SCIENTIFIC RESEARCH at



"DUNĂREA DE JOS" UNIVERSITY of GALAȚI


UGAL
INVENT

Ugal RDI TT DJUG



Rector
Prof. PhD. Ing.
Lucian Puiu Georgescu

"Dunărea de Jos" University of Galați (DJUG) is the largest university in the South East of Romania, a pole of academic excellence which concentrates elite human resources, specialized in training professionals with national and international recognition in numerous fields.

Scientific research is a main component of the professional development activity in "Dunărea de Jos" University of Galați and one of the main criteria for assessing academic performance and acknowledging the national and international institution prestige.

"Dunărea de Jos" University of Galați finds itself in the first part of the national ranking of Romanian universities and occupies honourable positions in international rankings in terms of scientific research.
The university management supports the research-development-innovation and technological transfer activities of the university teaching staff and researchers, distributing financial resources to research units with the potential to achieve excellent results. The productivity and quality of institutional scientific research is monitored periodically by means of modern tools which quantify the presence of the university in the main international scientific databases.

The institutional research areas are in accordance with the national strategic fields and are interconnected with the modern trends of scientific progress which have fundamental and applied impact. The actions carried out are aimed at training highly-qualified human resources and at increasing the national and international visibility of research, in accordance with the modern principles of university autonomy and with the principle of respect for the rules of ethics and professional deontology.

The vision of the university management regarding RDI activity takes into account:

- the quality of regional "Leadership" in strategic fields, at the border between science and technology;
- institutional recognition and promotion at regional and international level;
- excellence in RDI and TT through internationalization;
- increasing the number of projects funded by national/international competitions;
- attracting national and European funds for research.

The 34 research units accredited at institutional level carry out RDI activities in the fields of artistic creation and sports performance and in fundamental fields recognised at national level, with the mission of developing fundamental and applied research in accordance with the Institutional Development Strategy and with the RDI

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Vice Rector Reserch Activity
Prof. PhD. Eng. Ec. Habil.
Silvius Stanciu

national and international strategies. The continuous development and modernisation of the existing RDI and TT infrastructures is an institutional priority achieved by exploring new directions of research and support, by applying modern methods of research management in the context of increasing their own capacity. DJUG is currently implementing some of the most important research projects at the national level.

The institutional strategic objectives with respect to research aim at:

- promoting the values based on the performances proven through the visibility and impact of the contributions of the members related to the academic community of DJUG in the RDI-TT activity, at national and international levels;
- increasing the performance and visibility of DJUG, at regional, national and international levels, in RDI-TT activities for science and society;
- developing scientific research and innovation in relation to society;
- developing research directions with performance potential which can bring a competitive advantage to the university, ensuring a stimulating climate for research and innovation activities, supporting start-up initiatives and supporting joint projects with the socio-economic environment.

The Technology Transfer Centre operating within DJUG is an authorised entity integrated into the National Innovation and Technology Transfer Network (ReNITT) and in the Romanian Association for Technology Transfer and Innovation (ARoTT), respectively.

The ReForm-UDJG Multidisciplinary Research Platform represents a modern organisational framework for the effective mobilisation of university resources (human resources, strategic infrastructure) for large-scale- multi-, inter- and trans-disciplinary research, competitive at regional, national and international levels, with scientific, technological, economic, social and cultural impact.

This research infrastructure integrates the activity of high-performing research units with that of DJUG doctoral schools in order to increase efficiency, scientific performance, impact and visibility. It is open to all research units which exceed a performance threshold approved by DJUG Senate, upon the proposal of the Coordination Council of the ReForm-UDJG Platform.

The quality management system for research, development and innovation activities at "Dunărea de Jos" University of Galați is certified according to SR EN ISO 9001: 2015 standard, the result of the application of modern principles for the management of CDI activities at the levels of the university, of the faculties and of the institutionally accredited research units.

Long heritage of performance!

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IOSUD - DJUG





Eugen Rusu - Member of the Romanian Academy

Higher education in Galati started its development in 1948, by the establishment of the Land Improvement Institute. The institutes established in Galati included a number of study programmes which were unique in the country: shipbuilding, ships and ports exploitation, food industry, fishing techniques, refrigerating systems technology, a fact which led to an important design process, regarding the development of the curricula, courses, laboratory equipment, etc., currently used in other university centres in the country.

“Dunărea de Jos” University in Galati was officially assigned this name in 1974, and since than it has constantly strengthened its role as a reference national and international institution in the field of education.

Relying on its relevant history and achievements, “Dunărea de Jos” University in Galaţi is an institution organizing doctoral studies (IOSUD) the study programmes being organised in 18 doctoral fields, under the guidance of 120 doctoral supervisors.

The doctoral programmes currently available at DJUG cover a wide spectrum of specializations in 18 distinct fields, including: medicine, pharmacy, chemistry, biotechnologies, food product engineering, engineering and management in agriculture and rural development, industrial engineering, mechanical engineering, electrical engineering, systems engineering, computers and information technology, materials engineering, economics, management, marketing, philology, history, science of sports and physical education.

The 120 doctoral coordinators in the 4 doctoral schools are directly involved in developing practical academic research in keeping with current scientific standards, in promoting quality in doctoral studies, based on an open partnership with doctoral students whose professional achievements represent a point of reference for DJUG doctoral studies.

There are 4 multidisciplinary doctoral schools in “Dunărea de Jos” University in Galati: the Doctoral School of Mechanical and Industrial Engineering, the Doctoral School of Fundamental and Engineering Sciences, the Doctoral School of Humanities and Social Sciences and the Doctoral School of Biomedical Sciences.

Since doctoral studies (ISCED 8) represent the 3rd cycle of university studies centred on learning through research and aimed at developing competent human resources able to carry out scientific research and to access the highly-qualified labour market, the Council for Doctoral Studies (CSUD) of DJUG has undertaken the mission of organising doctoral study programmes with a view to develop human resources prepared for scientific research and insertion on the highly qualified labour market.

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The Doctoral School of Mechanical and Industrial Engineering (SD-IMI) was created on 21 May 2017, pursuant to the decision 1178/21.05.2017, by separating the previous doctoral fields, Mechanical Engineering and Industrial Engineering. Currently, the Doctoral School of Mechanical and Industrial Engineering (SDIMI) manages the fields of doctoral studies in Mechanical Engineering and Industrial Engineering.

The Doctoral School of Fundamental and Engineering Sciences (SD-SFI) operates in its current form pursuant to Decision no. 1178 of 06/21/2017, which separated the doctoral fields existing at that time. The Doctoral School of Fundamental and Engineering Sciences carries out doctoral studies in the following fields: chemistry, materials engineering, electrical engineering, food product engineering, biotechnologies, engineering and management in agriculture and rural development, computers and information technology, systems engineering. Its mission lies in the development of doctoral education specific activities, based on in-depth scientific research in the scientific fields accredited within “Dunărea de Jos” University in Galati, for the training of human resources in fundamental and engineering sciences as experts able to develop innovative solutions necessary for the progress of society.

The Doctoral School of Humanities and Social Sciences was established in 2012, pursuant to Decision no. 1940/12.09.2012. The programmes carried out within the Doctoral School of Humanities and Social Sciences correspond to qualification level 8 according to the national qualifications framework, for the following doctoral fields:

- management,
- economics,m
- marketing,
- science of sports and physical education,
- philology and history.

In accordance with the strategy and objectives undertaken, the Doctoral School of Humanities and Social Sciences has the mission of performing and developing training activities for young researchers and specialists, based on in-depth scientific research in the doctoral fields envisaged.

The Doctoral School of Biomedical Sciences was founded in 2019 and it currently offers the possibility of professional development, through doctoral studies, in the fields of Medicine and Pharmacy.

The mission of this doctoral school is, in addition to consolidating medical scientific research, to create an academic environment for the initiation and development of study programmes aimed at contributing to the professional training of doctoral students as valuable specialist physicians/pharmacists and at obtaining a significant improvement of the medical act for the patients' benefit, with practical implications from a diagnostic, therapeutic and preventive point of view.

The Doctoral School of Biomedical Sciences provides students with theoretical knowledge, skills and special abilities which will allow them to develop their critical thinking and creative potential, carrying out, in parallel with their professional activities, high quality research in biomedical sciences, thus bringing their contribution to relevant developments in the fields of Medicine and Pharmacy while observing the principles of intellectual honesty.



CENTER OF EXCELLENCE POLYMER PROCESSING (CE-PP)

MISSION AND STRATEGY

- **Vision:** Becoming a relevant factor in education, research and innovation in key enabling and emerging technologies which work for the people.

- **Mission:** Conducting leading edge research, in collaboration with academic partners and the industry, which focuses on the processing and characterization of polymers and polymer composites, contributing to the education of future researchers.

- **The main goal:** Gathering relevant expertise in the field of polymers and polymer composites processing so as to become a platform which carries out world-leading research and provides solutions to real problems by innovative approaches.

INFRASTRUCTURE

The research infrastructure of CE-PP consists in state-of-the-art research laboratories which may be used beyond research (e.g. education and public service):

- Injection Molding Laboratory;
- Materials Testing and Characterization Laboratory;
- Nanoindentation Laboratory;
- Electrospinning Laboratory;
- Numerical Modeling and Simulation Laboratory;
- 3D Printing Hub;
- Numerical Modeling and Simulation Laboratory.







