) (GAS);
- **Urban Planning and Regional Development** (Planning and Management of Regional Development) (GAS);
- **Computer Graphic** (Animation in Engineering) (UAS, GAS, DAS);
- **Energy Efficiency in Civil Engineering** (SAS);
- **Biomedical Engineering** (UAS, GAS);
- **Stage Architecture, Engineering and Design** (UAS);
- **Stage Design** (Stage Architecture and Design) (GAS);
- **Stage Design** (DAS);
- **Engineering Mechanics** (DAS);
- **Treatment and Water Protection** (Treatment and Water Protection Engineering) (GAS);
- **Energy Technologies** (Clean Energy Technologies) (UAS, GAS)

Professional Studies

(Undergraduate – UPS, specialist – SPS)

- **Power Engineering – Renewable Energy Resources (UPS)**
- **Electronics and Telecommunications (UPS)**
- **Software and Information Technologies (Department in Indija) (UPS)**
- **Power, Electronic and Telecommunication Engineering (SPS)**
- **Engineering Management (SPS)**
- **Engineering Management – MBA (International practice oriented master's studies) (SPS)**

From its establishment until 1st January 2013, 15,283 students obtained the Bachelor and Master degree in engineering at the Faculty of Technical Sciences. Thus, 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, in the field of Architecture 395, in the field of Industrial Engineering and Management 320, in the field of Graphic Engineering and Design 88 and in the field of Environmental Engineering 23 students. Graduate academic studies - Master has so far completed 5,582 candidates; in the field of Mechanical Engineering 332, in the field of Electrical and Computer Engineering 1,369, in the field of Civil Engineering 356, in the field of Traffic Engineering 576, in the field of Architecture 641, in the field of Industrial Engineering and Management 1,424, in the field of Graphic Engineering and Design 347, in the field of Environmental Engineering 329, in the field of Mechatronics 107, in the field of Mathematics in Engineering 15 and in the field of Geodesy and Geomatics 86 candidates.

At the Faculty of Technical Sciences Master Degree in Engineering obtained 851 candidates: in the field of Mechanical Engineering 272, in the field of Electrical and Computer Engineering 279, in the field of Civil Engineering 41, in the field of Architecture 21, in the field of Traffic Engineering 46, in the field of Industrial Engineering and Management 140, in the field of Environmental Engineering 39, in the field of Graphic Engineering and Design 7, and in Mathematics in Engineering 6 candidates.

At the Faculty of Technical Sciences PhD in Engineering obtained 453 candidates: in the field of Mechanical Engineering 130, in the field of Electrical and Computer Engineering 150, in Civil Engineering 29, in Traffic Engineering 24, in the field of Architecture 12, in the field of Industrial Engineering and Management 87, in the field of Environmental Engineering 16, while in the field of Graphic Engineering and Design 5 doctoral degrees are obtained.

According to the Law on Higher Education and the Decision of the Educational and Scientific Council of the Faculty on 28/05/2003 335 engineers obtained the diploma of the first cycle studies (sixth level of education) and 252 candidates received the Diploma of a Specialist in Engineering in a particular field of science.

So far 3,291 students have obtained undergraduate academic degrees.

The Faculty was the first in this region to issue Diploma Supplement, before signing Bologna Declaration. Since 2004 it has started issuing Diploma Supplement to students in Serbian and English, which has greatly facilitated mobility and employment of our students in Europe and worldwide. Diploma Supplement is a document that is merged with the Diploma of Higher Education, also published in Serbian and English, and was made to offer a description of the nature, level, context, content and status of studies that was attended and successfully completed by the student named in the original diploma, which this supplement incorporated.

Based on the recommendations of the University (initiated by the FTS), the Rules on completion of the studies and acquisition of a title by the Law on Higher Education was adopted. Students are allowed 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, the student wins a total of 300 ECTS credits. So far, 3,703 candidates completed their studies and 56 enrolled doctoral studies which began in 2006/07 academic year. In 2012/13 the sixth generation enrolled the studies, so up to now 751 students entered doctoral studies.

Faculty of Technical Sciences was the first faculty in Serbia to enable students who completed the study according to the Law on University to replace their degree with "new" Master's degree according to the Law on Higher Education. So far, around 1,000 diplomas have been substituted at the Faculty.

On 23rd May 2008 Faculty of Technical Sciences received the Decision on the accreditation of the Faculty as a higher education institution. On 23rd December 2011 the Faculty accredited higher education unit (Department) in Indija, and in 2012 the department in Loznica as well. Until now, 73 study programmes for academic and professional studies have been accredited. Study programme of undergraduate professional studies of Software and Information Technologies has been accredited at the Departments in Indija and Loznica.



Research Activity

Research activities at the Faculty of Technical Sciences are oriented primarily to the realization of research projects funded by the Ministry of Science and Technology of the Republic of Serbia and the Provincial Department of Science and Technology. The Faculty participates in several European research projects (FP7, Eureka!, Cost, etc.). These are projects or sub-projects 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. In 2011 the Faculty received the Decision on the re-accreditation.

Faculty scientific and research activities are carried out in modern laboratories and computer centre. Teachers and staff annually 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:

- Production Engineering
- International Journal of Industrial Engineering and Management (IJIEM);
- Journal for Technology of Plasticity;
- Faculty of Technical Sciences Proceedings
- FTN Newspaper
- The Faculty is a co-publisher of the following journals:
- Technics,
- Computer Science and Information Systems.

Applied research

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

- defining the needs of the economy for professional profiles - directions of individual vocations that are taught at the Faculty;
- coordination and direction of scientific and research work of the Faculty in accordance with a long-term economy and development programmes;
- increase of efficiency of applied research of the Faculty in solving current problems of economy.

Faculty of Technical Sciences 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 and hydro;
- saving energy, rational use and quality of electricity;
- revitalization of existing technologies and technological systems;
- environmental protection;
- analysis of safety;
- diagnostics, expertise and maintenance;
- urban design;
- projects of traffic and transport systems;
- projects of energy, electronics and telecommunications;
- projects of disaster risk management;
- geo-information 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.



Computing center



Centre for Computer Science at Faculty of Technical Sciences in Novi Sad was established in order to provide support to the process of modernization of education activity and research work. The centre is located on the third floor of the teaching block in the Faculty building. It comprises seven laboratories:

- L1** - General purpose computer laboratory (32 posts)
- L2** - Computer laboratory for design and computer graphics (16 posts)
- L3** - Special purpose computer laboratory (21 posts)
- L4** - Computer laboratory for construction and computer graphics (16 posts)
- L5** - Computer laboratory for design and computer graphics (21 posts)
- L6** - Multimedia laboratory (16 posts)
- L7** - Internet Laboratory (16 posts).

Other computer laboratories

In addition to the computer centre there is another 18 computer laboratories equipped to perform computer - laboratory exercises. They provide 12 to 32 posts.

Since 2008/09 academic year a computer classroom with 16 posts, which is not used in regular teaching process, is available to students 24 hours.

Faculty of Technical Sciences has 79 state-of-the-art equipped laboratories that are designed for:

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

Conferences



The Faculty, i.e. 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 2011);
 - MMA – Flexible Technology with International Participation, Novi Sad (every three years since 1976, last conference held in 2012);
 - Conference on Production Engineering of Yugoslavia and Serbia (1971, 1992, 2008, 2010, 2012);
 - International Symposium in Interdisciplinary Regional Research; Hungary, Romania, Serbia – Novi Sad (1998, 2002, 2005, 2007);
 - International Symposium in Power Electronics – Ee, Novi Sad (1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011);
 - 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).
 - INDIS – Industrial Building: Planning, Design and Building, Novi Sad (every three years since 1976, last conference held in 2012). 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 2012);
 - International Conference “Energy and Environment”, Novi Sad (2003, 2006, 2009);
 - Conference DOGS (Digital Processing of Speech and Images), Palic (2008, 2010, 2012);
 - PSU-UNS International Conference “Energy and Environmental Protection”, Hat Yai, Songkla, Thailand (2003, 2007, 2011), Novi Sad (2005, 2009, 2013);
 - Construction, Modelling and Design – KOD, Palic (2006), Novi Sad (2008), Balatonfüred, Hungary (2012);
 - GRID – Graphic Engineering and Design, Novi Sad (2002, 2004, 2006, 2008, 2010, 2012);
 - International Students’ Competition in Hardware and Software (H&S), Novi Sad (2005, 2007, 2009), Banja Luka (2006, 2008, 2010, 2011, 2012)
- There are also around fifteen other international and domestic conferences every year.



Personnel structure

In the first academic year 1960/61, the Faculty started working with seven (two full-time and 5 part-time) teachers and 17 assistants, organized in 11 Chairs.

Nowadays, by the end of 2013, the overall number of 1100 employees was employed at the Faculty of Technical Sciences.

Teachers

At the Faculty of Technical Sciences, there are 378 people employed in the lecturing process (105 full professors, 76 associate professors, 166 assistant professors, 3 senior lecturers, and 28 lecturers).

Assistants

1. Lecturing assistants

At the Faculty of Technical Sciences, there are 299 employed assistants (259 assistants with M.Sc. and 40 lecturing assistants).

2. Research assistant and project assistants

At the Faculty of Technical Sciences, there are 176 employed assistants in researching and non-lecturing processes (2 scientific assistants, 55 researchers – assistants, 58 researchers – junior assistants, and 61 project assistants).

Non-lecturing staff

At the Faculty of Technical Sciences, there are 250 employees working as non-lecturing staff.



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 give lectures at many 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 50 realized international projects. During the last several years, large international projects have started to be realized from the programmes TEMPUS (EU), CEEPUS (EU), WUS (Austria), CARDS (EU), FP7 (EU), EU-REKA! and 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, and IIM Euro – International Graduate School for Industrial Engineering and Management.

On the basis of bilateral agreements, the Faculty of Technical Sciences has the cooperation with the following: Technical

University (TU) Budapest, TU Kosice, Polytechnic School Timisoara, TU Bratislava, TU Prague, TU Salonica, 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, University of Manchester, University of Porto, 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, etc.

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.

The Library at the Faculty of Technical Sciences



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. 45,000 books, half of which are issued by foreign publishers. There are approximately 1,445 periodical issues. The library stores 9,362 graduation theses, 5,366 Master's theses, 2,983 Bachelor theses, 227 Specialization theses, 926 MSc theses and 575 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.

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, Engineering Village, ProQuest, American Psychological Association, Science Direct, Springer-Link, HeinOnline, Wiley Interscience, Asge, Jstor, High Wire-Press, Cambridge University Press, Oxford Journal, Emerald, Teal, American Chemical Society, Institute of Physics, IEEE Computer, American Physics Society.

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



The 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 "Naucna 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". Edition editors were Faculty deans: prof. Dušan Petrovački, PhD, until 1998, prof. Ilija Ćosić, PhD from 1998 to 2012, and from 2012 the editor-in-chief is prof. Rade Doroslovački, PhD. Until now, 390 textbooks have been published in the edition "Technical Sciences – Textbooks", and 52 monographs have been published in the edition "Technical Sciences – Monographs".

Registrar's Office



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 it introduced Students' Web Service.



Students' Web Service



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.

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.

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



Student Vice Dean

Student Parliament



Student Vice Dean

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 re-established 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 they represent students' views, present and handle problems, contribute 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 34 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, Traffic Engineering 4, Architecture 3, Industrial Engineering and Engineering Management 5, Graphic Engineering and Design 3, Environmental Engineering and Work Safety Engineering 2, Mechatronics 1, and one representative from Faculty units in each Indjija and Loznica.

Students' activities



At the Faculty of Technical Sciences, students build friendships to 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”: “Mašiniijada” (for students of Mechanical Engineering), “Elektrijada” (for students of Electrical Engineering), “Saobraćijada” (for students of Traffic Engineering), “Građeviniijada” (for students of Civil Engineering), “Menadžerijada” (for students of Management Engineering), “Zaštitiijada” (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 2004 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 (SSFTN);
- Student Union of FTS (SUFTN);
- Student Association of FTS;
- IAESTE;
- EESTEC LC, Novi Sad;
- IEEE – Student Branch, Novi Sad;
- ESTIEM.



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

EESTEC LC is the abbreviation for 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 contracting 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 62 universities within 21 European states. Since 2003, there is a local group at the Faculty of Technical Sciences as well. ESTIEM offers activities on European level including several competitions: TIMES - the topics of competitions comprise engineering and management, VISION PROJECT - series of seminars all over Europe organized by local groups, ESTIEM MAGAZIN, Summer School, etc.



Students of the Faculty of Technical Sciences have all conditions for a comfortable studying: copy shop, bookstore, bookbinder, “FTN Club Mašinac” and at the Faculty there are also a post office and canteen “Mašinac”



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.

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 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.

Their location is in the room No. 4; ground floor at the Faculty of Law, Trg Dositeja Obradovića 1; workdays from 10 a.m. to 1 p.m.; phone and fax (021) 6350-377, ext. 374 or e-mail nsusi@uns.ac.rs.

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 can enter the competition for the 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.

FTN Newspaper

Following the tradition of student newspaper "Mašinar" that was first presented to freshmen in 1971, professors from the Faculty of Technical Sciences decided to publish "FTN newspaper." This newspaper, supposed to be an informative monthly magazine about the events at the Faculty, is mostly read by students and employees. "FTN newspaper" as the magazine belonging to all students of the Faculty of Technical Sciences can be found either in paper version at the hall desks or in electronic version on the website of the Faculty.



Marketing Office at the Faculty of Technical Sciences

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 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 marketing activities have the objective to strengthen institutional image and improve the brand position.

Apart from the activities related to the enrolment of new students (the creation of the enrolment campaign, the preparation of printed and electronic promotional material, preparation and realization of promotions in high schools, online communication with potential students through social networks Facebook and Tweeter, advertisement throughout the year, preparation and support during the enrolment period, result analysis and process improvement), marketing office also carries out maintenance of the enrolment related website and organizes different events: engineer promotions, professional conferences, seminars and events, from the organization of fair exhibitions to the partici-

pation in organizing large events, such as "Researchers' Night", which gathered 25,000 visitors last year.

The marketing office at FTS is the laureate of the award for the best marketing approach in the field of nonprofit institutions in Serbia for 2004.





International Cooperation

Office of the Faculty

of Technical Sciences

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 staff 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 inter-

national 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 staff in mobility programmes.

Faculty of Technical

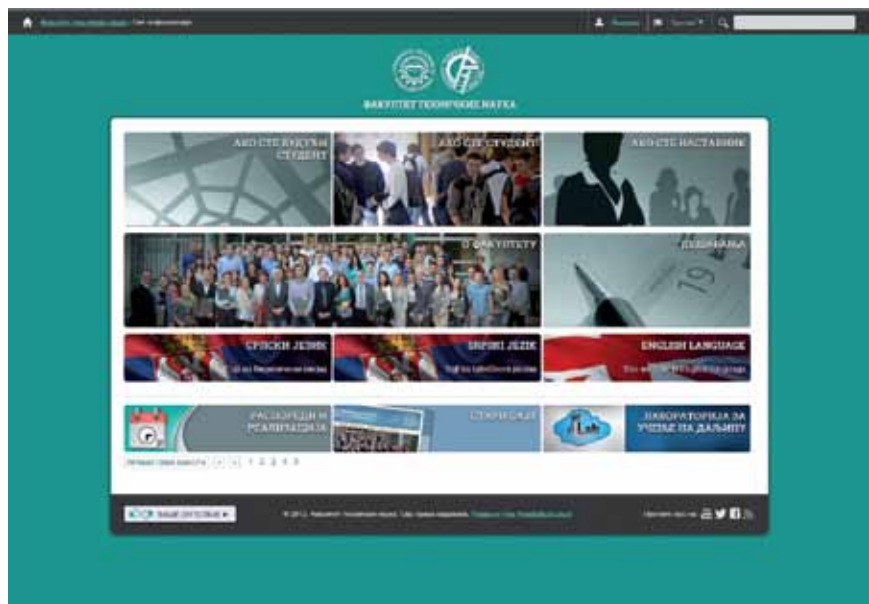
Sciences Website

(www.ftn.uns.ac.rs)



The internet presentation of the Faculty of Technical Sciences daily satisfies complex and contemporary demands of students and teachers. This site provides information on the entrance examination and its results, information on the studies, information for future students and freshmen, curricula and syllabuses, schedule of lectures, written examinations, news, schedule of examinations, student activities, etc. Special popularity

is attributed to the webmail enabling students to check their e-mail from anywhere in the world. Likewise, we have enabled our students to have online examination application, examination results verification, and other services. More can be found at the Faculty website. Some departments have separate websites with further information about their activities and lectures; www.ftn.uns.ac.rs/linkovi

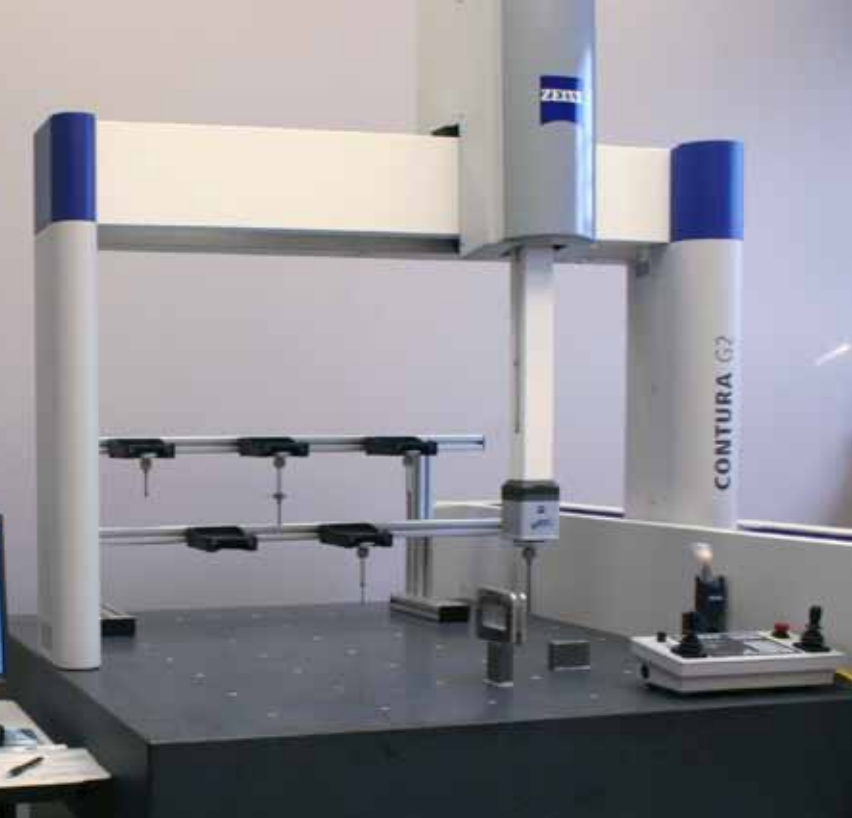


Faculty of Technical Sciences

Departments



Production Engineering



Phone: +38121 485 2320, +38121 450 366

Fax: +38121 454 495

E-mail: ipm@uns.ac.rs

Web: <http://www.dpm.ftn.uns.ac.rs>

Head of Department:
Prof. Miodrag Hadžistević, Ph.D.

