



University of Novi Sad
Faculty of Technical Sciences



overview of
**INTERNATIONAL
PROJECTS**
2022/2023

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UNIVERSITY OF NOVI SAD
FACULTY OF TECHNICAL SCIENCES

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OVERVIEW OF INTERNATIONAL PROJECTS

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OVERVIEW OF INTERNATIONAL PROJECTS

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2022/2023

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Foreword

Humanity has always been challenged by constant changes and social events that inevitably affect our lives, but what is constant is the prosperity of science, which contributes to improving our understanding of life and the problems we face every day. It is science that invents solutions, leads to new questions of the curious, changes the flow and experience, and is sure ground under our feet. What is science without humanity, and what is our work in our lifetime if it does not trigger an avalanche of changes for at least a slightly better future for the upcoming generations?

Encouraged by that thought, we strive to shape our research, knowledge and understanding into works worth mentioning. The Faculty of Technical Sciences is home to a large number of engineering disciplines that primarily and rapidly change the future of humanity, and it is up to researchers and scientists to direct the improvement correctly with their observations. We are committed synergistically with other researchers around the world to contribute to science, and to make our achievements applicable in industry and economy, so that the benefit reaches everyone faster. In the years behind us, we have witnessed that this view of the principle of work has an effect, and that we represent an important part of the chain in achieving sustainable goals, encouraging the development and improvement of ideas in the economy.

The words of Stephen Hawking: "Scientists have become the bearers of the torch of discovery in our quest for knowledge", encourage us to illuminate the unexplored parts of science and continue on the path of knowledge. At the Faculty of Technical Sciences, the contribution to science comes from the experiences of professors and assistants, and on the other hand, what always moves us are the excellent ideas of young assistants, doctoral students, associates and researchers, who gladly accept opportunities to achieve notable successes in cooperation with us. We are a safe harbor for those eager for knowledge, and many colleagues have gone out into the world and illuminated our scientific work in the best way around the world. We strive not only for the quantity of papers and patents, but for the quality and substance of our research, which this year's researchers and scientists from the Faculty have justified.

For the benefit of all those who have been helped by our works, those who will continue even better and more successfully where we once stopped, we leave a mark in the scientific work of the institution, for a better tomorrow. Let science at the Faculty of Technical Sciences continue to develop, contribute and resolve. As Carl Sagan said: "Somewhere, something incredible is waiting to be known.", we recognize that great challenges and successes are ahead of us.

The Faculty of Technical Sciences is proud to represent the current state in the field of international research that is being undertaken in our laboratories.

Prof. dr Darko Stefanović

Vice-dean for Science and International Cooperation

5
ERASMUS+
STRATEGIC
PARTNERSHIP

**INTERNATIONAL
COOPERATION
PROJECTS**

2022-2023

5
HORIZON EUROPE

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H2020

1
EPIC GAMES
UNREAL ENGINE

16
BILATERAL
AND
MULTILATERAL
COOPERATION

17
COST

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ERASMUS+
MUNDUS

35
CEEPUS

1
USAID

1
U.S.
EMBASSY

2
EUKI

50
ERASMUS+
CREDIT
MOBILITY

4
ERASMUS+
JEAN
MONNET

2
ERASMUS+
KNOWLEDGE
ALLIANCE

9
ERASMUS+
CAPACITY
BUILDING -KA2

TOTAL
160

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.

Seen as a means to drive economic growth and create jobs, Horizon 2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.

By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

Horizon 2020 is open to everyone, with a simple structure that reduces red tape and time so participants can focus on what is really important. This approach makes sure new projects get off the ground quickly – and achieve results faster.

The EU Framework Programme for Research and Innovation will be complemented by further measures to complete and further develop the European Research Area. These measures will aim at breaking down barriers to create a genuine single market for knowledge, research and innovation.



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

1. INnovation and excellence in massive-scale COMmunications and information processing- INCOMING

Description: Massive-scale data acquisition and information processing for large infrastructures, such as smart grids, smart transportation or smart industry, underpins the emerging fourth industrial revolution. 5G mobile networks and mobile edge computing (MEC) will provide communication and computation platform for such intelligent infrastructures to become a reality. Recognizing the need for expertise and leadership in this domain, with onward looking goal to support rapidly growing regional ICT sector, Faculty of Technical Sciences of the University of Novi Sad (Serbia) established the Centre for intelligent COMmunications, Networking and Information proCessing (ICONIC). ICONIC collects strong research team with a vision to become regional hotspot for 5G research and innovation, focusing on massive Machine-Type Communications, Large-Scale Distributed Information Processing, and Reconfigurable Hardware Design. INCOMING project (Innovation and excellence in massive-scale COMmunications and information processING) lays out ambitious research-intensive and innovation-oriented plan to make the ICONIC centre regional 5G lighthouse by twinning it with Aalborg University (Denmark), Chalmers University of Technology (Sweden) and German Aerospace Centre (Germany). INCOMING will use staff exchanges, expert trainings, summer schools and workshops to boost the research excellence of ICONIC staff members focusing on ESRs. The twinning program will gradually shift focus from research to innovation-driven implementation of the promising research outcomes.

Contact person: Prof. dr Dejan Vukobratović

Period of realization: 2020 - 2022

ID: 856967-INCOMING-H2020-WIDESPREAD-2018-03

<https://cordis.europa.eu/project/id/856967>



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

2. Selfsustained custoMized cyberphysicAI system expeRimenTs for capacity buiLding among European stakehoLders an intends to build a network of Digital Innovation Hubs (DIHs) across South and Eastern Europe - SMART4ALL

Description: SMART4ALL builds capacity amongst European stakeholders via the development of selfsustained, cross-border experiments that transfer knowledge and technology between academia and industry. It targets CLEC CPS and the IoT and combines a set of unique characteristics that join together under a common vision different cultures, different policies, different geographical areas and different application domains. SMART4ALL brings a new paradigm for revealing “hidden innovation treasures” from SEE and helping them to find the path to market via new, innovative commercial products. As part of its strategy, the project will develop and maintain an active network of DIHs across SEE for supporting academics, startups, SMEs, and mid-caps entering the digitization era. The mechanisms for achieving this are the design and implementation of 88 cross-border PAEs that will be executed by the consortium members and by 3rd party consortia (academics, companies and mid-caps). The latter will be supported via well-defined regular open calls and will have a day-by-day coaching by SMART4ALL consortium for boosting the research ideas to successful products. PAEs will be actively supported by SMART4ALL DIH cluster throughout and after their execution. The targeted application areas are domains that are not adequately represented in current SAE projects and include digitized environment, digitized agriculture, digitized anything and digitized transport.

Contact person: Doc. dr Boris Antić, Prof. dr Zoran Mitrović

Period of realization: 2020 – 2024

ID: 872614-H2020-DT-2018-2020

<https://www.smart4all-project.eu/>



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

3. Innovative Network for Training in wAtEr and Food QUality monitoring using Autonomous SENSors and IntelligEnt Data Gathering and Analysis – AQUASENSE

Description: The deterioration of water quality, caused by climatic/seasonal changes, or industrial waste etc. is a major global concern. Over the last decade, water quality observing technology has risen to the challenge of scientists to identify and mitigate poor water quality by providing them with cost-effective tools that can take measurements of essential biogeochemical variables autonomously. Yet, despite these options becoming more readily available, there is a gap between the technology and the end-user (including the investigators and technicians that deploy these technologies) due to a collective lack of training, in-depth knowledge, and skilled workers who can meet new and emerging challenges. There is also a disconnect between data quality, data gathering by autonomous sensors and data analysis, which is a major obstacle, as the sensors are already being deployed (e.g. through buoys, boats etc.). AQUASENSE will address these challenges through 15 early stage researchers (ESRs), who will receive 540 person-month of unparalleled multidisciplinary training in the field of water quality monitoring. Each ESR will be mentored by carefully selected experts from academia and industry in 9 European countries (UK, Germany, Ireland, Serbia, Sweden, Italy, Poland, Austria, Estonia) and will have access to state-of-the-art equipment to develop autonomous sensors for improved data quality. The autonomous underwater robots and drones will be used to improve the data gathering and AI methods will be used to improve the data analysis.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2018 – 2023

ID: H2020-MSCA-ITN-2018- 813680

<https://www.aquasense-itn.com/>



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

4. A multimodal AI-based toolbox and an interoperable health imaging repository for the empowerment of imaging analysis related to the diagnosis, prediction and follow-up of cancer - INCISIVE

Description: "The increasing amount and availability of collected data (cancer imaging) and the development of novel technological tools based on Artificial Intelligence (AI) and Machine Learning (ML), provide unprecedented opportunities for better cancer detection and classification, image optimization, radiation reduction, and clinical workflow enhancement. The INCISIVE project aims to address three major open challenges in order to explore the full potential of AI solutions in cancer imaging: (1) AI challenges unique to medical imaging, (2) Image labeling and annotation and (3) Data availability and sharing. In order to do that INCISIVE plans to develop and validate: (1) an AI-based toolbox that enhances the accuracy, specificity, sensitivity, interpretability and cost-effectiveness of existing cancer imaging methods, (2) an automated-ML based annotation mechanism to rapidly produce training data for machine learning research and (3) a pan-European repository federated repository of medical images, that will enable the secure donation and sharing of data in compliance with ethical, legal and privacy demands, increasing accessibility to datasets and enabling experimentation of AI-based solutions. The INCISIVE models and analytics will utilize various cancer imaging scans, biological data and EHRs, and will be trained with 1 PB of available data provided by 8 partners within the project. INCISIVE solution will be investigated in four validation studies for Breast, Prostate, Colorectal and Lung Cancer, taking place in 8 pilot sites, from 5 countries (Cyprus, Greece, Italy, Serbia and Spain), with participation of at least 2,600 patients and a total duration of 1.5 year. INCISIVE moves beyond the state of the art, by improving sensitivity and specificity of lower cost scanning methods, accurately predicting the tumor spread, evolution and relapse, enhancing interpretability of results and "democratizing" imaging data"

Contact person: Prof. dr Tatjana Lončar-Turukalo

Period of realization: 2020 – 2024

ID: H2020-SC1-FA-DTS-2019



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

5. Twinning for reaching sustainable scientific and technological excellence in the field of Green Electronics – GREENELIT

Description: This project proposal aims at significantly strengthening research and innovation capacities of the University of Novi Sad (UNS), Serbia in the emerging field of Green Electronics by twinning action with EU internationally-leading research institutions – Italian Institute of Technology (IIT), Italy and Technical University of Denmark (DTU), Denmark. Through this project, networking gaps and deficiencies between the UNS and EU leaders will be decreased as well as RDI capacity of the involved institutions will be enhanced and staff's research profile will be improved. Green Electronics or Food-based electronics or electronic devices which can be consumed through the digestive system, provides solution for continuous monitoring of physiological parameters of the human body and represents alternative for invasive and painful approaches in conventional medicine. The GREENELIT work program envisages: (1) Sustainable linking for excellence - through transfer of knowledge and expertise during secondments, best practices will circulate between UNS and EU leading research institutions (IIT and DTU); (2) Raise research profile of the UNS and its staff - through delivering lectures by experts, short-term on-site training, organization of workshop/conference and strengthening the research management and administration unit at UNS; (3) Scientific strategy for stepping up in the field of Green Electronics - through benchmarking analysis and creating the Strategy and Action plan for its implementation; (4) Involvement of early stage researchers - focused on promotion of involvement of ESRs at UNS and improvement prospects of their career through training, mentoring and networking measures; (5) Dissemination and outreach activities - aimed to present the GREENELIT achievements to a wider community. This project will significantly support the UNS on the route to be a dynamic "innovation engine" capable of sustaining regional and national scientific, economic and social growth.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2020 – 2023

ID: H2020-WIDESPREAD-2020-5, no. 951747

<https://greenelitproject.com/>



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

6. Embedding RRI in Western Balkan Countries: Enhancement of Self-Sustaining R&I Ecosystems – WBC-RRI.NET

Description: "Although Western Balkan countries (WBCs) have improved in terms of R&I performance, research and innovation efforts should be further enhanced for bridging the remaining 'gap' with the rest European regions. RRI principles can act as enablers for the sustainable development of the local R&I systems, enhancing the effectiveness of R&I strategies contributing to the advancement of Western Balkan socio-economic progress in a transparent, open, and inclusive way through active participation of all quadruple helix actors. WBC-RRI.NET aims to foster the application of RRI principles at the territorial level in five (5) Western Balkan -4 region-level and 1 country-level- R&I ecosystems and promote a multi-level steering R&I governance framework in the WBCs. RRI principles will act as enablers to the shared learning and diffusion of R&I governance innovations at territorial level, enhancing R&I planning, including S3 Strategies in the WBCs. The project's approach evolving through an analytical, reflective and implementation thread will operationally address the 5 WB territories (partners represent all parts of the quadruple helix) and subsequently influence the wider WB region, by activating the embedding of RRI into their R&I ecosystems. This will be realised by RRI activities throughout the entire project (horizontal aspect), raising an active dialogue in the wider WB region and fostering the comprehension of all RRI pillars under a holistic framework based on a 'smart directionality' approach, offering stakeholder engagement with a focus on citizen participation. Alongside, 5 RRI 'anchor' initiatives (vertical aspect), as interventions touching in-depth specific RRI keys, territorial features and scientific domains, will allow RRI principles to be rooted in the territorial ecosystems leading to concrete impact to R&I territorial policies and societal regional needs. Finally, impact evaluation and dissemination activities focus on the project's long-term sustainability."

Contact person: Prof. dr Goran Stojanović

Period of realization: 2021 – 2024

ID: H2020-SWIFT-14-2018-2019-2020, no. 101006279

<https://wbc-rri.net/tag/project-description/>



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

7. ERA Chair for emerging technologies and innovative research in Stretchable and Textile Electronics- STRENTEx

Description: Wearable technology is set to supercharge the catwalk. Our clothes are becoming smarter with the integration of stretchable electronic circuits into textiles. The STRENTEx project's ERA Chair action aims to boost the research potential of the Faculty of Technical Sciences, University of Novi Sad (FTN) in Serbia. Building on a network of existing international, regional and national partners, as well as SMEs and stakeholders, the project will contribute to the development of patches to monitor health, sensors in baby slings, theranostic wound dressings and other similar products. A wider aim of the project is to strengthen the economy of Serbia and Europe. The motivation behind this Project is to create a point of excellence of the Faculty of Technical Sciences, University of Novi Sad (FTN), Novi Sad, Vojvodina, Serbia, to continuously advance state-of-the-art research, technological innovation and contribution to broader social goals, in the field of Stretchable and Textile Electronics. The Project is set in the framework of the ERA Chair action to simultaneously reinforce the research potentials of the FTN and to create cutting-edge dynamic and sustainable research environment. These products with a high future market potential, such as human monitoring patches, sensors in baby slings, theranostic dressings, will enable a move from "technology push" to "market pull" and will facilitate involvement of the ERA Chair into "Industry 4.0" revolution. STRENTEx project envisages the following activities: (1) ERA Chair establishment – ERA Chair holder appointment and employment of his/her team members; (2) Implementation of structural changes in FTN, for sustainable excellence; (3) Raising research profile of the FTN and its staff, thanks to ERA Chair; (4) Boosting FTN's innovative capacities and capabilities; (5) Dissemination, communication and exploitation activities. Thanks to this Project, disparities in terms of research and innovation performance between Serbia and innovation leaders in EU will be significantly decreased.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2020 – 2024

ID: H2020- WIDESPREAD-04-2019: ERACHairs

<https://strentexproject.com/about-project/>



**European
Commission**

**Horizon 2020
European Union funding
for Research & Innovation**

8. Multimodal Extreme Scale Data Analytics for Smart Cities Environments- MARVEL

Description: The “Smart City” paradigm aims to support new forms of monitoring and managing of urban resources as well as to provide situational awareness in decision-making to fulfill the objective of servicing the citizen, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects. Considering the city as a complex and dynamic system which involves different interconnected spatial, social, economic, and physical processes subject to temporal changes and continually modified by human actions, Big Data, fog, and edge computing technologies have significant potential in various scenarios considering each city individual tactical strategy. However, one critical aspect is to encapsulate the complexity of a city and support accurate, cross-scale and in-time predictions based on the ubiquitous spatio-temporal data of high-volume, high-velocity and of high-variety. To address this challenge, MARVEL delivers a disruptive Edge-to-Fog-to-Cloud (E2F2C) ubiquitous computing framework that enables multimodal perception and intelligence for audio-visual scene recognition, event detection and situational awareness in a smart city environment. MARVEL aims to collect, analyse and data mine multimodal audio-visual streaming data of a Smart City and help decision makers improve the quality of life and services to the citizens without violating ethical and privacy limits in an AI-responsible manner. This is achieved via: (i) fusing large scale distributed multimodal audio-visual data in real-time; (ii) achieving fast time-to-insights; (iii) supporting automated decision making at all levels of the E2F2C stack; and iv) delivering a personalized federated learning approach, where joint multimodal representations and models are co-designed and improved continuously through privacy aware sharing of personalized fog and edge models of all interested parties, while performance of the deployed models and local ML adaptations are constantly monitored to achieve continuous system improvement and adaptation.

Contact person: Prof. dr Dragana Bajović

Period of realization: 2021 – 2023

ID: H2020- ICT-51-2020 Big data technologies and extreme-scale analytics

<https://cordis.europa.eu/project/id/957337>



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

9. Innovative bio-inspired sensors and microfluidic devices for saliva-based theranostics of oral and systemic diseases – SALSETH

Description: Oral hygiene is the cornerstone of good oral health and World Health Organization recognizes oral health as an integral part of systemic health. Among the non-invasive organic fluids, saliva is one of the most preferable and practical specimens for oral and systemic health monitoring as it is readily available and easily collected and stored. Saliva is frequently called a “mirror of the body” since it can reflect both the physiological and pathological conditions in the entire human organism. This project promotes international and intersectoral collaboration between participating institutions, bringing experts from different fields of science in a unique research and innovation set up. The SALSETH brings together expertise of the respectable institutions to reach beyond the-state-of-the-art advances in: (1) natural and bio-inspired biocompatible materials; (2) edible food-based sensors which can promptly detect important biomarkers from saliva; (3) external smart electronic device for wireless reading data from sensors; and (4) microfluidic devices for optimal administration of drugs or essential oils as a main part of the intraoral appliances for better oral and systemic health. Through carefully designed secondments, the seconded staff will work on significant technological breakthrough in salivary theranostics for personalized dental bio-medicine. This interdisciplinary project offers an excellent research oriented environment for the personal and professional growth of the involved staff members. The SALSETH will open possibilities of salivary diagnostics for personalized individual medicine applications including clinical treatment options and outcome evaluation predictions.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2019 - 2024

ID: Marie Skłodowska-Curie - (RISE) - 872370

<https://salsethproject.com/>

Horizon Europe

THE NEXT EU RESEARCH & INNOVATION
PROGRAMME (2021 – 2027)

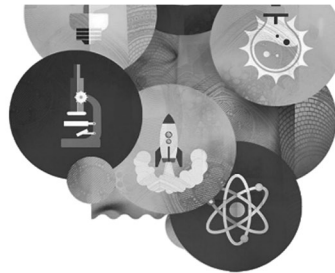


Horizon Europe is the EU's research and innovation programme for 2021-2027 with a budget of €95.5 billion.

It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth.

The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies.

It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.