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RESEARCH DIRECTION

CE-PP supports research, innovation, technology transfer and training of researchers regarding the processing of polymers and polymer-based composites and focuses on two Key Enabling Technologies:

- advanced manufacturing;
- advanced materials.



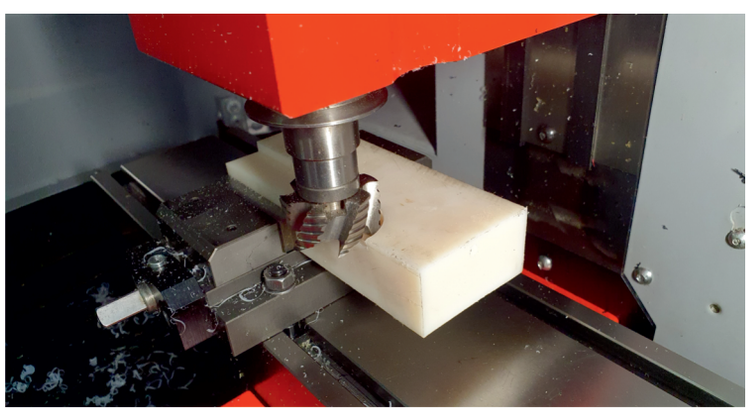
Specific research directions include, but are not limited to:

- advanced materials;
- development and characterization of advanced, high-performance materials for additive manufacturing;
- development of micro- and nanofibers for food and food packaging technology;
- characterization and modelling of high-performance, advanced materials.
- advanced manufacturing technologies;





- development of advanced manufacturing processes (additive manufacturing, electrospinning, injection molding, extrusion, machining, etc.);
- manufacturing with new and advanced polymer-based nanocomposites;
- integrating 3D printing in the process of manufacturing the products of the future, as a mechanism of adding value to the mechanical components;
- developing electrospinning technologies for nano- and microfibers fabrication;
- simulation and modelling, from material processing to material manufacturing and recycling;
- recycling technologies for the circular economy;



- development of recycling and remanufacturing technologies for polymer-based composites, including critical materials;
- product design and manufacturing for circular economy;
- life-cycle analysis and end-of-life strategies for polymer-based nanocomposites.

BIOALIMENT - TEHNIA

MISSION AND STRATEGY

BioAliment-TehnIA Center focusses on fundamental and applicative scientific research aiming to create clusters of research, expertise and technology transfer in the field of food science, food engineering and applied biotechnology.

The BioAliment-TehnIA Center mission:

- development of various applicative research directions with the industry and consumers;
- development of a high-level education and training programs for a competitive career in the field of food science and technology and applied biotechnology;
- transfer of technical expertise to the industry.



INFRASTRUCTURE

The infrastructure of the Center (http://erris.gov.ro/FOOD-BIOTECHNOLOGY) includes the following pilot plants:

- milk processing pilot plant -fully automated;
- meat processing pilot plant - fully automated;
- brewing production pilot plant -fully automated.





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RESEARCH DIRECTION

- promoting the concept of safe, affordable, nutritionally optimized food;
- optimizing process parameters;
- ncreasing the shelf life of food products by innovative technological approaches;
- increasing the value of biologically active compounds obtained by different extraction methods;
- obtaining new products through minimal processing technologies;
- modifying atmosphere packaging technology and introducing new materials for food packaging;
- food expertise, food quality control and





consumer protection authorities for food quality monitoring, consumption of fake and / or contaminated food prevention and risk analysis;
- implementing biotechnological processes in the food industry;
- introducing bioprocessing technologies relevant for food science and biotechnology;
- designing, controlling, modelling and simulating starter cultures and fermentative processes;
- studying tribiotics (prebiotics, probiotics and postbiotics);
- genetic engineering in biotechnology and food science;
- bioremediation, biodecontamination and biovalorisation of wastes;
- bioconversion processes.

food safety;
- assessing food quality and safety;
- technical expertise in food industry;
- ensuring and monitoring food quality and safety directly at the producers;
- providing consultancy services for the implementation of food quality and safety management programs (SR EN ISO 22000: 2005, HACCP system) and of quality management in testing laboratories (ISO 17025);
- training services regarding the principles of food quality, safety management and total quality management;
- collaborating with national food safety and



ELECTRONICS, INFORMATION AND COMMUNICATION TECHNOLOGY RESEARCH CENTER (CCETIC)

MISSION AND STRATEGY

The mission of CCETIC is to conduct fundamental and applied scientific research in order to create a cluster of research and expertise in electronic engineering, telecommunications and information technologies.
The vision of the CCETIC centre takes into account:

- development of fundamental and applied research directions with direct beneficiaries in industry;
- development of high-level educational and training programs for a competitive career in electronics and information technology.

INFRASTRUCTURE

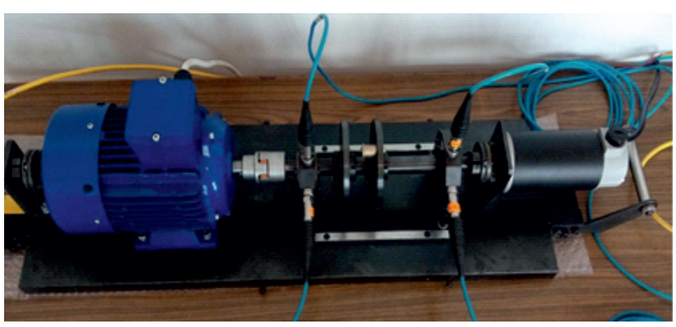
- The Centre infrastructure on ERRIS platform: https://eeris.eu/ERIF-2000-000N-3336

Website: http://www.etc.ugal.ro/ccetic/

ADVANCED PRODUCTS AND TECHNOLOGIES:

Biomimetic SONAR head in the air
Basic features:

- programmable working frequency: 40, 125 or 300 kHz;
- programmable signal emitted in continuous or pulsed form;
- signal processing frequency 1 Mhz;
- USB connection;



- exploration directions: x, y, z.

Use:

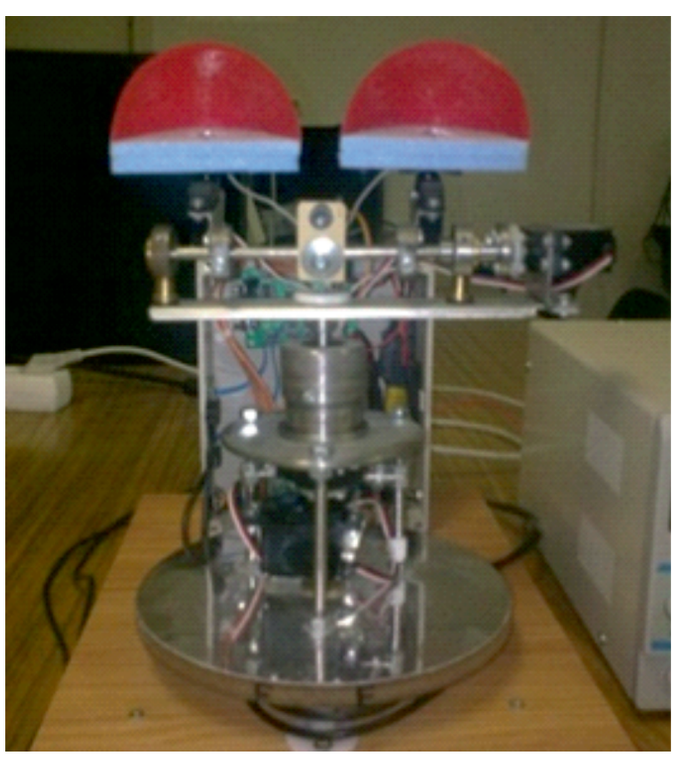
- exploring difficult environments, industrial environments in darkness and/or hazardous atmosphere;
- autonomous vehicle navigation;
- material testing for structural defects (voids).

Vibration test stand for electromechanical systems
Basic features:

- vibration measurements in the frequency range (1-15) kHz;
- programmable control of the working mode;
- programmable electrical load;
- USB connection.

Use:

- vibration measurement of electromechanical systems;
- vibration-based process detection and diagnosis.