About the Department

At the Department of Production Engineering 1274 students have graduated, where 68 have obtained a bachelor's degree, 128 have obtained a master's degree, and 1078 have graduated from the previous study programmes. Also, 54 students have obtained the title of the graduated engineers-Masters and 31 students have obtained a doctoral degree at this Department. There are currently around 250 students studying at the Department.

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 four years (eight semesters) and students are obliged to obtain 240ECTS (European system of accreditation points), including the final paper, which is worth 6 ECTS.

SECOND CYCLE STUDIES – Graduate Academic-Master's Studies last 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 5 modules (study groups):

- Computer Aided Technologies
- Modern Technologies in Metal Forming
- Modern Technologies in Plastic and Wood

- Precision Engineering
- Software for Mechanical Engineering

THIRD CYCLE STUDIES - Doctoral Studies last three years (six semesters) and are the continuation of the Graduate Master 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.

The 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.

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 Staff

At the Production Engineering Department there are currently 59 employees:

- 22 professors
- 14 associates
- 13 researchers
- 8 laboratory assistants
- 2 administrative workers

Out of those there are:

- 22 doctors of sciences
 - 11 masters of technical sciences
 - 13 graduated engineers- masters
- Such expert potential is the most important base for the current and future work at the Department in all fields of its activity.

Scientific and Research Work

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:

1. Technologic development projects:
 - Physics and Chemistry with Ion Beams (the project manager: Professor Damir Kakaš, Ph.D.)



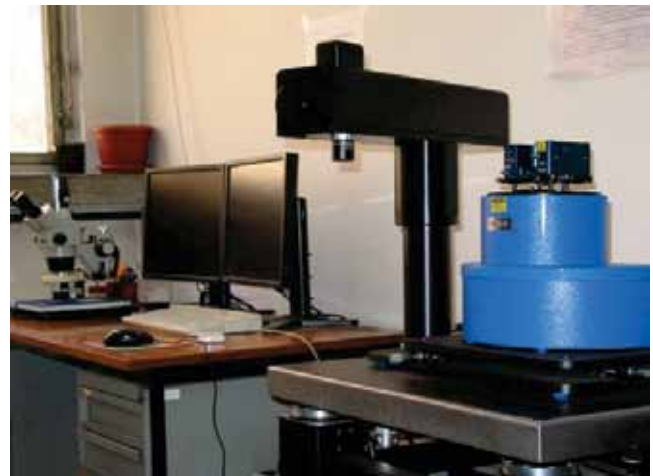
The Machining Center



Coordinate Measuring Machine



Hydraulic Dynamic Testing Machine



Atomic force microscope

- Application of the Artificial Intelligence Method in Research and Development of Production Processes (the project manager: professor Pavel Kovač, Ph.D.)
 - Modern Approach in Development of Special Solutions for Bearing Assemblies in Mechanical Engineering and Medical Prosthetics (the project manager: 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 (the project manager: Janko Hodolič, Ph.D.)
 - Micromechanical Damage and Fracture Criterion (the project manager: Katarina Gerić, Ph.D.)
 - Design, Development and Application of New Generation ADI Materials (the project manager: Lepasava Šidanin, Ph.D.)
 - Development and Application of Multifunctional Materials Based on Domestic Raw Materials by Modernization of Traditional Technologies (the project manager: Lepasava Šidanin, Ph.D.)
2. Provincial projects:
- Continuous Quality Improvement of Products and Processes During the Entire Life Cycle, Eu.nr. 451-1924 (the project manager: Janko Hodolič, Ph.D.)
3. International projects:
- **Conversion Courses for Unemployed University Graduates in Serbia – CONCUR, TEMPUS IV** (the project manager: Miroslav Plančak, Ph.D.)
 - Innovative eco-friendly metal processing solutions, EUREKA E!5005 (the project manager: Miroslav Plančak, Ph.D.)
 - The platform for building the network of LCA centers and R&D institutes from central and Southeastern Europe, Multilateral project, project nr. 114-451-3774/2011-01 (the project manager: Janko Hodolič, Ph.D.)
 - **ADVANCES IN MACHINING** - innovation trends for joint education and research, CEEPUS III project nr.: CIII-

- SK-0067-08-1213 2012-2013 (the project manager: Pavel Kovač, Ph.D.)
- Renewable energy resources, CEEPUS III project nr.: CIII-SK-0405-04-1213 2012-2013 (the project manager: Pavel Kovač, Ph.D.)
 - Concurrent Product and Technology Development Teaching, research and Implementation of Joint Programs Oriented in Production and Industrial Engineering, CEEPUS II, project nr.: CII-HR-0108 (the project manager: Miroslav Plančak, Ph.D.)
 - Modern Methods of the Constitution and Measurement of Geometrical Surface Structure-Stage II, CEEPUS III, project nr.: CIII-PL-0007 (the project manager: Janko Hodolič, Ph.D.)
 - Applications of Rapid Manufacturing in Biomedical Fields, CEEPUS III, project nr.: CII-SI-0206 (the project manager: Miodrag Hadžistević, Ph.D.)
 - Knowledge Bridge for Students and Teachers in Manufacturing Technologies, CEEPUS III, project nr.: CII-CZ-0201 (the project manager: Igor Budak, Ph.D.)
 - From preparation to development, implementation and utilization of joint programs in study area of Production Engineering - contribution to higher flexibility and mobility of students in Central European region, CEEPUS III, project nr.: CIII-SK-0030 (the project manager: Djordje Vukelić, Ph.D.)
 - Teaching and Research of Environment-oriented Technologies in Manufacturing, CEEPUS III, project nr.: CIII-RO-0013 (the project manager: MSc. Boris Agarski)
 - Applications and diagnostics of electric plasmas, CEEPUS, CII-AT-0063-02-0607. 2006-2012 (the project manager: Branko Škorić, Ph.D.)
 - Bilateral project: Intergovernmental programme of scientific-technological cooperation between the Republic of Serbia and Republic of Slovenia in 2012-2013., nr. 651-03-1251/2012-09/10 Application of artificial intelligence in sustainable development, (the project manager: Milenko Sekulić, Ph.D.)
 - Bilateral project: Intergovernmental programme of scientific-technological cooperation between the Republic of Serbia and Slovak Republic in 2012-2013., nr.: SK-SRB-0031-11, (680-00-140/2012-09/08), Application possibilities of artificial intelligence in monitoring precision machining, (the project manager: Marin Gostimirović, Ph.D.)
 - Bilateral project: Intergovernmental programme of scientific-technological cooperation between the Republic of Serbia and Slovak Republic in 2012-2013., nr.:SK-SRB-0045-11, (680-00-140/2012-09/04), Capability analysis of monitoring the spindle of the machining tools, modeling and simulation of machining processes, (the project manager: Pavel Kovač, Ph.D.)
 - Bilateral project: Intergovernmental programme of scientific-technological cooperation between the Republic of Serbia and Russia in 2012-2013.: Constitutive equations for intensive plastic deformation (the project manager: Dragiša Vilotić, Ph.D.)
- Department of Production Engineering issues international journals: The International Journal for Technology of Plasticity and The Journal of Production Engineering.
- Department of Production Engineering has up to this day organized 11 international conferences in MMA Flexible Technologies.
- ### 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 concerning 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 metal 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.

Mechanization and Design Engineering



Phone: +381 21 485 2428
Fax: +381 21 6350 592
e-mail: sostakov@uns.ac.rs

Head of Department:
Prof. Rastislav Šostakov, Ph.D.

About the Department

At the Department for Mechanization and Design Engineering more than 600 students have graduated, more than 30 have obtained a master's degree, and more than 20 have obtained a doctoral degree to this day. There are currently around 200 students studying at the Department.

Studies

The studies at the DEPARTMENT FOR MECHANIZATION AND DESIGN 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 system of accreditation points), including the final paper, which is worth 15 ECTS.

SECOND CYCLE STUDIES – Graduate Academic-Master's Studies last one year (two semesters) and are the continuation of the undergraduate academic studies, while the students are obliged to obtain additional 60 ECTS, so that after completing the second cycle of studies each student has obtained no less than 300 ECTS.

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

- Machine Design, Transport and Logistics
- Agricultural and Food Engineering
- Engines and Vehicles

with numerous elective subjects which will enable the student to get directly involved with the chosen field of economy in the country or abroad. The elected module (study group) is stated in the Diploma Supplement.

THIRD CYCLE STUDIES - Doctoral Studies last three years (six semesters) and are the continuation of the Graduate Academic 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.

Organization of the Department

At the Department for Mechanization and Design Engineering classes are carried out at three subdepartments:

- Chair of Machine Design, Transport Systems and Logistics
- Chair of Engines and Vehicles
- Chair of Machine Elements, Machine and Mechanism Theory and Mechanical Engineering in Agriculture

- Integration Models of the Transport System (a technological development project TR-036024 the Ministry of Science and Technological Development of the Republic of Serbia);
- Sustainable Development Models of Traffic in Vojvodina (a technical-technological project 114-451-2273/2011 the Provincial Secretariat for Science and Technological Development);
- Research of Vehicle Safety as a Part of the Cybernetic System Driver-Vehicle-Environment (a technological development project TR-35041 the Ministry of Science and Technological Development of the Republic of Serbia);
- Tractor and Mobile System Quality Improvement with the Objective to Increase Competitiveness, Protect the Soil and Environment (a technological development project TR-31046 the Ministry of Science and Technological Development of the Republic of Serbia);



The teaching equipment in the Engine and Vehicle Laboratory

Scientific and Research Work

Scientific-research work is carried out within the projects of the Ministry of Science and Environmental Protection of the Republic of Serbia, of the Provincial Secretariat for Science and Technological Development and within other projects carried out by international institutions and associations. About 130 scientific research projects and topics have been carried out at the Department.

At its disposal, the department has 9 laboratories, out of which 5 are used for classes and scientific research work.

The following projects are currently being carried out:

- Application of Information Technologies in the Harbours of Serbia – from Machine Monitoring to the Network System within the EU Environment (a technological development project TR-35036 the Ministry of Science and Technological Development of the Republic of Serbia);
- DAHAR – Danube Inland Harbour Development (project 2012/283-599, South-East EU);

- Development and Improvement of Automotive and Urban Engineering Studies in Serbia (DIAUSS) (a TEMPUS project JP 516729-2011);
- Modern Approach in Development of Special Solutions for Bearing Assemblies in Mechanical Engineering and Medical Prosthetics (a technological development project TR-35025 the Ministry of Science and Technological Development of the Republic of Serbia);
- Research and Development of the New Generation of Wind Turbines with High Energy Efficiency (a technological development project TR-35005 the Ministry of Science and Technological Development of the Republic of Serbia);
- Improvement of product development studies in Serbia and Bosnia and Herzegovina (project 530577-TEMPUS-1-2012-1-RS-TEMPUS-JPCR);
- Technical Characteristics Research of Modern Products in Machine Industry (Machine Design, Fluid Technics and Calculations) with the Purpose of the Improvement of Their Market Characteristics and Better Placement on the Market (project CIII-RS-0304-05-1213);
- Development of Mechanical Engineering (design, technology and production management) as an essential base for



The teaching equipment in the Laboratory for Machine Design, Transport Systems and Logistics

- progress in the area of small and medium companies' logistics - research, preparation and implementation of joint programs of study (project CIII-PL-0033-08-1213);
- Modern Trends in Education and Research on Mechanical Systems - Bridging Reliability, Quality and Tribology (project CIII-BG- 0703-01-1213).

Program of Economic Support

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

- Design, construction and technical supervision of machines, vehicles, devices and equipment, metal constructions, technological lines, etc.
- Testing the quality and conducting preventive periodical maintenance of machines and equipment, from the health and safety aspect
- Conducting expert and forensic work and providing consulting services
- Attesting vehicles as licensed by the authorities, testing vehicles for the transport of dangerous materials and attesting the installation of LPG vehicle devices
- Supervision of a traffic control system in a meteorological laboratory accredited by the Accreditation Council of Serbia
- Expert training, courses and seminars

The Department organizes and financially participates in the realization of different types of professional field trips for the students of the Department during the course of studies:

- short field trips (up to 100km from Novi Sad), as a part of mastering the knowledge taught in certain courses;
- medium field trips (on the territory of the Republic of Serbia), with the objective to get students introduced to the important companies in the field of machine-engineering;

- longer trips to Germany (for the students of Graduate academic studies), with an objective to get students introduced to the relevant European companies in the field of the Department activities (BMW, LIEBHERR, SIEMENS, large depots and some of the larger harbours on the Danube), the result of which is to enable students to complete the professional practice and write the Master Thesis in one of those companies.



A completed project in Rakovac Crushing Factory



A future project of the Varadin Gondola

Energy and Process Engineering



Phone: +38121 459 981, +38121 485 5402

E-mail: vojingr@uns.ac.rs

Web: www.ftn.uns.ac.rs

Head of Department:
Prof. Vojin Grković, Ph.D.

About the Department

At the Faculty of Technical Sciences, in the areas of energy and process engineering, i.e. at the Department of Energy and Process Engineering, over 1,019 students have completed their studies (including 48 Bachelors with honors in engineering and 92 Masters in engineering) so far; the total of 40 master's (for getting Master of Science degree) and 26 doctoral (PhD) theses have been defended.

At the Department of Energy and Process Engineering, at undergraduate and graduate academic studies, a total of 191 students are currently studying. Eight doctoral candidates are currently attending doctoral academic studies.

Studies

The studies at the Department of Energy and Process Engineering at the Faculty of Technical Sciences in Novi Sad are organized such as follows:

FIRST CYCLE STUDIES - undergraduate academic studies last four years (eight semesters), with the obligation to acquire 240 ECTS (European system of transferable credits), including the final paper which is worth 15 ECTS;

SECOND CYCLE STUDIES - master academic studies are the continuation of the undergraduate academic studies, last one year (two semesters) and are worth additional 60 ECTS. Upon completion of the second cycle studies, a student obtains a total of 300 ECTS.

Starting with the third year, students can focus on some particular areas, by choosing among 5 packages of optional subjects:

- Thermal power engineering;
- Process engineering;
- Hydro-pneumatic engineering;
- Gas and oil engineering;
- Energy Flow Control

After successful defense of the master's thesis, a graduate student fulfills the first necessary condition for getting two of three existing licenses (license 330 and 332) for mechanical engineers in Serbia.

THIRD CYCLE STUDIES - doctoral academic studies are the possible continuation of master studies. These studies last three years (6 semesters); after the realization of the curriculum, additional 180 ECTS are awarded. Having completed the doctoral academic studies, the student obtains a total of 480 ECTS.

Department organization

The Department of Energy and Process Engineering consists of three chairs, namely:

- Chair of Thermal Engineering;
- Chair of Process Engineering;
- Chair of Fluid Mechanics and Hydro-pneumatic Systems.

Each chair consists of one or several laboratories.

The Department initiated the foundation of the Provincial Centre for Rational Management of Energy, which is officially established at the Faculty of Technical Sciences.