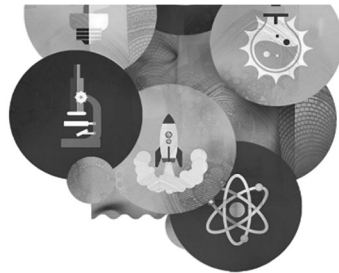
1. Towards MXenes' biomedical applications by high-dimensional immune MAPping - MX-MAP

Description: The long-term goal of MX-MAP is to develop a functional pipeline for the immune characterization of new 2D nanomaterials of MXene family, for the qualitative and quantitative assessment of the human immune compatibility and immune activity towards biomedical applications. The immune characterization of the tested materials on the basis of intrinsic physical-chemical and immunological properties, through the combination of the most innovative technologies such as single-cell mass cytometry (CyTOF), will open breakthrough perspectives for the development of new therapeutic approaches applying nanomaterials as immunomodulators, scaffolds for tissue engineering, cancer therapy, and antibacterial agents. MX-MAP will develop key chemistry and immune-based strategies for MXene medical applications. The implication of this project extends beyond the specific nanoscience program greatly advancing the engineering process of 2D materials and their use in biomedicine. The MX-MAP project involves fourteen key players in European and non-European countries, including the United States, Canada, Saudi Arabia, and three partners from Ukraine, coming from academia and SMEs. This program will provide strong support for the development of the careers of young brilliant scientists who want to grow towards an interdisciplinary vision of Science.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2022-2025

ID: HORIZON-MSCA-2021-SE-01 (101086184)



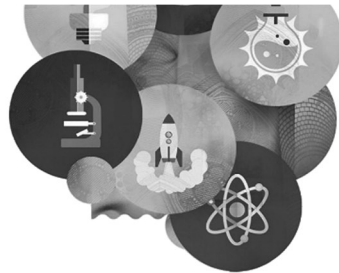
2. Rural Environmental Monitoring via ultra wide – ARea networkS And distriButed federated Learning -REMARKABLE

Description: Internet of Things (IoT) technology combined with complementary support for data analytics is the corner stone of today's digital transformation. The societal and economic impact of IoT/ML systems in urban and suburban areas significantly outpaces the one in rural areas due to a limited reach of connectivity infrastructure. To reverse further widening of the urban-rural gap, we need to bring efficient and affordable IoT/ML solutions to deep rural areas, reaching out to applications and use cases ranging from wildlife management, rural tourism, livestock monitoring, water and air pollution control, and others. By identifying main gaps in connectivity and affordable data analytics and through interleaved research, development and validation in a real-world setting, REMARKABLE will address the challenge of bringing IoT and data analytics systems a step closer to seamless, energy efficient and secure deployment in rural areas. The consortium composed of six European academic partners, five companies and five associated partners representing leading academic groups from Africa, will focus on research, development, innovation and demonstration across five use cases with six demonstration sites located in rural areas across the European and African continent. The inter-disciplinary nature of the programme provides a unique opportunity for investigation of smart sensing, IoT and data science technology from non-traditional, holistic perspectives leading to new scientific achievements and innovations. Project outputs like smart IoT sensors and devices, rural IoT digital twinning platforms, ultra wide-area IoT networks, novel data analytics models and architectures will find their routes to the market via active industrial partners. The project will impact EU workforce market via new interdisciplinary skills for young contributors and form new long-lasting networks of European and African institutions in the area of sensing, IoT, big data analytics and rural entrepreneurship.

Contact person: Prof. dr Maja Turk-Sekulić

Period of realization: 2023-2026

ID: HORIZON-MSCA-2021-SE-01 (101086387)



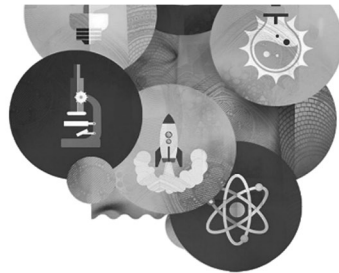
3. Trustworthy and Resilient Decentralised Intelligence for Edge Systems- TaRDIS

Description: Developing and managing distributed systems is a complex task requiring expertise across multiple domains. This complexity considerably increases in swarm systems, which are highly dynamic and heterogeneous and require decentralised solutions that adapt to highly dynamic system conditions. The project TaRDIS focuses on supporting the correct and efficient development of applications for swarms and decentralised distributed systems, by combining a novel programming paradigm with a toolbox for supporting the development and executing of applications. TaRDIS proposes a language-independent event-driven programming paradigm that exposes, through an event-based interface, distribution abstractions and powerful decentralised machine learning primitives. The programming environment will assist in building correct systems by taking advantage of behavioural types to automatically analyse the component's interactions to ensure correctness-by-design of their applications, taking into account application invariants and the properties of the target execution environment. TaRDIS underlying distributed middleware will provide essential services, including data management and decentralised machine learning components. The middleware will hide the heterogeneity and address the dynamicity of the distributed execution environment by orchestrating and adapting the execution of different application components across devices in an autonomic and intelligent way. TaRDIS results will be integrated in a development environment, and also as standalone tools, both of which can be used for developing applications for swarm systems. The project results will be validated in the context of four different use cases provided by high impact industrial partners that range from swarms of satellites, decentralised dynamic marketplaces, decentralized machine learning solutions for personal-assistant applications, and the distributed control process of a smart factory.

Contact person: Prof. dr Silvia Gilezan

Period of realization: 2023-2025

ID: HORIZON-CL4-2022-DATA-01 (101093006)



4. Responsible tErritories and Institutions eNable and Foster Open Research and Collaborative Innovation for traNsitions Governance— REINFORCING

Description: The objective of REINFORCING is to become the ORRI (Open and Responsible R&I) central point of knowledge and expertise, easily accessible, up-to-date and tailored to community needs. It will do so by reviewing and exploiting the richness of 10 years of ORRI-related initiatives, including the RRI Tools database. It will make this know-how available in the REINFORCING One-Stop Source platform, together with new community-led resources, and pathways to support navigation through them. REINFORCING is committed to capitalize on EU-funded actions and the proven expertise of its partners in both the theory and the practice of ORRI implementation. REINFORCING will act as catalyzer of quadruple-helix community members, who will co-develop services, including policy recommendations; of ORRI-related initiatives (regional and EU), to support efficient cooperation and adaptation rather than replication; and of ORRI expertise through the creation of a European map of Ambassadors and Facilitators. A key focus is on financial support of institutional and territorial changes towards Fair Transitions governance through cascading grants. REINFORCING will award 96 grants dedicated to boost institutions scaling up their ORRI experience, and to incubate newcomer territories experimenting with ORRI for the first time. Reducing disparities is also a key focus of REINFORCING. Three key gaps (Balkan territories, Open Innovation and Mission projects) have already been identified and addressed through specific actions, while the overall project contribution to their reduction will be thoroughly assessed. The engagement of the Global ORRI Network will guarantee wide international cooperation. These efforts will result in a number of medium and long-term impacts, such as over 150 sustainable, individual institutional changes and mainstreaming of excellent, open and responsible R&I across the ERA.

Contact person: Prof. dr Petar Vrgović

Period of realization: 2023-2025

ID: HORIZON-WIDERA-2022-ERA-01-40 (101094435)



5. ECOsystem-based governance with DANube lighthouse Living Lab for sustainable Innovation processes— EcoDaLLi

Description: The 2030 & 2050 Green Deal goals push EU towards integrated solutions & clear targets. EcoDaLLi, embedded in the Mission 'Restore our Ocean, seas & waters by 2030' will help achieve freshwater targets of European Green Deal, integrating a systemic approach for restoration, protection & preservation for the entire Danube Basin, provided by coordinated actions. The main objective of EcoDaLLi is to centralise Danube governance structures in terms of innovative solutions for improved ecological restoration, protection and preservation of the Danube basin and it's Delta by fostering a stronger innovation ecosystem within a well-connected Practices Living Lab System, supported by a digital Portal, completely linked to the Mission Implementation Platform. Improved governance at Danube Basin level, based on dedicated EcoDaLLi tools will foster such innovative solutions, change mindsets on water ecosystems restoration and climate change and develop value chains based on ecosystem services. This will contribute to the decarbonisation goal of Green Deal, cleaner water, improved state of the environment, land creation of jobs in sensitive areas along the basin, especially in the Danube Delta. EcoDaLLi will support innovators connect to governance structures, providing and maintaining networks, trough dedicated Living Labs for knowledge co-creation, workshops, a custom made digital portal for synergies, and innovation support services, to experiment with new solutions, helping the innovation ecosystem to create circular services towards Sustainable Blue Economy in the Danube Basin and beyond.

Contact person: Prof. dr Đorđe Đatkov

Period of realization: 2023-2025

ID: HORIZON-MISS-2021-OCEAN-02 (101093908)



Erasmus+

Erasmus+ Strategic Partnerships

Strategic Partnerships are transnational projects designed to develop and share innovative practices and promote cooperation, peer learning, and exchanges of experiences in the fields of education, training, and youth.

Overall, strategic partnerships aim to address horizontal priorities as well as field specific priorities in the areas of:

- Higher education
- Vocational education and training
- School education
- Adult education, and
- Youth.

There are two kinds of Strategic Partnership; those supporting innovation and those supporting the exchange of good practices.

Strategic Partnerships provide opportunities for a wide variety of public, private, and non-governmental organisations to implement a broad range of activities including, for example:

- Strengthening cooperation and networking between organisations,
- Promoting the development, testing, and implementation of innovative practices,
- Promoting the recognition and validation of knowledge, skills, and competences,
- Promoting cooperation between regional authorities to develop new systems for education, training, and youth,
- Supporting education and training professionals to promote equity, diversity, and inclusion in learning.



Erasmus+

1. Triplex Confinium-Tackling Gaps and Mismatches in the Field of Higher Education for Architecture and Urban Planning while Exploring and Addressing Discontinuities along the National Borders in-between Romania, Hungary and Serbia (TC)

Description: Project addresses conditions in architecture education system related with other intersecting disciplines: anthropology, political science, social geography, digital tools. Project objectives are creation of transnational partnership between neighboring countries - Romania, Serbia and Hungary, with the aim of approaching shared problems regarding both higher education and regional development. Other outcome is increasing awareness of comune cultural heritage and the ways in which it can become a shared resource in bettering the lives of local communities.

Contact person: Prof. dr Bojan Tepavčević

Period of realization: 2019 - 2022

ID: 2019-1-RO01-KA203-063881



Erasmus+

2. Developing Data Literacy Courses for University Students (DEDALUS)

Description: DEDALUS - DEveloping DAta Literacy courses for University Students is aiming to equip students with the necessary competences to cope with future digital challenges and to create an additional value for the enterprises and industries where they would be employed. It will do so by developing an innovative modular, open and online learning curriculum to include data literacy competences in any study field. At the same time, through the CPD qualification for HE professionals it will develop the digital competences of educators, enabling them to transfer such competences in their practice. Data literacy is a cross-cutting competence which is relevant in all disciplines since data are used in a multitude of domains and future entrepreneurs, regardless of the type of business they wish to run, need to deal with data and analytics to make quicker and more brilliant decisions and to get the most from business intelligence solutions. At the same data literacy is a difficult concept, since the required knowledge, skills and attitudes related to it are dependent on the context and so is the competence level. Indeed, courses and certification paths available on the market, as well as in universities are only scattered approaches that are lacking a convincing learning and study trajectory oriented towards a competence framework which maps the competences along the requirements of the study domain and the future field of application. This again would increase the employability of the students since their expertise could be better identified.

Contact person: Prof. dr Uglješa Marjanović

Period of realization: 2019 - 2022

ID: 2019-1-IT02-KA203-063359



Erasmus+

3. CREATIVE DANUBE-INNOVATIVE TEACHING FOR INCLUSIVE DEVELOPMENT IN SMALL AND MEDIUM SIZED DANUBIAN CITIES (DANUBIAN_SMCs)

Description: The methodology used in the project implementation is in line with the principles agreed upon by The Erasmus + program, being primarily a collaborative educational project that emphasizes both the transfer of knowledge between university partners and between teachers and students of all partners. The methodology consists of a set of steps for each phase which is part of the activity plan, having as main focus to stimulate all participants to an innovative approach of teaching activities.

At longer term, the project will show how a Danubian SMCs can be better known and valorised with unconventional and creative teaching methods, getting to an inclusive and stimulative attitude both for teachers and learners and for local stakeholders. Through this, the project will create a link to the creativity and innovation requirements on the labor market and the expected competences of the graduates in spatial planning field.

The main results of our project are:

- Strengthen the regional dialogue among the partnership universities in the cross-disciplinary education field spatial planning;
- Contributing with new methodologies and innovative teaching approach to study the actual problematic of Danubian SMCs;
- Contributing with new perspectives, innovative and customized data and creative body of knowledge about the inclusive development of SMCs;
- Increasing the involvement of local stakeholders to real issues and problems of the inhabitants of Danubian SMCs.

Contact person: Prof .dr Milena Krklješ

Period of realization: 2019 - 2022

ID: 2019-1-RO01-KA203-063878



Erasmus+

4. Information and Communication Technologies for Sustainable Tourism Development (ICT4STD)

Description: The aim of the project is to use information and communication technologies to promote and develop sustainable tourism. The project defines several specific goals and uses new technologies for the development and improvement of courses related to sustainable tourism, as well as market activities in the field of tourism, enrichment of learning materials, as well as its own content, development of entrepreneurial skills students with the necessary needs sustainable development. tourism - planning business models and products.

Contact person: Prof. dr Bojan Lalić

Period of realization: 2019 - 2022

ID: 2019-1-PL01-KA203-065781



Erasmus+

5. Versatile and Innovative open educational resources for collaborative Virtual and mobile learning Arrangements in HE (VIVA)

Description: The VIVA project is aimed at addressing one of the many features characterising the digital transformation our society is currently undergoing, that is the digitalisation of the teaching and learning experiences, especially in the higher education sector. As already recognised by an OECD report released in 2020, due to the Covid-19 health emergency, HEIs had to reinvent their activities to ensure the continuity of education by offering online classes and learning experiences as a substitute for in-class time. Our project acknowledges the digital transformation described above and wants to contribute to the definition of the teaching and learning of tomorrow by fostering the integration and implementation of design-based collaborative learning practices into HEIs, with a specific focus on universities. All partners have highlighted the urgent need to properly train HE professionals and internship mentors to adopt online collaborative learning approaches to avoid “Zoom fatigue” and low motivation among students, as well as to properly integrate web-based collaborative approaches into their regular teaching practices in combination to classroom-teaching, even after the pandemic period. In general, the needs of our target groups are: - To introduce the method and strategies of web-based collaborative learning into old and new curricula, especially in combination with other 21st century skills; - To prepare lecturers for teaching and learning with technology-based tools and instruments; - To understand the role of a facilitator in supporting learners involved in open learning, distance education, or online learning; - To support learners in the individual and collaborative construction of knowledge, skills, and attitudes, especially in informal learning; - To support learners in moving successfully through the various stages that online learners typically go through; - To support learners effectively through the use of asynchronous and synchronous communication and learning tools; - To use assessments and assignments effectively as learning tool.

Contact person: Prof. dr Uglješa Marjanović

Period of realization: 2022 - 2023

ID: 2021-1-LT01-KA220-HED-000032067



Erasmus+

Erasmus+ Knowledge Alliances

Knowledge Alliances are innovative transnational projects which bring Higher Education Institutions and Businesses/enterprises together to work on common issues.

The overall aim is to help strengthen Europe's capacity to innovate and to support the modernisation of Europe's higher education systems.

There are 4 common EU strategic objectives

Making lifelong learning and mobility a reality

Improving the quality and efficiency of education and training

Promoting equity, social cohesion, and active citizenship

Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training

The other objectives of Knowledge Alliances are the development of new, innovative and multidisciplinary approaches to teaching and learning, stimulating entrepreneurship and the entrepreneurial skills of higher education teaching staff and company staff as well as facilitation the exchange, flow and co-creation of knowledge.



Erasmus+

1. Data Literacy at the interface of higher education and business (DATALIT)

Description: Nowadays data literacy is widely considered a critical skill to have in the 21st century. It can be defined as the ability to read, work with, analyse, and argue with data, in order to derive meaningful information and knowledge. Employees with data literacy skills have become highly valuable in today's economy and labour market: more than ever before, employers demand some degree of data literacy from all employees, regardless of the professional role. Since data are used in a multitude of domains, data literacy is today an essential skill also for professionals like journalists, policy makers, etc. It is also a powerful enabler of civic engagement, as it empowers individuals and communities to keep governments transparent and accountable, tackle local issues, and navigate their own data ecosystems. The project DATALIT aims at: (1) offering to university students across different Faculties, the opportunity to reach a suitable level of data knowledge that they can use and apply appropriately and diversely throughout their personal and professional lives, (2) Narrowing the gap between business and academia and putting EU enterprises in direct contact with potential future employees or business partners properly trained to exploit data effectively. To meet this challenge, DATALIT will develop and pilot an approach based on a long-term partnership of academia, business and educational partners. After an in-depth research phase, aimed at identifying best practices and experiences of data literacy inclusion in EU higher education and to better understand the needs and expectations of the target groups (students, HE professionals, employers), the partners will define a common understanding of data literacy as competence and design a syllabus to orient the creation of data courses. In parallel, the partners will develop a digital learning environment to integrate the class-based courses and a sound validation and certification system connected to the EQF, ECTS and EUROPASS systems. The outputs developed will be piloted by the Universities involved and by students that will have the opportunity to apply their data skills through internship experiences in EU enterprises.

Contact person: Prof. dr Uglješa Marjanović

Period of realization: 2019 - 2022

ID: 612561-EPP-1-2019-1-IT-EPPKA2-KA



Erasmus+

2. A Knowledge Alliance of Agribusinesses, Academia and Business Angels for Disruptive Farm-to-Fork Agri-Tech Training (AgTech7)

Description: AgTech7 addresses the lack of inter-disciplinary knowledge and multi-actor mobilisation for future agri-tech disruptive applications on the entire farm-to-fork food-chain. For this purpose, the project will directly engage the following target groups: 1) European Universities' and Research Institutes' students, and, 'in-house' incubator managers; 2) Agribusiness companies (i.e. agri-tech and food-tech); and 3) Angel-investors. The project will advance their knowledge necessary to facilitate: 1) inter-disciplinarity in agro-education, integrating engineering innovation, agricultural know-how and entrepreneurial skills, while at the same time, 2) advancing European angels investors' and startup service providers' understanding on the emerging agri-tech future market opportunities.

Contact person: Prof. dr Stevan Stankovski

Period of realization: 2020-2022

ID: 612221-EPP-1-2019-1-RS-EPPKA2-KA



Erasmus+

Erasmus+ Jean Monnet

Jean Monnet Activities are designed to promote excellence in teaching and research in the field of European Union studies worldwide. The activities also foster the dialogue between the academic world and policy-makers, in particular with the aim of enhancing governance of EU policies.

European Union studies comprise the study of Europe in its entirety with particular emphasis on the European integration process in both its internal and external aspects. The discipline also covers the role of the EU in a globalised world and in promoting an active European citizenship and dialogue between people and cultures.

There are 3 types of activities:

1. Teaching and Research: Jean Monnet Modules, Chairs and Centres of Excellence.
2. Support to Associations: Jean Monnet support to Associations.
3. Policy debate with the Academic World: Jean Monnet Networks and Jean Monnet Projects.

Key activities include courses, research, conferences, networking activities, and publications in the field of EU studies.

Opportunities are available to higher education institutions worldwide. Furthermore certain actions are open to organizations active in the European Union subject area and associations of professors and researchers specialising in European Union Studies.



