Doctoral Studies

OVERVIEW:

The doctoral studies represent the third stage of university studies, which can be followed after graduation from the bachelor's and master's cycles. "Gheorghe Asachi" Technical University of Iași organizes doctoral studies in engineering sciences and exact sciences; there are thirteen doctoral fields within the following faculties:

- Automatic Control and Computer Engineering
- Civil Engineering and Building Services
- Machine Manufacturing and Industrial Management
- Electrical Engineering, Energetics and Applied Informatics
- Electronics, Telecommunications and Information Technology
- Hydrotechnics, Geodesy and Environmental Engineering
- "Cristofor Simionescu" Faculty of Chemical Engineering and Environmental Protection
- Mechanical Engineering
- Materials Science and Engineering
- Industrial Design and Business Management

Master's degree graduates who want to continue their education will choose a field and a doctoral advisor, in order to be able to enroll in the admission that takes place once a year, in September.
The doctoral advisor is a professor who holds the certificate of habilitation and is affiliated to a doctoral school; his role is to support and guide the PhD student in the process of research and elaboration of the thesis.

The three years allocated for the PhD can be extended, upon request, by up to four years, to defend the thesis. There are the following ways to pursue doctoral studies at the Technical University "Gheorghe Asachi" in Iasi:

- Full-time learning, with scholarship – budgeted
- Full-time learning, without scholarship – budgeted
- Full-time learning, without scholarship – with a fee (annual fees differ depending on the faculty)
- Part-time learning, without scholarship – budgeted
- Part-time learning – with a fee (annual fees differ depending on the faculty)

ADMISSION

https://doctorat.tuiasi.ro/admitere/admitere-2022/

- after submitting their file, the candidates have to take a test which consists in verifying their language skills for an international language of their choice;
- the second test is represented by a colloquium based on some previously announced topics and a bibliography. The commission is made up of specialists with the title of doctor; they assess the candidates according to their knowledge of the chosen specialty and their ability to take theoretical, experimental and methodological initiatives.

THE PHD HAS TWO COMPONENTS

- The training program based on advanced university studies (first year), which consists of courses and seminars chosen by the doctoral student with their advisor, depending on the specifics of the research field (https://doctorat.tuiasi.ro/studenti-doctoranzi/sustinere-proiect-cercetare/)
- The scientific research program (second and third years), which consists of the preparation and public defense of two or three research reports.

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www.doctorat.tuiasi.ro

OPPORTUNITIES AFTER GRADUATING FROM DOCTORAL STUDIES

Doctoral studies offer numerous employment opportunities, due to the skills acquired and the higher level of training. Although it is believed that doctoral studies are useful only to those who want to pursue a career in university education or scientific research, this outlook can be easily contradicted.

Of course, a career in scientific research or education cannot be conceived without completing the doctoral studies. On the other hand, doctoral studies offer a complex training, which includes creative thinking, perseverance, teamwork and more. All these qualities make the new doctor a perfect candidate for many jobs.

Why enroll in a doctorate?

- to improve in the area you have chosen to study;
- to be able to pursue a teaching career in higher education (you can take the first steps even during your doctoral studies);
- to have your research supported by the best specialists in the field and to have access to an adequate working environment;
- to have the opportunity to participate in the study program organized in partnership with other universities from Romania and the EU;
- to contribute to the technological, economic and social environment;
- to have access to internships and scholarships in research centers and companies, which can turn into employers even during your PhD;
- to benefit from a period of study abroad, in order to obtain a double qualification;
- to have a significant advantage on the labor market.

Career Advantages PhDs Have Outside of Academia

Having a PhD is a significant advantage. PhDs get paid higher than non-PhDs and are in high demand. Trained professionals who know how to create information, not just repackage it, are desperately needed. Entrepreneurship and innovation are at an all-time high and this will continue as the economy continues to favor innovation.

If you have a PhD or are on your way to having one, the future is yours. The only thing that can hold you back is yourself—by choosing to be one dimensional and choosing to ignore the less objective soft skills that will complement your PhD and make you a magnet for industry success. A PhD offers you great advantages over other job candidates and over the population, in general.

Let us see few advantages of PhDs over non-PhDs.

1. They know how to find answers.

The top three desired skills for every industry position are critical thinking, complex problem solving, and correct decision-making. In other words, you have to be able to identify problems, find the right problem, and then find the right answer to that problem. It is very clear that PhDs excel in all three of these areas.