Research

The research in the Department includes investigation and scientific method development which are being realized through the respective projects. The projects are financially supported by the funds of national and international organizations. The domestic funds are mainly initiated by the Ministry of Science and Technology of the Republic of Serbia and the Provincial Secretariat for Science and Technological Development of Vojvodina. The Department has been engaged in their development since 1968, which resulted in:

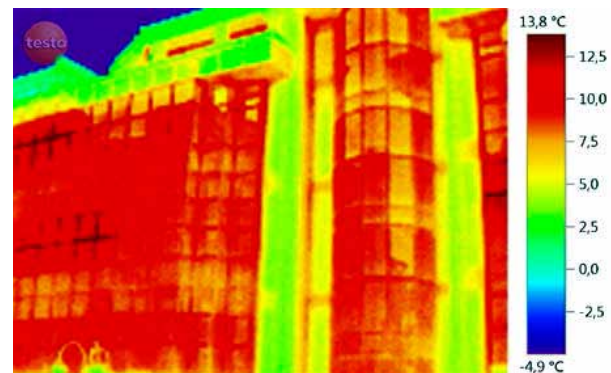
- 66 fundamental research projects in which the Department is a holder;
- About 120 short-term technological and development projects (for industry);
- The total of 1,020 bibliography units were published (indeed, 280 abroad): books, scientific papers or reports, and one recognized technical solution; out of which two monographies for international publications and 72 papers in SCI journals.

The Department experts have participated in the projects design, managing over 40 EU and numerous international projects. These projects were financed with EU funds and some international organizations. The six-year UNDP / UNIDO project (since 1982) entitled "Industrial Energy Conservation Network" was one of the most comprehensive. The Department was the holder and coordinator of project section devoted to the rationalization of energy consumption in the food industry, with the participation of Bulgaria,(ex) Czechoslovakia, Hungary, Poland, Portugal, Cyprus, Malta and Romania.

The Department is currently implementing an immense project - "iNTeg-Risk" from the European Framework Programme FP7. This is one of the biggest projects in the overall Framework Programme FP7. The whole project, "iNTeg-Risk", encompassing all European participants is managed by an expert in the Department of Energy and Process Engineering. In addition, experts in the Department are members of numerous scientific and professional associations in Serbia and abroad

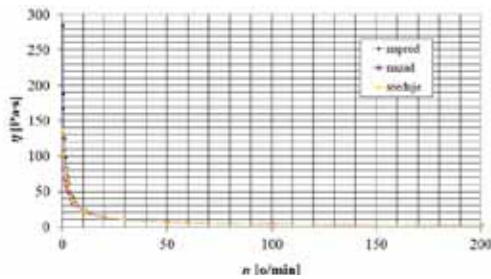


Energy review of the public building facade



Thermovision recording and photo-Lamella VI, the building East facade

- in the USA and in Germany and some of them are registered as EU experts.



Cooperation with industry

The Department has been a partner to our industry, supporting its development programmes for many years, more exactly since 1965. During that period, research and development support of the Department to industry was implemented through:

- Fieldwork experimental measurements, including: guarantee testing, functional testing, determining the value of energy and technological characteristics and indicators, energy review of buildings. A part of these activities is illustrated by enclosed figures.

- Programmes for rational energy consumption and increasing efficiency of energy use (for parts of plants or plant as a whole, buildings, etc.);

- Technical studies and feasibility studies, conceptual and major projects (or parts of plants as a whole);

- Projects audit (from the level of individual factories to the whole industry in Vojvodina);

- Engineering tasks (preparation, planning, conducting surveillance activities over construction, commissioning of the factory as a whole);

- The application of their own solutions and patents.



Recording temperature regime of canned meat sterilization

Technical Mechanics



Phone: +38121 485 2240
Fax: +38121 450 207
E-mail: headmech@uns.ac.rs
Web: <http://mechanics.ftn.uns.ac.rs>

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

About the Department

The main task of the Department is to realize the idea that the uninterrupted development and achievements of mechanics as a fundamental engineering discipline are installed into the education of mechanical engineers who are to solve problems in real surroundings in accordance with the demands of the society.

Department organizes the Undergraduate and Master Academic Studies for Mechanical Engineers and Doctoral Academic Studies in the field of mechanics.

Mechanics is a science on forces, movement and body deformations as a consequence of force action. Even though it comprises axioms, theorems, proofs, definitions, and princi-

ples, the core of mechanics is to learn how to set the problem and how to solve the problem. Mechanics actually deals with problems and problem-solutions. It is a science on patterns for setting a concrete problem and on manners to pass the path from a problem to a solution. In this frame, the Department for Technical Mechanics and Design has been established.

The studies are to answer the challenge of engineering, and that is to turn new technical solutions into a commercial reality through the clear application of accumulated scientific knowledge, practical engineering experience and problem-solving skills. The studies provide excellent application for both analysing and solving the most general problems met by a mechanical engineer in an everyday practice, and for the continuation of education towards the academic degree of a Doctor of Science. It is all established on the application of contem-

porary physical and mathematical theories in modelling real systems, the usage of contemporary computer tools and the interpretation of results in an acceptable form.

During the studies, biological systems are also studied, especially the human body. Due to its multifunctionality, complex geometry and structure, these systems are much more complex than technical ones. In that domain, the emphasis is on the development, expansion and application of mechanics in order to understand better the physiology and pathophysiology, as well as the diagnosis and treatment of diseases and injuries with the ultimate goal of general improvement in life conditions.

The emphasis at the study programmes at the Department is in understanding the fundamental physical and geometrical principles, the development of problem-solving skills and the design of a system or an appliance, whether it is an existing one in demand of improvement or a completely new one whose performances and feasibility are to be investigated. It is all realized through the independent practice, hard work and creative thinking. Hence, the competence of a mechanical engineer and later a Doctor of Science is to be achieved, regarding foremost the independency in decision-making process and in ability to take responsibility for decisions made.

The basic scientific fields studied by teachers and assistants at the Department include mechanics, mechanics of deformable bodies and biomechanics. Within these, relatively wide areas, certain specializations are performed, thus the areas studied today are the following:

- Dynamics of systems with unilateral limitations;
- Application of a derivative of a random real order in engineering and medicine;
- Stability and optimization of elastic bodies;
- Mechanics of continuous space and viscoelasticity;
- Theory on collision and biomechanical injury analysis;
- Variation principles and movement management;

- Non-linear oscillations;
- Nonholonomic and non-smooth mechanics;
- Rheological properties of human tissue and respiratory materials;
- Dynamics of human body movement;
- Biomechanics of a continuous space.

The Department for Technical Mechanics can be traced to a remarkably large number of scientific papers published in foreign journals, having a high citation index. Concrete results can be seen at <http://mechanics.ftn.uns.ac.rs/publications/indeh.html>

A part of these papers is related to the research results financed by the AP Vojvodina, Republic of Serbia and international organizations.

Currently active projects are as follows:

- High Elasticity of Fraction Type and Optimization of Shape in the Rod Theory;
- Mechanics of Non-Linear and Dissipative Systems: Contemporary Models, Analysis and Applications;
- Application of Biomedical Engineering in Pre-Clinical and Clinical Practice;
- Multi-Scale Methods and Their Application in Biomedicine;
- Parametrically Induced Oscillations: Behaviour, Phenomena and Usability;
- Seismic Waves in Non-Homogenous Geological Environments with Discontinuities.

Technical Mechanics has always been the key to technology of the future since it includes a great range of complex problems and as such, it presents the most significant part of the foundation for the development of the society.

Through the realization of study programmes, scientific and research work and international cooperation, the Department tries to contribute to that development.

Power, Electronic and

Telecommunication Engineering



Phone: +38121 485 2558
Fax: +38121 475 0572
E-mail: crnojevic@uns.ac.rs
Web: <http://deet.ftn.uns.ac.rs>

Head of Department:
Prof Vladimir Crnojević, Ph.D.

About the Department

The Department for 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.

The Department has so far produced about 4 thousand graduates in electrical and computer engineering while 71 students have obtained their Doctoral degrees and 133 students have received Master's degrees.

The Department for Power, Electronic and Telecommunication Engineering has successfully accredited its six study programmes which currently have over 1175 students.

Studies

The Department offers following accredited study programmes:

FIRST CYCLE STUDIES - Undergraduate academic studies in Power, Electronic and Telecommunication Engineering, last four years (eight semesters), requiring 240 ECTS credits (in the European Credit Transfer System). On completion a student acquires a Bachelor's degree with Honours in electrical and computer engineering.

The first year of undergraduate academic studies is the same for all students. After that the students can choose among five modules:

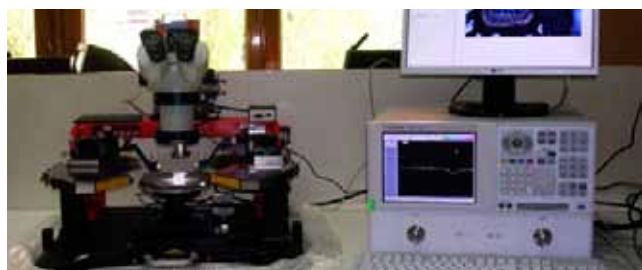
- **Power Engineering – Power Engineering Systems:** production, transmission, distribution and consumption of electrical energy;
- **Power Engineering – Power Electronics and Electrical Machines:** regulation of electric motor drives, applied power electronics, electric installations and plants, quality of electrical energy and renewable energy sources.
- **Microcomputer Electronics:** microprocessor electronics 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 engineering;
- **Communication Technologies and Signal Processing:** telecommunication signals and systems, mobile communications, design and development of communication software, digital processing of audio and video signals, images and biomedical signals, audio and video technologies, speech technologies;
- **Instrumentation and Measurement:** sensors and measurement converters, biomedical instrumentation, measurement in industry, measurement systems and precise measurement.

SECOND CYCLE STUDIES – Master academic studies in Power, Electronic and Telecommunication Engineering lasting one year (two semesters) are a continuation of undergraduate academic studies and are worth additional 60 ECTS. Upon completion a student acquires the total of 300 ECTS credits and a degree of Master in electrical and computer engineering.

THIRD CYCLE STUDIES – Doctor academic studies in Power, Electronic and Telecommunication Engineering, last three years (six semesters), are a continuation of Master studies and are worth additional 180 ECTS credits. After completing doctoral studies a student acquires the total of 480 ECTS credits and a Ph. D. degree in electrical and computer engineering.

SPECIALIST ACADEMIC STUDIES in Power, Electronic and Telecommunication Engineering which last one year and a half (three semesters) are a continuation of master academic studies and require additional 90 ECTS. After completing these studies student acquires the total of 390 ECTS credits and a degree of Specialist in Electrical and Computer Engineering.

UNDERGRADUATE PROFESSIONAL STUDIES in Power Engineering – Renewable Energy Sources last three years (six semesters) and require 180 ECTS. After completing these stud-



ies a student acquires 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), are a continuation of undergraduate professional studies and are worth additional 60 ECTS. After completing these studies a student acquires the total of 240 ECTS and a degree of Specialist of Applied Studies in Electrical and Computer Engineering

In 2013 the Department offers three new study programmes: Electric Power Software Engineering, Measurement and Regulation and Electronics and Telecommunications.

UNDERGRADUATE ACADEMIC STUDIES in Electric Power Software Engineering last four years (eight semesters), requiring 240 ECTS credits (in the European Credit Transfer System). On completion a student acquires a Bachelor's degree in electrical and computer engineering.

MASTER ACADEMIC STUDIES in Electric Power Software Engineering lasting one year (two semesters), are a continuation of undergraduate academic studies and are worth additional 60 ECTS. Upon completion of this programme a student acquires the total of 300 ECTS credits and a degree of Master in electrical and computer engineering.

UNDERGRADUATE ACADEMIC STUDIES in Measurement and Regulation last four years (eight semesters), requiring 240 ECTS credits (in the European Credit Transfer System). On completion a student acquires a Bachelor's degree in electrical and computer engineering.

MASTER ACADEMIC STUDIES in Measurement and Regulation lasting one year (two semesters), are a continuation of undergraduate academic studies and are worth additional 60 ECTS. Upon completion of this programme a student acquires the total of 300 ECTS credits and a degree of Master in electrical and computer engineering.

UNDERGRADUATE PROFESSIONAL STUDIES in Electronics and Telecommunication last three years (six semesters) and require 180 ECTS. After completing these studies a student acquires a degree of Bachelor of Applied Studies in Electrical and Computer Engineering.

Department structure

The Department consists of 6 chairs:

- Chair of Power Engineering
- Chair of Power Electronics and Converters
- Chair of Electronics
- Chair of Telecommunications and Signal Processing
- Chair of Electrical Measurement
- Chair of Theoretical Electrical Engineering

For internationally successful centers are also founded within the Department:

- Center for Integrated Microsystems and Components
- Regional Center for Biosensing Technologies (Biosense)
- Center for Metrology
- Center for Renewable Sources and Quality of Electrical Energy.



The Department employs:

- 56 professors
- 33 teaching/ research assistants
- 12 laboratory assistants
- 71 professional assistants.

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 the international projects financed by the EU, the Department has equipped its laboratories with the latest research equipment which is used for educational purposes as well as for research experiments.

The results of the research work are published in renowned international journals and presented at international and national conferences. In the last 5 years the members of the Department have published over 115 papers in the most eminent international journals (with impact factor).



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

Accredited laboratories

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



Regional Development

The Department for Power, Electronic and Telecommunication Engineering is the leading developmental and research institution for promoting entrepreneurship, technology transfer and regional development. Members of the Department faculty are the founders of over ten companies including: Schneider Electric DMS NS, AlfaNum, Zesium, Novilog, and Tajfun.

Schneider Electric DMS NS, with its 950 employees (over 250 of them young engineers) and the export of software and technology on 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 in which professors and assistants from the Department are involved either as project coordinators or participants:

1. REPUBLIC OF SERBIA PROGRAMME

1.1. ENERGY EFFICIENCY

1. Calculation, visualization and monitoring of electromagnetic field, (coordinator: prof. Neda Pekarić Nadj, Ph.D.), project No: EE-18043, 2008-2010;
2. Research of 16 micro hydro-electric plants in the Timok river region with the aim of increasing their energy efficiency, (Prof. Andrija Sarić, Ph.D.), project No: EE-18001, 2008-2010;
3. Programme for the realization of the Republic of Serbia Strategy for Development of Electric Power Industry until 2015, (prof. Ljubomir Gerić, Ph. D.) 2007-2012;
4. Optimization of distribution network with 14 micro hydro power plants located at Trgoviški Timok and the distribution network with four micro power plants at Crni Timok (prof. Andrija Sarić, Ph.D.), project No: EE-223014B, 2006-2008;
5. Increasing energy efficiency of industrial processes by using electromotive drives with wide speed range for transportation of fluids and materials, (prof. Veran Vasić, Ph.D.) project No: EE-223031, 2006-2008;
6. Application of modern technologies in deregulated electric power system in view of quality of electric power and high energy efficiency, (coordinator prof. Vladimir Katić, Ph.D.) project No: EE-222-009, 2005-2008;
7. Automation of electric power distribution systems (coordinator: prof. Dragan Popović, Ph.D.) project No: EE-3452, 2005-2008;
8. Planning the development of electric power distribution systems in restructure electric power industry, (coordinator prof. Vladimir Strezoski, Ph.D.) project No: TP-6606A, 2005-2008;
9. PoC (Push-to Talk Over Cellular) application for mobile phone systems (coordinator: prof. Vojin Šenk, Ph.D.) project No: TP-6139A, 2005-2008;
10. Realization of a distributed measurement system for permanently measuring parameters of electric power quality and analysis of additional losses in the grid, (prof. Vladimir Katić, Ph.D.) project No: EE210-190, 2003-2006;
11. Influence of power quality parameters on the energy efficiency of Serbia power system (coordinator: prof. Vladimir Katić, Ph.D.) project No: EE210-204, 2003-2006;
12. System for managing fault and power quality in power distribution systems, (prof. Ljubomir Gerić, Ph. D.) project No: EE32024, 2002-2005;
13. New generation of instruments for measurement and testing in power distribution (Vladimir Vujičić, Ph.D.) project No: 1-32023, 2002-2005;
14. Cooperative Web based system of municipal administration, public and utility companies/ services, (prof. Vojin Šenk, Ph.D.) project No: 0000-2002, 2002-2005;

15. Strategy for the development of innovation centres (coordinator prof Vojin Šenk, Ph.D.) project No: 0000-2001, 2001-2004;
16. Telecommunications, (prof Vojin Šenk, Ph.D.) project No: 0000-1996, 1996-1999;
17. Development of control electronics equipment for electrical vehicles, (coordinator: prof. Miloš Živanov, Ph.D.) project No: XYZ04, 1994-1997;
18. Telecommunications, (prof Vojin Šenk, Ph.D.) project No: 0000-1993, 1993-1995.



1.2. FUNDAMENTAL RESEARCH

1. Interdisciplinary research on the quality of verbal communication, (ass. prof. Milan Sečujski) project No: 178027, 2011-2014;
2. Amorphous and nanostructured chalcogenides, (prof. Ljiljana Živanov, Ph.D.) project No: 141026B, 2006-2010;
3. Synthesis of nanoparticles and preparing ceramics and nanocomposites for application in new technologies (prof. Mirjana Damnjanović, Ph.D.) project No: 142059, 2006-2010;
4. Influence of brainstem and spinal cord structure on the variations in blood pressure and heart rate, (prof. Dragana Bajić, Ph.D.) project No: OI145062, 2006-2010;
5. Estimation of drug efficiency on the regulation mechanisms of cardio vascular systems using computer methodology: spectral and fractal analysis, (prof. Dragana Bajić, Ph.D.) project No: 1774, 2001-2005.