Erasmus+

1. Strengthening European Cultural Identity through Interdisciplinary Heritage Studies (CULTher)

Description: Main purpose of the project is to establish series of lectures related to the field of the cultural heritage as important aspect of the European integration processes. Cultural policy represents a significant mean of economic and social cohesion in the context of European integration, while cultural heritage is recognized as both the manifestation of cultural diversity and a resource for sustainable cultural, social, environmental and economic development. On the other hand, strengthening international cultural cooperation, with clear initiatives and partnerships in the cultural sector, is an important component in European integration of Serbia. Therefore, we have recognized the significance of introducing and enhancing understanding of these issues among present and future researchers and practitioners in cultural sector in our country. The Module, designed for the students who do not automatically come into contact with European integration studies, would adopt an interdisciplinary approach, focusing on unique potential of heritage in supporting inter-cultural dialogue, comparison European and local cultural values, with understanding diversity as a mechanism for promoting unity, promotion national cultural heritage as the part of European cultural context, rising awareness of European cultural identity in local cultural traditions. It is assumed that envisaged series of lectures on the European cultural heritage would induce students' interests in the topic, extend and deepen knowledge of participants, and encourage greater level of professional cooperation, as Module would be opened to the students as well as for professionals working in the field. Expected overall impact of the project is a considerable contribution to the capacity building of human resources, increase of expertise and integrated interdisciplinary approach to protection and promotion of Europe's cultural heritage as a shared resource and bearer of the common European identity.

Contact person: Prof. dr Anica Draganić

Period of realization: 2019-2022

ID: 611433-EPP-1-2019-1-RS-EPPJMO-MODULE



Erasmus+

2. Information Technology in the Function of Harmonization of Criminal Procedure Law of Republic of Serbia with EU Law (IT4LEGALHARMONY)

Description: The aim of the project is to acquaint the wider academic community and civil society with the need to harmonize national rules of criminal procedure with EU rules, as well as with the importance of information technology in achieving this goal. One of the best illustrations of the potential of information technology to advance development of law is the harmonization of national with supranational legislation. Information technology has a great potential to automate many repetitive and simpler legal tasks. This potential is slowly but steadily being realized in the last decade with an upswing of many legal tech companies through EU and the world. The current UNS curricula do not usually provide the proper knowledge and skills in legal technology as their outcome. Thus the students in general lack awareness of possibilities of process of digital transformation in law. The project will foster the dialogue between future lawyers and IT professionals on the importance of harmonization of criminal procedure law of Republic of Serbia with relevant EU rules and acquaint students and wider academic community with legal technology and to enhance their digital skills and competence. The participants of the summer school are future representatives of the legislative and executive authorities at the local, provincial and republic level, holders of judicial functions, lawyers who will get acquainted with the European dimension of the project and who will promote the adopted European values in the future. Also, the dissemination activities shall inform the wider academic community and public in general about the importance of harmonization of national rules with EU legislation. This shall be accomplished by implementing three summer schools and disseminating information about the activities and the results of the project.

Contact person: Prof. dr Stevan Gostojić

Period of realization: 2022-2024

ID: 101047859



Erasmus+

3. Enhancing PM2 Skills and Competencies for EU Funded Projects - PM²4EUfunds

Description: The PM²4EUfunds Module is designed as an interdisciplinary set of lectures, practical classes, training and outreach activities to bring the European PM² Methodology and its benefits closer to its broader stakeholders and potential user community. The PM²4EUfunds Module is based on three main pillars: Teaching; Training; Outreach encompassing activities oriented towards three target groups: Students, CSOs & student activists; the Academic community & General Public. The general objective of the PM²4EUfunds Module is to sustainably promote excellence in the management of EU-funded projects by introducing European PM² Methodology through teaching, training and outreach activities aimed at students, CSOs & student activists and the broad academic community. Furthermore, the Module seeks to increase the awareness, knowledge, and skills for successful, cost-effective preparation of a funding proposal and develop management capabilities for implementing EU-funded projects - towards common values of the European Union.

The specific objectives are:

1. By Revising the curriculum to integrate the PM² Methodology to sustainably build students' capabilities for managing EU-funded projects while promoting the EU Grant Landscape & Funding Structure.
2. By delivering PM²4EUfunds Training Academy to increase CSOs and student activists' management skills and capacities for EU-funded projects while promoting the EU Grant Landscape & Funding Structure.
3. By organising PM²4EUfunds outreach activities to promote excellence in the management of EU - funded projects according to the standards of the PM² Methodology.

Contact person: Doc. dr Danijela Ćirić Lalić

Period of realization: 2022-2025

Website : www.pm24eufunds.uns.ac.rs



Erasmus+

4. Challenges and opportunities for implementation of regulations on environment, occupational health and safety and labor relations based on the best European practices- ENROL

Description: The project focuses on perceptions of EU policy and best practices in selected topics in the field of environmental protection, occupational safety and health and labor relations and their impacts upon workplace changes and demands, educational retraining and new competences and skills. Human and technical resources available in the field of environment and occupational safety and health including labor relations conditions and opportunities for improvement are limited, resulting in insufficient monitoring, reporting and evidence-based policy actions. Focusing on EU policy in key areas of environmental protection, occupational safety and health and labor relations the project centers on several activities – blended learning summer school which will be available for interested parties (students from HEIs, stakeholders, industries, and government) from Serbia and countries such as Bosnia and Herzegovina, Montenegro and Kosovo as the main activity. Moreover, 6 round tables are planned in order to bring academics together with industry, business, policy makers and community stakeholders.

Contact person: Doc. dr Maja Petrović

Period of realization: 2022-2025

ID: 101085701



CEEPUS is an acronym for "Central European Exchange Program for University Studies".

CEEPUS is based on lean management. The highest ranking decision making CEEPUS body is the Joint Committee of Ministers that meets once a year and takes all strategic decisions. Coordination, evaluation, program development and advertising are the main tasks of the Central CEEPUS Office (consisting of only two persons). Each country has a National CEEPUS Office in charge of national implementation. In order to avoid setting up new administrative bodies, the National CEEPUS Offices are integrated into already existing structures, usually national agencies.

The main activity of CEEPUS are university networks operating joint programs ideally leading to Joint Degrees, esp. Joint Doctoral Programs. CEEPUS covers mobility grants for students and teachers in this framework.

The main objectives are:

Focus on joint PhD programs.

Promote cooperation in the framework of the EUSDR.



1. Image Processing, Information Engineering & Interdisciplinary Knowledge

Description: CIII-AT-0042-17-2022 exists since 23 years and represents an interdisciplinary network consisting of medical and engineering departments and grows. AT-42 keeps growing year by adding new partners every year – this time five new partners joined. Size matters because of the complexity of the subjects dealt with, so the expertise of each new partner is a valuable input for the whole network. On the other hand we are also trying to spread best practice solutions - so again, size matters. Our main educational efforts are organizing several unique schools and workshops (for this application year) and one academy. All these schools and workshops are targeted to different topics as well as different education level – eg the “CEEPUS Summer Academy of Pediatric Medicine” to students, “CT School” or “School of Pediatric Haematology” to Radiology residents / specialists, or others like the “Summer School on Image Processing” to undergraduates or on Master respective PhD level. It is noteworthy to mention, that due to the organisation of the “CEEPUS Summer Academy of Pediatric Medicine” now a structural cooperation with the University of Brisbane / Australia and the Western University / Canada could be established with regular participation of their students. Therefore for these universities it’s synonym is “Educational Courses – Multidisciplinary”. In addition to these efforts CIII-AT-0042-17-2022 is trying to promote, advertise and enhance individual student mobility between partners during the lecture free time. There is continued scientific cooperation of partners and all together about 170 papers (congress contributions, book chapters/books) were published. Due to the involved institutions there is a strong focus on pediatric medicine. As everywhere there more institutions more active than others but it generates gravitation to the others.

Contact Person: Prof. dr Tibor Lukić

Period of realization: 2022 – 2023

ID: CIII-AT-0042-18-2223



2. Applications and diagnostics of electric plasmas

Description: What is plasma and where can we find it? Electrical plasma consists of ionized matter and is frequently called the fourth state of matter. Every gas assumes this state when a sufficiently strong electric current is passed through it or when it is heated to more than about 10000 K or when it is exposed to intensive ionizing radiation (UV, X-rays, gamma-rays). More than 99 % of the visible matter of the universe is in the plasma state. The most common method to produce physical, technical or industrial plasma is the application of a dc or ac voltage to a more or less diluted gas and to produce a gas discharge in which electron impact ionization (frequently supported by secondary electron emission) produces sufficient charge carriers to pass an electric current through the gas. Recently, atmospheric plasma has become more important, i.e. discharges in gases at atmospheric pressure, which makes the use of expensive vacuum systems obsolete. Plasma consists of free positive and negative electric charge carriers – most commonly positive single-charged ions and electrons (as the negative charge carriers). But there are also plasmas with a large fraction of negative ions or clusters, which can be of high relevance for technical applications in reactive plasmas. It is the presence of negative and positive charge carriers which determines the behavior of plasma decisively, since for its theoretical description not only the laws of fluid mechanics, thermodynamics and statistics are required but also those of electrodynamics. For very hot plasmas such as fusion plasmas, also nuclear physics is required (fusion reactions) and, under extreme conditions, plasma particles can even become relativistic. An additional characteristic of plasmas is that the negative charge carriers (most frequently electrons) are much lighter than the positive charge carriers; in the case of hydrogen plasma the mass ratio of electron to ion is 1836. Due to the presence of electric charge carriers, plasma can be manipulated, confined and utilized by electric and magnetic fields.

Contact Person: Prof. dr Branko Škorić

Period of realization: 2022 – 2023

ID: CIII-AT-0063-18-2223



3. New teaching technologies and new applications in modernization of teaching at the Faculties of Technical Sciences in connection with the needs of small and medium enterprises in the environment

Description: “Technology can and should play an important role in curriculum planning, development, delivery, assessment, and administration. Technology must be “institutionalized in a faculty”- integrated into the culture and classroom practice of a University” (Nelson, Post, & Bickel, 2001). Professional development is essential to ensure that teachers are able to choose the most appropriate technologies and instructional strategies to meet district curriculum goals and student learning needs. The primary reason teachers do not use technology is a lack of experience with the technology itself (Wenglinsky, 1998). Technological trends inspire restructuring of higher engineering education in the direction of improving competencies of graduates. Based on the project objectives and planned activities, the expected outputs from this project are: a) Modernized Engineering studies by changing modules and courses focused on the specific and applied area of new technologies and in relevance to the labour market needs. b) (Updated existing and built new capacities concerning equipment, teaching materials, teaching methods, and teaching staff in order to achieve quality and relevance of the newly developed modules and courses. c) Improved regional and international university networks in engineering leading to the improvement of higher education performance. d) Implemented Project Oriented Methodologies in the Universities, as an innovative pattern and pedagogical methodology for improving the graduates’ skills and for obtaining sustainable industry-education cooperation. Introducing the new technologies in engineering education will have an impact on improving the level of competences and skills in WBC engineering graduates and at the same time will improve the attractiveness of the study program.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022 – 2023

ID: CIII-BA-1402-04-2223



4. Modern Trends in Education and Research on Mechanical Systems - Bridging Reliability, Quality and Tribology

Description: Mechanical engineering is one of the oldest and most diverse branches of engineering and supports industrial development in such areas as manufacturing and production, energy generation and conversion, chemical engineering, transportation, automation, robotics, etc. Nowadays, the existence of general crisis enhances the increasing and continuous need for improved methods of determining the reliability and predicting the lifetime and quality of elements, machines and production systems. This is especially valid for the European countries, particularly in Danube region, and in Central and East European regions. Attention will be turned to the role of tribology for the large and complex scope of reliability engineering and the different tribology-related methods to improve reliability and quality, such as reliability design, component lifetime, condition monitoring, and diagnostics. One of the tasks of tribology is to study and find the advantages from a full investigation of industrial failures, and using tribological knowledge and understanding to establish the causes and the ways of healing them. It is frequently possible to improve reliability and quality substantially by not so complex procedures, once the real cause of the mechanism of the failure is revealed and understood. An illustration can be given in the following consideration. What is wear? The tribological interactions of a solid surface's exposed face with interfacing materials and environment results in loss of material from the surface. The process leading to loss of material is known as wear, one of the most menacing tribological processes. Wear can be minimized by modifying the surface properties of solids by one or more of surface engineering processes or by use of lubricants. Engineered surfaces extend the working life of both original and recycled and resurfaced equipments, thus saving large sums of money and leading to conservation of material, energy and the environment.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022– 2023

ID: CIII-BG-0703-11-2223



5. Computer Aided Design of automated systems for assembling

Description: The working team for the project has the required experience for the project's execution which is apparent from the presented publications of books on the reviewed subject. Also, the team has experience of mutual work with PhD students and companies from the respective industry. Some of the team members have participated in projects of CEEPUS III and International Summer School on 'Advanced Manufacturing Operation' in Bulgaria. II The main elaborations with applicability are the following: A main task is to provide conditions for increase of the creativity of the engineering specialists (students, PhD students and teachers). We will develop the following activities in the long program: > Mobility within the training of students, PhD students and teachers between the teams of the universities of the partner countries; > Application of creative methods and technologies for computer-based designing of mechanical products within the process of training; > Algorithms and applied software products for optimal computer-based designing of mechanical products, and selection of an optimal structurally set scheme, and a system for automated assembling; > Computer-made geometrical models of mechanical products by the use of virtual designing and experimental determination of the behavior of the compound parts during designing of assembled units by a dynamic analysis of resilient elements and hydrodynamic products; > Development of a set of design documents for designing and automated assembling of a mechanical product within a CAD environment, methodology assets and deduction materials; >The concise course of lectures for use expert systems and Product Lifecycle Management in engineering design; > Test control in training of students on Computer-Aided Design and Automated System for Assembling and testing throughout the training for 'Bachelor' and 'Master' degrees. III The network activities: Intensive Courses Lectures and Visiting Professors In the project is made provision that professors from University partners will read a concise course of lectures on related problems.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022 – 2023

ID: CIII-BG-0722-11-2223



6. Modelling, Simulation and Computer-aided Design in Engineering and Management

Description: Advanced modelling and simulation frameworks and corresponding Computer-aided design tools have to be developed to provide methods and environments to deal with autonomous systems which are determined by intelligent and adaptive behavior. The know-how in the network “Modelling, Simulation and Computer-aided Design in Engineering and Management” can be useful in many ways to new traffic solution/Autonomous driving. A review of different partners’ experience shows that the network can contribute in topics as: • Modelling, simulation and testing the electronic and communication aspects of automobiles and unmanned aerial vehicles (UAVs or drones); • Study, evaluation and applications of standards in Intelligent Transportation System - Network architecture, standards, routing protocols, coding and network security of VANETs; • Design of Arduino-based sensor network in smart parking systems; • Transmission line modelling for automotive applications; • Development of Software tests for electronic systems in automobiles, using the systems PROVETech and Vision, • Study on unmanned aerial vehicles (UAVs or drones) Safety regulations and Safety Management System. • Object detection and tracking from live video streams which can be exploited for realtime control of unmanned vehicles (robotics, automotive, aerospace) in natural geometric environment. Such environments are characterized with high level of uncertainty in their structure and state and few others.

Contact Person: Prof. dr Slobodan Morača

Period of realization: 2022 - 2023

ID: CIII-BG-1103-07-2223



7. Knowledge Bridge for Students and Teachers in Manufacturing Technologies

Description: Technology is one of the most important fields of knowledge at the whole world. It determines manufacturing of various machines and mechanical equipment. The development of manufacturing methods is dependent on the intensity of research. At present time many central European companies and research centers is based on conventional technologies. Numerically controlled machine tools and modern CAM systems are being employed in the analysis and simulation of technological progressive processes. It is also possible to check the manufacturing accuracy (product dimensions, shape, and surface quality) and test the final products, and also test the durability and reliability of machines and devices. To this thinks should be contribute and can be realized by this project Knowledge Bridge for Students and Teachers in Manufacturing Technologies.

Construed CEEPUS III project with name “Knowledge Bridge for Students and Teachers in Manufacturing Technologies” make a goal to create condition to successful cooperation for student, university teachers and young researchers from participant’s universities within frame of network and for others universities within frame of free mover mobility. It is possible only by kind of interdisciplinary educational knowledge and multilateral co-operation among universities the European engineers.

Contact Person: Prof. dr Igor Budak

Period of realization: 2022- 2023

ID: CIII-CZ-0201-15-2223



8. ABCD Network = Architecture, Built Environment, City Planning and Design Network

Description: ABCD Network helps us to upgrade our university education on the level of the 21st century in the vision to make our teaching process and outcomes relevant to the current needs of the real world and society. Establishing CEEPUS network is a result of our long-term effort in increasing the quality of architectural education in Central Europe and the Balkans.

The ABCD network has the following objectives: 1) to enhance the socio-economic transformation and promote intercultural dialogue and contacts in the EU and future access countries; 2) to increase the quality of the educational process at all the involved universities 3) to produce top-level professionals and researchers combining theoretical, experimental and practical knowledge from the field of architecture, urban design, urban planning, sociology, heritage protection, etc. Objectives 5 4) to promote and use the most up to date trends and methods of architectural education; 5) to strengthen the collaboration on teaching process of involved universities via joint studio classes, joint degree programs, joint workshops, lectures of visiting professors, excursions, etc.; 6) to share the experience in the process of accreditation and preparation of new study program and its administrative;

All the partners aim to cooperate on long-term projects and activities such as joint degree study programs. We would like to set up a strong collaborative platform with a vision of the long-life cooperation of all partners.

The network aims to produce top-level professionals and researchers combining theoretical, experimental and practical knowledge from the field of architecture, urban design, urban planning, sociology, heritage protection, etc.

Contact Person: Prof. dr Anica Draganić

Period of realization: 2022– 2023

ID: CIII-CZ-1602-02-2223



9. Concurrent Product and Technology Development - Teaching, Research and Implementation of Joint Programs Oriented in Production and Industrial Engineering

Description: According to CEEPUS III Work Programme 2019 – 2025 are developed and promoted university network CEEPUS HR 108 is designed to stimulate academic mobility, in particular regional student mobility i.e. joint programmes in the frame of CII HR 108 network leading up to double i.e joint degrees and joint thesis supervision and planned mobility actions will be set in that direction. We have finalized our curriculum and we are preparing and developing common teaching materials in the frame of curriculum. We unified the methodology of the modern industrial praxis, educational-technological knowledge and curricula. Successful connecting the educational-technological knowledge with the modern industrial praxis and the important topics in industry in the frame of our joint curricula. On the level of joint program strong industrial collaboration of the majority of project partners enabled high educational level. Specialization of each project participant and its implementation into new joint curriculum is promoted. Determining of the optimal structure of our curricula will enable set-up of Join Degree Diplomas, issued by partner universities in participating UE countries. Only with such kind of interdisciplinary educational knowledge and multilateral co-operation among universities the European engineers will be sufficient innovative and enough competitive to successfully implement the Lisabon declaration and the Bologna curriculum process, Education and Training 2020 strategy (ET2020) and Europe 2020 strategy. Through this network we have coordinate our network activities in line with three of five key priorities according to the Education and Training 2020 strategy (ET2020): improving the quality and relevance of teaching and learning, promoting mobility of students and staff and cross-border cooperation and strengthening the "knowledge triangle", linking education, research, and innovation.