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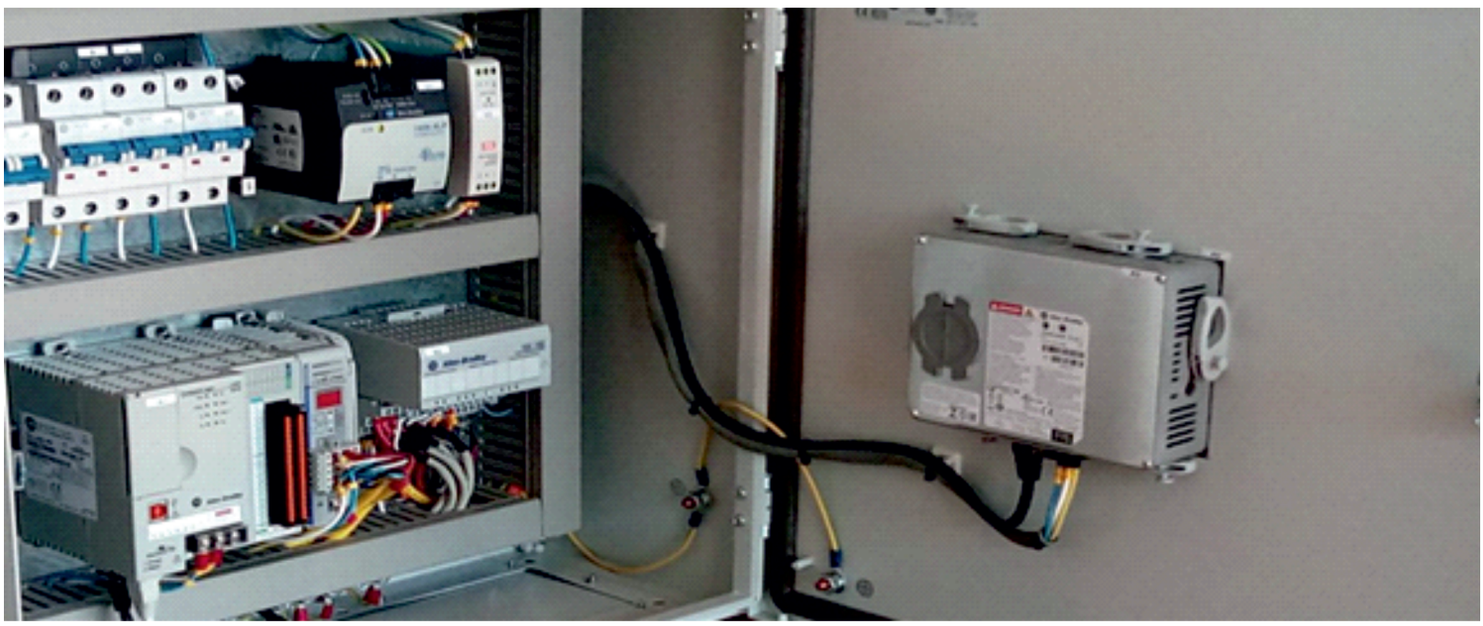
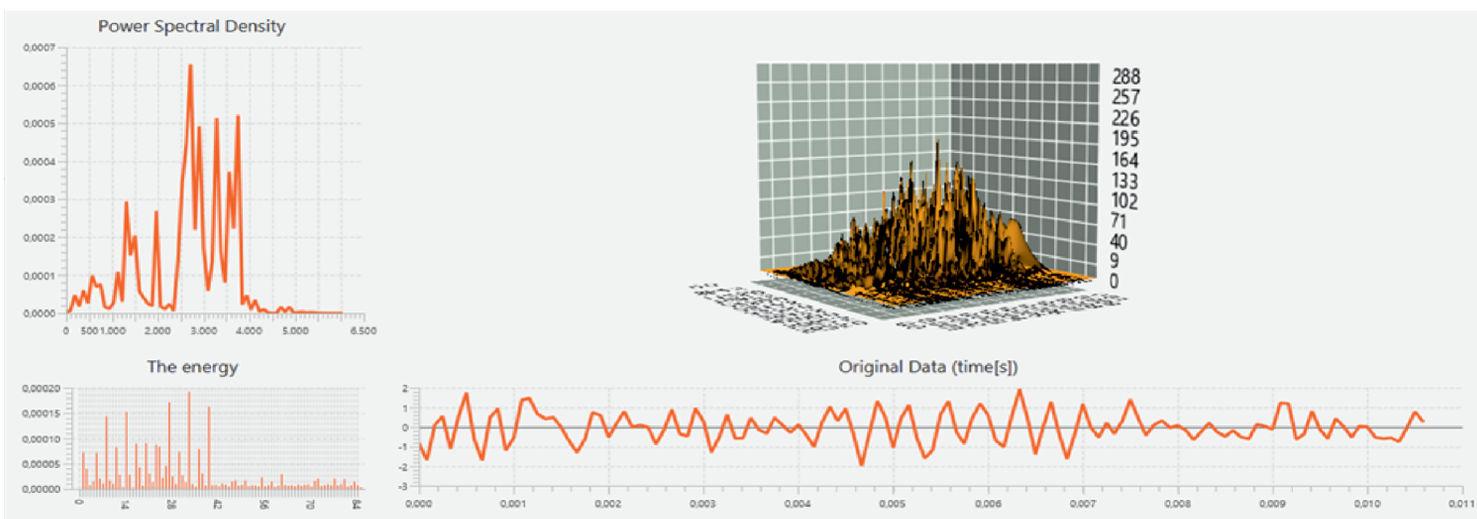
RESEARCH DIRECTION

- measuring, processing and transmitting signals;
- measuring vibration signals from vibrational processes;
- measuring electrical signals from industrial processes;
- measuring non-electrical signals from physical-chemical processes;
- acquisition and processing of thermal images;
- modelling signals for prediction and recognition;
- detecting process state change;
- detecting faults in electrical machine elements;
- diagnosing industrial process and equipment;
- artificial intelligence techniques for data analysis;
- human speech recognition;
- human face recognition;
- shaping individual and group intelligence;
- artificial intelligence: intelligent systems, knowledge-based systems, computational intelligence;
- predictive diagnostics in medicine;
- sparse and compressive sampling: sparse vector estimation algorithms.
- optimisation: solving high-dimensional problems with classes of subspace-based algorithms.





INTERDISCIPLINARY CENTRE FOR CENTRAL AND SOUTH-EAST EUROPEAN CULTURAL STUDIES (CISCLE)

MISSION AND STRATEGY

The research activities take place on the basis of the cooperation agreements among the DJUG research structures and Institutes of the Romanian Academy and institutes/centres/institutions for research and education in Romania and abroad.

- Development and refinement of the current lines of research into literature and socio-humanities, with application to the specificity of Central and South-East European culture and literatures.
- Identification and development of new lines of research, both fundamental and practical in the field of literary studies and humanities with direct relevance for the Central and South-East European culture and literatures.

INFRASTRUCTURE

Multifunction monochrome laser printer A4 Lexmark MX 317 DN; 2 portable scanners IRIScan Book 3 – ISCB4 – 0001294/07448; 2 laptops 15,6, LENOVO IdeePad 100BY – MP12HQIT, MP12NE12, MP12HRE3P; video projector InFocus IN124STx Short Throw – BVVB70100102.

RESEARCH DIRECTION

The specific areas of inter/multi-disciplinary research on Central and South-Eastern European cultures concern: the dynamics of the concepts specific to literary, cultural and socio-humanistic studies and resignification of the main ideological coordinates (identity, local, regional, marginal, territorial, national, universal, peripheral, tradition, cosmopolitism).

- comparative geographies/ literary geography and geopolitics;
- Literary Balkanism and Byzantine Commonwealth/Phanariot Commonwealth;
- exile and diaspora studies;
- studies on the cultural and social memory in the Central and South-Eastern European space;
- literature – the bearer of the urban memory culture;
- the migration phenomenon in the Central and South-Eastern European space from a literary perspective.

Research in the spotlight:

- interdisciplinary fundamental and applied research in the fields of literary studies and humanities;
- inter- and pluri-disciplinary doctoral and postdoctoral research in the fields of literary studies and humanities;
- research – development – innovation projects with diverse beneficiaries;
- participation in the elaboration of fundamental or reference works such as: dictionaries, histories, encyclopedias, monographs, syntheses, volumes of thematic studies, philological critical editions in the field of literary studies and humanities in the Central and South-Eastern European space.
- writing and publishing: volumes of syntheses/ practical applications/ anthologies of critical and literary studies for doctoral, post-doctoral students and young researchers;
- editing and translating scientific or literary works with a scientific apparatus and a critical study;
- editing proceedings of scientific conferences organized within an institutional framework by the Romanian Academy, the Institutes of the Romanian Academy, and universities;
- specific consultancy and counselling services for publishing houses and libraries - translation, editing and acquisition of specialized academic publications.

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NNOVATION

INTERDISCIPLINARY RESEARCH CENTER IN THE FIELD OF ECO-NANO TECHNOLOGY AND INNOVATIVE MATERIALS (CC-ITI)

MISSION AND STRATEGY

MISSION of CC-ITI: developing scientific research of excellence at Dunarea de Jos University of Galati and promoting it at national and international levels, through the development of national and international partnerships for scientific projects and doctoral studies.

The GENERAL STRATEGY of CC-ITI consists in promoting the development of a competitive and interdisciplinary research environment in emerging fields and ensuring academic ethics in scientific research and in the training of new generations of specialists.