1.3. PROJECTS OF TECHNOLOGICAL DEVELOPMENT APPLIED ON THE BASES OF MULTILATERAL CONTRACT

1. Current state of the development of the technology and application of fuel cells and their possible application in

Serbia, (coordinator: prof. Miloš Živanov, Ph.D.) project No: H1EE701-1029II, 2003-2010.

1.4. TESLA – Programme of fundamental research and programme of technological development and research equipment drive and maintenance

1. Science with accelerators and accelerator technologies, (prof. Vesna Spasić Jokić, Ph.D.), project No: 101247, 1989-2010.

1.5. TECHNOLOGICAL DEVELOPMENT

1. Development of information network for continual study of electromagnetic fields, (coordinator: prof. Nikola Djurić, Ph.D.), project No: TP 32055, 2011-2014;

2. Development of dialogue systems for Serbian and other South Slavic languages, (coordinator: prof. Vlado Delić, Ph.D.) project No: TP 32035, 2011-2014;

3. Development of multivariable methods for analytic support of biomedicine diagnostics, (coordinator: (prof. Dragana Bajić, Ph.D.) project No: TP 32040, 2011-2014;

4. Measurement within the concept of “smart” distribution network, (coordinator: prof. Zoran Mitrović, Ph.D.) project No: TP 32019, 2011-2014;

5. Innovative electronic components and systems based on inorganic and organic technologies incorporated in goods and products for mass consumption, (prof. Ljiljana Živanov, Ph.D.) project No: TP 32016, 2011-2014;

6. Developing the method for calibration and standardization of samples of referential materials and the development of geomaps: gamma spectrometry testing of environmental samples, (coordinator: prof. Vesna Spasić Jokić), project No: TP 21011, 2008-2010;

7. New solutions for the control of energy converters in wind farms, (prof. Veran Vasić, Ph.D.) project No: TP 17022, 2008-2010;

8. DMS – Improved features, (prof. Andrija Sarić, Ph.D.) project No: TP 17009, 2008-2010;

9. Reliability of deregulated distribution systems, (prof. Andrija Sarić, Ph.D.) project No: TP 17001, 2008-2010;

10. Humanoid robot systems – theory and applications (prof. Laslo Nadj, Ph.D.) project No: TP 14001, 2008-2011;

11. Development of methods and systems for measuring the flow of electric power and energy, (prof. Vladimir Vujučić, Ph.D.) project No: TP 11024, 2008-2010;

12. New configurations for ferrite transformers and EMI suppressors for Dc/DC converters and telecommunication modules, (coordinator: prof. Ljiljana Živanov, Ph.D.) project No: TP 11023, 2008-2010;

13. Wireless sensor networks and remote data collection – basis for new agricultural infrastructure, (coordinator: prof. Vladimir Crnojević, Ph.D.) project No: TP 11022, 2008-2010;

14. Dual-band and tri-band microwave circuits and antennas based on metamaterials for new generation communication systems, (coordinator: prof. Vesna Crnojević Bengin, Ph.D.) project No: TP 11009, 2008-2010;

15. Development of systems and instruments for researching water, oil and gas, (prof. Miloš Živanov, Ph.D.) project No: TP 11006, 2008-2010;

16. Speech communication man-machine, (coordinator: prof. Vlado Delić, Ph.D.) project No: TP 11001, 2008-2010;

17. Development of speech technologies for Serbian and their application in Telecom, (coordinator: prof. Vlado Delić, Ph.D.) project No: TP 6144A, 2005-2008;

18. Measuring the quality of electric power, (coordinator prof. Vladimir Vujučić, Ph.D.) project No: TP 6120B, 2005-2008;

19. Microelectronics and optoelectronics, (prof. Ljiljana Živanov, Ph.D.) project No: 1001E, 1991-1994.

1.6. INTEGRAL AND INTERDISCIPLINARY RESEARCH

1. Digital media technologies and socio-educational changes, (prof. Željen Trpovski, Ph.D.) project No: III-47020, 2011-2014;

2. Research and development of a platform for scientific support in decision making and management of scientific and technological development in Serbia, (prof. Vojin Šenk, Ph.D.) project No: III-47005, 2011-2014;

3. Synthesis of nanoparticles and preparing ceramics and nanocomposites with specific electric and magnetic properties for application in integrated passive components, (prof. Mirjana Damjanović, Ph.D.) project No: III-45021, 2011-2014;

4. Optoelectronic nanodimensional systems – road to application, (prof. Miloš Živanov, Ph.D.) project No: III-45003, 2011-2014;

5. Integrated systems for detection and estimation of fire development by observing critical parameters in real time, (coordinator prof. Vladimir Crnojević, Ph.D.) project No: III-44003, 2011-2014;

6. Common research into measurement and influence of ionised and UV radiation in the field of medicine and environment protection, (subproject coordinator: Ljubica Župunski, B. Sc. in molecular biology) project No: III-43011, 2011-2014;

7. Development of sensor method and systems for controlling the quality of water, air and ground, (coordinator: prof. Miloš Živanov, Ph.D.) project No: III-43008, 2011-2014;

8. Biosensing technologies and global systems for continuous research and integrated biosystem control, (coordinator: prof. Vesna Crnojević Bengin, Ph.D.) project No: III-43002, 2011-2014;

9. Smart power distribution network based on distributed management system and distributed production, (coordinator: prof. Dragan Popović, Ph.D.) project No: III-42004, 2011-2014;

10. Developing robot as a tool for overcoming difficulties in child development, (subproject coordinator: dr Milan Gnjatović) project No: III-44008, 2011-2014.

1.7. WATER – NATIONAL PROGRAMME FOR MANAGEMENT, PROTECTION AND USE OF WATER IN SERBIA

1. System for acquisition of well logging in oil well holes, (coordinator: prof. Miloš Živanov, Ph.D.) project No: XY3011, 2003-2008.

1.8. INNOVATION PROJECTS BY THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT

1. Improvement of wireless communication detector, (coordinator: ass. prof. Miloš Slankamenac, Ph.D.) project No: 451-03-00605/2012-16/211, 2012-2013.



2. PROVINCIAL PROGRAMME

1. Correlation between the composition and properties of metal-doped non crystal chalcogenides, (prof. Goran Stojanović, Ph.D.) project No: 114-451-2187/2011-01, 2011-2014;
2. Genetic resources of Vojvodina agroeco system in the development of sustainable agriculture, (prof. Vesna Crnojević Bengin, Ph.D.) project No: 114-451-2173/2011-01, 2011-2014;
3. Research and development of energy efficient systems of electric cars charge and drive, (coordinator: prof. Vladimir Katić, Ph.D.) project No: 114-451-2248/2011-03, 2011-2014;
4. Development of advanced encoding techniques in multi path magnet systems for high density data storage, (coordinator: Nikola Djurić, Ph.D.) project No: 114-451-2061/2011-03, 2011-2014;
5. Measurement and acquisition systems in cognitive neuroscience, (coordinator: prof. Zoran Mitrović, Ph.D.) project No: 114-451-2190/2011-03, 2011-2014;
6. Audio library for persons with disabilities, (coordinator: prof. Vlado Delić, Ph.D.) project No: 114-451-2210/2011-04, 2011-2014;

7. Coordination of national and international activities within the 7th priority area of EU strategy for the Danube region – development of knowledge based society and economy through development of science, education and IT, (prof. Vesna Crnojević Bengin, Ph. D.) project No: 114-451-2817/2011-04, 2011-2012;

8. Positioning of University of Novi Sad scientific and research community in the FP 8 EU research and development programme, (prof. Vladimir Crnojević, Ph.D.) project No: 114-451-2834/2011-02, 2011-2012;

9. Further development and research in the area of sensed and strengthened artificial multi segment foot with ankle joint for humanoid robots, (prof. Laslo Nadj, Ph.D.) project No: 114-451-00759/2008-04, 2008-2009;

10. Realization of high performance micro sensor for operation in extreme environmental conditions, (coordinator: prof. Goran Stojanović, Ph.D.) project No: 114-451-01009/2008-01, 2008-2009;

11. Research and realization of new solutions for energy converters in industrial electric motor drives, (coordinator: prof. Vladimir Katić, Ph.D.) project No: 114-451-00622, 2005-2008.

3. INTERNATIONAL PROJECTS

FP7

1. Reinforcement of BioSense Center – ICT for Sustainability and Eco-Innovation, (coordinator: prof. Vesna Crnojević-Bengin, Ph.D.), project No: 316191, 2013-2016;

2. ENvironmental Optimization of IRrigAtion Management with the Combined uSe and Integration of High Precision Satellite Data, Advanced Modelling, Process Control and Business Innovation (ENORASIS), (prof. Vladimir Crnojević Ph.D.), project No: 282949, 2012-2014;

3. Video Quality Driven Multimedia Streaming in Mobile Wireless Networks (QoSSTREAM), (prof. Vladimir Crnojević, Ph.D., Dejan Vukobratović Ph.D.), project No: 295220, 2012-2016;

4. Low-cost and energy-efficient LTCC sensor/IR-UWB transceiver solutions for sustainable healthy environment (SENSEIVER), (coordinator: prof. Goran Stojanović Ph.D.), project No: 289481, 2011-2015;

5. Design, Analysis and Applications of Novel Information Processing Paradigms for Multimedia Transmission in Next-Generation Wireless Networks (MMCODESTREAM), (coordinator: ass. prof. Dejan Vukobratović, Ph.D.), project No: 276985, 2011-2014;

6. Multiband Electronically Reconfigurable Microwave Devices and Antennas for a New Generation of Wireless Systems (MultiWaveS), (coordinator: prof. Vesna Crnojević-Bengin, Ph.D.), project No: 247532, 2010-2014;

7. Balkan GEO Network – Towards Inclusion of Balkan Countries into Global Earth Observation Initiatives, (coordinator: prof. Vladimir Crnojević, Ph.D.), project No: 265176, 2010-2013;

8. Reinforcement of Research Potentials of the Faculty of Technical Sciences in the Field of Post Silicon Electronics (APOSTILLE), (coordinator: prof. Goran Stojanović Ph.D.), project No: 256615, 2010-2013;

9. Smart Control of Demand for Consumption and Supply to enable balanced, energy-positive buildings and neighbourhoods (SmartCoDe), (prof. Veljko Malbaša, Ph.D.), project No: 247473, 2010-2013;
10. Distributed Infrastructure for EXPERimentation in Eco-system Research (EXPEER), (prof. Vladimir Crnojević, Ph.D.), project No: 262060, 2010-2014;
11. Design, analysis and applications of robust and efficient transmission schemes for multimedia streaming in wireless networks (MMSTREAM), (coordinator: ass. prof. Dejan Vukobratović Ph.D.), project No: 236234, 2009-2010;
12. Wireless Sensor Networks and Remote Sensing - Foundation of a modern agricultural infrastructure in the region (AGROSENSE), (coordinator: prof. Vladimir Crnojević, Ph.D.), project No: 204472, 2008-2010;

FP6

1. Reinforcement of the Center for Integrated Microsystems and Components, (coordinator: prof. Ljiljana Živanov, Ph.D.), project No: 043669, 2007-2010;
2. Network of Excellence METAMORPHOSE, (coordinator: prof. Vesna Crnojević Bengin Ph.D.) project No: UNESI, 2004-2007;
3. Multi-Material Micro Manufacture: Technologies and Applications, (prof. Veljko Malbaša Ph.D.), project No: 500274-2, 2004-2007.

EUREKA

1. Miniature Metamaterial-Based Sensing Devices for Agricultural, Environmental and Geological Applications, (coordinator: prof. Vesna Crnojević Bengin Ph.D.) project No: E!5014, 2009-2012;
2. New generation of 3D Integrated Passive Components&Microsystems in LTCC (Low Temperature Co-fired Ceramic) Technology, (coordinator: prof. Goran Stojanović, Ph.D.), project No: E!4570 IPCTECH, 2009-2012;
3. Text-to-Speech Technology for Embedded Devices, (coordinator: prof. Vlado Delić, Ph.D.), project No: E!4965 TESTED, 2009-2012;
4. The remotely controllable variable message signalization system, (prof. Vladimir Crnojević, Ph.D.) project No: E!4924 REMSIS, 2009-2012;
5. Video Content Analysis for Automated Traffic Surveillance, (coordinator: prof. Vladimir Crnojević, Ph.D.) project No: E!4160VICATS, 2008-2011;
6. Metamaterial-based technology for broadband wireless communications and RF (Radio Frequency) identification, (coordinator: prof. Vesna Crnojević Bengin, Ph.D.) project No: E!3853, 2006-2009;
7. Intelligent Telephone E Mail Access - iTEMA, (coordinator: prof. Vlado Delić, Ph.D.), project No: E!3864, 2006-2009;
8. Power Distribution Network Automation System, (coordinator: prof. Vladimir Strezoski, Ph.D.), project No: E!3452, 2005-2008.

BILATERAL PROJECTS

1. Statistical characterization of neural behavior in the cerebral cortex of behaving animals, (coordinator: prof. Dragana Bajić, Ph.D.), 2010-2011;
2. Multilingual Text-to-Speech synthesis in Serbian and Slovenian with automatic language identification, (coordinator: prof. Vlado Delić, Ph.D.), project No: SR-SLO, 2008-2009;
3. Design, modeling and optimization of novel integrated passive components for power electronics application (coordinator: prof. Goran Stojanović), project No: 451-03-2405/2007-02/04, 2007-2008;
4. Promoting Entrepreneurship in the High-Tech Area, (coordinator: prof. Vojin Senk, Ph.D.), project No: 1, 2006-2007.

IPA

1. MERIEXWA-MEasurement, monitoring, management and Risk assessment of inland EXcess WAtER in South-East Hungary and North Serbia, (prof. Miloš Živanov, Ph.D.) project No: HUSRB/1002/121/088, 2012-2014.

TEMPUS

1. Building Capacity for Structural Reform in Higher Education of Western Balkan Countries, (coordinator: prof. Ladislav Novak, Ph.D.), project No: 511335 -TEMPUS-1-2010-RS-TEMPUS-SMHES, 2010-2013;
2. National Platform for Knowledge Triangle, (prof. Veljko Malbaša, Ph.D.), project No: 114-451-3509/2010-1., 2009-2012;
3. Education Policy Study Programme in Serbia and Montenegro, (prof. Ladislav Novak, Ph.D.), project No: 159074-TEMPUS-RS-TEMPUS-JPCR, 2009-2012;
4. WBC Virtual Manufacturing Network an Fostering an Integration of the Knowledge Triangle, (prof. Goran Stojanović, Ph.D.), project No: JP 144684-2008, 2008-2011;
5. Internal Quality Assurance at Serbian Universities, (prof. Veljko Malbaša, Ph.D.), project No: 145677-TEMPUS-2008-RS-SMGR., 2008-2011;
6. Establishing Central University Studies, (prof. Ladislav Novak, Ph.D.) project No: C015A06-2006, 2006-2007;
7. Joint Advanced Doctoral Degree in Energy Systems, (prof. Vladimir Katić, Ph.D.), project No: CD_JEP-41085-2006, 2006-2008;
8. Introduction of a new study programme in Applied Electronics, (prof. Veljko Malbaša, Ph.D., prof. Ladislav Novak, Ph.D.), project No: CD_JEP-40017-2005, 2005-2007;
9. Integration Et Reorganisation Du Systeme D'information, (prof. Ladislav Novak, Ph.D.), project No: JEP-40091-2005, 2005-2007;
10. Cost Effective and Environmentally Friendly Energy Systems, (prof. Vladimir Katić, Ph.D.), project No: JEP 18126-2003, 2003-2006;
11. Revision of Electrical Engineering Curricula based on New Technologies and Bologna Recommendations, (coordinator: prof. Veljko Malbaša, Ph.D.), project No: JEP 18105-2003, 2003-2006;

12. Towards an Integrates University via Internal Agreement, (coordinator: prof. Ladislav Novak, Ph.D.), project No: JEP 18077-2003, 2003-2005;
13. Electronic Engineering Curriculum Restructuring, (prof. Vladimir Katić, Ph.D.), project No: CD_JEP-17028-2002, 2002-2005;
14. University Science Parks – Organisational Framework, (coordinator: prof. Vojin Šenk, Ph.D.), project No: UM_JEP-16090-2001, 2001-2003.