Contact Person: Prof. dr Mladomir Milutinović

Period of realization: 2022– 2023

ID: CIII-HR-0108-16-2223



10. Research and Education of Environmental Risks

Description: A natural disaster is a major adverse event resulting from natural processes of the Earth; examples include floods, hurricanes, tornadoes, volcanic eruptions, earthquakes, tsunamis, and other geologic processes. Due to population growth and its concentration in densely populated areas there is an increasing need for modern society to be vigilant of the impact of catastrophic natural events. Every year, the number of disasters in the world is increasing. It causes more and more damage and deaths. Floods, forest fires and droughts, which do not choose either the place or time when to occur, have been causing irreparable damage, often threaten the lives of people, cultural, material resources and the environment. There are many areas, including towns and cities that are already at risk. Therefore, it is necessary to develop earthquake, tsunami or flood damage scenario by utilizing appropriate vulnerability assessment criteria, topographical information, building and infrastructure inventories, demographical data and other relevant facts. Seismic risk represents the degree of possible loss of human life and material assets in case of earthquake occurrence of a certain intensity in a given area and is usually expressed in relative numbers (in relation to the maximum possible loss). Seismic Risk Management is a process of systematic application of policies, procedures, treatments and monitoring of seismic risk. Managing risks means looking into the future, thinking ahead about the potential events, actions and consequences that one can be faced with in the future as a result of earthquakes, and taking timely measures to minimize risks, thereby avoiding or reducing adverse effects. Risk management includes: formal, quantitative evaluation of potential damage or loss at a given time interval; observation and correction of security deficiencies. The main objective is to provide sustainability in three crucial segments: development of leadership (human resources), capacity development (funds), raising public awareness (information, training and education).

Contact Person: Prof. dr Borko Bulajić

Period of realization: 2022 – 2023

ID: CIII-HR-1302-05-2223



11.Active Methods in Teaching and Learning Mathematics, Informatics and their Applications

Description: Our network is aimed at enhancing the Teaching and Learning of Mathematics, Informatics and their Applications in our partnership by finding those active methods which can catalyse the classical teaching methods using the excellent opportunities offered by CEEPUS network mobility. We build up our network activity by means of large cooperation based on the joint activity of 75 partners from 15 CEEPUS countries. The activity of our network has been awarded the CEEPUS Ministers' Prize of Excellence twice, in 2006 Ljubljana, and 2013 Vienna. We will create a shareable database with teaching videos, recorded lectures, course materials, teaching materials etc, offer to our partners to possibility to create a virtual visiting professorship portfolio, and making possible hybrid type mobilities. A great variety of teaching programs, intensive and joint activities and excellent partner staff contribute as well to cooperation, fulfilling the high quality, and to meet the needs of the labour market. The dedication of partner coordinators, the excellent silent partners resulted in combining networking with other cooperation forms, as organizing summer universities activities and planning a great number of various joint programs. We did organize an excellent summer University intitled GeoGebra Summit. 2021. Computer Algebra and Dynamical Geometry Environment in Education of Mathematics and Informatics we decided to organize it as on-line events due to the emerging restrictions. One of strengths in our network is the fact that many partner coordinators are members of decision-making bodies/are scientific or administrative leaders of the partner universities, organizations. The large variety and geographic situation of our partners allow us to hope that we strongly contributed to the challenges of the Danube Region strategy concerning the increase of mobility inside the countries of the region, especially the students of our 68 partner universities, exploiting the international dimension of innovation and research.

Contact Person: Prof. dr Slavica Medić

Period of realization: 2022 – 2023

ID: CIII-HU-0028-16-2223



12. Metronet- network for novel measuring and manufacturing technologies

Description: To produce goods or provide services companies need standards. Standardization is applied to achieve a certain level of orderliness that is optimal under specific circumstances by formulating procedures for general and repeated use and providing solutions to the existing or possible problems. In industry standards are necessary, for example, to specify the ways of communication and preparation of documents at the particular stages of product design and construction. They are responsible for process smoothness and the quality of semi- and finished goods. Of significance are also the quality assessment and control methods. Standardization plays a vital role in the engineering industry, particularly in the production of machinery and mechanical systems. It has been reported that the quality of machine parts is frequently dependent on the level of standardization. As it is extremely important to assure the accuracy of form, dimensions and surface texture, manufacturers of machine parts are required to follow the requirements known as Geometrical Product Specifications (GPS). Set by the International Standardization Organization (ISO), the documents provide guidelines for dimensioning, geometrical tolerance and measurement of geometric quantities at each stage of machine part generation, from design to assembly. Geometrical Product Specifications define the requirements concerning, for instance, the product functionality, safety, reliability and interchangeability. They need to be followed to obtain the required dimensional properties of ready products. Procedures are given to achieve the dimensional tolerance and that of geometric surface structure parameters, the latter including the geometric tolerance and the surface parameters tolerance.

Contact Person: Prof. dr Igor Budak

Period of realization: 2022 - 2023

ID: CIII-PL-0007-18-2223



13. Development of Mechanical Engineering

Description: Small and medium industrial companies (SMC), according to the opinion of many experts, are the base of developing countries economy. It concerns especially the economy of Central Europe countries, which formerly had non market economy. Development of mentioned industrial enterprises nowadays depends on proper level of mechanical engineering (design, manufacturing engineering and production management) and, in particular, on proper logistics. All of this demand good level of education from proper specialized institutions especially universities. Exchange of ideas, knowledge, results of investigations, students, teachers etc. is the condition sine qua non of high level of research and education in particular university. Thus, existence of the possibility of mentioned exchange is very important from the point of the development of economy. Technology, one of the most important fields of knowledge of the modern world, determines manufacturing of various machines and mechanical equipment. The development of manufacturing methods is dependent on the intensity of research, the aim of which is obtaining high-quality products in mass production at as low costs as possible. Therefore, the investigations carried out by the majority of European research centers concentrate on basic conventional technologies as well as prospective unconventional manufacturing techniques. Numerically controlled machine tools and also modern computer-aided manufacturing systems are being employed in the analysis and simulation of technological processes. The development of technology enables monitoring of particular stages of the technological process, inspection of the technical conditions of technological machines and devices and control of the production cycle of machine elements. It is also possible to check the manufacturing accuracy (product dimensions, shape and surface quality), evaluate the quality of materials used for the manufacturing of particular machine elements, evaluate and test the final products, and also test the durability and reliability of machines and devices.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022-2023

ID: CIII-PL-0033-18-2223



14. Engineering as Communication Language in Europe

Description: In Europe, many national languages are used, however, very often engineers use their own slang, which is quite well understandable to them, regardless of their nationality. It has been noticed, that technical tutorials, brochures or other documents which are written in technical English can by understood by people, who have only basic knowledge of English. The goal of that CEEPUS Network titled "Engineering as Communication Language in Europe" is to create communication and cooperation between engineers, dealing with various engineering branches. The aim of the Network is to be able to create Interdisciplinary Engineering Teams. A strong background in engineering techniques applicable to a wide variety of complex problems is in demand in the widespread knowledge. Our engineers should understand more than one discipline and be prepared to work at the intersection of two or more engineering and science disciplines. Often a single engineer is not able to solve complicated interdisciplinary problems, but there is a great possibility that Interdisciplinary Engineering Teams would make it better and faster. The main task of that Network is involving teachers from partner Institutions in order to create team projects that would be main parts of the program. It is also expected that students will take an active part in all didactic activities proposed by Network and will benefit from our Program, as much as possible. Thanks to engineering knowledge as well as soft skills (ability to work in an international team), all the students in their further career will be able to communicate freely and work in international companies as well as continue their education, e.g. doctoral studies in any university in the world. The CEEPUS Network "Engineering as Communication Language in Europe" gives the opportunity to create successful cooperation, not only between students, 2 but also between teachers from all the universities, which are participants in the network PL-701. Additionally, the Network is open for any open-minded people, who can participate in events organized by that network with using the Freemover Mobilities.

Contact Person: Prof. dr Borislav Savković

Period of realization: 2022-2023

ID: CIII-PL-0701-11-2223



15. Teaching and research in advanced manufacturing

Description: Teaching and research in advanced manufacturing in times of rapid development of the above thesis is very important. Technological development and improving the quality of people's lives are closely linked with the development of manufacturing processes and manufacturing techniques. There is a continuous development of automation and robotics manufacturing processes. Conventional machine tools are replaced with modern multipurpose and multi-axis machining centers, which are equipped with smart functions to enable a safe and user-friendly service, and optimal energy-efficient operation. Robotics and automation is concentrated not only on manufacturing, but also includes the rehabilitation of people, health and daily living assistance. As part of the development of technology, we will conduct research in the field of high-speed machining as advanced manufacturing. Very important aspect of mentioned above thesis is to link industry with the teaching of the field on advanced and at the same time environmentally friendly technologies. Planning processes, construction of virtual technological lines, robotics applications, everything must be linked with the concept of energy efficiency. We would like to make our project that will serve the development of advanced and modern manufacturing techniques, and the transfer of modern industrial knowledge to the sphere of education and training of new generations. The possibility of using practical knowledge while understanding manufacturing solutions in modern industrial plants creates for our project participants in the labor market advantage. After recognizing partners possibilities in the area of laboratory capabilities we would like to introduce from academic year 2019/2020 new activity for students as a short term excursion. During visit students will have the possibility to work in laboratories at Universities of partner project.

Contact Person: Ivan Matin

Period of realization: 2022-2023

ID: CIII-PL-0901-09-2223



16. Internet of Things and Teleinformatics – ITT network

Description: Fast developies of Internet and Communication Technology (ICT) has been observed recently. Global networking infrastructure contains millions of cables, optic fibres, computers, servers, mobilies and other elements to keep the connection alive. The current networks are being used almost in every aspect of our daily life. The expansion of micro and nanodevices as well as Internet of Things (IoT) devices in home, offices and industry are another reason for increasis the role of ICT. IoT technology using Internet will integrate all object communicating with human beings as well as other devices. IoT refers to the networked interconnection of objects which are often equipped with artificial intelligence, so it is strongly related to Industry 4.0 and 5G Technology. With the current fast expansion of the ICT, the needs for development of reseach in ICT, Industry 4.0, 5G Technology, programming, network architecture, exploitation, testing wire and wireless computer networks, and cybersecurity have increased. There are many positions on the job market for the engineers with knowledge and skills in the field of advanced technologies. There is a necessity to include these issues in study programs at university level. The main goal of the network is collaboration in educations and research activities in computer science. The net will be dedicated for students, young and experienced researchers as well as for industrial partners, and provides an exchange platform for networks knowledge and know-how. elaborate and implement joint study program in the field of advanced methods of computer engineering and teleinformatics.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022-2023

ID: CIII-PL-1509-03-2223



17. Teaching and Research of Environment-oriented Technologies in Manufacturing

Description: Traditional academic exchanges are justifiable from the social-cultural standpoint, permitting as it does the circulation of scientific knowledge, research techniques and pedagogical approaches. Academic exchanges allows the individual to engage in professional development and networking, representing an investment in human capital by higher education system that is likely to bring returns in the form of innovation in teaching and research. However, the benefits of this type of mobility occur principally in both universities (home and host, via the exchange of knowledge, experience and practice) and can help to make our universities more attractive as a study destination. The skills, competences and qualifications that people need, are changing over time and must be developed in line with the evolving needs of the labor market. This means that educational systems must know the current requirements of the labor market and also to continuously adapt their curriculum to them. The exchanges of experience and mobility between partner universities can strongly support these and can help to acquire the key competences needed to enable them to adapt flexibly to such changes. In the global economy, when the labor market evolves at a faster rate than education and training, international experience becomes more and more important and mobilities are bridges that can reduce the "speed" between the two. In this connection, one of the major objectives of this project is contributes to develop the education and training systems to facilitate peer learning and the exchange of good practices and to follow up developments and progress of these, through reports, after semester mobility. The main objective for prolongation of the network is to continue to offer the possibility for participants to access mobilities, through which they can obtain more information about the importance, advantages and limits of environment-oriented technologies, tools, and methods.

Contact Person: Prof. dr Boris Agarski

Period of realization: 2022-2023

ID: CIII-RO-0013-18-2223



18. Implementation and utilization of e-learning systems in study area of Production Engineering in Central European region

Description: "Globalization, new technologies and demographic developments constitute an enormous challenge; one of the answers to this problem is the access to lifelong learning." (Jan Figel, former European Commissioner for Education, Training & Culture, 2004-2009) A learning system based on formalized teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times. (The Economic Times, 2018) Access to lifelong learning can be solved using the e-learning systems. Information and communication technologies (ICT), properly used, contribute to the quality of education and training and to Europe's move to a knowledge-based society. The universities have to know to respond on global problems and to be prepared to educate the specialists. Many of the new methods used in production engineering and in CA systems and technologies as rapid machining, virtual prototyping, CAD/CAM/CAE/CMMS are based on "e" (electronic) activities because they reduce the time (time is becoming rapidly the most strategic topic of companies) and increase the quality of products without increasing the costs. E-learning comprises all forms of electronically supported learning and teaching. E-learning applications and processes include Web-based learning, computer-based learning, virtual classroom opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

Contact Person: Prof. dr Aco Antić

Period of realization: 2022-2023

ID: CIII-RO-0202-16-2223



19. Intelligent Automation for Competitive Advantage

Description: On the basis of developed relationships through CEEPUS II 05/06 academic year IntACA group is continuing joint work with broadening on new members from Austria (Graz, Vienna), Poland (Krakow), Macedonia (Skopje) and Slovakia (Kosice) in 2007, from Bosnia & Herzegovina (Zenica) in 2008 and from Hungary (Budapest) and Croatia (Slavonski Brod) in 2009; in 2011 we added a new partner from Bosnia & Herzegovina (Sarajevo), in 2012 we added two new partners (Cluj-Napoca - Romania and Kishinev - Moldova) in 2013 we added one new partner from Austria: CAMPUS 02 - University of Applied Sciences, in 2014 we added Transilvania University of Brasov, Romania; in 2015 we added University of Istocno Sarajevo, Faculty of Production and Management from Bosnia and Hercegovina; in 2016 we added University of Split (Croatia) and Technical College Cacak (Serbia); in 2018 we added two new partners: Polytechnic of Rijeka (Croatia) and Czestochowa University of Technology (Poland); and this year we are also planning to add one new partner: University of Kragujevac, Faculty of Engineering (Serbia). With great enthusiasm IntACA is continuing with operations of Joint PhD studies program (Thesis Supervision) supported by University of Maribor and University of Novi Sad, along with University of Split and Budapest University of Technology and Economics. This program serves as an example for other institutions in the network and create important experience for future cooperation. Network further aims to intensify contacts between the participating institutions by exchanging undergraduate and doctoral students and teachers. The network is based on the similarities, the common academic fundamentals, the same mission of the faculties, the similar structure of engineering and social sciences curriculum and the same problems in the participating countries. Also, the network advantages are certain experience in CEEPUS I, CEEPUS II and CEEPUS III from 2005 to 2017 activities, in Socrates - Erasmus projects at Faculty of Mechanical Engineering in Maribor, in JoinEU-SEE SIGMA and SIGMA Agile projects, WUS Austria, TEMPUS projects, and ERASMUS+.

Contact Person: Prof. dr Bojan Lalić

Period of realization: 2022 - 2023

ID: CIII-RS-0065-17-2223



20. Technical Characteristics Researching of Modern Products in Machine Industry with the Purpose of Improvement Their Market Characteristics and Better Placement on the Market

Description: Market globalization has affected on product assortment extension on the market, which brought many benefits to the consumers. They are enabled to buy products of different quality, price, design and terms of delivery. Major manufacturers have received globalization with a great pleasure, because globalization enabled them expansion of the market and all the preferences that follow with this. Small and medium manufacturers are the most affected with globalization, because of presence of concurrents, so they can't place their products anymore in such amount like before, or even they can't do it at all. Due to globalization, they had to reduce their assortment and intensively to develop existent products, so they could become more competitive. All who didn't succeed this, had to change their production program, or simply to close their factories. Global world brings global problems in industrial production. Economic pressure urges producers to make more customized products of high quality, in smaller series, with shorter lead time and of course, without increased costs. Time is becoming one of the most important point of the company's strategy. Costs are also important. More important is competitive price and the most significant are marketability of manufactured products. Therefore, producers look for different ways (new design, modern tools, etc.) to increase a competitive advantage of their products. In most of the cases, leading concurrents bought all perspective companies (their potential concurrents), so they continued to produce, but, after this, different products. So, if small and medium manufacturers want to stay on globalized market, they intensively and incessantly must develop their products, apply new technologies and nourish aggressive marketing, because it is the only way to subsist at the market.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022-2023

ID: CIII-RS-0304-15-2223



21. Research, Development and Education in Precision Machining

Description: The key change drivers in the case of machining technology include: Diminishing component size, enhanced surface quality, and tighter tolerances and manufacturing accuracies, reduced costs, diminished component weight and reduced batch sizes. The trends towards higher precision are occurring in virtually all areas of manufacturing. Higher precision is needed for several reasons · To obtain the high motion required in high-accuracy machine tools, computer peripherals, etc. · To guarantee robustness (optimal functionality under varying circumstances). · Creating information on advanced materials and the possibilities of their application · To guarantee part interchange ability (avoid adjustments), and hence to allow mass production at low price. Metal machining industry is under increasing pressure as a result of competition, stricter environmental regulation, supply chain demand for improved environmental performance and falling skill levels within industry. Adopting sustainable manufacturing practices offers material machining companies a cost effective route to improve their economic, environmentally and social performance. The alternative sustainable production, have to put all three levels on the same equal level. Sustainability products principles are considering manufacturing costs, energy consumption, waste management, environmental impact, operation safety and personal health. The education system ought to be preparing knowledge based, well skilled and trained people for the future practice. It is a main task of Universities but it could be realized only with narrow cooperation among them. As known each university (technical Institution) has its own strongpoint in the research, development and education. Therefore, knowledge based and well skilled experts could be prepared well when this strongpoint will be used for students' education and teacher cooperation. The exchange mobility program Ceepus could be enabled in mentioned effort.

Contact Person: Prof. dr Borislav Savković

Period of realization: 2022-2023

ID: CIII-RS-0507-12-2223



22. Research and Education in the Field of Graphic Engineering and Design

Description: The graphic industry in the developed world takes a high profit place and its products greatly influence the other industry product marketing. It has a special importance in the economies of developing countries with a large number of small and medium enterprises. The particular place belongs to the packaging because it presents product to the customers and it is one of the most important deciding factor when buying is in a question. This project mainly aims to form proper network through which the advance of the knowledge will be enabled and significantly improved. The improvements will have a basis in constant research and knowledge along with modern programming tools and systems. Key research will include the important areas of graphic engineering and design. The basic research will include the field of design, prepress, press, postpress and packaging. Research in the field of design will include graphic product and industrial design in a correlation with prepress, press and postpress demands. Photography, typography and realization of multimedia contents will be also the objectives of the research. Important focus is going to be put on the type design of different lettering (e.g., Latin, Cyrillic) and a various number of a critical marks. Impact of different materials used for enhancement of printed images, like special and UV pigments, will be investigated. In recent years there is increasingly significant research in this field in order to achieve visually attractive products in graphic industry. Determination of achieved value of gloss and colour range will help solving the problem of revisualisation of products in the design face. Special attention will be paid to the market trends in terms of current requests concerning visual identity and production ability. Prepress activities will consist of defining the proper software for image processing, vector based pictures processing and final layout. Also, the research will be addressed to usual problems from the graphic industry with printing plates for different printing techniques and possible improvements in every day usage.