INFRASTRUCTURE

The ITI Research Center brings together the specialized expertise of its experienced staff to support research in the fields of Energy and Environment and Eco Nanotechnologies and Advanced Materials.
The infrastructure of the center ERRIS platform: https://eeris.eu/erif-2200-00f-8253





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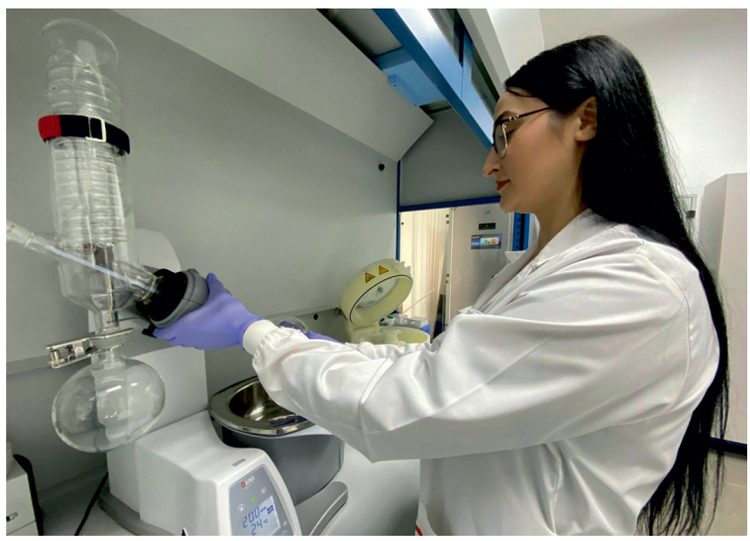
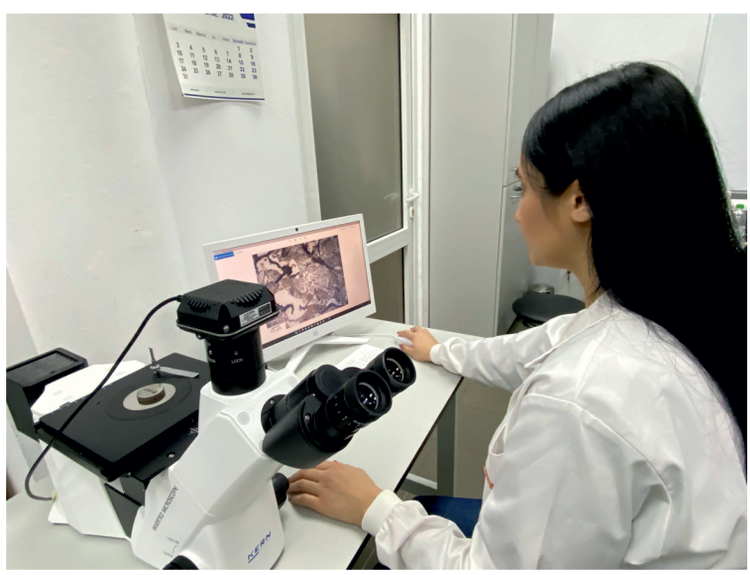
RESEARCH DIRECTION

- obtaining and characterizing composite and nanocomposite layers with special properties (anticorrosive, magnetic, biocompatible etc.);
- nano- and microstructured electrical deposits;
- interface chemical, electrochemical and biochemical processes in surface modification processes;
- controlled formation of nanoporous oxide films;
- surface chemistry, chemical and electrochemical analyses;
- surface and interfacial phenomena in environmental protection processes;
- kinetics and mechanisms of electrocrystallization and electrocodeposition processes.
- purification of wastewater by electrochemical methods;
- degradation (deterioration) of materials (corrosion, tribocorrosion, biocorrosion);
- new hybrid functionalizations (inorganic-organic) of biomaterials surfaces (metals, alloys, polymers) with bioactive molecules by electrochemical techniques;
- preparation of polymeric membranes and nanocomposites;
- complex characterization of membranes in the filtration and nanofiltration processes;
- characterization of materials by tensile, bending, resilience and hardness tests;
- chemical synthesis from solution (sol-gel, co-precipitation, CBD, self-assembly, electrodeposition, biomimetic growth) of nanostructured materials (nanoparticles/ QD, nanowires, nanoplatelets, thin films) oxide, composites and (multi) functional hybrids;
- deposition of metallic and oxide films on different substrates (glass, quartz, and, steel, polymers) by the PVD-assisted plasma method;
- obtaining semiconductor thin films for solar cells by PVD-thermal evaporation method;
- measurement and analysis of transmission and optical reflection spectra of thin films in the near UV-VIS-IR fields;
- recording and interpreting the Current-Voltage curves in M/S/M type structures.







RESEARCH CENTRE FOR MECHANICS OF MACHINES AND TECHNOLOGICAL EQUIPMENTS (MECMET)

MISSION AND STRATEGY

Mission: Carrying out fundamental and applied scientific research, providing consultancy, disseminating scientific results and specific activities of innovation and experimental development within the assumed research areas.

Strategy:

- developing new and emergent directions in applied research, with directly transferable results to the industry and consumer areas;
- providing competitiveness in career development, within the area of mechanical engineering, through new educational and high level formative programs;
- enlarging the expertise transfer flow towards potential beneficiaries.



INFRASTRUCTURE

Research facilities include experimental endowment for specific investigations within mechanics, acoustics and vibration, diagnosis and health monitoring of mechanical systems, hydraulic driving systems, material characterization, listed in ERRIS and UDJG-UNICER platforms.





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RESEARCH DIRECTION

MECMET Research Center covers the following main directions of scientific research, consultancy and service:

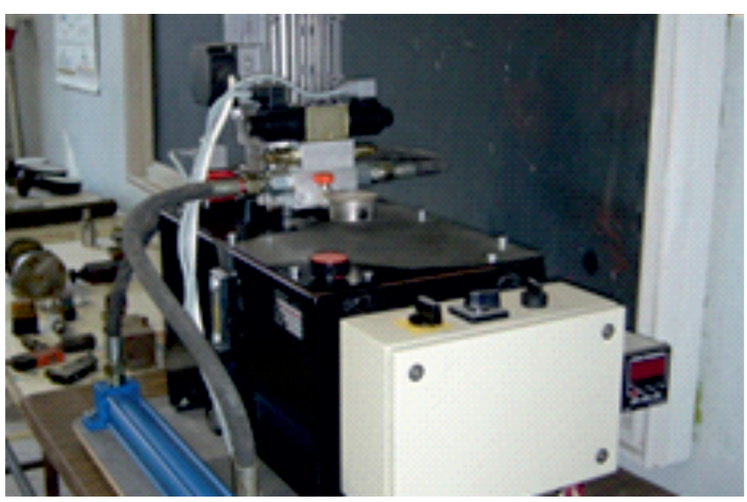
- technological machines and equipments;
- mechanics and vibrations;
- technical acoustics and noise mitigation;
- dynamic diagnosis and health monitoring of technical systems;
- shock and vibration insulation;
- driving systems for technological machines and equipments;
- energetic and automation of technological equipments and processes;
- advanced computational engineering;
- computed assisted engineering and virtual prototyping.

The highly specialized staff are able to develop and provide consultancy (and experimental services) in the following areas:

- evaluation of functional and technological capabilities of construction equipments and machines for subsequent certification;
- static and dynamic analyses using FEM/FEA;
- CAD and virtual prototyping;
- virtual instrumentation;
- vibration and noise monitoring and diagnosis of technological systems;
- technical acoustics (acoustic barriers, noise control, airborne and impact noise assessment);
- applied mechanics;
- protective systems against shock and vibration;
- static and dynamic behavior analysis of materials;
- vibration isolation for technological equipments with intensive and varied operational regimes;
- hydraulic drive systems.

MECMET Research Center provides a wide range of consultancy, expertise and technological transfer services in the domain of technological equipment and mechanics. Based on the embedded expertise, inter- and trans-disciplinary approaches are strongly considered and provided.



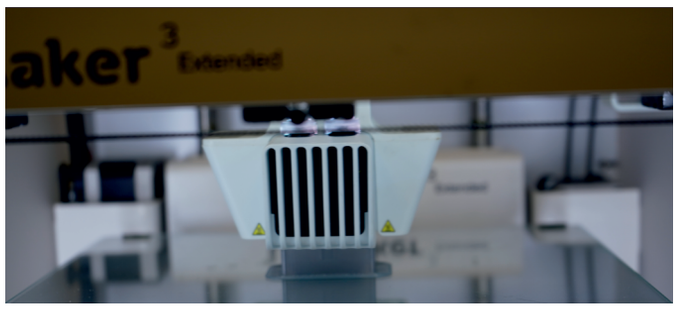


RESEARCH CENTER IN MANUFACTURING ENGINEERING (CC-ITCM)

MISSION AND STRATEGY

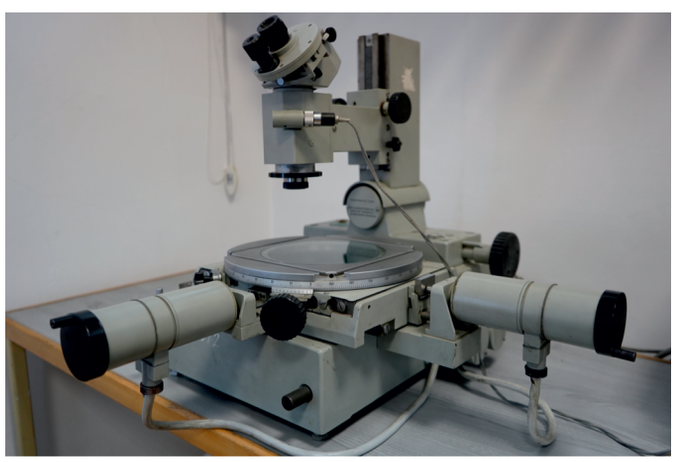
- **Vision:** Becoming a knowledge pole for promoting new manufacturing technologies and practices to industry and education.
- **Mission:** Conducting high-level research in all major areas of manufacturing by cutting and forming processes, providing consultancy services, disseminating research results through publications and scientific events in the field of manufacturing and industrial engineering.
- **The main goal:** developing research programs which address the current manufacturing problems in cutting and forming processes as well as generating innovative solutions in material processing, smart manufacturing, reconfigurability and flexibility in manufacturing technologies, processing advanced materials through advanced techniques, micro and nanotechnology, metal additive technologies, and eco-technologies.