COST

1. Cooperative Radio Communications for Green Smart Environments, (coordinator: prof. Dragana Bajić, Ph.D.), project No: IC1004, 2011-2015;
2. HDRi: The digital capture, storage, transmission and display of real-world lighting, (prof. Željko Trpovski, Ph.D.), project No: IC1005, 2011-2015;
3. Novel and Reliable Optical Fibre Sensor Systems for Future Security and Safety Applications (OFSeSa), (ass.prof. Miloš Slankamenac, Ph.D.), project No: TD1001, 2010-2014;
4. Wireless Networking for Moving Objects, (ass.prof. Čedomir Stefanović, Ph.D.), project No: ICO906, 2010-2013;
5. MOVE: Knowledge discovery from moving objects, (prof. Vladimir Crnojević, Ph.D.), project No: IC0903, 2009-2013;
6. IntelliCIS Intelligent Monitoring Control and Security of Critical Infrastructure System, (prof. Veljko Malbaša, Ph.D.), 2009-2013;
7. Cross-Modal Analysis of Verbal and Non-Verbal Communication, (coordinator: prof. Vlado Delić, Ph.D.), project No: COST2102, 2008-2010;
8. RF/Microwave Communication Subsystems for Emerging Wireless Technologies (RFCSET), (coordinator: prof. Vesna Crnojević Bengin Ph.D.), project No: IC0803, 2008-2010;
9. Pervasive Mobile and Ambient Wireless Communications, (coordinator: prof. Dragana Bajić, Ph.D.), project No: COST2100, 2006-2010;
10. Participation in Broadband Society, (coordinator: (prof. Veljko Malbaša, Ph.D.), project No: COST298, 2006-2010;
11. Towards the Maturation of IT usability Evaluation, (coordinator: prof. Veljko Malbaša, Ph.D.), project No: COST294, 2005-2009;
12. Semantic Multimodal Analysis of Digital Media, (prof. Željko Trpovski, Ph.D.), project No: COST292, 2004-2008;
13. Spectrum and Power Efficient Broadband Communications, (coordinator: prof. Dragana Bajić, Ph.D.), project No: COST289, 2003-2007;
14. Towards mobile broadband multimedia networks, (coordinator: prof. Dragana Bajić, Ph.D.), project No: COST273, 2001-2005.

WUS

1. Control of Power Electronics Converters, (coordinator: prof. Vladimir Katić, Ph.D.), project No: CDP+002/2006, 2006-2007;
2. Information Theory and Communications, (coordinator: prof. Vojin Šenk, Ph.D.), project No: CDP+030/2006, 2006-2007;
3. Materials in Electrical Engineering, (coordinator: prof. Goran Stojanović, Ph.D.), project No: CDP+106/2006, 2006-2007;
4. Power Electronics in Drives and Industry, (coordinator: prof. Vladimir Katić, Ph.D.), project No: CDP+133/2004, 2004-2004;
5. Computer Aided Design of Electronic Circuits, (coordinator: prof. Ljiljana Živanov, Ph.D.), project No: CDP+134/2004, 2004-2004;
6. Microelectronics, (coordinator: prof. Ljiljana Živanov, Ph.D.), project No: CDP+039/2004, 2004-2004;
7. Embedded Systems Design, (coordinator: (prof. Veljko Malbaša, Ph.D.), project No: CDP+038/2004, 2004-2004;
8. Digital Communications, (prof. Vlado Delić, Ph.D.), project No: CDP+025/2004, 2004-2004;
9. Optoelectronics – Modernization of the Course, (coordinator: prof. Miloš Živanov, Ph.D.), project No: CDP+033/2003, 2003-2004;
10. Restructuring Course on Microprocessor Systems, (coordinator: prof. Veljko Malbaša, Ph.D.), project No: CDP+037/2003, 2003-2004.

DAAD

1. Pekaric Nadj, N. DAAD Joint Project ELISE-2010 (ELISE = ELectrical Engineering and Information Technology in South-Eastern Europe).

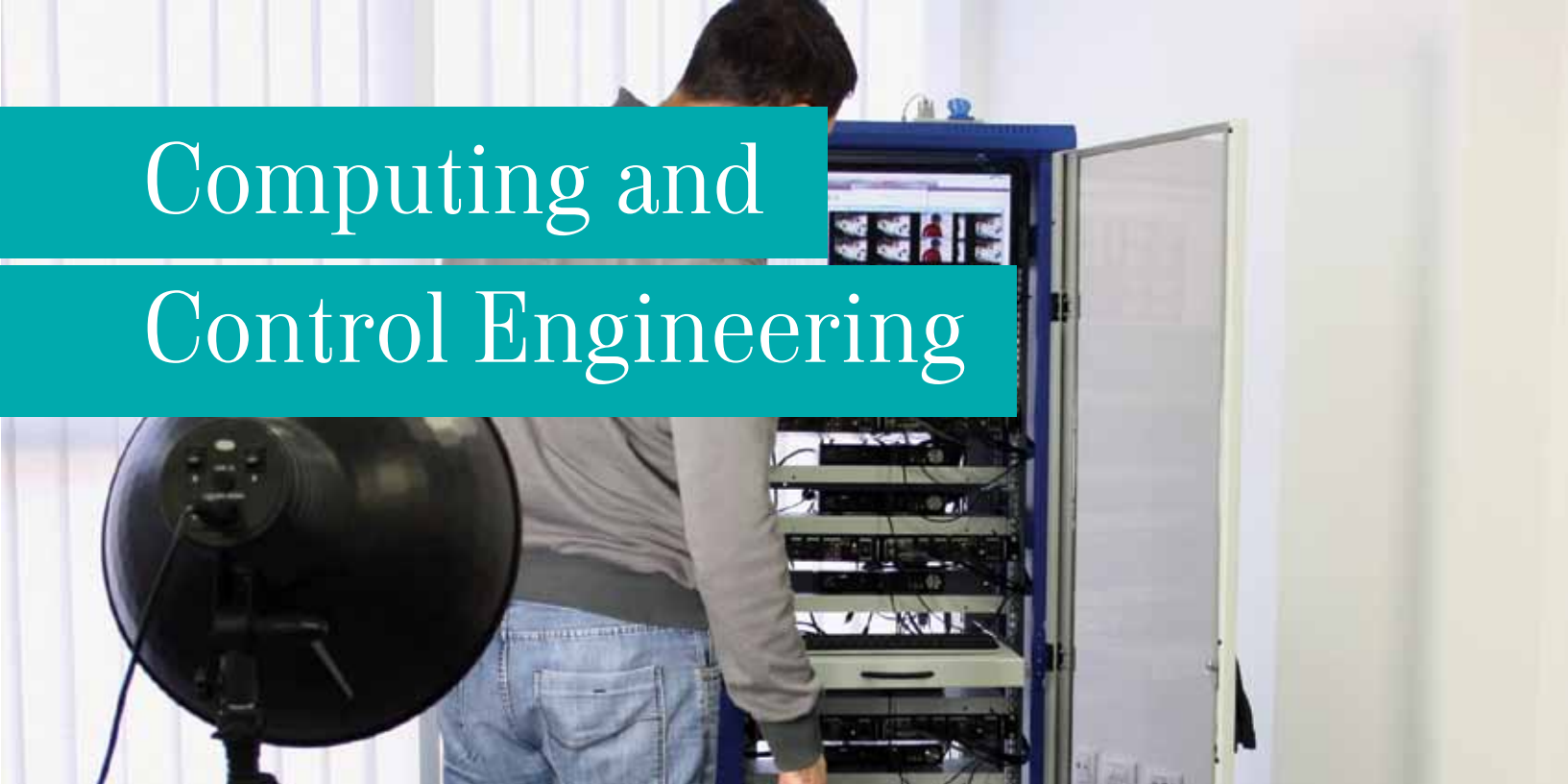
4. COOPERATION WITH INDUSTRIAL AND OTHER ORGANIZATIONS

1. Detailed analysis of the influence of GSM base stations on the environment, (coordinator: prof. Miroslav Prša, Ph.D.), project No: 01-172/386-1, 2008-2010;
2. System for automatic visual inspection of laser printing, (coordinator: prof. Vladimir Crnojević, Ph.D.), project No: ЗИИ-02, 200Z8;
3. System for automatic visual inspection of printing on conveyor belt, (coordinator: prof. Vladimir Crnojević, Ph.D.), 2007;
4. Introduction of modern maintenance systems in NIS, (coordinator: prof. Miloš Živanov, Ph.D.), project No: TD7004, 2005.

INTERNATIONAL COOPERATION

No	Institution name	State	Project
1.	Vienna University of Technology	Austria	TEMPUS project
2.	Middlesex University	England	TEMPUS project
3.	National Technical University of Athens	Greece	TEMPUS project
4.	Littelfuse Ireland Limited	Ireland	Industrial project
5.	WUS Austria	Austria	WUS CDP + project
6.	University of Paris 1	France	TEMPUS project
7.	Ghent University, Department for Telecommunications and Data Processing	Belgium	University cooperation
8.	Polytechnic University of Valencia	Spain	TEMPUS project
9.	Ss. Cyril and Methodius University in Skopje	FYR Macedonia	TEMPUS project
10.	Technical University of Madrid	Spain	TEMPUS project
11.	University of Goettingen	Germany	TEMPUS project
12.	University of Porto	Portugal	TEMPUS project
13.	University of Cagliari	Italy	TEMPUS project
14.	Leibniz University in Valencia	Spain	TEMPUS project
15.	University of Bath	England	TEMPUS project
16.	University of Padua	Italy	FP 6 – project
17.	University of Liege	Belgium	FP 6 – project
18.	University of Erlangen-Nuremberg	Germany	FP 6 – project
19.	University of Birmingham	England	FP 6 – project
20.	University of Strathclyde	Scotland	FP 6 – project
21.	University of Twente	Netherlands	FP 6 – project
22.	Comitec - Dept. D'Enginyeria Electronica Universitat Autonome De Barcelona	Spain	EUREKA project
23.	Polytechnic University of Milan	Italy	FP 6 – project
24.	Integrated Microsystems Austria	Austria	FP 6 – project
25.	Vienna University of Technology, Institute of Sensor and Actuator Systems	Austria	FP 6 – project
26.	Heriot-Watt University, Faculty of Power, Electronic and Computing Engineering	England	FP 6 – project
27.	Jožef Stefan Institute/Department for Electronic Ceramics	Slovenia	FP 6 – project
28.	Institute for Electronic Technology	Poland	FP 6 – project
29.	Swiss Federal Institute of Technology	Switzerland	FP 7 – project
30.	University of Strathclyde	England	FP 7 – project
31.	Florida Atlantic University	USA	FP 7 – project
32.	Texas A&M University	USA	FP 7 – project
33.	National Institute of Informatics	Japan	FP 7 – project
34.	University of Technology Parana	Brazil	FP 7 – project
35.	Stellenbosch University	South Africa	FP 7 – project
36.	University of Pennsylvania	USA	FP 7 – project
37.	College of Dunaujvaros	Hungary	Provincial project
38.	Department of Physical Geography and Geoinformatics	Hungary	IPA – project
39.	Institute of Nuclear Research of the Hungarian Academy of Sciences	Hungary	COST – project

Computing and Control Engineering



Phone: +381 21 485 2424

Fax: +381 21 6350 727

E-mail: ira@uns.ac.rs

Web: www.ftn.uns.ac.rs

Head of Department:
Prof. Ivan Luković, Ph.D.

About the Department

At the Department for Computing and Control Engineering 74 students have obtained a doctoral degree and over 200 students have obtained a master's degree. The total of over 4,000 students has graduated at the Electrical and Computer Engineering Department to this day. There are currently 1,153 students studying at the Department.

The studies at the DEPARTMENT FOR COMPUTING AND CONTROL ENGINEERING at the Faculty of Technical Sciences in Novi Sad are divided into three cycles:

Studies

FIRST CYCLE STUDIES – Undergraduate Academic Studies last four years (eight semesters) and students are obliged to obtain 240 ECTS (European system of accreditation points).

SECOND CYCLE STUDIES – Graduate Academic Studies-Master last one year (two semesters) and are the continuation of the undergraduate academic studies (they are worth additional 60 ECTS). After completing the second cycle of studies, the student acquires the title of the Master in Electrical and Computer En-

gineering and has obtained no less than 300 ECTS.

THIRD CYCLE STUDIES - Doctoral Studies last three years (six semesters) and are the continuation of the Graduate Master Studies. The student is obliged to obtain 180 ECTS. The studies are designed to introduce students to scientific-research work in the chosen field. After completing the Doctoral studies the student has obtained at least 480 ECTS in total.

At the study programmes of Computer and Control Engineering, the student can choose between three modules (study groups):

- Computer Engineering and Computer Communications
- Applied Computer Science and Informatics and
- Automatic Control and Systems Engineering

Apart from the academic studies, within the Department for Computer and Control Engineering, professional studies are organized through the programme of the undergraduate professional studies of Software and Information Technologies. The studies at this programme last three years (six semesters), and students are obliged to obtain at least 180 ECTS in the process.

The intensive development of the 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 at the Studies of Computer 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.

Since 2013, the new study programmes were started and accredited after the existing study programmes had been significantly improved. 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)

At the Department, some educational training is carried out independent from the higher education system, and in the following specialized centers:

- Cisco Networking Academy (for obtaining Cisco Certificates)
- Automation Training Center (along with Schneider, Siemens, Danfoss and Nivelco)
- IBM Cell Summer School (computers with multiple processors and parallel real time programming)
- Android Summer School (the development and implementation of Android based application in multimedia devices)
- TI, Xilinx, Altera, Intel, Cadence, Synopsis Academic Programme Members (additional schools and training programmes in the fields of FPGA, DSP and parallel programming)
- EPLAN (an authorized training center for training software clients of the company EPLAN Software & Services.

Organization of the Department

The Department for Computing and Control Engineering is comprised of three sub- departments: The Sub-department for Automatic Control, Geomatics and Systems Engineering, The Sub-department for Computer Engineering and Computer Communications, and The Sub-department for Applied Computer Science and Informatics. Within the Department there are 20 laboratories in total.

- The Sub-department for Automatic Control, Geomatics and Systems Engineering is in its scientific research work focused on the field of: automatic control and systems engineering, biomedical engineering, and geo-information systems and technologies.
- The Sub-department for Computer Engineering and Computer Communications is in its scientific research work focused on the fields of computer architecture and computer networks, real time programming, computer based systems, FPGA and DSP technologies, programme support in multimedia systems and cell phone industry and the programme support in audio and video signal processing.
- The Sub-department for Applied Computer Science and Informatics is in its scientific research work focused on the field of programming languages and translators, operative systems, web programming, software engineering, computer aided business, intelligent systems and soft computing.

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



Scientific Research Work

Several hundred scientific research projects have been carried out at the Department up to this day. More than 200 articles have been published in outstanding international journals and several hundred scientific papers have been presented at conferences in the country and abroad. The following projects are currently being carried out:

1. Basic Research Projects

- Computer Mechanics in the Theory of Design, the Faculty of Civil Engineering in Subotica and Faculty of Technical Sciences in Novi Sad (the project manager: Aleksandar Prokić, Ph.D. and Miroslav Hajduković, Ph.D.)

2. Integral and Interdisciplinary Research Projects

- Intelligent Systems for Software Product Development and Model Based Business Support, the Faculty of Technical Sciences in Novi Sad, Faculty of Economy in Kragujevac, Faculty of Engineering in Kragujevac, Faculty of Sciences in Kragujevac, Faculty of Organizational Sciences in Belgrade, and Technical Faculty in Cacak in cooperation with: IN2 Ltd. Belgrade, Prozone Ltd. Novi Sad, and Provincial Secretariat of Economy of the Autonomous Province of Vojvodina (the project manager: Ivan Luković, Ph.D.)
- Infrastructure for Technology Aided Learning in Serbia, Faculty of Organizational Sciences in Belgrade, Faculty of Technical Sciences in Novi Sad, Faculty of Sciences in Novi Sad, Technical Faculty in Cacak, and Faculty of Mathematics in Belgrade (the project manager: Vladan Devedžić, Ph.D. and Branko Milosavljević, Ph.D.)
- Development of Digital Technologies and Networked Services in the Systems with the Inbuilt Electronic Components, Faculty of Technical Sciences in Novi Sad, Faculty of Electrical Engineering with the Innovation Center in Belgrade, Faculty of Electronic in Nis with Intel Belgrade and RT-RK Institute Novi Sad (the project manager: Miodrag Temerinac, Ph.D.)
- Application of Biomedical Engineering in Preclinical and Clinical Research, Faculty of Engineering in Kragujevac, Faculty of Medicine in Kragujevac and Faculty of Technical Sciences in Novi Sad (the project manager: Nikola Jorgovanović, Ph.D.)

3. Technological Development Project

- Development of Software Tools for Analysis and Improvement of Business Processes, Technical Faculty "Mihajlo Pupin" Zrenjanin, Faculty of Technical Sciences in Novi Sad, and Faculty of Agriculture in Novi Sad in cooperation with:

Business Incubator Zrenjanin BIZ and YuTeam Software OD Zrenjanin (the project manager: Ivana Berković, Ph.D. and Dragan Ivetić, Ph.D.)

- Development of Methodology for Software Testing in Multimedia Systems, Faculty of Technical Sciences in Novi Sad (the project manager: Nikola Teslić, Ph.D.)
- Program Support and Tools in Multicore Systems, Faculty of Technical Sciences in Novi Sad (the project manager: Miroslav Popović, Ph.D.)
- Development of Program Support for Data Compression Based on Computer Intelligence Methods, Faculty of Technical Sciences in Novi Sad (the project manager: Dragan Kukolj, Ph.D.)
- State and Structure Modeling of Slope Processes by Application of GNSS and Laser and Georadar Scanning Technologies, Faculty of Technical Sciences in Novi Sad (the project manager: Miro Govedarica, Ph.D.)
- Intelligent Supervisory-Control System for Early Detection and Elimination of Unwanted States and Changes on the Devices, Equipment and Processes, Faculty of Technical Sciences in Novi Sad (the project manager: Zoran Jeličić, Ph.D.)
- Development of Intelligent Supervisory-Control System for the Enhancement of the Building Energy Efficiency, Faculty of Technical Sciences in Novi Sad (the project manager: Filip Kulić, Ph.D.)