Contact Person: Prof. dr Živko Pavlović

Period of realization: 2022-2023

ID: CIII-RS-0704-11-2223



23. Fostering sustainable partnership between academia and industry in improving applicability of logistics thinking (FINALIST)

Description: Supply chain management is a fact of business, with logistics as a most powerful tool for achieving ultimate strategic advantage. Today's business is constantly changing and evolving in response to change in technology, social and economic environments, and climate. Changes in business models drive a "new" supply chains. That novelty could be described through several major characteristics: (1) supply chain role has moved from being tactical to being strategic; (2) supply chain complexity and dynamics are constantly growing; (3) supply chain completely focuses on value from customers' point of view. Hence, new paradigms in business evolve new logistics and supply chain management strategies. To understand and apply those new logistics thinking, appropriate way of dissemination of logistics knowledge to future and current employees should be created. Hence, the overall objective of this project is to promote the innovation and implementation of sustainable knowledge transfer between academia and industry, with the final aim to improve regional logistics competence through better applicability of logistics thinking. Long program description Dynamics of market changes dictated by globalization, liberalization and constant technological development places the effectiveness of logistics and supply chain in the centre of economic success and competitiveness of a country or region. Logistics effectiveness is based on the appropriate level of excellence regarding logistics infrastructure, applied logistics practices and technologies, logistics culture and logistics competence. Logistics competence implies understanding of new strategic role of logistics activities in contemporary strategies for supply chains management. Understanding and application of the principle of contemporary logistics management requires creation of appropriate dissemination of new logistics knowledge among future and at the moment employed logisticians (creation of logistics human capital).

Contact Person: Prof. dr Marinko Maslarić

Period of realization: 2022-2023

ID: CIII-RS-1011-08-2223



24. Building Knowledge and Experience Exchange in CFD

Description: The known fact is that beside costs, time is one of the most important aspects of one company's strategy. More important is competitive price and the most significant is marketability of product. Therefore companies look for tools that could increase a competitive advantage of their enterprises. One of these tools is computational fluid dynamics (CFD) which could reduce the development costs of many different products like devices, machines, systems etc. Computational fluid dynamics (CFD) already significantly replaces experiments in the many engineering fields: fluid mechanics, mechanics, thermodynamics, heat transfer, mass transfer etc. The reason for this is that the application of CFD reduces development costs of different products compare to experimental development. Due to lower costs there is a trend at the universities and development centers of large companies to reduce the share of experiment and increase the share of CFD application. Because of reduction of development costs of products, recently CFD is experiencing intense development and it is becoming the topic of many research projects around the world. Leading world universities already established CFD laboratories and study programs with subjects which deal with CFD. Many of these universities even issue diplomas of computational fluid dynamics engineer. This is reason why seventeen universities from eleven countries of Central and South-East Europe region suggest establishing of new network with title "Building Knowledge and Experience Exchange in CFD". Proposed network would bring many benefits to partners universities: establishing contacts between scientists who deal with CFD; exchanging information, knowledge and experience in the field of CFD; participating to the common research projects and other activities; assisting with work on M.Sc. and Ph.D. thesis in the field of CFD; organizing lectures, seminars, summer courses, schools, scientific conferences and workshops.

Contact Person: Prof. dr Siniša Bikić

Period of realization: 2022-2023

ID: CIII-RS-1012-08-2223



25. Multidisciplinary Approach to Education and Research in the Field of Digital Media Production

Description: In contemporary society, digital media technology touches almost every aspect of our lives. Digital media are an integral part of our day including both leisure and work times. Today, all analogue media have their digital version where most of them are with an interactive component, offering new experiences and functionalities. Further, development, production, advertisement, exploration of common products in our surroundings such as cars, pieces of furniture or food articles are advanced or enriched with digital content. This project primarily aims to form an academic network connecting respective high education institutions in the field of digital media production with diversified background and expertise. The main network objectives are aimed at creating a multidisciplinary approach to improve educational outcomes and research potential in this field among all network participants. The network is defined to answer the enhanced needs for education and research in contemporary creative media industries. The participating faculties characterised by the industry-standard laboratories and a wide range of state-of-the-art courses which combine practical elements and theory at a high level. The exchange and dissemination of knowledge base, learning practices and materials will facilitate and accelerate adaption of each institution to dynamic changes in a continually evolving field of digital media production where cutting-edge technology and solutions now may be overrated practice in five years. The collaboration within the network aims to develop a modular way of updating multidisciplinary courses and research application to reflect expected changes in both industry and academia. The mobility program anticipated with the project plan will enable scholarship users to access to media centres, design archives, library materials and research facilities and equipment.

Contact Person: Prof. dr Sandra Dedijer

Period of realization: 2022-2023

ID: CIII-RS-1311-05-2223



26. Interdisciplinary approach for enhancing knowledge in supply chain analytics (SCAN)

Description: Supply chains (SCs) are complex systems, which involve different organizations with different goals and objectives. The overall goal of all organizations involved in SC is to create a profit by satisfying the customer's demand for products or services. The business uncertainty (market conditions) is among the most important challenges facing modern SCs, and it poses considerable difficulties in terms of SC planning and control. Design of SC as well as the strategic and operational decisions depend on the expectations of what will be the market conditions in the following planning period. In today's changing markets, business uncertainty can emerge from a range of different sources: volatile and hardly predictable resources prices (oil), varying micro and macroeconomics indicators in different regions, wide customer base spread all over the world, demand volatility generated by end customers, political and climate challenges, etc. Accordingly, SCs are faced with huge obstacles in providing the value for the end customers in this changing environment. In order to deal with today's business challenges, SCs need modern analytic tools to overcome the "bridge of uncertainty" in everyday business. This project explores the various analytical tools and techniques which can be used in providing support for the decision making in a real SC. Accordingly, the project will be focused on building, enhancing and sharing the knowledge base about different kind of mathematical and simulation models for dealing with the business uncertainty in modern markets, as well as educating the future SC practitioners with analytical techniques, categorized in terms of descriptive, predictive and prescriptive analytics, which are needed in the contemporary markets.

Contact Person: Prof. dr Svetlana Nikolić

Period of realization: 2022-2023

ID: CIII-RS-1412-04-2223



27. Research and Development of New Technologies for Innovative Services in Sustainable Logistics 4.0

Description: Present time conditions of modern business environment indicate that the market competition will demand from the participants in supply-chain management abilities which enable instant responses to market requirements. Because of that, intense development of the production is required, especially intense development concerning organization and the automation of complex mechanized transport and warehouse equipment. In order to achieve a higher level of efficiency, the strategy needs to be oriented towards investments in new, smart technology. This CEEPUS network has interrelated objectives: to understand the current situation as regards sustainable logistics in Europe and world, to present a snapshot of the current developments in sustainable logistics, supply chains and innovative services in different countries participants, to provide insight into the trade-off between environmental impacts, cost and supply-chain performance under different transport strategies oriented towards smart technology, etc. Many companies are limited to measuring the sustainability of their own business operations and are unable to extend this evaluation to their suppliers and customers. This makes determining their true environmental costs highly challenging and reduces their ability to remove waste from the supply chains. However much progress has been made in defining supply chain sustainability and benchmarking tools are now available that enable sustainability action plans to be developed and implemented.

Contact Person: Prof. dr Milan Rackov

Period of realization: 2022-2023

ID: CIII-RS-1511-03-2223



28. Chemistry and Chemical Engineering

Description: The main objectives of the Ceepus network CIII-SI-0708 would be as follows:

- to establish a research center of excellence in the fields of process efficiency, renewable resources, new products and materials, cycle economy and sustainable development,
- to promote research work among students at all three levels in order to build a research excellence from Bachelor level through Master level up to Doctoral level. Students should acquire the competencies for independent and innovative research work,
- to establish research synergies among participating institutions in order to develop holistic, integrated, efficient and sustainable process solutions for some of the most challenging problems, such as depletion of fossil fuels, depletion of important chemical elements, transition from linear to circle economy, preservation of environment, efficient production, development of new products and materials.

The main goal of Ceepus network CIII-SI-0708 would be to foster and promote excellent research work among students at all three study cycles within the fields of chemical engineering, chemistry and biochemistry. The main emphasis would be on the PhD students, however, considering that the number of doctorate students can be limited, also Master and Bachelor research work would be promoted. The research cooperation among partner institutions has been developing since the beginning of this network in year 2012/2013, and shall be even strengthened in the future. The motivation would be inventing those research areas that are beyond-state-of-the-art within the fields of chemical and process engineering, chemistry, biotechnology, environment protection, energy and material efficiency, green- and low carbon technologies for production of energy and chemicals from renewable sources.

Contact Person: Prof. dr Dunja Sokolović

Period of realization: 2022-2023

ID: CIII-SI-0708-10-2223



29. Architecture Landscape Interiors Culture Emotions (A.L.I.C.E.)

Description: The most important focus of the platform is on its interdisciplinarity, joining different fields of art and design - interior design, product design, industrial design, textile and fashion design, graphic design, visual communications, illustration, etc. In the academic year 2013/2014 the platform consists of ten full partners and one silent partner: Full partners Faculty of Design in Ljubljana, an independent institution of higher education University of Split, Academy of Arts University in Sarajevo, Academy of Fine Arts University of Zagreb, Faculty of Forestry, Wood technology Department Poznan University of Life Sciences, Department of Furniture Design Faculty of Natural Sciences and Engineering, Department of Textiles University of Belgrade, Faculty of Forestry, Department of Wood Processing Non-state Academy of Fine Arts, Belgrade Chisinau "Ion Creanga" State Pedagogical University from Republic of Moldova, Faculty of Fine Arts and Design University of Novi Sad, Faculty of Technical Sciences Silent partner Saint-Petersburg State University of Technology and Design, Russia The principal goals of the platform consist of: - establishing a network of stable, reliable partners with common fields of study, goals, problems and topics in question; - the exchange of knowledge – sharing good practices, presenting different teaching approaches and new professional knowledge; - offering to all participating partners the possibility to partake in an international student project related to a chosen topic; - organising biannual student project competition related to a chosen group topic; - organising biannual scientific conference to exchange ideas, share problems, present new concepts, etc.; - publishing a catalogue of the student projects presented and selected by the international jury committee; and/or a catalogue of scientific papers presented at the scientific conference; - organising a biannual exhibition along with the award giving ceremony for the best project from each participating institution; - to prepare a joint MA programme between three/four partner institutions.

Contact Person: Prof. dr Živko Pavlović

Period of realization: 2022-2023

ID: CIII-SI-0719-11-2223



30. Training and research in environmental chemistry and toxicology

Description: The collaboration among some partners in the region has started already fifteen years ago through Association of Chemistry and the Environment (ACE) between partners from University of Ljubljana, Faculty of Health Sciences (prof. Polonca Trebše), University of Belgrade, Faculty of Chemistry (prof. Branimir Jovančičević) and Brno University of Technology, Faculty of Chemistry (prof. Josef Caslavsky). They collaborated through the research as well as in the development of new study programmes and study materials in the field of environmental chemistry and toxicology (TEMPUS project). Our common points of interest represent pollutants, coming from different sources like industries, agriculture, human activities, affect different environmental spheres such as air, water, soil, and pose serious threat to the ecosystems and living organisms. From that reason we wanted to connect not only teachers in the region but mostly students to work on real environmental problems and get insight to them. The network represents a basis for the establishment of collaboration between faculties with the main objective: to provide expertise and infrastructure for interdisciplinary education and research of future experts in the fields of environmental chemistry and toxicology. Within the last five years: - We performed intensive exchange of students and professors within the network. - Several students performed the research work to obtain more skills and experiences (e.g. Adna Čolaković, Nejra Kovač, Igor Akrap, Lara Čížmek) - Several students performed the research work within master of doctoral thesis (e.g. Šenan Hadžibegić, Hena Divanović, Štefan Kulaš, Marcin Podražka, Anamarija Milisav, Jerca Bajuk, Katarina Bertović).

Contact Person: Prof. dr Mirjana Vojinović Miloradov

Period of realization: 2022-2023

ID: CIII-SI-0905-09-2223



31. From preparation to Development, implementation and utilization of Joint Programs in study area of Production Engineering

Description: Global world brings global problems in production engineering. Economic pressures urge manufacturers to make more customized products of high quality, in smaller series, with shorter lead time and of course, without increased costs. Time is becoming rapidly the most strategic topic of companies. Costs are also important, more important are competitive price and the most significant are marketability of manufactured products. Therefore producers look for tools to increasing a competitive advantage of enterprises. Naturally the universities have to know to respond on global problems and to be prepared to educate the specialist. The new methods of production engineering, CA systems and technologies, Rapid machining, Virtual prototyping are indeed strong tools for solving the global problems. Such as the production is global also education has global dimension. New forms of education such as e-learning give good possibility to extend collaboration among universities. All activities concerning the “e” (electronic) are keys for solving of global problems of producers and global problems of universities. Except global problem in education it is needful to solve legislative frame of common interest. Joint programs give a good platform for increasing of collaborated universities. Therefore the subject of new CEEPUS network is titled “From preparation to Development, implementation and utilization of Joint Programs in study area of Production Engineering – contribution to higher flexibility , ability and mobility of students in the Central and East European region“. The principal motive is elaboration and implementation Joint programs in study area of Production engineering. All presented activities / organizing of conferences and workshops, seminars for students and PhD students, support for elaboration and finishing of PhD thesis, excursion/ will be henceforward supported and will be effort to increase their level in framework of Joint programs.

Contact Person: Prof. dr Đorđe Vukelić

Period of realization: 2022-2023

ID: CIII-SK-0030-18-2223



32. Applied Economics and Management

Description: The CEEPUS network "Applied Economics and Management" is a prolongation of the already existing network coordinated by the Faculty of Economics and Management of the Slovak University of Agriculture in Nitra, Slovakia. Based on the very positive feedback, good practice and experience from previous academic years, we are planning to: ∞ continue the networking between universities in the field of applied economics and management and related fields as well as carry out coordinating network activities; ∞ in order to make the network activities more efficient, we are re-evaluating the cooperation within the partnership annually and based on the growing interest in participation in our network we are accepting new partners; ∞ enable undergraduate student, doctoral student and teacher exchanges (with growing demand for short term excursions) to facilitate the emphasis areas at the host institutions, with using the library and other resources; ∞ organize and manage the work of experts' groups in applied economics and management (namely in the field of economics, management, marketing and applied agri-sector economics as well as emerging market studies); ∞ implement participation in lectures, workshops, conferences and seminars devoted to areas of expertise – special focus on guest lecturers aimed at the transfer of know-how and enriching the education process; ∞ implement the International Master Double Degree study program "Business Economics" offered by two universities of the network – the Slovak University of Agriculture in Nitra and the University of Agriculture in Krakow; ∞ involve teachers from our partner universities in lecturing the managerial course MBA at the coordinating institution, the Slovak University of Agriculture in Nitra;

Contact Person: Prof. dr Slavica Mitrović Veljković

Period of realization: 2022-2023

ID: CIII-SK-0044-17-2223



33. ADVANCES IN MACHINING: Education and Manufacturing Challenges in Industry 4.0 Environment- part 2

Description: The Network SK 0067 had started its activities since September 2005. The stress of the ongoing project will be done on continual improvement of all planned activities as well as on development of high level technical education in accordance with the industry demand. (During academic year 2019/2020 it was as umbrella network) Every year, all partners involved to the network have confirmed their willingness to cooperate and all have invest a lot of effort in order to fulfil the objectives stated in the project with larger or smaller success. Universities included in this project have long term cooperation on various levels (education, research, personal contact). There is new partner join to the project – VŠB Technical University in Ostrava (VSB-TUO). The main areas of cooperation established during this network are as follows: 1. Team of teachers actively and regularly have lectures in participating institutions as a part of regular educational activities. 2. Organization of scientific conference (previously workshop) for PhD students and teachers; the first workshop had been organized in Cracow in April 2006; and since this time at CUT Cracow there it is a practice to be held, yearly. We hope that this good practice will continue in future. Lectures presented in the workshop are published yearly in Research Report edited by CUT Cracow. 3. Assistance with PhD thesis and joint thesis supervision. 4. Utilization of unique laboratory equipment for PhD and master thesis preparation (for example: in the field of metal cutting, surface integrity and roughness measurement and cutting process phenomena identification via monitoring, CAD/CAM/CAE implementation into machining, etc.)

Contact Person: Prof. dr Borislav Savković

Period of realization: 2022-2023

ID: CIII-SK-0067-18-2223



34. Renewable energy sources

Description: Primary motivation for creation Network “Renewable Energy Resources” was based on the fact that in one of the most popular and important area of technical sciences – field of Renewable Energy Resources – there was no running Network. From that time till present days enlarge the number of participants 5 times and each academic year there was big amount of student and teacher mobility. Preventing dangerous climate change is a strategic priority for the European Union. For 2020, the EU has committed to cutting its emissions to 20% below 1990 levels. This commitment is one of the headline targets of the Europe 2020 growth strategy and is being implemented through a package of binding legislation. Moreover, EU leaders agreed on 23 October 2014 policy framework for climate and energy, as proposed by the European Commission in January 2014. This 2030 policy framework aims to make the European Union's economy and energy system more competitive, secure and sustainable and also sets a target of at least 27% for renewable energy and energy savings by 2030. From this point of view the main aim of the CEEPUS network “Renewable energy sources” for 2015/16 is to continue in the development of strong partnership where participated universities work together not only in the frame of undergraduate, graduate and postgraduate students exchanges and teachers mobility, but they are involved in wide diapason problems concerning renewable or alternative energies and relevant science areas. We can describe the main objective of our CEEPUS Network as an effort to enhance quality of study and research in the field of “Renewable energy sources”.

Contact Person: Prof. dr Borislav Savković

Period of realization: 2022-2023

ID: CIII-SK-0405-14-2223



35. Urban Innovations Network

Description: The Urban Innovations Network is tended as an instrument to strengthen the cooperation between concerned partners from different countries in the eponymous subject of Urban Innovations those cover a framework of three different spheres of urban space. Namely its physical structure, social structure and functional structure. The main goal of this network is to establish an interface between those spheres and strategical documents such as territorial agenda and Leipzig Charter to contribute to the territorial cohesion through the academical cooperation program CEEPUS.

Programme operational objectives:

- To improve the quality and to increase the volume of mobility throughout the network area
- To improve the quality and to increase the volume of co-operation between partners of the Urban Innovations Network
- To facilitate the development of innovative practices in the field of education
- To improve the transparency and recognition of qualifications and competences
- To form joint degrees
- To encourage the learning of modern foreign languages

Contact Person: Prof. dr Milena Krklješ

Period of realization: 2022-2023

ID: CIII-SK-0606-12-2223



COST is the longest-running European framework supporting trans-national cooperation among researchers, engineers and scholars across Europe.

It is a unique means for them to jointly develop their own ideas and new initiatives across all fields in science and technology, including social sciences and humanities, through pan-European networking of nationally funded research activities. Based on a European intergovernmental framework for cooperation in science and technology, COST has been contributing - since its creation in 1971 - to closing the gap between science, policy makers and society throughout Europe and beyond. As a precursor of advanced multidisciplinary research, COST plays a very important role in building a European Research Area (ERA).

It anticipates and complements the activities of the EU Framework Programmes, constituting a “bridge” towards the scientific communities of COST Inclusiveness Target Countries. It also increases the mobility of researchers across Europe and fosters the establishment of scientific excellence.

The former science organization which was structured into nine science and technology domains has been replaced by a new organization aiming at guaranteeing a fully open and bottom-up approach through the establishment of a single Scientific Committee. This also includes a renewed evaluation and selection procedure aiming at identifying breakthrough ideas and favoring interdisciplinary and multidisciplinary projects.

1. A pan-European Network for Marine Renewable Energy (WECANet)

Description: The pressure of climate change and the growing energy demand has increased interest in marine renewable energy resources, such as wave energy which can be harvested through Wave Energy Converter (WECs) Arrays. However, the wave energy industry is currently a significant juncture in its development, facing a number of challenges which require that research re-focuses onto a techno-economic perspective, where the economics considers the full life-cycle costs of the technology. It also require development of WECs suitable for niche markets, because in Europe there are inequalities regarding wave energy resources, wave energy companies, national programs and investment. As a result, in Europe there are leading and non-leading countries in wave energy technologies. The sector also needs to increase confidence of potential investors by reducing (non-) technological risks. This can be achieved through an interdisciplinary approach by involving engineers, economists, environmental scientists, legislation and policy experts etc. Consequently, the wave energy sector needs to receive the necessary attention compared to other more advanced and commercial ocean energy technologies (e.g. tidal and offshore wind).