INFRASTRUCTURE

- Laboratory of Advanced Technologies in Metal Forming (LTPR).
- Laboratory of Optimal Control, Materials Machinability and Machine Tools (LCOPMA).
- Laboratory of Surface Generation and Computer Measurements Systems (LMGS).
- Laboratory of Hydraulic and Pneumatic Systems (LAHP).





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RESEARCH DIRECTION

- identification, control and optimization of manufacturing processes by cutting and cold plastic deformation of materials;
- predictive and experimental reliability;
- development of economic processes control models based on market evolution;
- research on intelligent adaptive-predictive control of manufacturing processes;
- research on the machinability by cutting and cold plastic deformation of materials;
- modelling with finite elements of physical processes with applications in mechanical technologies;
- digital inspection and surface generation;
- generating digitized surfaces by wrapping;
- modeling of generation processes by cutting according to the tools and parts representation in discreet form through the cloud points;
- development of graphical methods in the process of tools profiling by wrapping;
- topological representation of surfaces by using reverse engineering applications;
- virtual manufacturing and maintenance;
- research on virtual manufacturing of industrial products and processes;
- research on metal additive manufacturing;
- simulation of technological processes within flexible manufacturing systems;
- conception and design of mechatronic systems used in technological processes simulation;
- management of the enterprises supply chains;
- maintenance of mechanical equipments, machine tools and processes;
- manufacturing expertise and quality control;
- assessment of product quality and safety;
- technical expertise in manufacturing – cutting and forming;
- implementation of quality management in product development;
- training in the field of manufacturing, total quality management and safety management;
- stimulating, facilitating and mediating joint research in an academic and economic environment, through the development of research projects and grants to promote new technologies in the undertaken fields;
- dissemination of scientific research results at national and international levels both in the academic and research community and in the economic units with activity in the field.







EUROPEAN EXCELLENCE CENTER ON ENVIRONMENTAL PROBLEMS, (ECEE)

MISSION AND STRATEGY

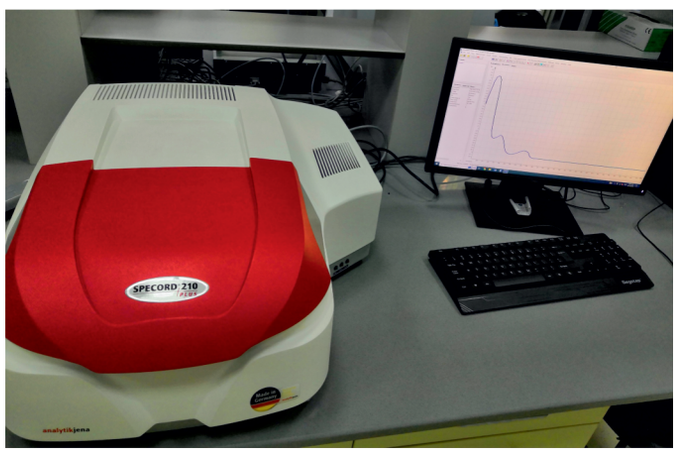
ECEE functions in the Faculty of Science and Environment, Department of Chemistry, Physics and Environment.
ECEE primarily aims at:

- participation in national and international networks;
- active participation in research and development projects funded by national and international programs;
- organizing national and international conferences, seminars and workshops regarding issues directly or indirectly related to the research directions of ECEE.



Infrastructure

- Regional Center for Environment Research and Monitoring, CREDENTIAL.
- Laboratory for synthesis and organic analysis, CYBIOCAT.
- Sensors and biosensors laboratory for food analysis, BIOSENS.
- Surface electrochemistry, analytical and inorganic application, ELECTROCHIM.
- Laboratory for disperse systems and microcaps, LABORCAPS.





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RESEARCH DIRECTION

Main areas of research, development and innovation:

- Environmental Science and Engineering, Earth Sciences: environmental and resource management, ecology, climate change, climatology;
- functionalization of food and medicines through micro and nano-encapsulation techniques;
- extraction and synthesis of organic compounds through conventional methods and methods belonging to green chemistry (biocatalysis, ultrasound, microwaves);
- separation and purification of organic compounds;
- physico-chemical and biochemical analysis of natural and synthetic organic compounds.

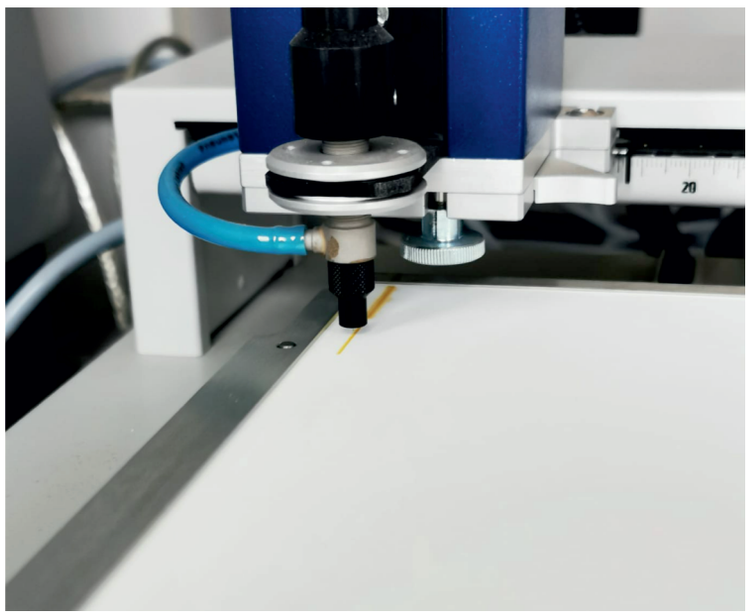
Secondary domains of research, development and innovation:

- numerical and statistical analysis;
- algorithmization of physical, chemical and biological parameters for the determination of quality classes for surface aquatic ecosystems;
- molecular organic compound-biomolecule interactions;
- advanced functional surfaces (coatings biomaterials) for selective adsorption of biomolecules;
- studies for new functional biosensors involving functional structures of organic compounds with nitrogen;
- electrochemical studies related to the interface metal/microorganisms in the production of materials for the food industry (packing, paper, polymer, composite);
- modelling of functional surfaces;
- studies on bio-functional emulsion crystals;

Services, microproduction:

- studies on the interaction between human activities and ecosystems;
- sensors for biogenic amines;
- spectra FTIR, RMN-H1.
- HPLC chromatography.
- HPPLC in thin layer chromatography.
- biochemical analyzes.





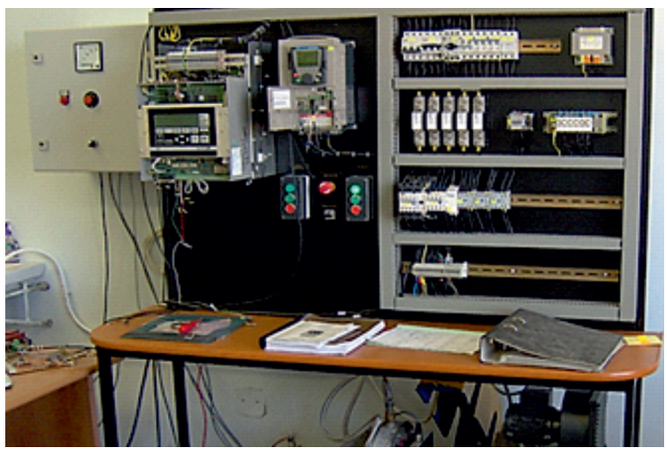


INTEGRATED ENERGY CONVERSION SYSTEMS AND ADVANCED CONTROL OF COMPLEX PROCESSES (IECSACCP)

MISSION AND STRATEGY

The mission and strategy of the Integrated Energy Conversion Systems and Advanced Control of Complex Processes Research Center is to carry out fundamental and applied scientific research, innovation, as well as to perform activities related to R&D - providing consultancy, services, dissemination, innovation, and experimental development activities - in the field of Electrical Engineering and Systems Engineering, aiming to contribute to the development of knowledge, students and researchers training, local, regional and national development through enhancing scientific advances in the field through scientific research.







INFRASTRUCTURE

Departments/Laboratories

- micro-trigeneration systems;
- Laboratory of Energy Quality and Energy Efficiency of Centralized and Decentralized Networks;
- Laboratory of Regenerative Electric Drives;
- Laboratory of the omnidirectional vehicle;
- Laboratory of Automatic Conversion of Wind Energy Conversion Systems / Optimization of Electromechanical Conversion to Classical Receivers;
- Laboratory of wind and photovoltaic systems;
- Respirometry, VETTEST dry biochemistry analyzer.