4. International Projects

- Action INCOMING: Interdisciplinary Curricula in Computing to Meet Labor Market Needs, Tallinn University, Tallinn, Estonia, Faculty of Technical Sciences, Novi Sad and others (TEMPUS project nr. 2012-3065/001-001, the project manager: Zora Konjović, Ph.D.)
- Power plants Robustification based On Fault Detection and Isolation Algorithms-PRODI project, within the Seventh Framework Programme (FP7), ICT, Network Embedded and Control Systems, contract number INFSo-ICT-224233;
- Phase Diagrams and Interfacial Energies, Alexander von Humboldt project, Technische Universität Berlin, Fakultät für Prozesswissenschaften, Fachgebiet Thermodynamik, Germany;
- Content Based Audio and Video Quality Assessment in Multimedia Networks, FP7-ICT-2009-5 program, Faculty of Technical Sciences Novi Sad (the project manager: Miodrag Temerinac, Ph.D.)
- FP7-ICT-2011-8/317882: Embedded learning platform, the Faculty of Technical Sciences, Univ. Novi Sad (coordinator), RD Institute Rudjer Boskovic, Zagreb, Faculty of engineering, Univ. Freiburg, Commissariat a l energie atomique et aux energies alternatives, Paris, RD Institute for automation and measurements, Warsaw, Creativitic Innova SL, La Rioja, RD Institute RT-RK, Novi Sad, Faculty of electrical engineering and computing, Univ. Zagreb, Ben Gurion university of Negev, (the project manager: Miodrag Temerinac, Ph.D.)

- IPA-HUSRB-1002/2.1.4/044: CIRENE, University Szeged (coordinator), Faculty of Technical Sciences Novi Sad, VOICT Novi Sad;
- HUTON Assisting humans with special needs: curriculum for Human-Tool Interaction Network, University of Belgrade, University of Novi Sad, State University of Novi Pazar, University of Patras, University of Ljubljana, University of Genoa (TEMPUS Project nr. 2012-3022 (the project manager: Nikola Jorgovanović, Ph.D.))
- Development of a common international English-speaking Master course of studies „Land management“ (Land and Property Management) in the context of the German Academic Exchange Service (DAAD) project Academic Reconstruction Southeast Europe (the project manager: Miro Govedarica, Ph.D.)
- STAR Project (the project manager: Filip Kulić, Ph.D.)
- FP7 PRODI-Power plants Robustification based On fault Detection and Isolation algorithms (the project manager: Dušan Petrovački, emeritus)
- IPA Center of Excellence for Advanced and Intelligent Control – CEFAIC (the project manager: Zoran Jeličić, Ph.D.)
- FP7 HOSPILOT (the project manager: Velimir Čongradac, Ph.D.)

5. International Academic Cooperation

The Department cooperates with several universities around the world (Berlin, Freiburg, Gent, Manchester, Wien, Scheffield, Pereira, Istanbul, Szeged, Bucharest) with which it exchanges the teaching staff, students and defines research projects of common interest.

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.

6. Business Activities in the Science-Technology Park

The teaching staff at the Department is the founder of one of the oldest companies in the Science-Technology Park at The Faculty of Technical Sciences which today functions under the name RT-RK ltd. and employs over 400 engineers on projects with the leading partners at the world market in the field of consumer electronics and embedded systems. 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 the SCI

Expanded List. The Impact Factor for the year 2011 is $IF2=0.625$.

Also, the Department for 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 Economic Support

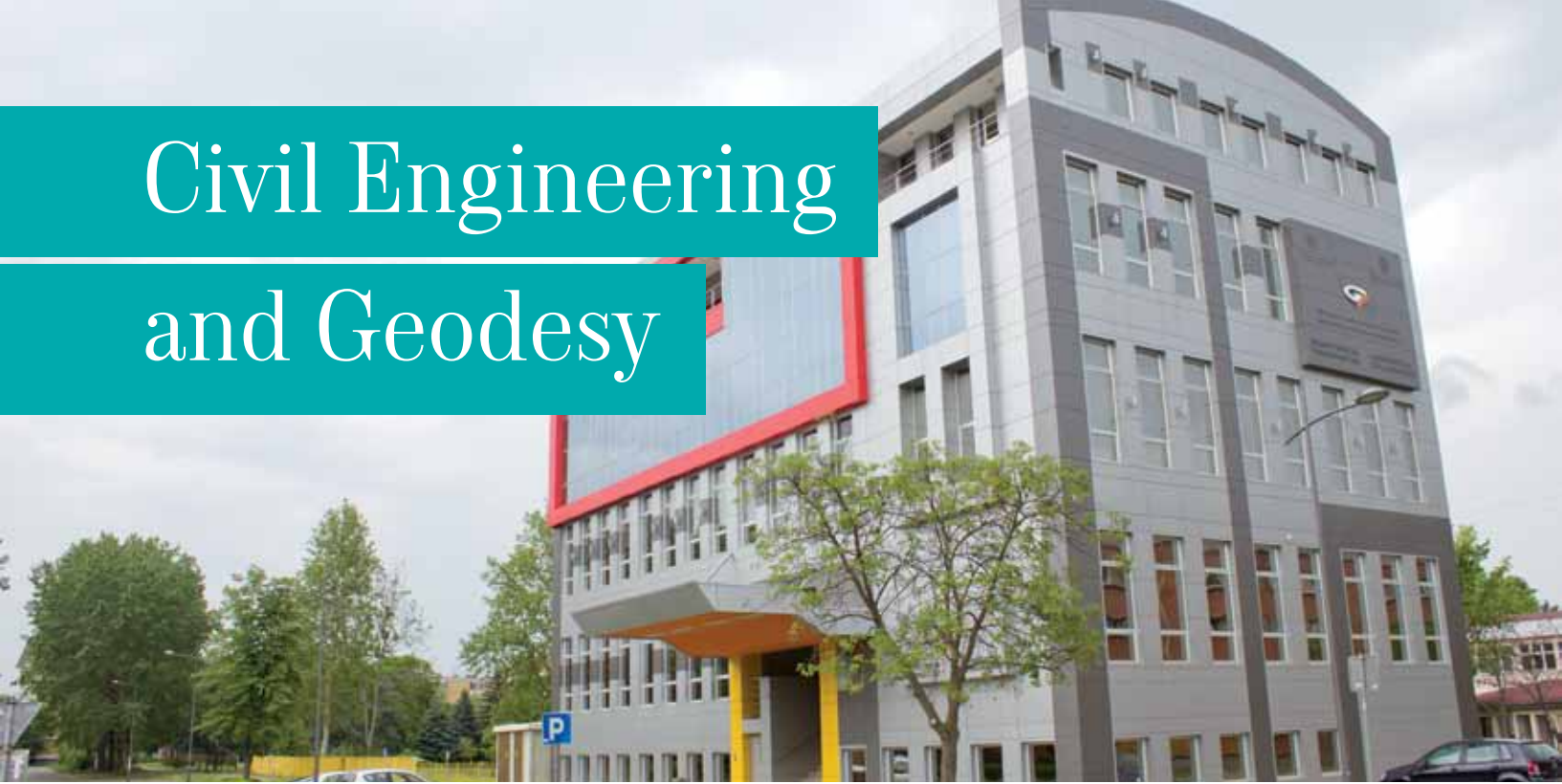
The Department has, up to this day, carried out several hundred projects in close cooperation with national companies: Sintelon, Potisje, Polet, VTI, Iritel, EI-Pupin, DKTS, NIS, Srbijagas, Viktorija grupa, The Geodesy Institute, Carlsberg Srbija, PC Water and Sewage Company, PC Informatika etc.

International Cooperation

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



Civil Engineering and Geodesy



Phone: +381 21 459 798
Fax: +381 21 459 295
E-mail: ladjin@uns.ac.rs, gradjevina@uns.ac.rs
Web: <http://gradjevinarstvo.ns.net>

Head of Department:
Prof. Đorđe Ladinović, Ph.D.

About the Department

The studies in Civil Engineering (Master academic studies and five-year-long Undergraduate studies according to the previous pre-Bologna study programme), have been completed by 1,190 students so far. At the Department for Civil Engineering, 41 candidates have received their Master's degree and 29 candidates have received their Doctoral degree. There are around 950 students currently studying at all study programmes in the field of civil engineering.

Studies

The Department for Civil Engineering and Geodesy organizes lectures at the following study programmes:

- Civil Engineering
- Geodesy
- Disaster Risk Management and Fire Safety

Studies in Civil Engineering are divided into:

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

FIRST CYCLE STUDIES – Undergraduate Academic Studies for obtaining the degree of a Bachelor with Honours in Civil Engineering (BSc) last for 4 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
- Hydrotechnics
- Road networks

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 profession, and the knowledge that enables them, if students decide for that option, to continue their studies. In the study group Structures, the emphasis is placed on designing and building concrete, metal, masonry and wooden structures. In the study group Hydrotechnics, students are enabled to use the basic principles in designing hydro-technical systems in the fields of water supply, sewerage, melioration, etc. In the study group Road networks, 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 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. For students, there is an obligatory professional practice, completed by students in construction companies of their personal choice. During the teaching process, 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
- Hydrotechnics
- Road Network
- Organization and Building Technology

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. In detail, this programme should enable students, within the selected study group, to additionally concretise their knowledge based on understanding basic principles 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 researches during the realization of this study programme.

The study programme of Specialist Academic Studies Energy Efficiency in Building presents the continuation of the study

programme of Master academic studies. It lasts for one year and is allocated 60 ECTS credits. Prerequisites for enrolling the study programme are completed Master academic studies with at least 300 ECTS credits, primarily in the fields of civil engineering and architecture. This study programme is a joint programme by three Departments: Department for Civil Engineering and Geodesy, Department for Architecture and Department for Energy and Process Engineering.

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 students to become capable for individual scientific and research work in the field of civil engineering. The research interest is decided by students on selecting courses to take, listen and pass. These courses contribute to 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 or individual (tutorial).

Studies in the field of Geodesy are divided into:

- 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 in Geodesy last for four years (240 ECTS credits), and the study programme is realized in the cooperation with the Department for Computing and Automation. 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 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 necessary knowledge from general educational and theoretic courses that will set the foundation for understanding geodesy and geoinformatics based on the principles of physics, mathematics, electrical engineering, and computer science. Senior years are intended for specialization courses that are to 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 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, if students require, 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 examinations from courses, 30 ECTS credits by passing theoretical bases for Doctoral dissertation, and 60 ECTS credits are obtained by elaborating and defending the Doctoral dissertation. Doctoral studies cannot last longer than 10 years.

The study programme in Disaster Risk Management and Fire Safety is divided as:

- Undergraduate Academic Studies
- Master 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 listen 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 fields: disaster risk management and fire safety management. This study programme is organized as a highly interdisciplinary and multidisciplinary study programme. The programme in the undergraduate studies in Disaster Risk Management and Fire Safety comprises educational and research areas of engineering science, which form lecturing units integrating many disciplines into an interdisciplinary programme. In the realization of the programme, students learn from curricula related to the segments of disaster risk management and fire safety, power engineering, electrical engineering, mechanical engineering, management, architecture, civil engineering and 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 students require, 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. At lectures, using the adequate didactic means, the predicted course content is presented, though students are at the same time introduced to research trends in that area. At practice classes, accompanying the lectures, students solve concrete tasks and are presented with the examples that additionally illustrate the course content. At practice, students are provided with additional explanations on the course content presented at lectures. Practice can be auditory, laboratory, computing and computer. Part of the practice can be taught in companies and other institutions.

Department organization

Teachers and assistants at the Department for 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 Hydrotechnics and Geodesy
- Chair of Geotechnics and Road Networks

Important results

Related to the existing staff possibilities and the equipment at the Department for 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.



Research

Within the research fields at the Department for Civil Engineering and Geodesy, over 70 scientific and research projects have been realized and more than 3,000 scientific and professional papers have been presented in the country and abroad.

Fields of research:

- Materials in building and concrete technology;
- Structural theory;
- Structures in construction;
- Structure assessment and repair;
- Building organization and technology;
- Construction management;
- Hydrotechnics;
- Geotechnics;
- Geodesy;
- Road networks.



Bridge over the river Tisa in Ada – students' excursion

Currently, the following projects are being realized and financed by the Ministry of Science and Technical Development of the Republic of Serbia:

- 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.

Cooperation with industry

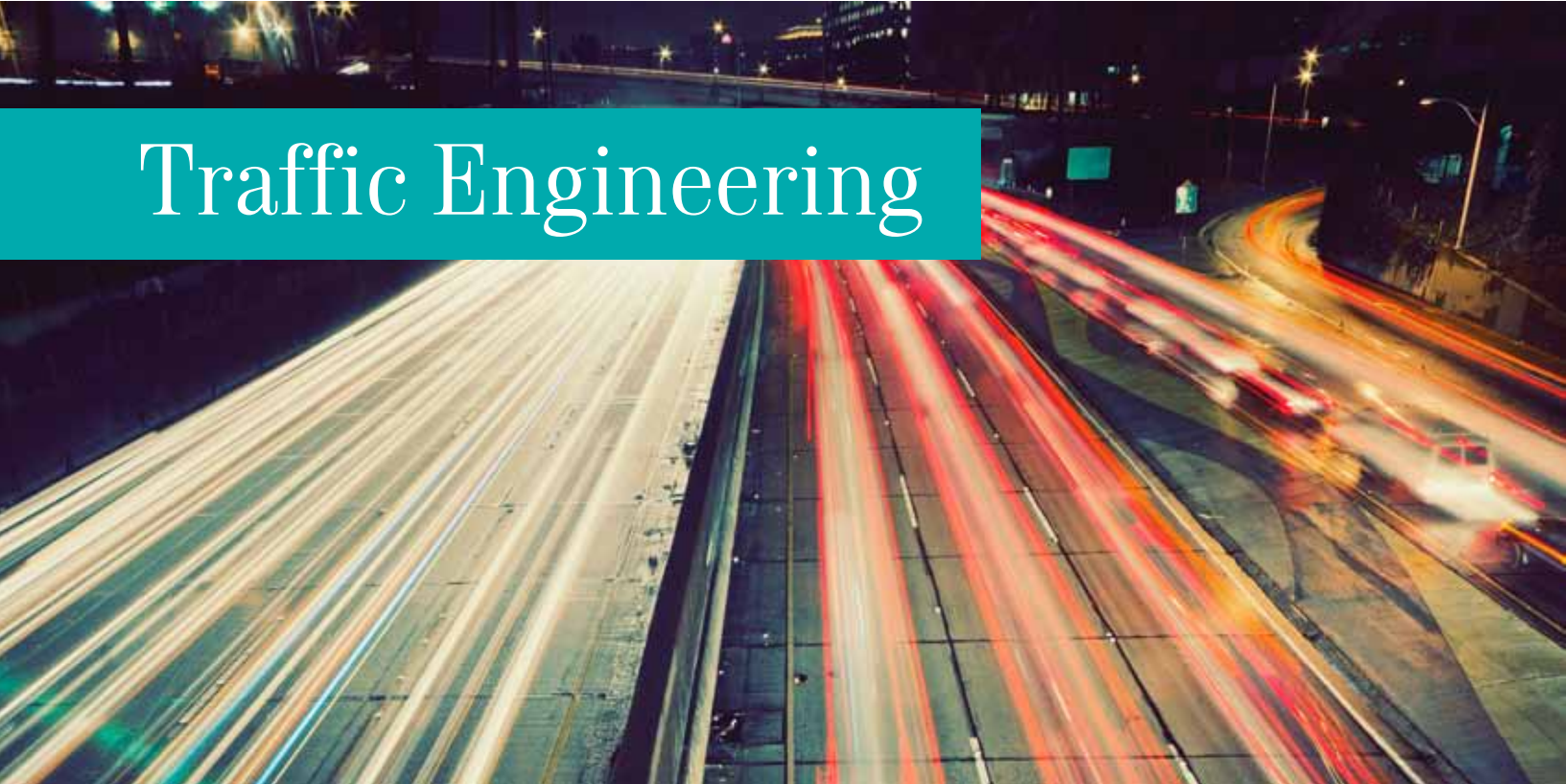
The programme for industry support, among others, considers the following:

- Researches 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.



Trial load on the bridge Sloboda – Novi Sad

Traffic Engineering



Phone: +38121 485 2488;
Fax: +381/21 450 644
E-mail: dept.traffic@uns.ac.rs
Web: <http://ftnsaobraćaj.com/>

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

About the Department

Until now, at the Traffic Engineering Department, 1,645 students have completed their studies, out of which 51 have received the titles of Bachelor degree, 327 have obtained the titles of Bachelor with honors degree, 561 have obtained the titles of Master degree and 706 graduated from this Department according to old study programmes. In addition, 45 have obtained Master of Science degrees and 24 candidates completed doctoral (PhD) studies. About 1,050 students are currently studying at all study programmes of the Traffic Engineering Department.

Studies

The studies at the Traffic Engineering Department 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 final paper which is awarded 15 ECTS in ECTS system.