Never forget the fact that you are a researcher. You are highly trained in identifying problems and finding solutions to those problems. Think of all the uncountable hours, days, week, months, and years you've spent trying to find answers to the world's toughest unknown questions.

You know how to attack questions from every different angle. You know how to follow a lead through 5 academic journal articles, 7 book references, and a plot in a figure that was published 15 years ago just because it helps prove some aspects of your overall hypothesis. While most people are skimming nonsense on a message board, you have the research skills needed to dig deeply into Google Scholar and Science Direct to find credible information. Employers value this. Make sure they know you have these skills.

2. They don't fear failure; they learn from it.

Remember when you graduated college at the top of your class and went to graduate school thinking you were going to be a rock star doctor with golden hands who would be able to get world-changing, Nature-worthy data in a few weeks? Yeah, that didn't last long. You learned pretty quickly that you would have to do some experiments 30 times just to find an answer to the tiniest question and then you'd have to do 30 more experiments to get the right R-squared value.

You failed over and over and over again, daily, without recognition or a decent pay check. Yet, you woke up the next morning to do it all over again. Why you did this? Because you knew that each failure would take you closer to getting the one-piece data that would bring it all together. You woke up to fail again because failure is the best teacher—failure showed you what to do next.

Do you think most people are like this? No, they're not. Most people are quitters who would rather do nothing than fail. These people fail once and quit. You have a major advantage over these people.

3. They are comfortable with uncertainty.

If you have a PhD or are getting a PhD, you've probably spent years of your life smack in the middle of uncertainty. You have no idea if your next grant is going to be funded. You have no idea if your paper is going to get passed that damn third reviewer and get published. You have no idea when your committee is going to give you the green light to defend your thesis. You don't even know if the project you're working on has an answer at all! Everything you're doing–your life's work–could be proven untrue at any time. As a PhD, you're not just comfortable with uncertainty, you thrive on it. You know that without uncertainty, discovery would be impossible. Most people don't get this. Most people want a sure thing and will spend their entire lives choosing unhappiness over uncertainty. Use this to your advantage. Be willing to take risks that other people are not willing to take.

4. They don't just regurgitate information, they create it.

Less than 2% of the world population has a PhD. Why? Because adding to a field is hard. Anyone can learn something and then repackage it. Anyone can regurgitate information. That's easy. It's so much harder to create information–to bring knowledge into existence for the very first time.

If you have a PhD, you are a creator of information. This is one of your most valuable and most transferable skills. Don't assume that everyone can create information. Most people can't even do a book report. You, on the other hand, have spent years creating information and months putting it together into a hundred-page story called a thesis just so 5 other people can read it. This kind of innovation and tenacity is uncommon.

5. They thrive on both competition and collaboration.

If you have a PhD, you've worked very closely with other students. You've had to compete for resources and for publications and you've had to share resources and collaborate to get published. No one is more qualified than you to work with a team. Don't let this hold you back. Position yourself properly, ask the right questions, and get the job you want.

6. They are qualified for any industry position.

Every job is a PhD job. You can never be too qualified for a job. An employer telling you that you're overqualified for a position is like someone breaking up with you and saying it's not you it's me. It is you. They're turning you down politely and sparing your feelings. The real reason they didn't want to hire you is your lack of social skills or your inability to present yourself for the position at hand.

Imagine you're trying to hire the best person to work for you and your company, would you turn down an amazing candidate because he or she is too qualified? No, you wouldn't. You would snatch them up and let them thrive in that position or you would promote them to another position. Overqualified means wrongly qualified. If you ever get turned down for a job for being overqualified, simply change your approach. Don't complain about the system being against you. Go back and figure out exactly what the employer is working for. Leverage your PhD and experience towards their interests, not your own. Rewrite your resume, change your interview approach, and position yourself correctly this time.