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RESEARCH DIRECTION

The Integrated Energy Conversion Systems and Advanced Control of Complex Processes (IECSACCP) Research Center has five research directions:

- integrated conversion systems for renewable energies (micro cogeneration, micro trigeneration, photovoltaic, wind);
- power quality and energy efficiency of centralized and decentralized networks;
- regenerative electrical drive systems;
- automatic control of electricity generation/ consumption systems (automatic wind power conversion, optimization of electromechanical conversion to classical receivers);
- Omnidirectional Autonomous Vehicle.

The research, expertise and technology transfer activities of IECSACCP Research Center are oriented towards:

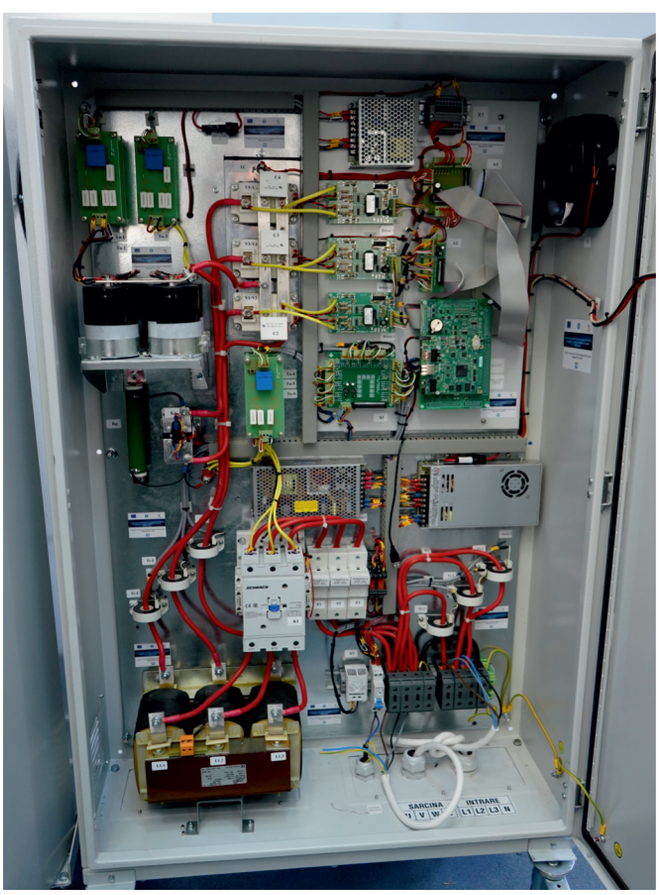
- industrial research: prototyping integration and testing, dissemination of scientific results.
- applied research: functional tests, realization of prototypes, elaboration of manuals for presentation and use, dissemination of scientific results - research / educational innovation: technological entrepreneurship, entrepreneurial skills development, technological innovation.

Domains of activity

- energy engineering facilities (non-nuclear);
- electrical and optical engineering facilities;
- aerospace and aerodynamics research facilities;



- renewable energy, power quality, wheeled mobile robots, facilities;
- prototype integrated regenerative electric drive systems;
- active power filters prototypes;
- integrated micro CCHP - stirling engine based on renewable energy sources for the isolated residential consumers in the South-East region of Romania (m-CCHP SE)';
- research in the spotlight;
- prototypes of grid power converters;
- smart electric drives and power converters;
- design and implementation of the static power converters for increasing the power quality;
- grid power converters;
- prototypes of active power filters;
- design and implementation of the static power converters for electrical power sources integration and operation based on the renewable energy into electrical grid.



INFRASTRUCTURE FOR ENVIRONMENTAL INTERDISCIPLINARY RESEARCH IN LOWER DANUBE EUROREGION (INPOLDE)

MISSION AND STRATEGY

INPOLDE is the first international interdisciplinary network in the Lower Danube Euroregion created for the environmental quality assessment in the framework of the project MIS ETC 1676 financed by JOP Romania-Ukraine-Republic of Moldova 2007-2013, aiming at developing the performant scientific research, technological development and innovation in the fields of nuclear and atomic physics, environment, health and materials science.

The fundamental domain/science branch: Interdisciplinary: Mathematics and Natural sciences - Engineering sciences





INFRASTRUCTURE

Laboratories

- Laboratory of atomic spectroscopy;
- Laboratory of experimental nuclear physics and radiations dosimetry;
- Laboratory of molecular spectroscopy, multiparametric analyses and processing of experimental data.

http://erris.gov.ro/INPOLDE-Infrastructure



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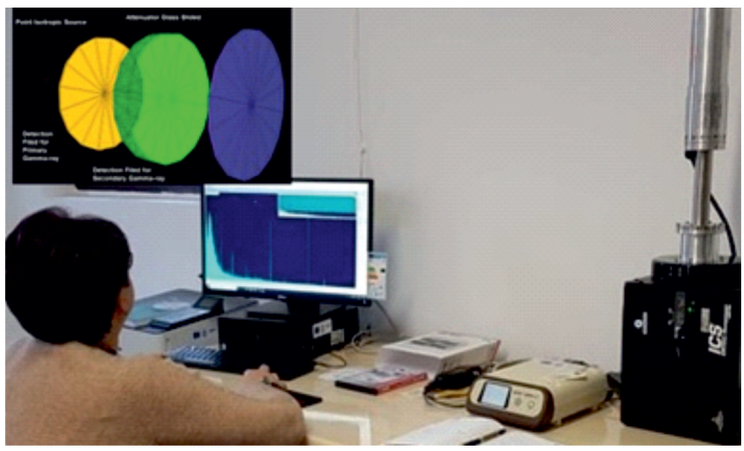
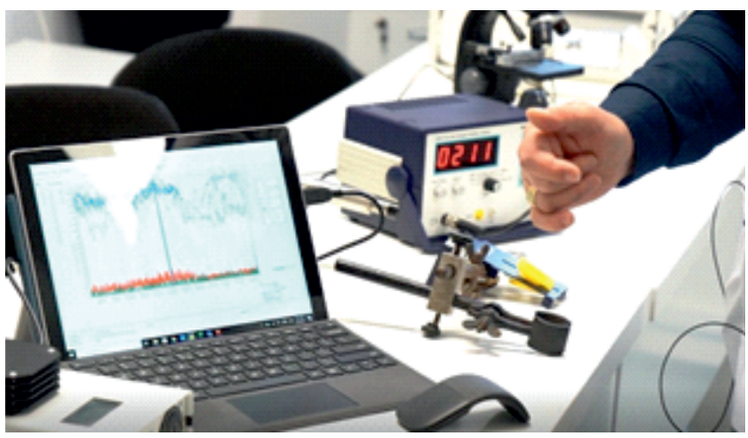
RESEARCH DIRECTION

- interdisciplinary research of toxic chemicals at trace level in biological, food and environmental samples (soils, sediments, waters, waste, aquatic organisms, seaweed, mosses, tissues of cultivated plants, etc.) by using atomic and nuclear techniques;
- methods for the characterization of environmental samples and functional materials used in eco-technologies, nanotechnologies and environmental protection and remediation;
- methods for the characterization of materials used for the protection against nuclear radiations (gamma, X, alpha, beta, neutrons);
- modeling and investigation of materials with nuclear radiation attenuation properties and with potential to be used for medical shielding;
- spectrometric determination of gamma radiations emitted by natural and artificial radionuclides from soils, water, aquatic biota, waste and industrial, building and geological materials;
- development of multiparametric analytical techniques, atomic, molecular and nuclear spectroscopy, photocolorimetry and microscopy for the analysis of multi-component samples;
- determination of radon and thoron activity concentration in indoor air and assessment of residential and occupational exposure;
- assessment of the concentration of radon and thoron activity in soils and waters;
- evaluation of doses for the ambient nuclear radiations and medical exposure;









- environmetry and GIS mapping;
- determination of organic compounds in biological, pharmaceutical, food and environmental samples;
- identification of microplastics in environmental samples, cosmetics, packaging and personal care products;
- determination of mineralogical compounds in environmental and biological samples;
- Dosimetry of nuclear radiations and assessment of population risk.



CROSS-BORDER INSTITUTE FOR INTERNATIONAL STUDIES AND CRIMINAL JUSTICE (CBIISCJ)

MISSION AND STRATEGY

C.B.I.I.S.C.J is an entity without legal personality, organized within the university, set up to concentrate on professional and research experience, as well as to conduct activities in the fields of international studies and of criminal justice, namely criminal sciences and forensics. C.B.I.I.S.C.J has competencies to develop international relations and cross-border cooperation in these areas.

INFRASTRUCTURE

The infrastructure of the C.B.I.I.S.C.J is presented on ERRIS platform; https://erris.gov.ro/CROSS-BORDER-INSTITUTE and includes equipment and software specific to its activities

RESEARCH DIRECTION

International law, Diplomacy, and International organizations

Classical mechanisms of public international law seemed inadequate to keep pace with the changes generated by the new configuration within the international community. However, the backbone of international cooperation, regardless of the effects of globalization, is still the legal classification and codification of rights and obligations of international actors, a balance maintained by regulations of contemporary international law.