During enrollment, a student is offered a choice to choose between the following study programmes:

1. Traffic Engineering and Transport
2. Postal Traffic and Telecommunications

After the completion of the fourth year, the title of Bachelor with honors in traffic engineering is obtained.

SECOND CYCLE STUDIES - master academic studies last one year (two semesters); being the continuation of undergraduate academic studies they are 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 (which are worth additional 180 ECTS in ECTS system). The Traffic Engineering Department consists of four chairs:

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



The Department is composed of:

- Assistant Professor Gordan Stojić, Ph.D.- associate for academic affairs
- Professor Todor Bačkalić, Ph.D. - associate for financial affairs
- Professor Jovan Tepić, Ph.D.- associate for investments and cooperation with industry
- Professor Valentina Basarić, Ph.D. - associate for science and international cooperation
- Dragan Bulješević - student' representative
- Ana Vajda - administrative and technical secretary

Research area

In addition to these basic services, the Traffic Engineering Department carries out the research, including the development studies and services, as required by economic and non-economic systems and enterprises through the following activities:

- planning and transport organization;
- management processes in transportation;
- transfer and application of research results into practice;
- engineering, consulting and marketing in the field of transport;
- designing in the field of traffic regulation and elaboration of technical documentation;
- traffic security;
- technology and storage capacity;
- development of expertise in the field of traffic security;
- organization of postal services.

The associates at the Traffic Engineering Department have realized a great number of scientific studies and development projects for the needs of transportation industry and non-economic systems in the field of traffic security and control, traffic lines, technology, transport, development of transport, management and logistics of companies and other fields. The Traffic Engineering Department permanently performs research in the following areas: safety, regulation and control systems, expertise in the field of traffic accidents, public transport of passengers and goods, and research in the field of logistics of companies, postal services.

Industry support programme

In recent years, Traffic Engineering Department has been involved in the implementation of studies, projects, expertise from various fields of transport, contributing significantly to solving problems in the functioning of some regions, cities and enterprises, both in our and surrounding countries. In the previous period, some of them were considered to be of particular importance:

- Parking studies (Novi Sad, Niš, Valjevo, Užice, Bačka Palanka, Šabac),
- Study of public transport (Belgrade, Kragujevac, Banja Luka, Indjija),
- Traffic studies (Novi Sad, Indjija),
- Plans for technical regulation of traffic (Ruma, Indjija, Brčko, Bijeljina, 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, Leskovac, Vranje, Niš, Sombor, Vrsac, Belgrade, Zaječar, Užice, Šabac, etc.).

The Traffic Engineering Department has also been engaged by the Ministry of Science and Environment in the implementation of four projects of national and regional importance in the field of road, water and rail transport. In addition, equipping of laboratory for traffic and transport is currently performed, which is of great importance for development of the Traffic Engineering Department.



Architecture and Urban Planning



Phone: +38121 455 587
Fax: +38121 455 587
E-mail: architecture@uns.ac.rs
Website: www.arhns.com

Head of Department:
Prof. Darko Reba, Ph.D.

About the Department

Department for Architecture and Urban Planning at the Faculty of Technical Sciences, University of Novi Sad, was founded in the autumn of 1996, and today it has over 1,250 graduate engineers in this complex discipline – both technical and artistic simultaneously. Together with the programme for undergraduate studies, the first generation of graduate students was also enrolled, so more than 20 candidates have obtained their Master's degree so far at the Department, and 11 candidates defended their Doctoral Dissertations. Sixteen years later, one can observe with pleasure the reasonability and the profound sense of founding Architecture at the Faculty of Technical Sciences, where over 2,350 students have been enrolled in all years of studies until today.

Department for Architecture at the Faculty has a modern and open curriculum and syllabus based on the union of theory

and practical experience, on local influences and worldwide trends, on the harmonious combination of architecture as art and as built environment with the great social, economic, technical, cultural and developmental significance. Beginning with 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. Department curricula at all study cycles were accredited in 2007 as the first ones in the field of Architecture in Serbia.

Studies

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

- Architecture
- Stage Architecture, Technology and Design

On completing the undergraduate academic studies in Architecture, and after defending their graduation thesis, students obtain the degree of a Bachelor with Honours in Architecture (BSc) and they are allocated 240 ECTS credits.

On completing the undergraduate academic studies in Stage Architecture, Technology and Design, students obtain the degree of a Bachelor in Stage Design and are allocated 240 ECTS credits.

SECOND CYCLE STUDIES – Master Academic Studies – Continuing their studies at the second cycle, students decide on one of the four study programmes:

- Architecture
- Regional Development Planning and Management
- Stage Architecture and Design
- Digital Technologies, Design and Production in Architecture and Urban Planning

At 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, students obtain 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, students obtain the degree of a Master in Regional Development Planning and Management. At the study programme Stage Architecture and Design, on completing the second semester and defending the Master thesis, students obtain the degree of a Master Artist in Stage 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, students obtain the degree of a Master in Digital Design in Architecture.

THIRD CYCLE STUDIES – Doctoral Academic Studies last for three years, and students decide to enrol the study programme Architecture or the study programme Stage Design. Lectures are held in first two years (four semesters), and during the third year (fifth and sixth semester) candidates for the PhD diploma elaborate on their Doctoral Dissertation. At the study programme Architecture, on elaborating and defending the Doctoral dissertation, candidates obtain the degree of a Doctor of Science in Architecture. At the study programme Stage Design, on elaborating and defending the Doctoral dissertation, candidates obtain the degree of a Doctor of Art in Stage Design.

Multidisciplinarity has always been the basic policy on which the Department for Architecture and Urban Planning insisted, and it will continue to be so. In this sense, the accreditation

also included the Specialist Studies in the field of Architecture and Urban Planning, in cooperation with other faculties within the integrated University of Novi Sad, other universities in the region, as well as institutions and organizations whose activities can contribute to the quality of educating the future specialist students.

Department for Architecture and Urban Planning cooperates with all other departments at the Faculty of Technical Sciences, with a range of courses taught at Architecture successfully by professors and assistants from the entire Faculty, especially from the Department for Civil Engineering. All courses and topics related to building and construction are lectured by professional and competent members from different chairs. Cooperation with the experts from different fields and diverse organizations in the city has been developing each year; thus, better results are yet to be expected.

From its early age, the Department has had a range of expert projects and studies for towns and villages in Vojvodina, from Sremska Mitrovica to Kula and Apatin, from Bečej old and new, Irig and Bačka Palanka, all the way to Novi Sad; thus, the arrangements are being made for new projects. Department has continually organized annual exhibitions of students' works. Since these exhibitions have caused enormous interest among the professional and cultural public, some of these exhibitions were transferred to other towns (Sombor, Subotica, Zrenjanin, Bečej, Pančevo, etc.).

One of the halls on the fourth floor at the Faculty has been adapted into the Gallery named after a professor, "Đura Kojić", where various exhibitions have been organized throughout the years with large success. Besides students' works, the Gallery also presents the works from secondary school pupils, as well as works by prominent architects from the country and abroad. To make architecture and urban planning closer to students, as well as other interested public, numerous lectures and visiting lectures of prominent persons have been organized in the amphitheatre "Ranko Radović" on the same floor, mostly in the area of built environment, and they are intended for wider professional and cultural public.

Each year, teachers, assistants, associates and numerous students participate at diverse national and international professional meetings, congresses, symposiums, and conferences, as well as summer schools and expert workshops. Large number of students takes the mobility programmes and enrolls studies at the faculties abroad lasting from one semester to one academic year, which enables them to enrich their knowledge listening to the experiences by professors from diverse surroundings.

Young colleagues who graduated from our Department have won numerous awards and first prizes at different competitions in the last couple of years, both in the country and worldwide, which undoubtedly confirms the high level and quality of studies and acquired knowledge.

Industrial Engineering and Management



Phone: +38121 485 2179
Fax: +38121 459 536
E-mail: blalic@uns.ac.rs
Web: <http://www.iim.ftn.uns.ac.rs>

Head of Department:
Assistant Prof. Bojan Lalić, Ph.D.

About the Department

The time in which contextual society asserts its dominance over information and post-industrial society requires specific competencies and skills to manage work processes, which are acquired through educational procedure at the Department of Industrial Engineering and Management, under the given settings carefully coordinated process of research, education and its application in the economy, development, design, organization and management.

Department of Industrial Engineering and Management have evolved from the Department of Industrial Production Advancement which was established in 1960 as a part of the Faculty of Mechanical Engineering in Novi Sad. Prof. Dragutin Zelenović obtains the greatest credit for its academic estab-

lishment. Today, it is one of the most important departments at the Faculty of Technical Sciences with over ninety employees and the largest number of students on study programmes that are organized.

Since the establishment of the Department of Industrial Engineering and Management the degrees are obtained by 951 engineers, 1,629 engineer - Master, 147 Master of Science, 104 Doctor of Science, 140 MBA and 134 professional Specialist.

A large number of graduate students from the Department now work in small, medium and large systems, but also in their own companies in a very responsible position, which is a sufficient indicator of successful educational activity of the Department of Industrial Engineering and Management.

Studies

Three different study programmes are organized and carried out at the Department of Industrial Engineering and Management:

1. Industrial Engineering
2. Engineering Management
3. Mechatronics, Robotics and Automation

Studies at the Department of Industrial Engineering and Management at the Faculty of Technical Sciences in Novi Sad are divided into academic and professional studies. Academic studies are organized in three cycle degree studies.

FIRST CYCLE STUDIES - Undergraduate studies (Bachelor with Honours), that last four years (eight semesters), with the obligation to acquire 240 ECTS (European system of transferable credits), including the graduation thesis. During the registration procedure a student enrolls one of three Study programmes:

Industrial Engineering – after enrolling the 4th year of studies a student chooses one of the following fields of study:

- System Design, Organization and Management;
- Automation of Work Process;
- Information-Management and Communication Systems;
- Quality and Logistics

Engineering Management – after enrolling the 4th year of studies a student chooses one of the following fields of study:

- Enterprise organization and management;
- Innovation and Entrepreneurship;
- Project Management;
- Investment Management;
- Information Management;
- Quality Management and Logistics;
- Risk and Insurance Management;
- Industrial marketing and media engineering;
- Human Resource Management.

Mechatronics - after enrolling the 4th year of studies a student chooses one of the following fields of studies:

- Mechatronics, Robotics and Automation
- Mechatronics in Mechanization

SECOND CYCLE STUDIES - Graduate academic Master's studies, last one year (two semesters) and are the sequel of undergraduate studies (worth additional 60 ECTS). Upon completion, the student acquires a total of 300 ECTS. In addition to the study groups that are present at undergraduate academic studies, Department for Industrial Engineering and Manage-

ment organizes three new study programmes: Development and Product Lifecycle Management, Advanced Engineering Technologies and Logistic Engineering and Management that are developed within the international Tempus projects.

THIRD CYCLE STUDIES - Doctoral studies last three years (six semesters with a total of 180 ECTS) and they are open to applicants who have gained 300 ECTS during their prior education in the appropriate fields. Doctoral studies are organized through three study programmes: Industrial Engineering and Engineering Management and Mechatronics.

SPECIALIST ACADEMIC STUDIES last three semesters and upon the graduation student acquires 90 ECTS. The studies are organized through two study programmes: Industrial Engineering and Engineering Management. Upon the completion of specialist academic studies a student is permitted to continue his higher education at doctoral studies.

Student can also enrol in professional studies. Specialist professional studies are organized in the field of engineering management specializing in the field of E-Business, Human Resource Management, Public Relations, Controlling and Internal Audit, Insurance and Risk, Media Management, Investment Management, Actuarial and Management and Public Procurements. They last one year and upon graduation student obtains 60 ECTS.

Two-year international specialized studies in the field of Business Management - **MBM** - Master of Business Administration provides the necessary knowledge to solve specific problems of the business environment and raising competence in the field of management system and its elements. They are implemented in cooperation with UBI – United Business Institutes, Brussels. Upon graduation, student obtains Joint Degree at the University of Novi Sad and United Business Institutes, with the actual 120 ECTS.

Studies at the Department are supported by the platform of distance learning, which allows combined learning in class-



Laboratory for production and assembly systems

rooms and laboratories, as well as through the Internet, which provides a high level of availability of teaching materials.

First students, firm was formed at the Department of Industrial Engineering and Management, in order to establish a realistic environment in which students acquire knowledge and work experience (learning by doing) in real work processes.

Scientific and Research Work

At the Department of Industrial Engineering and Management the scientific and research work take place in the following main areas:

- Research of technological production, organization and management of industrial structure system;
- Research in the field of mechatronics, robotics and automation;
- Research requirements of application of information and communication technology in work processes;
- Research in the area of quality, effectiveness and system-integrated support and logistics;
- Research in the field of engineering management;
- Research in the field of identification technologies.

Scientific and research work are carried out through one year or long-term projects funded by the Republic Ministry of Education, Science and Technological Development and the Provincial Secretariat of Science and Technology APV, as well as through numerous international projects. The following remarkable achievements should be pointed out: general model flow of materials in production systems, general model of information and management systems in enterprise, automated procedure of modelling production structures (APOPS-08), multifinger flexible robotic pincers, IML robot and DRINKO-MAT (Machine for selling drinks).

Since 2010 the Department of Industrial Engineering and Management publishes an international journal: «International Journal of Industrial Engineering and Management (IJIEM) that is present in the SCOPUS database.

Since 1975 every third year International Scientific Conference «Industrial Systems» is organized with main goal to exchange information on scientific research and knowledge in areas of interest.

Its scientific international cooperation is accomplished through Tempus, WUS, CEEPUS and FP7 projects.

Department organisation

Department for Industrial Engineering and Management is divided into four Chairs:

1. Chair of Production Systems, Organization and Management,
2. Chair of Mechatronics, Robotics and Automation,
3. Chair of Information and Communication Systems,
4. Chair of Quality, Effectiveness and Logistics.

The Chairs have at their disposal the following laboratory word:

- Laboratory for Production and Assembly Systems,
- Laboratory for Production Systems Management,
- Laboratory for Distance Learning,
- Laboratory for Media Systems,
- Laboratory for Catastrophe Risk Management
- Laboratory for Application of Programmable Logic Controllers and Movement Control
- Laboratory for Robotics,
- Laboratory for Mechatronics,
- Laboratory for Automation,
- Laboratory for Intelligent Systems and Artificial Intelligence
- Laboratory for Computer Integrated Systems,
- Laboratory for the Implementation of Automated System,
- Laboratory for Identification Technologies,
- Laboratory for Information Management Systems
- Laboratory for Quality, Logistical Support and Maintenance.

This allows students to receive practical knowledge of high quality.



Drinkomat

Economy Support Programme

In addition to its educational activity, potentials of the Department for Industrial Engineering and Management are used for domestic and international professional projects. Vocational and technical activities with companies and service organizations, the Department organizes in cooperation with research and development units: RTC - Research and Technology Centre and CAM Engineering. In addition, the Department performs these activities through its own centres: Centre for Human Resources Development, Youth Entrepreneurship Centre, Centre for Disaster Risk Management, Centre for Products Development and Management and Centre for Identification Technology. Vocational and technical activities include the development of new products, feasibility studies and consultancy services of the following types:

- Projects of enterprise production structure
- Projects of production programme development,
- Projects of technological structure of industrial systems,
- Projects of machinery and production management,
- Projects of systems monitoring, data management and exploitation,
- Projects of material handling (storage and transport systems),
- Projects of integrated system support structure,
- Projects of organizational structure
- Projects of management information system
- Projects of capital appraisal,
- Projects of management system introduction:
 - Quality (ISO 9000)
 - Environmental (ISO 14000)
 - Health and employees safety (BSI OHSAS 18000)
 - IT Services (ISO 20000)
 - Safety in food production (ISO 22000)
 - Information security (ISO 27000)



IML Robot

Special part of its work programme represents knowledge innovation through seminars organized for the participants from different enterprises. Seminars are organized in all areas of the Department. In 1980 the Department, together with the company FESTO in Germany, established a joint laboratory of the Centre for didactics in the field of process automation. Under the influence of trends in business, the Centre for Competitiveness and Clusters Development was founded in 2007, and in 2009 CISCO Entrepreneur Institute, Training Centre Serbia with the support of CISCO Systems Company, to explore the conditions for the application of information technology and the Internet in their own business, small and large systems, based on the knowledge formed in a joint work with Stanford and Cornell Universities in the United States.

Laboratory for computer integrated systems



Graphic Engineering and Design



Phone: +38121 485 2620
E-mail: novakd@uns.ac.rs
Web: <http://www.grid.uns.ac.rs>

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

About the Department

Graphic Engineering and Design is a new department within the Faculty of Technical Sciences which was founded in 1999. So far 380 students have graduated from the Department while 8 have obtained a Master's degree and 5 candidates have obtained a Doctoral degree.

Studies

The studies at the Department for Graphic Engineering and Design at the Faculty of Technical Sciences are organized in three cycles. Studies at the Graphic Engineering and Design study programme are at all three cycles.

FIRST CYCLE STUDIES - undergraduate academic studies, last for four years (eight semesters) and are worth 240 ECTS credits (in the European Credit Transfer System) including the 15 credits worth of the Bachelor thesis.