The formation of the first pan-European Network on an interdisciplinary marine wave energy approach will contribute to a large-scale WEC Array deployment by dealing with the current bottlenecks. The WECAAction aims at a collaborative approach, as it provides a strong network platform that also creates the space for dialogue between all stakeholders in wave energy. WECAAction's main target is the equality research, collaboration and funding opportunities for all researchers and professionals, regardless of age, gender and location.

Contact person: Prof. dr Branka Nakomčić-Smaragdakis

Period of realization: 2018 – 2023

ID: COST Action CA17105

2. Pan-European Network for Sustainable Hydropower (PEN@Hydropower)

Description: Hydropower (HP) played an essential role in Europe over decades, providing a unique combination of safe, low-cost, and clean electricity production. It is still one of the largest renewable energy sources (RES), adding up to about 35% of the electricity generated from RES. Predictions show that by 2024-2025 all RES will contribute almost 34% to the worldwide electricity production, and HP will provide approx. 50%. Europe shows an almost equal share of electricity from volatile wind (36.5%) and predictable hydropower sources (34.3%) for 2019. This trend of an increasing quantity of unregulated energy (wind plus solar) involves market requirements for flexibility and dynamics such as energy storage and fast response. In that case, HP has the potential to balance a renewable energy system on a short term (seconds to minutes) and on a medium to long term (months or even years) basis by using pumped-storage technology. New requirements in terms of operation and maintenance of Hydropower plants as well as co-generation of electricity with other RES needs substantial future research. As past funding of research projects was low, this new initiative should work together for a better knowledge exchange, capacity building of young researchers to meet the needs of the future. The main objective of this Action is to establish a Pan-European network for a sustainable, digitalised Hydropower contributing to the Clean Energy Transition (CET), a united network of researchers, engineers, scholars, and other stakeholders, such as representatives from industry, policy and civil society, to facilitate close collaboration among European research groups through projects supporting sustainable Hydropower.

Contact person: Prof. dr Branka Nakomčić-Smaragdakis

Period of realization: 2022 – 2026

ID: COST Action CA21104

3. European Network for Game Theory (GAMENET)

Description: With the rapid advancement of technological innovations, modern societies rely more and more on the proper functioning of complex networks (i.e., social, telecommunication and transportation networks). Since the state and the dynamics of these networks are determined by independent decision makers, a solid understanding, control and optimization of such networked systems constitutes a major challenge for modern societies.

Game theoretic concepts are nowadays used in the analysis of networked systems, such as the computation of traffic equilibria in large-scale transportation networks, the prediction of content popularity in social networks and online services, and the analysis of the spreading of diseases and epidemics. Since there are many applications from different fields exhibiting similar network structures (e.g., biological, technological and social networks) and each of these applications has field-specific characteristics, our Action needs to bring together researchers from different fields of science, such as, applied mathematics, algorithmic computer science, engineering and economics.

The key objective of this Action is to facilitate interactions and collaborations between different groups of game theorists, to provide game theoretic expertise to industrial partners, and to establish a large and vibrant interconnected community of excellent scientists in these different fields. This Action will be the first European network where computer scientists, applied mathematicians, economists, and operations researchers will join forces on problems with significant technological and socio-economic impact. On a meta-level, the aim is to create a broad community of game theorists across Europe and at every stage of their career and to facilitate contact with stakeholders.

Contact person: Prof. dr Dejan Vukobratović

Period of realization: 2017 – 2022

ID: COST Association COST Action CA16228

4. INDoor AIR POLLution NETwork (INDAIRPOLLNET)

Description: In developed countries, we spend 80%-90% of our time indoors, where we recover most of our exposure to air pollution. However, regulation for air pollution focuses mainly on outdoors and the indoor environment is much less well characterized. The concentration of many air pollutants can be higher indoors than out, particularly following activities such as cleaning and cooking. With increasing climate change impacts, related energy efficiency measures are making buildings considerably more airtight. Such measures can increase both the indoor and outdoor environments and the role of ventilation, in order to mitigate through appropriate building operation, use and design. INDAIRPOLLNET (INDoor AIR POLLution NETwork) will improve our understanding of the cause of high concentration of indoor air pollutants. It will assemble experts in laboratory and chamber experiments, modeling studies and measurements of relevance to indoor air quality (IAQ), including outdoor air chemists. Our network includes experts in chemistry, biology, standardization, particulate matter characterization, toxicology, exposure assessment, building materials (including those manufactured specifically to improve IAQ such as green materials), building physics and engineering (including ventilation and energy) and building design. This Action aims to significantly advance and field of indoor air pollution science, to highlight future research areas and to bridge the gap between research and business to identify appropriate mitigation strategies that optimize IAQ. The findings will be disseminated to relevant stakeholders such as architects, building engineers and instrument manufacturers.

Contact person: Prof. dr Dunja Sokolović

Period of realization: 2018- 2023

ID: COST Action CA17136

5. European Middle Class Mass Housing (MCMH-EU)

Description: The main challenge of this Cost Action is to create a transnational network that gathers European researchers carrying studies on Middle-Class Mass Housing (MCMH) BUILD IN Europe since the 1950s. This network will allow the development of new scientific approaches by discussing, testing and assessing case studies and their different methodologies and perspectives. MCMH has been generally underestimated in urban and architectural studies and there is still a lack of comparative analysis and global perspectives. The number of transnational publications and scientific meetings has been scarce. By crossing different approaches focus on Architecture, Urbanism, Planning, Public Policies, History, Sociology new concepts and methodologies will arise. Therefore, the Action aims to produce a wider understanding of MCMH sprawl, deepening on-going researches and focusing on the existing case studies. The current methodology, surveys, and contextualization allow an initial mapping of relevant case studies, their diverse degrees of resilience and how they have been adapted to current (urban and social) conditions. It is intended to develop the knowledge of the interaction between spatial forms, behaviors, and satisfaction and to combine methodologies of architectural and social analysis. The Action will be developed by three Working Groups, coordinated by a Core Group: Documenting the MCMH; Development of a specific set of (new) concepts for MCMH analyses; Leverage contemporary architecture interventions and Public Policies. In the Action will be involved researchers related to Mass Housing, MCMH Architecture and Urbanism, Planning and Public Policies, Sociology Studies, Architecture History and Modern Heritage.

Contact person: Prof. dr Milena Krklješ

Period of realization: 2019 – 2023

ID: COST Action CA18137

6. International Interdisciplinary Network on Smart Health Age-friendly Environments (NET4AGE-FRIENDLY)

Description: "To promote social inclusion, independent living and active and healthy ageing in society, the NET4AGEFRIENDLY COST Action will establish an international and interdisciplinary network of researchers and stakeholders from all sectors. Its aim is to foster awareness, and to support the creation and implementation of smart, healthy indoor and outdoor environments for present and future generations. NET4AGE-FRIENDLY further aims to overcome fragmentation and critical gaps at both conceptual and pragmatic innovation level on responsive, age-friendly and sustainable environments to address European research and policy challenges. The main approach of NET4AGE-FRIENDLY is the establishment of local or regional ecosystems in each COST country involved, to work on health and well-being in an age-friendly digital world. The ecosystems will consist of citizens, public authorities, businesses/NGOs and researchers. They will be supported by four thematic Working Groups (User-centered inclusive design in age-friendly environments and communities; Integrated health and well-being pathways; Digital solutions and large-scale sustainable implementation; Policy development, funding forecast and cost-benefit evaluations). The outcomes of the thematic Working Groups will be integrated by a dedicated Working Group to create a synergized output as a Reference Framework. NET4AGE-FRIENDLY will be used as a connector for involving and hosting regular themed sessions with local and regional stakeholders and users' representatives from various countries and backgrounds, as well as for fostering the knowledge creation and sharing among researchers. Particular attention will be devoted to promoting the involvement of Early Career Investigators, entrepreneurs and participants from COST Inclusiveness Target Countries"

Contact person: Prof. dr Tatjana Lončar-Turukalo

Period of realization: 2020 – 2024

ID: CA COST Action CA19136

7. Wider Impacts and Scenario Evaluation of Autonomous and Connected Transport (WISE-ACT)

Description: Autonomous vehicle (AV) trials are currently taking place worldwide and Europe has a key role in the development of relevant technology. Yet, very limited research exists regarding the wider implications of the deployment of such vehicles on existing road infrastructure, since it is unclear if and when the transition period will start and conclude.

It is anticipated that improved accessibility and road safety will constitute the primary benefits of the widespread use of AVs, whilst co-benefits may also include reduced energy consumption, improved air quality or better use of urban space. Therefore, the focus of this COST Action is on observed and anticipated future mobility trends and implications on travel behavior, namely car sharing, travel time use or residential location choice to name a few. Other important issues to be explored under different deployment scenarios are social, ethical, institutional and business impacts.

To achieve this, it is essential to culminate co-operation between a wide range of stakeholders at a local, national and international level, including academics and practitioners. Consequently, this COST Action will facilitate collaboration within Europe and beyond about this emerging topic of global interest.

Contact person: Prof. dr Todor Bačkalic

Period of realization: 2017 – 2022

ID: CA COST Action CA16222

8. Distributed Knowledge Graphs – (DKG)

Description: Knowledge Graphs are a flexible way to represent information about virtually anything. People from a variety of application domains including biomedical research, public and open data, linguistics, journalism, and manufacturing publish, use, and investigate knowledge graphs. As the publication is done in a decentralized fashion across the web, the knowledge graphs form a distributed system. Due to the ever-increasing uptake of Knowledge Graphs technologies in recent years, there are new challenges for research and development including dealing with the scale and the degree of distribution of knowledge graphs, while monitoring and maintaining data quality and privacy. Tackling these research challenges will need a stronger collaboration within the research community and a joint effort to establish a more functional, decentralized Web of Data. The main aim of the action is therefore to create a research community for deployable Distributed Knowledge Graph technologies that are standards-based, and open, embrace the FAIR principles, allow for access control and privacy protection, and enable the decentralized publishing of high quality data. To this end, the Action connects European researchers and practitioners from 1) diverse application domains and 2) the whole life cycle of Distributed Knowledge Graphs, from provisioning to finding, access, integrating, programming, deploying, enriching and analytics. The Action will develop practices for scalable, privacy-respecting, high quality and decentralized Knowledge Graph publication and consumption, reach out to the European industry, and formulate a research agenda.

Contact person: Prof. dr Stevan Gostojić

Period of realization: 2020 – 2024

ID: CA COST Action CA19134

9. *Reliable* roadmap for certification of bonded primary structures (CERTBOND)

Description: With the increasing pressure to meet unprecedented levels of eco-efficiency, aircraft industry aims for superlight structures and towards this aim, composites are replacing the conventional Aluminum. The same trend is being followed by civil, automotive, wind energy, naval and offshore industry, in which the combination (or replacement) of steel with composites can increase the strength-to-weight ratio. However, the joining design is not following this transition. Currently, composites are being assembled using fasteners. This represents a huge weight penalty for composites, since holes cut through the load carrying fibers and destroy the load path. Adhesive bonding is the most promising joining technology in terms of weight and performance. However, its lack of acceptance is limiting its application to secondary structures, whose failure is not detrimental for the structural safety. In primary (critical-load-bearing) structures, fasteners are always included along bond lines, as “back-up” in case the bond fails. The main reason for this lack of acceptance are the limited knowledge of their key manufacturing parameters, non-destructive inspection techniques, damage tolerance methodology and reliable diagnosis and prognosis of their structural integrity. The Action aims to deliver a reliable roadmap for enabling certification of primary bonded composite structures. Despite the motivation being aircraft structures, which is delivered to have the most demanding certification, it will directly involve other application fields in which similar needs are required. The Action will tackle the scientific challenges in the different stages of the life-cycle of a bonded structure through the synergy of multi-disciplinary fields and knowledge transfer.

Contact person: Prof. dr Dragan Rajnović

Period of realization: 2019 – 2023

ID: CA COST Action CA18120

10. Statistical and machine learning techniques in human microbiome studies (ML4Microbiome)

Description: In recent years, human microbiome has been characterized in great detail in several large-scale studies as a key player in intestinal and non-intestinal diseases, e.g. inflammatory bowel disease, diabetes and liver cirrhosis, along with brain development and behavior. As more associations between microbiome and phenotype are elucidated, research focus is now shifting towards causality and clinical use for diagnosis, prognostics and therapeutics, where some promising applications have recently been showcased. Microbiome data are inherently convoluted, noisy and highly variable, and non-standard analytical methodologies are therefore required to unlock its clinical and scientific potential. While a range of statistical modeling and Machine Learning (ML) methods are now available, sub-optimal implementation often leads to errors, over-fitting and misleading results, due to a lack of good analytical practices and ML expertise in the microbiome community. Thus, this COST Action network will create productive symbiosis between discovery-oriented microbiome researchers and data-driven ML experts, through regular meetings, workshops and training courses. Together, it will first optimize and then standardize the use of said technique, following the creation of publicly available benchmark databases. Correct usage of these approaches will allow for better identification of predictive and discriminatory “omic” features, increase study reliability, and provide mechanistic insight into possible causal or contributing role of the microbiome. This action will also investigate automation opportunities and define priority areas for novel development of ML/Statistics methods targeting microbiome data. Thus, this COST Action will open novel and exciting avenues within the fields of both ML/Statistics and microbiome research.

Contact person: Prof. dr Tatjana Lončar-Turukalo

Period of realization: 2019 – 2023

ID: COST Action CA18131

11. European Network on Future Generation Optical Wireless Communication Technologies (NEWFOCUS)

Description: The design of future wireless communication networks that cope with the ever-growing mobile data traffic as well as support varied and sophisticated services and applications in vertical sectors with a low environmental impact is recognized as a major technical challenge that European engineers face today. The COST Action NEWFOCUS will propose truly radical solutions with the potential to impact the design of future wireless networks. Particularly, NEWFOCUS aims to establish optical wireless communications (OWC) as an efficient technology that can satisfy the demanding requirements of backhaul and access network levels in beyond 5G networks. This also includes the use of hybrid links that associate OWC with radiofrequency or wired/fiber-based technologies. Towards this vision, NEWFOCUS will carry out a comprehensive research programme under two major pillars. The first pillar is on the development of OWC-based solutions capable of delivering ubiquitous, ultra-high-speed, low-power consumption, highly secure, and low-cost wireless access in diverse application scenarios. The developed solutions will in particular support Internet-of-Things (IoT) for smart environments with applications in vertical sectors. The second pillar concerns the development of flexible and efficient backhaul/fronthaul OWC links with low latency and compatible with access traffic growth. In addition to scientific and technological advances, NEWFOCUS will serve as a global networking platform through capacity building of all relevant stakeholders including universities, research institutions, major industry players, small medium enterprises, governmental bodies and non-governmental organisations. Within this rich consortium, NEWFOCUS will train experts to accompany related European industries for the standardisation and commercialisation of the OWC technology.

Contact person: Doc.dr Milica Petković

Period of realization: 2020 – 2024

ID: COST Action CA19111

12. Optical synergies for spatiotemporal SENSing of Scalable ECOpysiological traits (SENSECO)

Description: Vegetated ecosystems largely mediate terrestrial gas and energy exchange at the atmosphere-biosphere-pedosphere interface. The spatial and temporal acquisition of information on vegetation status, health and photosynthetic functioning is fundamental to model the dynamic response of vegetation to changing environmental conditions, necessary for climate change and food security studies. Satellite or airborne Earth Observation (EO) provides the opportunity to collect spatially continuous information of vegetation reflectance globally and at ecologically relevant scales. Optical EO is now advancing towards measuring a signal that is emitted by vegetation (sun-induced chlorophyll fluorescence: SIF). By flying in tandem with Sentinel-3 (S3), ESA's forthcoming FLEX mission will observe SIF, which can, in combination with reflectance, provide an indicator of actual photosynthetic activity. The FLEX-S3 multi-sensor concept exemplifies the synergistic use of multi-source data to capture scalable ecophysiological traits. This, in combination with other Copernicus missions will allow novel data analytical techniques to be realised. Then, by combining these data with proximal sensing from drones and flux towers it becomes possible to address critical open spatiotemporal scaling questions. The synergistic use, processing and interpretation of data from multiple optical instruments at multiple scales have matured to a stage where harmonization across Europe is now possible. This will be achieved by forming the network proposed in this Action and bringing together the Sentinel-2, S3 and FLEX passive EO communities. This Action will therefore develop and further the capabilities for the interpretation of multi-sensor and multi-scale optical measurements and develop common protocols for community use (<https://www.senseco.eu/>).

Contact person: Doc. dr Branko Brkljač

Period of realization: 2018 – 2023

ID: COST Action CA17134

13. Maximising impact of multidisciplinary research in early diagnosis of neonatal brain injury (AL-4-NICU)

Description: Telemetry is a commonly applied method to investigate the ecology and movement behavior of aquatic species in relFive in every 1000 babies born each year have a condition linked to brain injury. For newborn term infants, lack of oxygen is a common cause of injury; for premature infants, an immature cardiovascular system can lead to brain injury. These injuries can result in death, cerebral palsy, or neurodevelopmental delay. Early diagnosis is essential for risk stratification and targeted neuro-protective strategies. Central to an early diagnosis is continuous brain monitoring. The AI4NICU Action will create a pan-European multidisciplinary network with the clinical and technical expertise required to bring artificial intelligence (AI)-enabled decision-support tools to the neonatal intensive care unit (NICU). These AI tools build on existing cot-side technologies, such as the electroencephalogram, by including machine-learning algorithms to detect biomarkers of brain injury. Neuro-physiological data sets are limited in size and scope and not freely available; AI4NICU will develop the tools necessary to acquire, pool, share, and manage data. These data are often complex and noisy, and standards for developing and appraising machine-learning algorithms are lacking; AI4NICU will create a framework to develop, test, and compare these algorithms. A lack of coordinated effort, sometimes exacerbated by a disconnect between clinicians and scientists/engineers, impedes progress; AI4NICU will expand the research community, consolidate existing fragmented efforts, and create and enhance productive synergies. Working with all stakeholders, AI4NICU will identify roadblocks to clinical implementation and propose designs for clinically useful prototypes. This Action will address the urgent, unmet need to reduce the potentially catastrophic life-long consequences of neonatal brain injury.

Contact person: Doc. dr Tamara Škorić

Period of realization: 2021 – 2025

ID: COST Action CA20124

14. Intelligence –Enabling Radio Communications for Seamless Inclusive Interactions - INTERACT

Description: INTERACT vision is to go beyond the capabilities of the 5G and to make the radio network itself intelligent. This is required in order to enhance the human experience of both human-to-human and human-to-machine communications, and make it seamless, with the perception of no intermediary. Machine learning is an important tool in implementing this vision, since along with advanced network architectures and distributed content provision, it provides a means of implementing many aspects of this network intelligence. However, its use must be informed by theoretical and experimental research on radio channel models, network architectures and signal processing algorithms.

Hence, the main scientific objectives of INTERACT are:

1. To perform fundamental research in the fields of antennas and propagation, signal processing and localisation, and network architectures and protocols, to design intelligent-enabling radio communications.
2. To make the wireless network intelligent, meaning aware, adaptive, and parsimonious. Similarly to cities and buildings, future wireless networks should become intelligent by taking advantage of cutting-edge technologies to cope with the increasing demand for connectivity and traffic density and to bring the user experience to a new level.
3. To contribute to the creation of intelligent environments. Not only will mobile radio networks become intelligent, but they will constitute the nervous system to foster intelligence in other systems and verticals, such as ehealth, transportation, industry, buildings and cities.