Transverse aspects:

- strategic affairs, energy, space, migration and citizenship;
- Black Sea synergy;
- human rights and refugee protection;
- security and international relations.

The international community is currently facing a series of crises and conflicts involving heterogeneous actors and fluctuating situations, this change being generated by the already evoked paradigm transformation within the international community. Issues related to conflicts and, consequently, new security needs now require an integrated approach that takes into account, on the one hand, regional and global issues, and, on the other hand, political, military, and economic dynamics of international relations.

The Black Sea and its strategic importance.

- regional issues: Europe, Russia / CIS, Republic of Moldova, Turkey and the Middle East;
- European integration and neighborhood policy;
- cross-border cooperation and regional development.

Contemporary paradigms of developments have been associated, during the last decade, with two types of actions apparently autonomous: culture and economics, so much so that the first is seen as a generator of new economical geography, and cultural economics as leverage of special organizing and local development.

- regional development;
- democratization, governance, and good governance;
- creativity and territorial innovation in cross-border regions.

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MULTIDISCIPLINARY INTEGRATED CENTER OF DERMATOLOGICAL INTERFACE RESEARCH (MIC-DIR)



MISSION AND STRATEGY

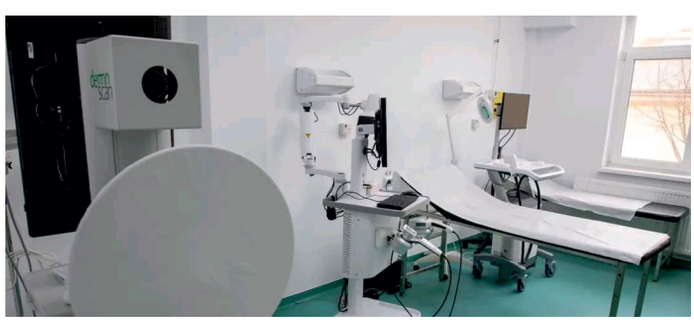
MIC-DIR is an academic research unit without legal personality, organized within “Dunărea de Jos” University of Galați and clinically integrated in “St. Parascheva” Clinical Hospital of Infectious Diseases Galati.



INFRASTRUCTURE

- Confocal Laser Scanning Microscope;
- Fotofinder;
- Dermoscanner;
- VivoSight Optical coherence tomograph;
- UVB-NB Phototherapy cabin.





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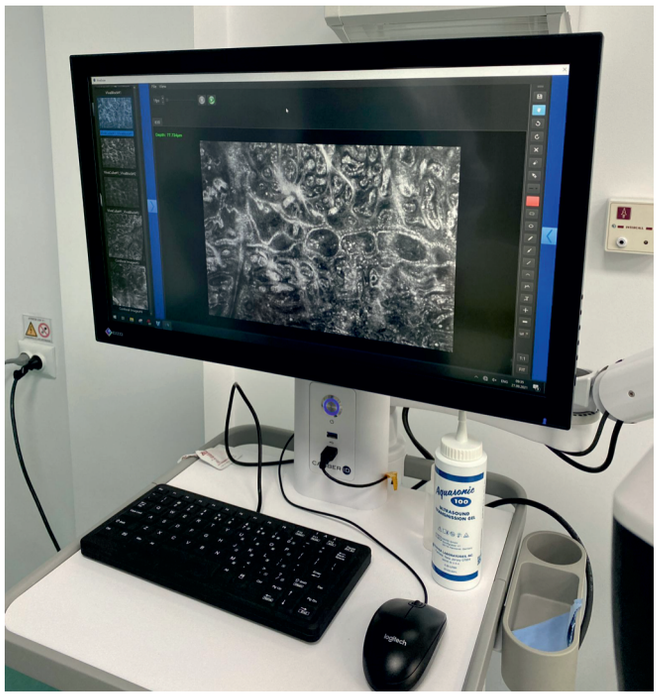


RESEARCH DIRECTION

- observations of cutaneous changes induced by external factors such as: various known topical medication or experimentally induced in the project, from various extracts, with the use of water;
- studies on the mechanism of action of antimicrobial topical extracts in the context of antibiotic resistance;
- development of entrepreneurial skills and perspectives for DJUG researchers, teachers, PhD students, postdoctoral researchers, students and employees;
- determination of the effects of natural radiant exposure factors on normal and pathological skin;
- collaboration with various local and national medical/pharmaceutical/chemistry specialists;
- research on various topical drugs and on their anti-inflammatory role in dermatology;
- establishment of therapeutic principles for demodex folliculorum based on new technologies, carrier nanotechnology or liposomes.
- monitoring and treatments of hair and nail disorders.
- detection of pathological changes and therapeutic effects on normal skin and in various skin conditions using dermoscopy, capillaroscopy, trichoscopy, in vivo confocal laser scanning microscopy, optical coherence tomography.
- treatment of cutaneous xerosis found in extreme conditions in a mountain-sea-delta area.





THE ROMAN CENTER FOR THE MODELING OF RECIRCULATING AQUACULTURE SYSTEMS (MoRAS)

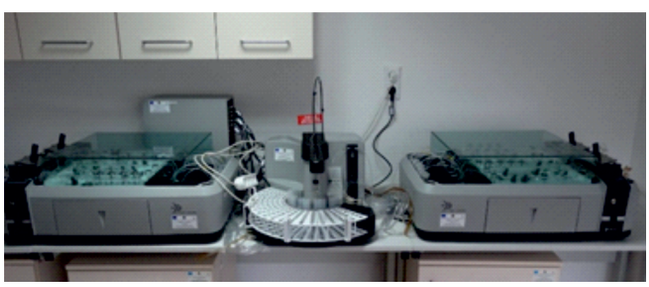
MISSION AND STRATEGY

VISION: Supporting, through education and research, responsible, sustainable and efficient aquaculture by developing innovative technologies and services for the business community.

MISSION: Pursuing scientific progress in the field of aquaculture through basic and applied research whose results can be transferred to the business environment.

MAIN OBJECTIVES:

- increasing the performance, visibility and transferability of the research, development and innovation (RDI) activity results in order to become a relevant European entity in the field of aquaculture scientific research.
- actively contributing to the sustainable development of the aquaculture sector in Romania.







INFRASTRUCTURE

The Centre infrastructure is presented on ERRIS platform https://erris.gov.ro/ROMANIAN-CENTER-FOR-MODELLING.
The MoRAS Centre (www.moras.ugal.ro) is included in the Integrated Network for Research and Development in Food and Aquaculture (RICD-IAA).
The main facilities of the centre are:

- pilot aquaculture and aquaponics experimental stations;
- pilot feed station;
- ultra-high pressure liquid chromatograph;
- confocal laser scanning microscope;
- atomic absorption spectrometer;
- continuous flow wastewater autoanalyser;
- FT-IR spectrometer;
- Fourier transform nuclear magnetic resonance spectrometer;
- respirometry tunnel
- VETTEST dry biochemistry analyser.

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RESEARCH DIRECTION

As a research entity of excellence, MoRAS represents a multidisciplinary research structure, competitive in terms of research, development and innovation in the field of aquaculture, at both the national and European levels. In order to meet the demands of the economic environment and to be able to respond competitively, in real time, to the scientific and technical progress in a context of technological globalisation, a series of advanced, exploratory, transdisciplinary research activities are carried out in the following research areas:

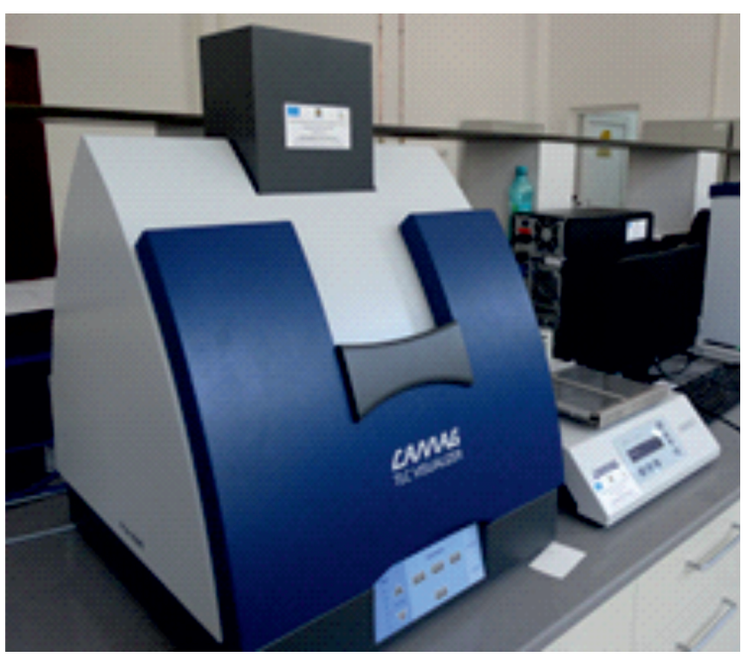
- improving the design and operational management of aquaculture production systems for subsequent implementation in the production sector. The development of this research direction aims to improve advanced, easily reproducible, efficient aquaculture systems which can be implemented in the production sector and to optimise technological water and effluent treatment processes in intensive aquaculture.
- making the aquaculture industry more efficient by developing improved technological and operational management systems. This research aims to develop specific RAS diets so as to improve feed utilization efficiency, to optimize feed management so as to reduce the proportion of uneaten feed and to maximize production and minimize costs for each technological sequence.
- ensuring the health and comfort of crop biomass.