TUIASI Doctoral School

TUIASI Doctoral School, established by Senate Decision no. 347 of 27th of October 2017, coordinates the activity of the nine doctoral program coordination councils that function at the level of the faculties as follows:

- DPCC established at the level of the Faculty of Automatic Control and Computer Engineering;
- DPCC established at the level of the Faculty of Machine Manufacturing and Industrial Management;
- DPCC established at the level of the Faculty of Electrical Engineering, Energetics and Applied Informatics;
- DPCC established at the level of the Faculty of Electronics, Telecommunications and Information Technology;
- DPCC established at the level of "Cristofor Simionescu" Faculty of Chemical Engineering and Environmental Protection;
- DPCC established at the level of the Faculty of Mechanical Engineering;
- DPCC established at the level of the Faculty of Materials Science and Engineering;
- DPCC established at the level of the Faculty of Industrial Design and Business Management;
- DPCC established at the level of the Faculties of Civil Engineering and Building Services and Hydrotechnics, Geodesy and Environmental Engineering.

Events organized by the Doctoral School

DOCTORAL SCHOOL CONFERENCE, Iași, 19–21th of May 2021

During its fourth edition, the International Conference of the Doctoral School of the Technical University "Gheorghe Asachi" from Iasi (TUIASI) offered PhD students from doctoral schools of technical universities in Romania and abroad a favorable framework for communicating research results, exchange of ideas, initiation of new collaborations and refining theoretical and

methodological approaches, encouraging the continuous development of interdisciplinary research. The conference aims to bring together various oral presentations that address relevant issues associated with the thirteen doctoral fields in TUIASI: Chemistry; Computers and information technology; Chemical engineering; Civil engineering and building services; Electrical engineering; Electronic engineering, telecommunications and information technology; Energetics; Industrial engineering; Materials engineering; Mechanical engineering; Environmental Engineering; Systems engineering; Engineering and management.

During the three days of the conference (19-21th of May 2021), PhD students were able to present their studies, in Romanian or English, in five sections. The conference program also included a series of lectures given by prestigious professors from universities in the country and abroad, close collaborators of TUIASI. The abstracts and studies proposed by the PhD students had to be endorsed by the doctoral advisor and have been written in English. The works in extenso were recommended for publication in the Bulletin of the Polytechnic Institute of Iași.

Conference Sections:

- Computers and information technology; Systems engineering
- Chemistry; Chemical engineering; Environmental Engineering
- Civil engineering and building services
- Electrical Engineering; Energetics; Electronic engineering, telecommunications and information technology
- Mechanical Engineering; Industrial engineering; Materials engineering; Engineering and management1.

For details go to: http://www.csd2020.tuiasi.ro/

ONLINE SEMINARS CARRIED OUT IN THE ACADEMIC YEAR 2020-2021:

Validation of the results of the doctoral research by publication - reason of the creativity and originality of the doctoral thesis – 26th of Nov 2020;

The art of presenting papers at international conferences – 17th of Dec 2020;

How to get the most out of the cooperation with the doctoral advisor – 11th of Feb 2021;

10 steps for an efficient research - case study – 10th of Mar 2021;

Creation and protection of patentable inventions – 08th of Apr 2021

The importance of creativity in scientific research, in the context of a future dominated by artificial intelligence – 17th of Jun 2021

For details go to:

www.doctorat.tuiasi.ro/Htm/Evenimente.htm

TUIASI DAYS 2020

DOCTORAL STUDIES IN TUIASI - FROM PERSONAL EXPERIENCE TO THE VOCATION OF EXCELLENCE

For details go to:

https://doctorat.tuiasi.ro/evenimente/2020-2/

International cooperation

- European PhD

Criteria for granting the European Doctoral Certificate:

- The PhD student is enrolled in a doctoral study program at the Technical University "Gheorghe Asachi" in Iasi (TUIASI);
- The PhD student completed a doctoral program accredited in TUIASI and promoted the scientific research project with at least the grade "very good";
- The PhD student completed a research placement of at least three months in the field of the thesis in one or two universities in the EU or in associated EU countries (outside Romania). The PhD student must obtain a positive report from the research placement coordinator from the partner university and then have it approved by the doctoral advisor at TUIASI (Form PO.CSUD.07 F1);
- At least one member of the doctoral thesis defense committee is a professor/researcher in a prestigious university or research institute in the EU and EU associated countries (outside Romania and different from the one/s where the

research placement took place);

- At least two specialized referees, professors and/or researchers from prestigious universities or research institutes in the EU and associated countries (outside Romania), have to analyze the doctoral thesis and recommend its public defense. The specialist referees must be personalities with high scientific visibility and research concerns in the field of the doctoral thesis. The specialized referees can't be members of the commission for the public defense of the doctoral thesis nor coordinators of the research placement carried out by the PhD student.
- The doctoral thesis has to be written in an international language (preferably English);
- The doctoral thesis was publicly defended in a language of international circulation (preferably English).