Contact person: Prof. dr Dragana Bajić

Period of realization: 2021 – 2025

ID: COST Action CA20120

15. European Network on International Student Mobility: Connecting Research and Practice

Description: Over the past decades, international student mobility (ISM) in higher education has expanded rapidly. This growth has sparked a considerable interest in ISM within different disciplines, research communities, and circles of practitioners and policy makers. However, there is surprisingly little connection and exchange among researchers across these spheres. In addition, ISM scholarship remains strongly restricted to scientific circles, despite the relevance that scientific knowledge on ISM has for policy and daily practice. This Action responds to the pressing need for systematic interdisciplinary and international exchange of knowledge on theoretical frameworks, research methodologies, findings, and best practice examples, and for translating scientific findings into recommendations for ISM practice. It is organised around five working groups, four of them addressing themes in need of scientific development, and a fifth one bringing together recommendations for practice:

- (1) Global ISM flows and trends at the macro-level;
- (2) Social inequalities in access to and during ISM;
- (3) The social and cultural integration of international students in their host countries;
- (4) The impact of ISM on graduates' careers;
- (5) Connecting research and practice.

The Action brings together established researchers, early-career investigators (ECIs) and PhD students from different scientific disciplines, countries, and research communities as well as stakeholders from international offices, international student and study abroad organizations, and different policy levels. The Action will offer comparative and practical insights into ISM dynamics by bringing fragmented knowledge together, with the main aim of generating new interdisciplinary and innovative empirical perspectives on the phenomenon and translating these into tangible recommendations for stakeholders.

Contact person: Prof. dr Milan Segedinac

Period of realization: 2021 – 2025

ID: COST Action CA20115

16. Implementation of Circular Economy in the Built Environment (Circular B)

Description: Facing the increasing concerns about the negative environmental impacts of buildings, governments and general society worldwide have been seeking more efficient and sustainable constructions. Hence, the Circular Economy (CE) emerged as a new paradigm of innovative practice with potential application to the construction industry besides other economic sectors. Following the European Circular Economy Action Plan (ECEAP), multiple efforts have been made to apply circular thinking to construction practices and include resource circularity into sustainability frameworks, such as Level(s). However, despite the endeavours, there is still a lack of a standard tool that fully implements the circularity potential, classifies buildings accordingly, and assesses the realisation level of the ECEAP. Thus, the CircularB Action aims to develop a common international framework of a circularity rating tool with Key Performance Indicators (KPIs) based on current best practices of CE construction, state-of-the-art and ECEAP. The tool's framework will allow local application and adaptation by different COST countries and regions. By developing a benchmark database – based on each country/region conditions, culture and traditions – the direct use of the tool is enabled, supporting both designers in developing more sustainable buildings and national/local governments in assessing and promoting their CE targets. Furthermore, construction, assembly, adaptability, deconstruction and business model guidelines will be identified for new and existing buildings to enhance CE in buildings and promote stakeholder knowledge. The rating tool will also be integrated into the Open BIM workflow for better-informed design decisions, automated assessment, efficient value chain management, and circular feedback using central BIM models.

Contact person: Prof. dr Mirjana Laban

Period of realization: 2022 – 2026

ID: COST Action CA21103

17. European network for the Mechanics of Matter at the Nano-scale (MecaNano)

Description: Our society urgently needs new materials with improved performance and durability in order to overcome its environmental crisis. Room for significant progress is available at the nano-scale, where all properties originate. Research at this length scale strongly intensified over the past two decades, but the knowledge remains very fragmented. As a consequence, a holistic understanding of how the nanoscale mechanical behavior gives rise to the macroscopic properties of the materials is still missing. The Action ambitions to combine the expertise and resources of European researchers to overcome the different bottlenecks limiting the exploration of mechanical size effects. Synergetic gains will be achieved through a common agreement on the physical parameters to be measured and by promoting interoperability of the produced research data throughout the European Research Area (ERA). In addition, the experimental yield will be boosted by granting access to the latest techniques in nanomechanical testing, nanomechanical simulation and nanocharacterization to the whole community. Even more dramatic gains will be achieved by promoting the application of machine learning to nanomechanical research and favoring the development of interdisciplinary in situ techniques. The transformative policies implemented by MecaNano will durably strengthen nanomechanical research in the ERA. They will foster the emergence of talented future scientific leaders, increase the number of female scientists engaging in nanoscience, as well as increase the visibility of research institutions in Inclusiveness Target Countries and allow their researchers to establish durable cooperations with their peers throughout the ERA.

Contact person: Prof. dr Goran Stojanović

Period of realization: 2022 – 2024

ID: COST Action CA21121



Erasmus+

Erasmus+ Capacity-building projects in the field of higher education' build on the success of the former Alfa, Edu-link and Tempus programmes and aim to:

- Support the modernisation, accessibility and internationalisation of higher education in the Partner Countries;
- Promote cooperation between Programme Countries and eligible Partner Countries (as well as among eligible Partner Countries themselves);
- Promote voluntary convergence with EU developments in higher education;
- Promote people-to-people contacts, intercultural awareness and understanding.

Capacity-building projects in the field of higher education are transnational cooperation projects, based on multilateral partnerships, primarily between higher education institutions from Programme and eligible Partner Countries.

Joint Projects operate at micro level and target higher education institutions in the eligible Partner Countries specifically.

They aim to modernise and reform higher education institutions through activities such as:

Developing new curricula or improving existing ones; Improving governance and management systems; Building relationships between higher education institutions and relevant socio-economic actors.

Structural projects operate at macro level and target national higher education systems and policies in the eligible Partner Countries. They involve activities such as:

Modernisation of policies, governance and management of higher education systems; Strengthening relations between higher education systems and the wider socio-economic environment.

Projects can involve, where relevant, NGOs, SMEs and any organisations in the field of higher education.



Erasmus+

1. Business driven problem-based learning for academic excellence in geoinformatics (GEOBIZ)

Description: GEOBIZ project consortium built out of 15 academic and 3 business partners together with 5 affiliated partners is addressing partner's needs regarding geoinformatics business and academic sector in five European countries: Albania, Bosnia and Herzegovina, Kosovo, Moldova and Montenegro. Geoinformatics ecosystem, as a link between technical and ICT subject and professionals, is part of digital industrial revolution characterized with fast technology driven changes and development of new knowledge and skills necessary for efficient use of this technology for satisfaction of user needs. Rapid change is creating situation in which academic sector faces problems. It can't cope with fast changes and lags in introduction of new content in educational process. This results in situation that new professionals finishing academic education do not master necessary knowledge and skills in field of geoinformatics and therefore are not well prepared for industry. Ultimately business sector suffers from such situation lacking new experts which can contribute in their development. Therefore, GEOBIZ project aims to design and establish new business-academia cooperation platform in field of geoinformatics in targeted countries which will bring together geoinformatics subjects, foster their cooperation and create situation in which all stakeholders will benefit. Based on this cooperation HEI's will improve quality of education of geoinformatics and related courses using business-driven problem-based cases which are prepared (designed) by geoinformatics companies for use in educational process and thus modernise their geoinformatics courses. This modernisation will result in raising attraction of geoinformatics studies for students, deliver well educated and prepared professional, satisfy needs of business sector for expert work force and ultimately offer to society geoinformatics sector capable to answer on societal needs in efficient, timely and cost benefit manner.

Contact person: Prof. dr Miro Govedarica

Period of realization: 2019 – 2022

ID: 610225-EEP-1-2019-1-HR-EPPKA2-CBHE-JP



Erasmus+

2. Strengthening educational capacities by building competences and cooperation in the field of Noise and Vibration Engineering, Environmental Protection and Occupational Safety (SENVIBE)

Description: The wider aim of this SENVIBE project is to improve and build national educational capacities, cooperation and competences in dealing with environmental and occupational noise and vibration (No&Vib) engineering issues in accordance with ongoing EU integration strategies and the needs identified in Serbia.

There are four Specific Project Objectives (SPOs):

SPO1. To modernise existing courses in the field of No&Vib as well as to develop and implement new courses tailor-made for students of undergraduate programmes of six different engineering departments (Environmental Engineering, Occupational Safety Engineering, Mechanical Engineering, Electrical Engineering, Civil Engineering and Traffic Engineering);

SPO2. To create and implement two types of Life-Long Learning (LLL) courses for practitioners in the fields of No&Vib Engineering, Environmental Protection and Occupational Safety;

SPO3. To develop and implement a new MSc programme in Vibro-Acoustic Engineering (VAE), enabling students to strengthen their knowledge and build specific soft skills in three different sub-disciplines: i) Environmental Noise and Vibration, ii) Acoustical Engineering and iii) Vibration Engineering;

SPO4. To establish a No&Vib Hub – a central unit launching and facilitating strategic cooperation among the key stakeholders engaged in No&Vib management: academia, local industry and local and national authorities.

Contact person: Prof. dr Ivana Kovačić

Period of realization: 2018 – 2022

ID: ERASMUS+ KA2



Erasmus+

3. Knowledge triangle for a low carbon economy (KALCEA)

Description: In response to the threat of climate change and the global challenges in the Energy sector, countries around the world have pledged to invest in low-carbon energy. Renewable energy sources, storage, smart grids, energy efficiency technologies and more are some of the key segments which will help in massive decarbonization. However, the global challenges in Energy sector cannot be successfully addressed without the contribution of knowledge-based innovations drawing on education and research in Energy field. To successfully respond to these challenges it is necessary to introduce new mechanisms which will connect HEIs with the industry sector and society and produce new innovative solutions. The Knowledge Triangle (KT) paradigm highlights the importance of linking research, education and innovation. Furthermore, to effectively address the challenges in higher education and skill demands, novel training, learning and knowledge transfer schemes are required. KALCEA draws its motivation from the lack of KT mechanisms and structures in WBCs. Cooperation with the industry is weak and on an ad hoc basis, mostly based on individual contacts, while a systematic approach does not exist. KALCEA will establish Knowledge-Innovation Centers (KICs), structures hosted by selected WBC universities for capacity building in the area of KT; will build strategic partnerships with the industry sector; will develop open innovation platforms based on cooperation; will enable lifelong learning through professional education services in the field of Sustainable Energy through innovative actual and virtual learning environments, such as living labs and learning factories. The KALCEA target groups in HEIs include the administrative, technical and academic staff and PHD students, young researchers in Research Institutions, young professionals, entrepreneurs, and managers in the industry sector.

Contact person: Prof. dr Platon Sovilj

Period of realization: 2020 – 2023

ID: ERASMUS+ KA2



Erasmus+

4. Sustainable University Enterprise Cooperation for Improving Graduate Employability (SUCCESS)

Description: To modernize WBC universities through the strengthening University-Enterprise partnership in the areas of education and knowledge transfer based on the market needs with aim to improve student employability. Furthermore the project aims to enhance international cooperation and networking at the Regional/international level between universities and enterprises.

Contact person: Prof. dr Zoran Jeličić

Period of realization: 2020 – 2023

ID: 618975-EPP-1-2020-1-BAEPPKA2-CBHE

Website: <https://success-project.ba/>



Erasmus+

5. Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders (SWARM)

Description: Education of experts for water resources management in the Western Balkans (WB) in line with the national and EU policies.

Specific objectives

- Improve the level of competencies and skills in HEI's by developing new and innovative master programmes in the field of water resources management (WRM) in line with the Bologna requirements and national accreditation standards by October 2021.
- Design and implement seven new and up-to-date laboratories in WB partner HEIs in cooperation with EU project partners by November 2019.
- Develop and implement LLL courses for the water sector in line with EU Water Framework Directive by January 2021.

Contact person: Prof. dr Srđan Kolaković

Period of realization: 2018 – 2022

ID: 597888-EPP-1-2018-1-RS-EPPKA2-CBHE-JP

Website: <http://www.swarm.ni.ac.rs/>



Erasmus+

6. Development of digital approach for occupational health and safety systems in higher education courses (DOHASS)

Description: The DOHASS project envisages the improvement, digitization and implementation of remote access courses in the field of occupational safety and health, as well as the strengthening of links between partner universities. The overall goal of the project is to modernize and digitize educational materials, laboratory and computer exercises and strengthen skills in the field of safety and health at work, with emphasis on hazard identification, risk assessment methodologies in various industrial systems, modern instrumental methods of analyzing working conditions and application of optimization and AI technology in occupational safety and health systems.

Contact person: Doc. dr Maja Petrović

Period of realization: 2020 – 2023

ID: 2020-1-RS01-KA226-HE-094562



Erasmus+

7. Digitalization of laboratory exercises in the classical and instrumental analytical chemistry (DigiLabAC)

Description: At the time of COVID-19, the education process took place online using distance learning tools. The DigiLabAC project will develop a digital platform for the transfer of laboratory exercises from the courses of classical analytical chemistry and instrumental analytical chemistry, which will be available in 5 languages (Serbian, English, Slovak, Czech and Slovenian). The partner universities will support the project with laboratory tasks and supplementary materials in order to prepare a unique approach in strengthening the capacity of higher education institutions in the field of analytical chemistry.

Contact person: Prof. dr Maja Petrović

Period of realization: 2020 – 2023

ID: 2020-1-SK01-KA226-HE-094322



Erasmus+

8. WEstern Balkan higher educational courses in data JOurnalismju (WEBJOU)

Description: Data journalism and more generally, data-based communication represents a rapidly growing experience in higher educational courses and in professional training in European countries, since the media and news systems are more and more appreciating the use of data, in a systematic and scientific way, in the production of journalistic and communication content. WEBJOU project aims to promote knowledge exchange and multidisciplinary teaching and learning innovation in the Western Balkan reality, for what concerns providing all knowledge and skills, in particular from fields such as data science, statistics, visualization and communication, necessary to fruitfully operate in the data journalism and data communication frameworks. The WEBJOU Project has the following four major goals: 1. The definition of the profile of data journalism and data communication for the higher education (ISCED-6) with reference to the Western Balkan higher education system. 2. The design of 6 modular courses, which can be composed to realize different training paths (Big Data, Data Visualization, statistical analysis, Geospatial representations, Story telling, Legislation on data property in EU (GDPR)). The courses will be compliant with a competences assessment and qualification system based on the ECTS credit points. 3. The realization of 7 first course/bachelor's (ISCED-6) in Data journalism, one for each participating HE, tailored for the Western Balkan context with particular reference to the Albanian and Kosovan higher education system. 4. The development of an online platform. All the resources and teaching aids will be available to the public free of charge through open licenses. (Open Educational Resources -OER) To evaluate these objectives, WEBJOU will test the courses with 70 students with particular reference to females (50). Additionally, both academic and administrative staff will be trained both on the courses and on the learning platform.

Contact person: Prof. dr Uglješa Marjanović

Period of realization: 2023 – 2024

ID: ERASMUS+ KA2 - 101083122



Erasmus+

9. Business Analytics Skills for the Future-proof Supply Chain (BAS4SC)

Description: BAS4SC project is focused on modifying and improving the higher education curriculum of supply chain management professionals at universities, resulting in improved processes of recognition competencies regarding business analytics. The project consortium envisages five universities that offer study programs including courses in supply chain management. So, the project partners are linked by the use of studies and practical experience in the field that's very important for the functioning of the global economy and for the operational functioning of single companies. Some facts that prove the importance of the logistics industry are: the European logistics market, contributing around 10% to European GDP, employing more than 10 million people, and amounting to more than 1150 billion EUR in 2021. The European logistics market is rapidly progressing to digital, intelligent, sustainable solutions. However, the skills gap in this sector is expected to be significant in the coming years. One of the skills the European logistics sector will need is business intelligence, which is expected to boost logistics competitiveness. There are several paths to develop business intelligence knowledge, which vary in time commitment, cost, and rigour. One of the best ways for future supply chain professionals to boost their skills is by taking appropriate university courses. BAS4SC project aims to develop courses that will be accompanied by innovative learning and teaching methods and materials, enabling learners to develop their analytical skills and put them into practice. The final project goal is to ensure that supply chain management professionals possess key digital and soft management skills for the rapidly changing logistics labour market. The project will seek to not only produce a business analytics skills strategy for logistics professionals but also to increase the number of these professionals – enhancing the efficiency of the whole logistics industry. In the end, advanced analytics and business intelligence capabilities can create an overall sustainable competitive advantage.

Contact person: Prof. dr Marinko Maslarić

Period of realization: 2022-2025

ID: KA220-HED



The Danube Transnational Programme is a financing instrument of the European Territorial Cooperation (ETC), better known as Interreg. ETC is one of the goals of the European Union cohesion policy and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States.

The Danube Transnational Programme (DTP) promotes economic, social and territorial cohesion in the Danube Region through policy integration in selected fields.

In order to achieve a higher degree of territorial integration of the very heterogeneous Danube region, the transnational cooperation programme acts as a policy driver and pioneer to tackle common challenges and needs in specific policy fields where transnational cooperation is expected to deliver tangible results.

Considering its geographical coverage, this highly complex programme provides a political dimension to transnational cooperation which is unique in Europe, successfully facing challenges such as ensuring good mechanisms to contract partners who receive funding from different EU instruments.

The Danube Transnational Programme finances projects for the development and practical implementation of policy frameworks, tools and services and concrete small-scale pilot investments. Strong complementarities with the broader EU Strategy for the Danube Region (EUSDR) are sought.

1. LIVING DANUBE LIMES Valorising cultural heritage and fostering sustainable tourism by LIVING the common heritage on the DANUBE LIMES as basis for a Cultural Route

Description: The project focuses on connecting, enlivening, researching, preserving and highlighting the Roman Danube Limes as transnational cultural heritage of enormous significance, in order to create a sound foundation for a future European Cultural Route. The partner consortium consists of 19 project partners and 27 associated strategic partners from Germany, Austria, the Czech Republic, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania and the Republic of Moldova. Main objective of the project is the connection of the Danube region through its common Roman heritage. The project seeks to support its preservation through the creation of consciousness for the value of common heritage, while respecting local differences, particularities, and creating sensibility, that the Roman Danube Limes was not just a border fortification network, but also a vast trading zone with a lot of mobility. The project supports the UNESCO World Heritage nomination of the entire Danube Limes, specially focusing on the nomination process for Croatia, Serbia, Romania and Bulgaria. Another main objective of the project is laying the foundations for a future European Cultural Route traversing the entire Danube Region. The project will establish eight national pilot-sites with regular public activities such as livinghistory events and workshops on historic crafting methods. ☐ Physical reconstructions at the pilot-sites will complement the virtual reality reconstructions and invite more interest and should lead to follow-up projects and investment at the site. ☐ Workshops for the dissemination of historic crafting techniques will be organised and documented. ☐ A living-history cruise from Germany to the Black Sea, with international living-history groups steering the reconstructed Roman ship of the 4th century AD, will be organised at the end of the project. The ship and its crew will be halting at each pilot-site in order to participate in a livinghistory festival there, which will further allow for a large array of interactions with the public.

Contact person: Prof. dr Milena Krklješ

Period of realization: 2020 – 2022

ID: DANUBE INTERREG

2. F(ol)low the Plastic from source to the sea: Tisa-Danube integrated action plan to eliminate plastic pollution of rivers - Tid(y)Up

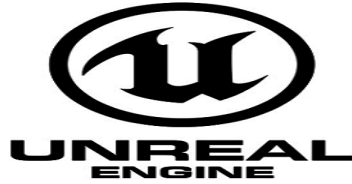
Description: Despite the advanced waste management and ambitious recycling objectives of the EU, studies indicate the presence of plastic and microplastic pollution in rivers of CE. From a water quality perspective, it is a challenge to prevent this new threat. For this reason, Tid(y)Up project is focusing on the improvement of water quality and reduction of plastic pollution of the Tisa river from its source to the Black Sea. Currently there are no standard methods and consistent data available on plastic pollution of rivers in the Danube Basin that would help harmonized actions of water management authorities and allow cooperation with other sectors necessary to stop the pollution. Within the project partners develop and launch a set of integrated actions, consult and provide tools for relevant stakeholders and initiate long term transboundary and intersectoral cooperation with the aim of eliminating the plastic pollution of rivers.