SECOND CYCLE STUDIES - Master academic studies, are the continuation of undergraduate studies, last one year (two semesters) and are worth the additional 60 ECTS credits (in the European Credit Transfer System) including the 30 credits worth of the Master thesis. This together with undergraduate studies amounts to 300 ECTS

THIRD CYCLE STUDIES – Doctoral academic studies are the continuation of Master studies, last for three years (six semesters) and are worth 180 ECTS credits (in the European Credit Transfer System). With previously completed studies this amounts to 480 ECTS credits

Department structure

The Department of Graphic Engineering and Design comprises the Chair of Graphic Engineering and Design, Graphic Centre and GRID laboratory.

Scientific research

A large body of scientific and professional research has been realized through the Department of Graphic Engineering and Design. The Department is the host of a bi-annually organized scientific and professional symposium on Graphic Engineering and Design – GRID. Since 2010 the Department publishes its scientific journal Journal of Graphic Engineering and Design – JGED. The Department is involved in various projects 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 of the province of Vojvodina.

Programme for industry support

The Department is oriented towards direct cooperation with the industry sector through:

- providing consultancy services,
- developing expertise,
- providing services in solving technical and technological problems,
- designing studies and development plans,
- designing and selecting contemporary equipment for production process,
- development and selection of current software,
- providing laboratory services,
- common research and development projects,
- educational activities for personnel, specializations, professional development courses, common publications and professional practice for students at different levels of study and other services of common interest.



Environmental Engineering and Safety at Work



Phone: +38121 485 2369
Fax: +38121455 672
E-mail: milanmartinov@uns.ac.rs
Web: www.izzs.uns.ac.rs

Head of Department:
Prof. Milan Martinov, Ph.D.

About the Department

Until now, at the Department of Environmental Engineering and Safety at Work, 506 students have obtained their degrees (197 have obtained Bachelor with honors degrees in engineering and 309 have obtained Master degrees in engineering), 39 received their Master of Science degrees and 15 received their doctoral (PhD) degrees. About 810 students are currently studying at the Department and the total student enrollment is amounting to 1,833.

Studies

The 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. In addition, there are specialization academic studies, lasting two years.

FIRST CYCLE STUDIES – undergraduate academic studies last 4 years (eight semesters) with possibility of obtaining 240 ECTS (European Credit Transfer System).

During enrollment, students may choose between two study programmes:

- Environmental Engineering
- Safety at Work

Within the Department, some new study programmes have been started since 2013: Clean energy technologies and Tem-pus master programme for treatment engineering and water protection.

SECOND CYCLE STUDIES – master academic studies last one year (two semesters) and are the continuation of the undergraduate academic studies. After the completion of the second cycle studies, student is awarded the maximum of 300 ECTS.

THIRD CYCLE STUDIES - doctoral academic studies last three years (six semesters) and after the completion, a student obtains a total of 480 ECTS.

Department structure

There are two Chairs at the Department - the Chair of Environmental Engineering and the Chair of Bio-system Engineering.

In accordance with Department activities, education, research and transfer of knowledge through scientific projects and cooperation with economy, industry, and public sector, main issues in the field of environmental protection are generally classified into four groups:

- Waste Management and Material Flow;
- Environmental Management – ECO Management;
- Bio-systems Engineering;
- Water Management.

Laboratory for monitoring the landfill, waste water and air

Within the Department, there is an accredited laboratory for monitoring of landfills, waste water and air. The laboratory is equipped with the following valuable devices:

- Spectrophotometer;
- Atomic absorption spectrometer;
- Mobile gas chromatograph;
- Multi-gas detector to determine the concentration of CH₄, CO₂, CO, H₂S, O₂ and measurement of gas flow, pressure and temperature;
- De-ionizer, digester for sample preparation;



- Other necessary equipment and instruments - pH meters, turbidimeters, HPK thermostat, magnetic mixer, centrifuge, digital scales, analytical scales, and so on.

Research areas

- Environmental engineering – the analysis on the state of the environment and waste management;
- Energy and fuels - renewable energy sources;
- Agricultural engineering - sustainable development of agriculture and rural areas;
- Ergonomics - Safety at Work.

Significant results

- Over 100 published papers in international and national journals (papers presented at over 50 international and national symposia and congresses);
- Membership and participation of our teachers in national and international expert teams and organizations.
- Since 2008, the magazine KOMPAKT has been released; it is the first magazine in our region dealing with waste management published by the Department of Environmental Engineering and Safety at Work.

Current research

- Determination of landfill pollution and monitoring model, risk assessment, determination of reference waste amount by modern satellite-information technologies in order to support legislation - MOPRORK project;
- Identification of data on wastewater infrastructure in the Republic of Serbia;
- The development of computerized database for recycling industry;
- Phase IV of the Project MONET CEECs - POPs concentrations in ambient air of the Central and Eastern Europe (CEE): Application of the passive air sampling technique as a tool for trend determination, and effectiveness evaluation



Department laboratory for environmental engineering

of international conventions, RECETOX, Masaryk University, Brno, Czech Republic;

- Improvement and development of hygiene and technology procedures in the production of food of animal origin in order to obtain high-quality and safe products competitive in the world market, Ministry of Science and Technological Development of the Republic of Serbia;
- Network for Education and Training for public environmental laboratories - NETREL (TEMPUS project);
- Setting up Landfill Database and Research on Possibilities CH₄ for use in Serbia, financed by Global Methane Initiative (U.S. EPA);
- Pilot Methane Utilization Project, financed by Global Methane Initiative (U.S. EPA);
- Development of Environment and Resources Engineering Learning - Darrell, financed by EACEA (TEMPUS Project);
- Drinking water quality risk assessment and prevention in Municipality Novi Sad, Serbia, financed by the NATO Science for Peace and Security;
- Network for Education and Training for public environmental Laboratories - NETREL, financed by EACEA (TEMPUS Project);
- Development and improvement of technologies for energy-efficient use of multiple forms of agricultural and forest biomass in an environmentally sound manner;
- IPA Project: Establishing the cross-border development of biogas industry via joint determination of biogas potentials, education, research and innovation;
- The potential for biogas production in Novi Sad and contribution to the protection of the environment;

- Biogas plant - instructions for making the previous feasibility study, including the example of a biogas plant.

Industry support programme

- Assessment and evaluation of strategic environmental impact;
- Monitoring of the environment;
- Regional and municipal waste management plans;
- Feasibility study of the projects;
- Studies and preliminary design in the field of renewable energy sources;
- Elaboration of design and planning documentation in the field of environmental protection.



Fundamental Disciplines in Engineering



Phone: +381216350 770
Fax: +38121 6350 770
E-mail: root@imft.ftn.uns.ac.rs
Web: <http://imft.ftn.uns.ac.rs>

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

Department structure

The Department for fundamental disciplines in engineering is organized into three chairs:

- Chair of Mathematics (35 members, head: Professor Mila Stojaković, Ph.D.)
- Chair of Physics (13 members, head: Professor Ana Kozmidis Petrović, Ph.D.)
- Chair of Social Studies and Arts (10 members, head: Professor Radoš Radivojević, Ph.D.)
- Chair of Engineering Animation (8 members, head: Professor Ratko Obradović, Ph.D.)
- Physics Laboratory
- Center for Mathematics and Statistics (CMS)

Education

The Department is involved in the education of students of all the departments at the Faculty of Technical Sciences, at the undergraduate, Master and Doctoral as well as specialist studies. Most of the subjects taught at the Department are on the first and second years of study. The Department also offers its study programme: Animation in Engineering – undergraduate, Master and Doctoral studies.

Doctoral studies

As of 2006/2007 academic year the Department offers Doctoral degree programmes in the area of Mathematics in Engineering and since 2012/13 also in Animation in Engineering.

Scientific research

The Department has an exceptionally successful scientific record. Three members of the Serbian Academy of Arts and Sciences come from this Department: academician professor Mirko Stojaković who founded the Chair of Mathematics, academician professor Vojislav Marić who was later the head of the Chair over a long period of time and academician professor Miljko Satarić from the Chair of Physics.

International cooperation

International cooperation of the Department takes the form of individual contacts and cooperation of with the members with of scientific institutions outside the country. Most significant is the cooperation with:

- 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
- Technische Universitaet Dresden, Germany
- Technische Universitaet Berlin, Germany
- University of Auckland, New Zealand
- Catholic University Nijmegen, the Netherlands
- University of Montreal, Canada
- Universita di Torino, Italy
- Tech. University Bucuresti, Romania
- Debrecen University, Hungary
- Faculty of Economics in Budapest, Hungary
- Faculty of Philosophy in Szeged, Hungary

The Department has organized or co-organized numerous 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, Bratislava,
- Prof. J. Miller, Trinity College Dublin,
- Prof. H. G. Roos, Technische Universitaet Dresden,
- Prof. B. de Baets, University of Gent, Belgium
- Prof. H.P. Barendregt, Catholic University Nijmegen, member of the Royal Netherlands Academy of Arts and Sciences

The Department has an exceptionally successful cooperation with all the other departments at the Faculty of Technical

Sciences as well as with the Faculty of Sciences at the University of Novi Sad, the Institute of Mathematics of the Serbian Academy of Arts and Sciences, and the 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.

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

The laboratory of the Center for Mathematics and Statistics, equipped with 16 computers, provides the facilities for conducting serious mathematical and statistical research using the latest software. The results of these studies are published in renowned scientific journals.

Cooperation with the industrial sector

This cooperation is realized through the Center for Mathematics and Statistics which provides services in the areas of education, programming, statistical data analysis and application of mathematical models to different practical fields.

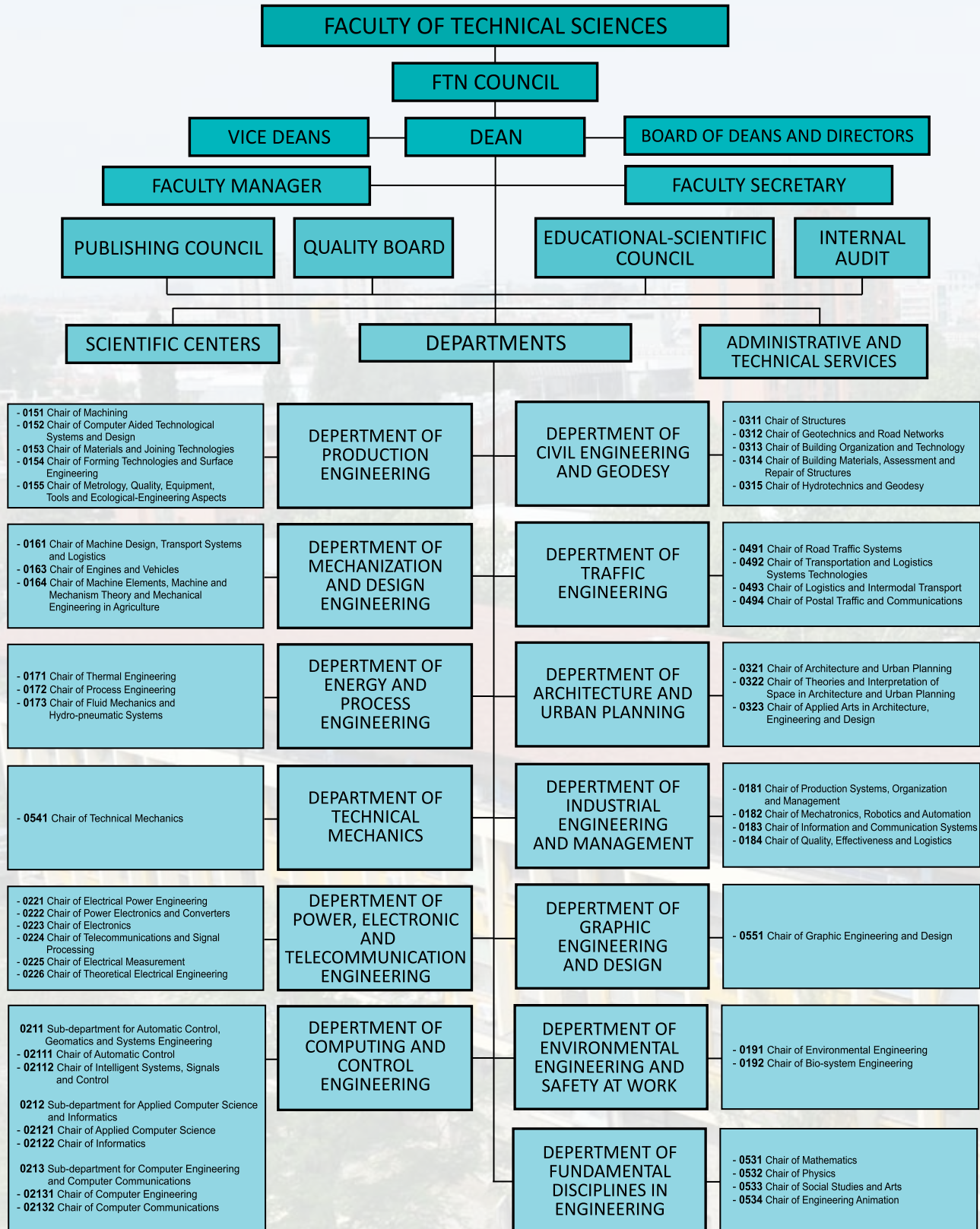
Publishing and research presentation

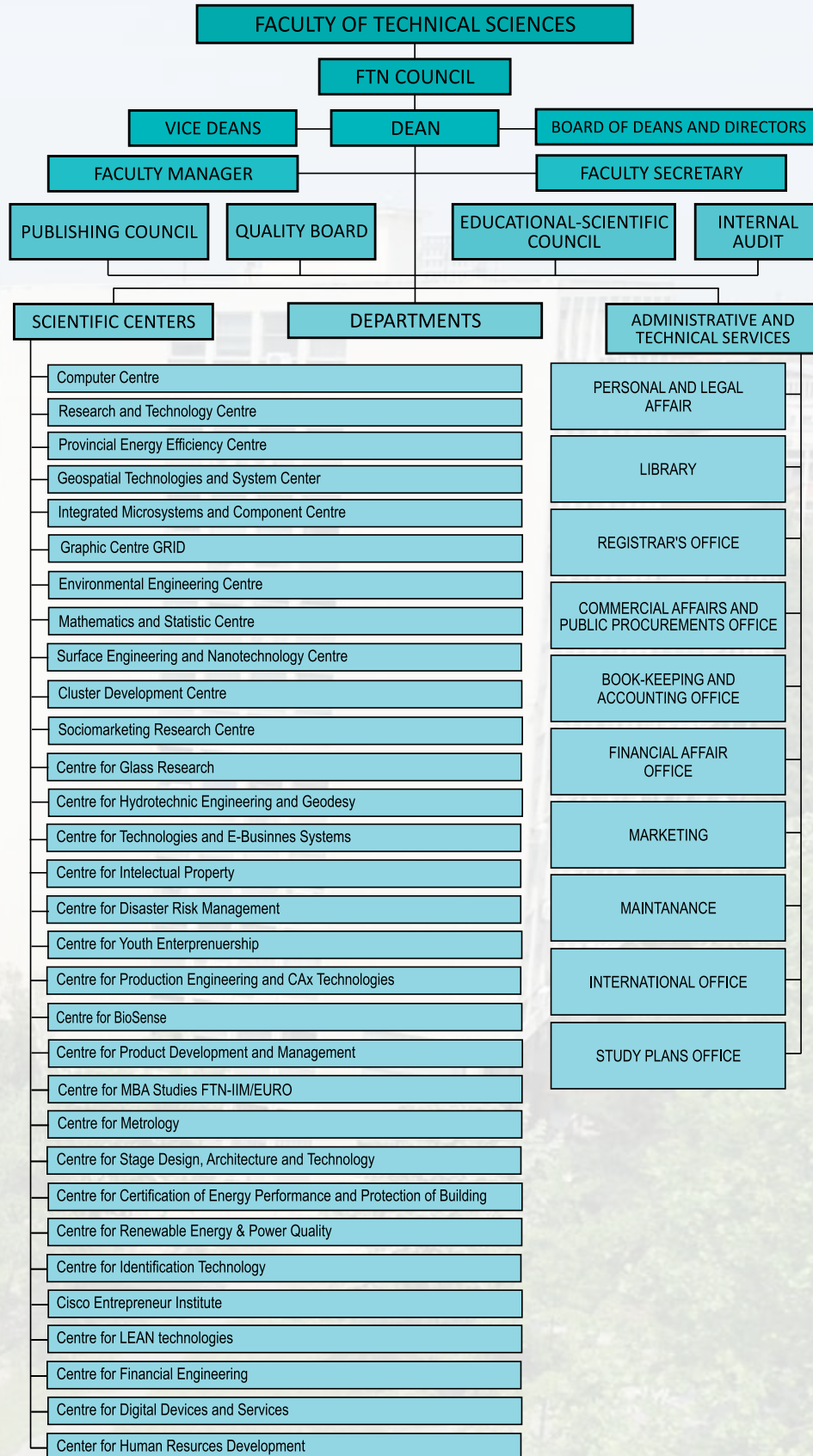
This is related to the plentiful educational and scientific activity at the Department and has resulted in more than a hundred course books, scientific monographs published by the Department members.



Organizational Structure of the Faculty







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