For details go to:
https://doctorat.tuiasi.ro/studenti-doctoranzi/doctorat-european/

INSTITUTIONAL COOPERATION AGREEMENTS For details go to:
https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/ACORDURI-DE-COLABORARE-INTERUNIVERSITARA_doctorat.pdf

ERASMUS+K103 TYPE COOPERATION AGREEMENTS (with EU countries or affiliates)
For details go to:
https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/Acorduri-Erasmus.pdf

PhD HUB
For details go to:
https://phdhub.eu/iasi/institutions/gheorghe-asachi-technical-university-of-iasi/

CO-SUPERVISION AGREEMENTS

POSTDOCTORAL PROGRAMS

Within the Organizing Institution of Doctoral Studies TUIASI and the Doctoral School that operates within it can be organized, in accordance with the law, postdoctoral programs of advanced research for all fields of doctoral studies operating within the Doctoral School.

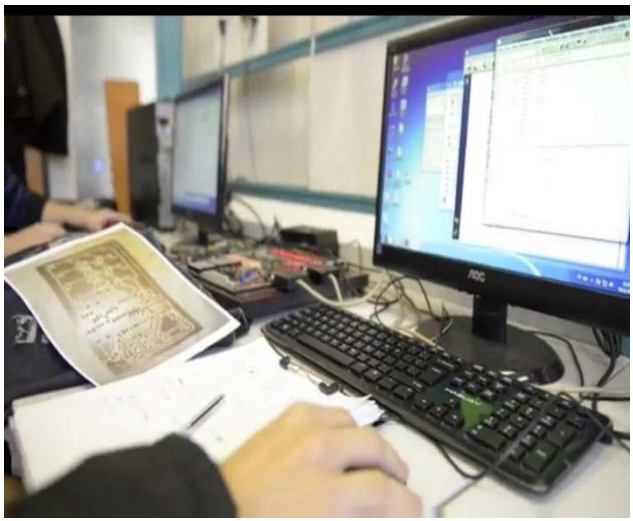
Postdoctoral research programs can be funded from TUIASI's own revenues, internal grants, research projects with national or international funding, economic agents, etc.

The postdoctoral research programs are organized within the Organizing Institution of Doctoral Studies TUIASI and are awarded after a contest organized at the level of the Doctoral School, depending on the nature of the funding.

Throughout the postdoctoral fellowship, the person admitted to a single postgraduate program of advanced postdoctoral research has the quality of a postdoctoral researcher.

The postdoctoral researcher is a person who participates in an advanced postdoctoral research program and has obtained a doctorate in science no later than five years before admission to the postdoctoral program (the date of confirmation by Order of the Minister of Education is taken into account) or who has participated and obtained the certificate of excellence at the "Marie Sklodowska Curie" competitions organized by the European Commission, regardless of when they obtained their doctorate and which meets other conditions imposed by the funder on the date of admission to the postdoctoral program.

For details go to: https://doctorat.tuiasi.ro/studii-postdoctorale/regulament/



Faculty of Automatic Control and Computer Engineering

https://ac.tuiasi.ro/studii/doctorat/
PhD advisors:
https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/AC-1.pdf

Partners: Amazon Development Center Romania - Iași, Continental Automotive Romania – Iași, Preh Romania – Iași, Vitesco Technologies Engineering Romania - Iași

Doctoral Domain: Systems Engineering (SE)

Control PhD's get jobs easily – maybe not as control engineers, but as people who can think abstractly.
(Prof. Jan Maciejowski, University of Cambridge - *Preparing Tomorrow's Scientists and Engineers* - Panel Session on Education – 2011 Congress of International Federation of Automatic Control, IFAC)

Why enroll in doctoral studies in the field of Systems Engineering?

The mission of the PhD field *Systems Engineering* is to develop a highly specialized human resource for research-development and innovation, competent in the design and management of technical systems and technological processes (with various degrees of complexity of automation). The skills necessary for progress in academia and industry, for advanced scientific research, for interdisciplinary approaches and for the promotion of scientific collaborations at national and international level are ensured.