This research aims:

- to improve fish health and comfort by understanding pathogen-host interactions,
- to develop methods for increasing immunity,
- to develop and use best practices for optimising the effectiveness of treatments and prophylactic methods;
- to develop methods for quantifying stress levels and for understanding the consequences of stress onset
- to include stress management in production management.







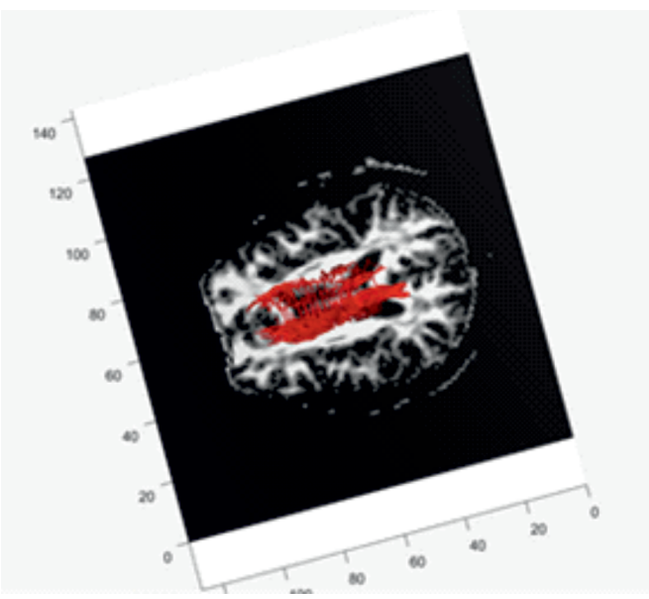
THE MODELLING & SIMULATION LABORATORY (MSlab)

MISSION AND STRATEGY

- international collaboration with Eastern and Western European partners to ensure the quality of the research activity and its validation by the international scientific community.
- writing and submitting proposals for R&TD projects in the recognized research areas;
- gaining experience for developing acquiring and conducting integrated research projects;
- focussing on scientific quality and social relevance
- focussing on economic aspects as a limited number of resources for research has to be distributed among researchers as applicants.

INFRASTRUCTURE

- Desktop computer Intel Core i7.
- Multifunctional printer Lexmark X734de.
- Laptop.
- Local network.
- Internet access.
- Matlab 202; Statistica.

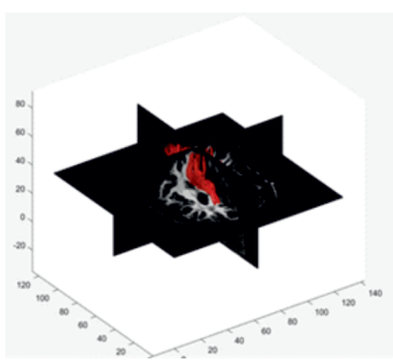


RESEARCH DIRECTION

- development of advanced neural network training;
- simultaneous training and validation of multiple networks;
- feature selection for estimation and classification;
- neural nets applications;
- algorithms and methods for analysis and classification of 2D/3D signals/images;
- biomedical signal processing;
- developing ultra- and infrasound technologies in layered environments for the detection and recognition of prohibited objects with high-risk potential.

Research in the spotlight

- consulting services in the areas of digital signal and image processing, digital filtering, algorithms for signal processing, numerical methods, sensors.
- training in the fields of digital signal processing, digital filtering, mathematical methods for signal processing, applied statistics.
- artificial intelligence (AI) techniques and applications of these techniques, views on AI, how it benefits society, ethical guidelines and so on.
- SMLab's AI initiative involves a wide range of work, from education and research to contact with industry and society.



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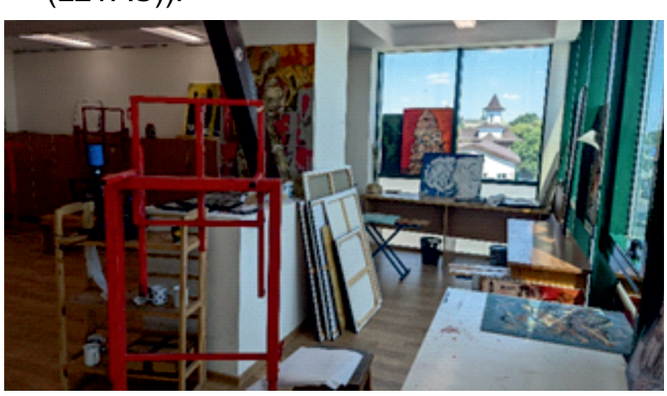
THE INTERDISCIPLINARY CENTER FOR ARTISTIC STUDIES (CISA)

MISSION AND STRATEGY

Promoting high-performance scientific research in the fields of music, visual and performing arts through partnerships, collaborations and research projects and/or artistic projects with a research component. At a strategic level, CISA aims at facilitating scientific collaboration and research in interdisciplinary artistic and creative projects with a view to increase performance through excellence.

INFRASTRUCTURE

- Music Laboratory (LM).
- Visual Arts Laboratory (LAV).
- Theatre and Performing Arts Laboratory (L1TAS).
- Theatre and Performing Arts Laboratory (L2TAS)).





RESEARCH DIRECTION

Music, Visual Arts and Theatre and Performing Arts.
The approach covers creative aspects (creations, works, plays, performances, audio-visual/multimedia products, plastic creations, etc), organizational aspects (cultural and artistic management, event organization, implementation of funded projects, collaborations and partnerships, artistic and artistic and/or cultural management consultancy, etc.) and theoretical aspects (volumes, articles, publications, etc). CISA members are encouraged to propose and carry out artistic and artistic research projects that which are regionally, nationally and internationally relevant, artistically and economically valuable and relevant.





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THE RESEARCH INFRASTRUCTURE REXDAN

MISSION AND STRATEGY

Developing relevant national and international partnerships for supporting interdisciplinary research in the field of smart specialization: Energy, environment and climate change.

The research activities related to water, sediments, soil, air, biodiversity, bathymetry, hydromorphology which are carried out in REXDAN RI cover various domains such as: chemistry, biology, physics, environmental science, ecology, bathymetry, topography, atmospheric chemistry, sustainable development.

INFRASTRUCTURE

REXDAN RI has two main components: a research vessel and a research center, with a total of 18 laboratories, among which:

- the Chromatography Laboratory;
- the Instrumental Analysis Laboratory;
- the Spectrometry Laboratory;
- the Ecology Laboratory;
- the Genetics Laboratory;
- the Bathymetry, Hydrology and Topometry Laboratory;
- the Climate Change Observation Platform;
- the IT Laboratory.







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RESEARCH DIRECTION

The holistic research proposed in the framework of REXDAN RI corresponds to the Joint Strategy for the Implementation of the Water Framework Directive which recommends the interconnection of methods and targets large-scale research in important basins in the EU.

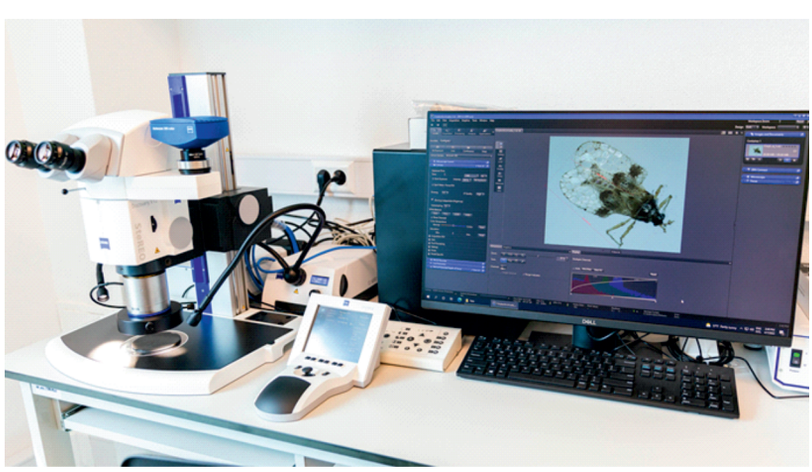
Some of the research directions taken into account are the following:

- approaching chemical, physical, biological and biodiversity factors by using statistically calibrated interdisciplinary algorithms;
- assessing the impact of hydrotechnical works carried out for maintaining river channels navigability on the biodiversity (migratory species of ichthyofauna and birds);
- monitoring climatic parameters (continuously) and of atmospheric composition (periodically) in areas where such measurements are sporadic or non-existent.







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și CERCETĂRII
Eveniment organizat sub patronajul
Ministerului Cercetării și Inovării

IDEI
UGAL

Drawn up within the project entitled Academic and Social Internationalization of Students at ”Dunărea de Jos” University of Galați – IDEI (UGAL)[22], project code CNFIS-FDI-2022-0369, financed by the Romanian Ministry of Education through Institutional Development Fund (FDI 2022).