The project operates with a list of diverse tools including scientific actions to standardize methods for estimation of the size of pollution, formulating recommendations toward a standardized measurement and analyzing method, on-site expeditions, pilot-actions for identification and clean-up of polluted areas and sources, as well as education and awareness raising actions for the prevention. The novelty of the project is that it provides tools, data and the assessment of various used methodology for understanding of the sources, nature and risks of contamination flows; and delivers practical examples of possible actions and legislative solutions both on local and transnational level. The key focus is to gather all necessary information, raise awareness of the relevant actors and provide them with practical tools in order to create active, co-operating communities in the fight against the plastic waste contamination and contribute to the work of water authorities to improve water quality by also providing input for the upcoming revision of DRBMP.

Contact person: Prof. dr Dejan Ubavin

Period of realization: 2020 – 2022

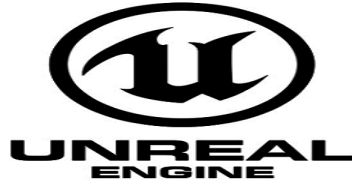
ID: DTP3-620-2.1 DANUBE INTERREG



Epic Games has committed \$100,000,000 to provide financial grants to creative, noteworthy, and innovative projects built in and around Unreal Engine or projects that enhance the open-source 3D graphics ecosystem.

Grants range from \$5,000 to \$500,000, and cover a variety of endeavors from game development, architecture projects, and film production to academic uses and software tool development.

More information in the project call Epic Mega Grant can be found on <https://www.unrealengine.com/en-US/megagrants>



1. Meta-Cobots: Human-Robot interaction in Synthetic environment

Description: To modernize WBC universities through the strengthening University-Enterprise partnership in the areas of education and knowledge transfer based on the market needs with aim to improve student employability. Furthermore the project aims to enhance international cooperation and networking at the Regional/international level between universities and enterprises.

Contact person: Prof. dr Milutin Nikolić, Prof. dr Mirko Raković

Period of realization: 2021-2022

Website: <https://www.unrealengine.com/en-US/megagrants>



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



European
Climate Initiative
EUKI

The European Climate Initiative (EUKI)

The EUKI is a project financing instrument by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It is the overarching goal of the EUKI to foster climate cooperation within the European Union in order to mitigate greenhouse gas emissions. It does so through strengthening across-border dialogue and cooperation as well as exchange of knowledge and experience.



1. Initiative on small biogas facilities for manure to attain GHG mitigation in agriculture (Biogas initiative)

Description: Even in DE with about 10,000 biogas facilities (incl. small as well), only about 25% of total livestock manure is used for biogas production, whereby small farms make a significant source of CH₄ emissions. In contrary, in RS small biogas facilities do not exist so far. Biogas initiative project have the following goals to: raise awareness and educate stakeholders; transfer relevant knowledge from DE to RS; develop implementation strategy and initiate it between stakeholders. Planned measures to attain project goals are to: create and dissemination information material; investigate manure potential from small farms and related potential GHG mitigation; investigate sustainability prerequisites; define framework for sustainable implementation. The project aims to achieve the developed framework for successful implementation of small biogas facilities based on manure from small & medium livestock farms, in order to contribute to attain GHG mitigation in agriculture. Several stakeholders' groups could benefit from the project: state institutions, professional associations, technology implementers and general public. Personnel in relevant ministries will be trained to define/adapt/adopt policy. Professional associations will be trained for dialogue with institutions to give appropriate feedback. Potential technology implementers will be trained for successful implementation from technical point of view. General public will be made aware on project topic to secure public acceptance. Partner institution: Institute for Agricultural Engineering and Animal Husbandry, Bavarian State Research Center for Agriculture (LfL), Freising, Germany

Contact Person: Prof. dr Đorđe Đatkov

Period of realization: 2020 – 2022

ID: 20_073_Biogas initiative

Website: www.euki.de/en/projects/



2. EDUcation for CLimate Change mitigation in the municipal solid waste sector (EDU-CLIC)

Description: Landfilling represents the predominant waste management option in South East Europe (SEE), especially in the countries which are not yet part of EU. Landfills are the third largest anthropogenic source of methane emissions in the World, and thus have significant impact on climate change. In order to tackle this issue, SEE countries need to upgrade waste infrastructure, improve waste management operations and educate staff in charge of landfill operations. The goal of the Project is to upgrade sanitary landfill Srem Mačva to the level of demonstration plant, comprising all required elements of modern waste management system. This Plant would be used as a good practice example within the Study course for sanitary landfill operators developed by the academic partners of EDU-CLIC project. The courses will be offered within the Regional Center for Sustainable Development, which is expected to be launched during the Project lifetime and located near the Regional sanitary landfill Srem Mačva.

Contact Person: Prof. dr Goran Vujić

Period of realization: 2021 – 2024

ID: 81277323



1. ESP-Getting Ready for Work- Related Communication

Description: University students in Serbia, majoring in technical sciences, mainly have English language courses in their first and/or second year, leaving them with a 1–3-year long gap between studying the language and being interviewed for their first jobs. This project aims to inform participants about work-related communication in English and train them to communicate in their future jobs successfully. The project provides a 4-week long online program for a group of senior year students (50-70 students) in the field of technical sciences. During weeks 1 and 2, students will have four 2-hour sessions (Monday to Thursday) focusing on preparation for daily business related activities commonly performed in English, such as presentations, business meetings, conference calls, small talk, writing emails, reading, and understanding reports. After consultations and feedback sessions in week 3, they will have mock interviews in week 4. To be awarded the certificate, participants will need to submit two practical tasks and an online interview with program moderators. The program will be scheduled for November 2021, not to interfere with the examination schedules.

Contact person: Doc. dr Dragana Gak

Period of realization: 2021 – 2022

ID: Federal Assistance Award Number SRB10021GR3073



USAID is the world's premier international development agency and a catalytic actor driving development results. USAID works to help lift lives, build communities, and advance democracy. USAID's work advances U.S. national security and economic prosperity; demonstrates American generosity; and promotes a path to recipient self-reliance and resilience.

USAID leads international development and humanitarian efforts to save lives, reduce poverty, strengthens democratic governance and help people progress beyond assistance.



1. USAID'S Intelligent Forecasting Field Implementation

Description: In July 2021, team Macro-Eyes was awarded the Intelligent Forecasting Field Implementation Grant to customize, pilot, and iteratively improve their model, which will be implemented at health service delivery sites in Côte d'Ivoire. Macro-Eyes will partner with Michael Konan and the University of Novi Sad/Faculty of Technical Sciences Hybrid Forecasting Approach (HFA) group, led by Dr. Dejan Mircetic, to maximize the success of their forecasting model and ensure it is locally-informed and incorporates diverse perspectives. Macro-Eyes, Michael Konan, and the HFA group separately competed for the Intelligent Forecasting Prize and learned about each other through the co-creation event hosted by USAID. These organizations decided to join forces to survey Côte d'Ivoire's health systems landscape and create an accurate and appropriate modeling solution for integration into the local pharmaceutical logistics system.

Macro-Eyes is an artificial intelligence (AI) company that makes crucial infrastructure predictive, saving lives and extending the impact of scarce resources. Macro-Eyes products perform in environments with little conventional data, amid high demand and supply uncertainty, and serve some of the most sophisticated organizations in the world. The Macro-Eyes machine learning team, led by MIT Professor Suvrit Sra, has a rigorous commitment to science and is distributed across North America, Africa, and Europe.

Contact person: dr Dejan Mirčetić

Period of realization: 2021-2023

Website: <https://www.usaid.gov/global-health/health-areas/family-planning/news-and-updates/usaaid-announces-intelligent-forecasting>



Erasmus+

Erasmus Mundus Design Measures (EMDM)

Erasmus Mundus Design Measures have been introduced in 2021. They support the design of high-level and integrated study programmes, at master level. Joint programmes are designed and delivered by an international partnership of HEIs. Additionally, they may involve other educational and/or non-educational partners with specific expertise and interest in the area of study. Erasmus Mundus Design Measures encourage HEIs to develop new, innovative and highly integrated master programmes by facilitating the setup of such international partnerships. EMDM aim to involve EU Member States and third countries associated to the Programme (previously called Programme countries), institutions, and/or thematic areas that are somehow under-represented in Erasmus Mundus. By the end of the project, the involved HEIs will have agreed on the basic following joint mechanisms for the master programme under development:

- joint procedures for student application, admission, selection and monitoring
- rules and procedures for student examinations and performance evaluation
- joint programme design and integrated teaching/training activities
- common services offered to students
- joint promotion and awareness-raising strategy
- joint administrative and financial management by the partnership
- a joint degree policy
- a draft partnership agreement
- a draft joint student agreement



Erasmus+

1. Designing a Joint Masters in Cybersecurity (DJM-CYBER)

Description: Global demand for cyber security experts is forecasted to outstrip supply by a third before the end of the decade, with companies struggling against what industry experts call the “largest human capital shortage in the world” according to Financial Times. The 2020 (ISC)² Global Information Security Workforce Study estimated that there are approx. 168.000 unfilled information security positions in Europe and 3.1 million worldwide. This deficiency became even more visible since the start of the COVID-19 pandemic, and it is predicted to get even worse over time.

In this context, the DJM-CYBER project aims to develop a multidisciplinary joint master’s degree in cybersecurity, taking industry, academia and policymaker’s inputs into account. This unique joint master’s degree will allow students to gain state-of-the-art hands-on education in cybersecurity and data protection, which will enable them upon entering the European job market to work towards a more secure Europe. This project will utilize the expertise and knowledge of the partnership to develop the new range of cybersecurity experts in Europe. Importantly, our partnership consists of partners located in Central and Southern Europe aiming to ensure that this geographic region remains competitive in relation to other parts of Europe in the digital age.

Contact person: Prof. dr Imre Lendak

Period of realization: 2022 - 2023

ID: 101050263



Министарство просвете,
науке и технолошког развоја



BILATERAL COOPERATION

Ministry of Education, Science and Technological Development contracts and financially supports projects of scientific and technological cooperation between domestic and foreign scientific and research organizations (NIO) on the basis of international bilateral agreements.

In cases where the NIO in such a way provide additional financial and material resources from abroad, the Ministry will proportionately in accordance with the budgetary possibilities, to provide our NIO additional incentives.



Министарство просвете,
науке и технолошког развоја



SERBIA – AUSTRIA

1. BIO-based cementitious composites with recycled aggregates (BIO-gates)

Contact person: Doc. dr Slobodan Šupić

Period of realization: 2022-2024



Министарство просвете,
науке и технолошког развоја



SERBIA – CHINA

2. Istraživanje IoT tehnologija za prenos podataka primenama veštačke inteligencije

Contact person: Prof. dr Dejan Vukobratović

Period of realization: 2021-2023

3. Unapređenje sistema za monitoring EM polja

Contact person: Prof. dr Nikola Đurić

Period of realization: 2021-2023

4. Visoka preciznost i tehnologija senzitiranja niske potrošnje energije za sumporna jedinjenja u tragovima hladnog lanca hrane

Contact person: dr Milan Radovanović

Period of realization: 2021-2023

5. Razvoj socijalno-asistivnog robota kao ključne tehnologije u rehabilitaciji dece sa cerebralnom paralizom

Contact person: Prof. dr Maja Čavić

Period of realization: 2021-2023

6. Izolacija buke i vibracija posredstvom nelinearnih metastruktura

Contact person: Prof. dr Ivana Kovačić

Period of realization: 2021-2023



Министарство просвете,
науке и технолошког развоја



SERBIA - HUNGARY

7. Poboljšana osteointegracija implantata primenom novih dupleks

AI -O i Ti-O slojeva izgrađenih ALD metodom

Contact person: Prof. dr Pal Terek

Period of realization: 2021-2023



Министарство просвете,
науке и технолошког развоја



SERBIA – INDIA

8. **Scalable Convolution Neural Network (CNN) fused with hand crafted descriptors for detection of COVID-19 infection based on Lung Congestion using X-Ray images**

Contact person: Prof. dr Dubravko Ćulibrk

Period of realization: 2022-2024

9. **Development of Zero Backlash Power Transmission Mechanism For Anthropomorphic Robots**

Contact person: Prof. dr Milan Rackov

Period of realization: 2022-2024



Министарство просвете,
науке и технолошког развоја



SERBIA – SLOVAKIA

10. ECO-friendly Self Reacting Friction Stir Welding of Al-alloys Aftertreated with Laser Shock Peening

Contact person: Prof. dr Sebastian Baloš

Period of realization: 2022-2023

11. Implementation Security of Neural Networks

Contact person: Prof. dr Mladen Kovačević

Period of realization: 2022-2023

12. Microplastics impact on occurrence of plasticizers in surface water and effects on human

Contact person: Doc. dr Maja Petrović

Period of realization: 2022-2023



Министарство просвете,
науке и технолошког развоја



MULTILATERAL COOPERATION in the DANUBE REGION

1. Time-frequency representation in function spaces (TIFREFUS)

Contact person: Prof. dr Filip Tomić

Period of realization: 2020-2022

ID: 337-00-00322/2019-09/45

Bilateral Cooperation between institutions

SERBIA – ITALY

1. Industrial Engineering and Management in Higher Education

Polytechnic University of Bari

Contact person: Prof. dr Zoran Anišić

Period of realization: 2021-2023

SERBIA – CHINA

2. Remote Sensing Monitoring of the Eco-environment of Cities along the China-Europe Railways Based on Artificial Intelligence

China-CEEC Higher Education Institutions Consortium

Contact person: Prof. dr Marko Vilotić

Period of realization: 2020-2022

SERBIA –JAPAN

3. Memorandum of Understanding

Kyoto University of Advanced Sciences

Contact person: Prof. dr Boris Dumnić

Period of realization: 2021- ongoing



Key Action 1: Mobility of Individuals

This Action is all about providing opportunities for individuals to improve their skills, enhance their employability and gain cultural awareness.

Under Key Action 1 organizations can apply for funding to run mobility projects to enable organizations to offer structured study, work experience, job shadowing, training and teaching opportunities to staff and learners.

Beneficiaries are able to spend a period of time in another participating country gaining valuable experience of life, study and work with the aim of increasing the opportunities available to them in the future.

Key Action 1 covers the five fields of higher education, vocational education and training, schools, adult education and youth. It is important to note that target groups and activities for Key Action 1 vary by field.

Key Action 1 is the largest action in Erasmus+ with 63% of programme budget supporting its focus on increasing mobility and skills.



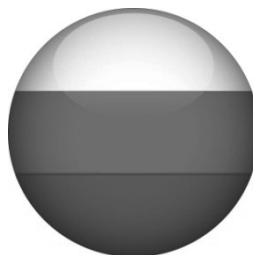
AUSTRIA

1. TU GRAZ
2. CAMPUS 02, GRAZ



BULGARIA

3. UNIVERSITY OF SOFIA



GREECE

4. UNIVERSITY OF THE AEGEAN, MYTILENE
5. UNIVERSITY OF PELOPONNESE, PATRAS





CROATIA



6. JOSIP JURAJ STROSSMAYER UNIVERSITY,
OSIJEK
7. UNIVERSITY OF APPLIED SCIENCE, ZAGREB
8. UNIVERSITY OF RIJEKA
9. UNIVERSITY OF SLAVONSKI BROD

ITALY

10. POLITECNICO DI MILANO
11. UNIVERSITY OF PALERMO
12. POLITECNICO DI BARI
13. UNIVERSITY OF FLORENCE
14. POLITECNICO DI TURIN



LITHUANIA



15. KAUNAS UNIVERSITY OF TECHNOLOGY
- KTU
16. VYTAUTAS MAGNUS UNIVERSITY
,KAUNAS



HUNGARY

- 17. BME, BUDAPEST
- 18. JOHN VON NEUMANN UNIVERSITY,
KECSKEMET
- 19. UNIVERSITY OF SZEGED



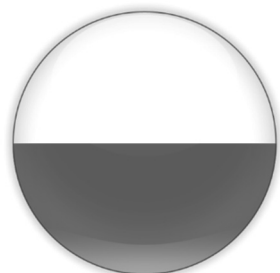
GERMANY

- 20. ULM UNIVERSITY OF APPLIED SCIENCES
- 21. SRH UNIVERSITY HEIDELBERG
- 22. CLAUSTHAL UNIVERSITY OF TECHNOLOGY
- 23. HOCHSHULE FUR ANGEWANDTE
WISSENSCHAFTEN WURZBURG-SCHWEINFURT



POLAND

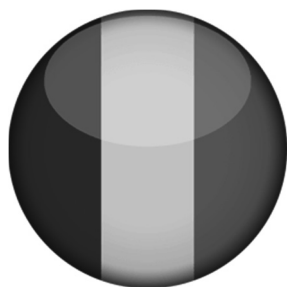
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- 26. KRAKOW UNIVERSITY OF TECHNOLOGY
- 27. POLITECHNIKA POZNANSKA
- 28. POLITECHNIKA GDANSKA
- 29. SILESIAN UNIVERSITY OF TECHNOLOGY,
GLIVICE





PORTUGAL

30. POLITECHNIC UNIVERSITY CASTELO BRANCO



ROMANIA

- 31. TRANSILVANIA UNIVERSITY OF BRAȘOV
- 32. POLITEHNICA TIMISOARA
- 33. UNIVERSITATEA BABES-BOLYAI, CLUJ-NAPOCA
- 34. TECHNICAL UNIVERSITY, CLUJ-NAPOCA

SLOVAKIA

- 35. SLOVAK UNIVERSITY OF TECHNOLOGY
BRATISLAVA
- 36. UNIVERSITY OF ZILINA
- 37. ALEXANDER DUBCEK UNIVERSITY IN TRENCIN





SLOVENIA

- 38. UNIVERSITY OF MARIBOR
- 39. UNIVERSITY OF LJUBLJANA



SPAIN



- 40. REY JUAN CARLOS UNIVERSITY, MADRID
- 41. POLYTECHNIC UNIVERSITY OF VALENSIA
- 42. POLYTECHNIC UNIVERSITY OF CATALONIA

TURKEY

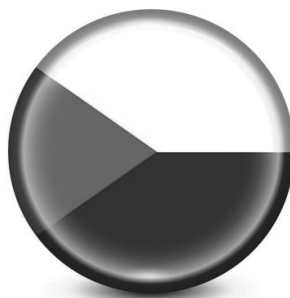
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- 44. AKSARAY UNIVERSITY
- 45. ISKENDERUN TECHNICAL UNIVERSITY
- 46. CANAKKALE ONSEKIZ MART UNIVERSITY





CZECH REPUBLIC

- 47. BRNO UNIVERSITY OF TECHNOLOGY
- 48. UNIVERSITY OF PARDUBICE



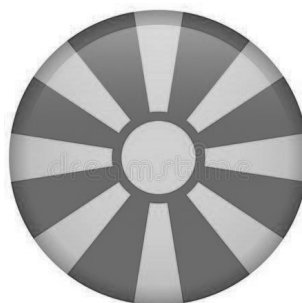
FRANCE

- 49. UNIVERSITY OF TECHNOLOGY OF COMPIEGNE



MACEDONIA

- 50. UNIVERSITY OD SKOPJE



Overview of international projects 2022/2023 is the result of the project: "Advanced teaching and research methods in academic and professional studies at the Faculty of Technical Sciences".

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