International cooperation

Erasmus + Agreements	Joint supervision
· Ghent University, Belgium · Eindhoven University of Technology, Netherlands · Vienna University of Technology, Austria · Universitat Duisburg-Essen, Germany · Universite Joseph Fourier Grenoble, France · University of Zaragoza, Spain · University of Sheffield UK	· Research Group on Dynamical Systems and Control, Ghent University, Belgium · Department of Computer Science and Systems Engineering, University of Zaragoza, Spain

Research perspectives

Research is oriented towards modern directions / themes, with a pronounced interdisciplinary character, in accordance with the scientific advances reported in the specialized literature:

- Qualitative theory of dynamical systems (structural properties, polytopic structures, switched structures, hybrid structures, discrete event systems, waiting systems);
- Advanced control techniques (model-free control, distributed predictive control, distributed control based on multi-agent concepts);
- Control of automotive systems dynamics (intelligent mobility – cooperative, connected and automatic mobility, cooperation of automatic vehicles through communication networks, evaluation of the reliability of network communications for interconnected vehicles, optimal fusion of data from sensors);
- Control strategies for electric and hybrid vehicles (electric systems and actuators, modeling and control of propulsion systems);
- Robotic systems equipped with visual sensors (algebraic and geometric methods of modeling and control, trajectory planning algorithms, algorithms for computer vision, real-time implementations in robotics).

Doctoral Domain: Computer Science and Information Technology (CSIT)

We are in the age of computers and technology. Help to define the future!

Why enroll in doctoral studies in the field of Computer Science and Information Technology?

The mission of the PhD field *Computer Science and Information Technology* is to develop a highly specialized human resource through research for research-development and innovation, competent in the design and operation of hardware and software structures, with various degrees of implementation complexity, capable of insertion on the highly qualified labor market, by ensuring a creative, deontological framework, adequate for academic studies, advanced scientific research, interdisciplinary approaches and the promotion of scientific collaborations at national and international level.

International cooperation

Erasmus + Agreements	Joint supervision
· Vienna University of Technology, Austria	· Vienna University of Technology, Austria
· University of Helsinki, Finland	· University of Eastern Finland, Finland
· University of Eastern Finland, Finland	
· Institut National Polytechnique de Toulouse, France	
· Ecole Nationale Superieure dIngenieurs de Caen, France	
· Institut Superieur d Electrinique de Paris ISEP, France	
· University of Applied Sciences Konstanz, Germania	
· Goethe University Frankfurt am Main, Germania	
· Universidade do Minho, Portugal	
· Universidad de Granada, Spain	

Research perspectives

Research is oriented towards modern directions / themes, with a pronounced interdisciplinary character, in accordance with the scientific advances reported in the specialized literature:

· High performance computing
· Combinatorial optimization
· Artificial intelligence
· Quantum computing
· Nature-inspired heuristics
· Machine learning, deep learning
· Image processing
· Cyber security
· Multi-agent systems

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«Cristofor Simionescu» Faculty of Chemical Engineering and Environmental Protection

Doctoral fields: Chemical Engineering, Chemistry, Environmental Engineering
https://icpm.tuiasi.ro/studii/doctorat/

PhD supervisors:
https://doctorat.tuiasi.ro/wp-content/uploads/2022/03/ICPM.pdf

Partners: RENAULT, GreenFiber International Iași, SC APAVITAL SA Iasi, «Petru Poni» Institute of Macromolecular Chemistry, Polytechnic University of Bucharest, Police Academy "Alexandru Ioan Cuza" București, S.C. TAPARO S.A Târgu Lăpuș, USAMV Iași

Why a PhD thesis in Chemical engineering, Chemistry, or Environmental engineering?

In the new global economy, chemical engineering is undeniably challenging, especially through its multidisciplinary approach and on several levels of complexity of its research, with several highly topical current and future directions: development of controlled structure/properties materials; process engineering and technologies for the manufacture of new sustainable products; process enhancement and product diversification; modeling and simulation on several operating scales – from molecular level to product.

International cooperation

Erasmus + Agreements	Cooperation agreements (Erasmus KA3, KA 107, MoU)	Cotutelle PhD Thesis
Vienna University of Technology Universiteit Antwerpen, Belgium Aalborg University, Denmark University of Avignon, France University of Nice Sophia Antipolis Ecole Nationale Superieure de Chimie de Rennes, France Aristotle University of Thessaloniki, Greece Technical University of Crete, Greece Sapienza Universita di Roma, Italy Universidade Nova de Lisboa, Portugal University of Twente, Netherlands Universidad de Castilla La Mancha, Spain University of Maribor, Slovenia	Colorado State University, USA Universite de Sherbooke, Canada Universidade Paulista – UNIP, Sao Paulo, Brazil Mahatma Gandhi University, India Université IBN ZOHR, Morocco Norwegian University of Life Science, Norway	Universitatea Angers, France Universitatea Littoral, Dunkerque, France Universite Cote d'Azur, Nice, France University Antwerp, Belgium Politecnico di Torino, Italy Politecnico di Bari, Italy University Minho, Braga, Portugal Vienna University of Technology, Austria

Research domains:

- Polymers sensible to external stimuli (light, temperature, pH) having biological applications
- Waste recovery for obtaining adsorbent materials with applications in environmental remediation
- Energetical recovery of waste from the food industry
- Advanced nanoheterostructures for applications in environmental catalysis
- Polymer composites based on vegetal fibers
- Ferroelectric/antiferroelectric liquid crystals
- Artificial intelligence with applications in autoimmune diseases

- Wastewater treatment processes and Sustainability assessments
- Advanced wastewater treatment to eliminate priority and emerging pollutants
- Bioremediation processes of environmental components by biosorption and bioaccumulation and recovery of critical metals from biomass
- Coordination compounds with special properties
- Diffusion in controlled release polymer systems
- Dermatocosmetic formulations using bioactive compounds from indigenous natural sources

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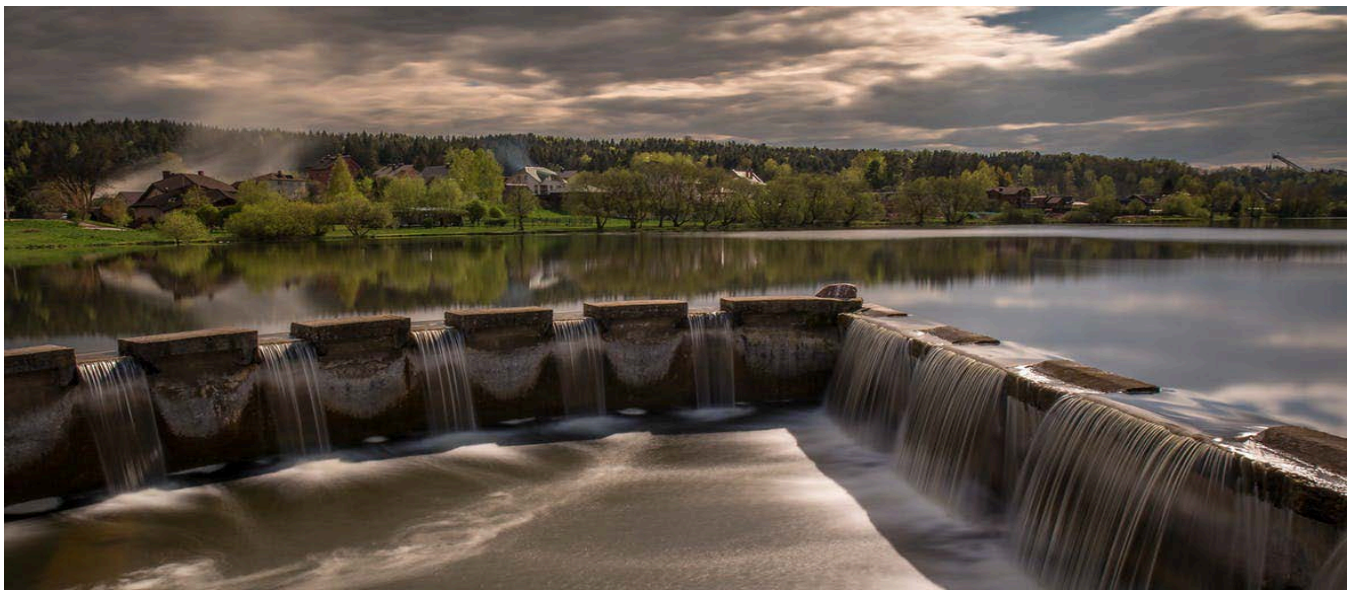

Faculty of Civil Engineering and Building Services
Faculty of Faculty of Hydrotechnics, Geodesy and Environmental Engineering

Doctoral field: Civil Engineering and Building Services
http://sdfci.ci.tuiasi.ro/

Start building your future with a PhD in Civil Engineering and Installations.
PhD supervisors:
https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/CMMI-1.pdf
https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/HGIM-1.pdf

Partners: Mapei România, ISC Iași, DRDP Iași, Iasicon SA, Conest SA, Clima Therm Center SRL, Dimmer SRL, Apavital Iași, ANIF Iași, Aba Prut-Bârlad.

Why apply for doctoral studies in the field of Civil Engineering and Installations?

You will be able to develop your research skills, you will improve your analysis and synthesis skills and you will develop professionally at the highest level. Also, the experience gained during doctoral studies will help you to quickly acquire new knowledge and will improve your ability to adapt to various situations.

International cooperation

Erasmus + Agreements	Cooperation agreements (Erasmus KA3, KA 107, MoU, etc)
Johannes Kepler University Linz, Universiteit Gent, Visshe Stroitelno Uchilishte (VSU)- "Lyuben Karalov"*, Todor Kableshkov Higher School of Transport, Brno University of Technology, Brno University of Technology, University of Cyprus, Universite d'Orleans, University of Reims Champagne-Ardenne, Universite Lille 1-Sciences et Technologies, Universite Paris Est Creteil Val-de Marne UPEC, ENTPE -Ecole Nationale des Travaux publics de lEtat, Technische Universitat Dresden, Universitat Kassel, National Technical University of Athens, Democritus University of Thrace, Universita degli Studi di Firenze, Universita degli Studi di Padova, Universita degli Studi di Cassino, Secunda Universita degli Studi di Napoli, Universita degli Studi della Basilicata, University of Parma, Universita degli Studi Mediterranea di Reggio Calabria, University of Palermo, University of Northumbria at Newcastle, Barhale Limited, AGILYSIS Limited, SS Cyril and Methodius University in Skopje, Wroclaw University of Technology, Universidade do Minho, Universidade Nova de Lisboa, University of Porto, Universidade da Beira, Instituto Politecnico de Tomar, Portugal, Universidad de A Coruna, Universidad Politecnica de Madrid, Universidad de Castilla La Mancha, Universidad de Leon, University of Huelva, Universitat Politecnica de Valencia, University of Maribor, Slovak University Technology in Bratislava, Gediz Universitesi, Istanbul Aydin University	University of Pretoria, Epoka University/Tirana, Royal University of Bhutan, University of Otawa, Beijing Jiaotong University, Universidad Adolfo Ibanez, Universidad Andres Bello, Pontificia Universidad Catolica de Chile, Universidad Fidelitas, Mansoura University, Technological University of Philippines, Samara State University of Economics, Georgian Technical University GTU, JadaVpur University, Indian Institute of Technology Bombay, Universitas Atma Jaya Yogyakarta, Universitas Pelita Harapan, Institut Teknologi Sepuluh Nopember Surubaya, Mutah University, Al Karak, Université IBN ZOHR, University Mohamed 5 Rabat, Universidad de Lima, , State Agrarian University of Moldova, Technical University of Moldova, Mae Fah Luang, Asian Institute of Technology AIT, Lviv Polytechnic National University, Odessa State Academy of Civil Engineering and Architecture

Research areas

- sustainable development, indoor comfort, energy efficient buildings, green buildings
- construction, energy efficiency, composite materials, waste recycling, passive house
- soil, foundation, infrastructure rehabilitation, slope stability, soil improvement
- concrete, precast, prestressed, retrofit
- roads, asphalt, road markings
- construction, building materials, composite structures, structural analysis, structural safety
- construction economics, project cost management, cost analysis, quality management, construction safety
- heat pipe heat exchangers, energy efficient buildings, energy storage systems, renewable energy, CFD analysis
- water quality, pollution, protection, treatment plants
- hydrology, water resources management, hydrogeology, flood risk management,
- flow, modelling
- soil, assessment, improvement

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Faculty of Machine Manufacturing and Industrial Management

Doctoral Domain: Industrial Engineering, Mechanical Engineering
https://cmmi.tuiasi.ro/studii/doctorat/

Industrial Engineering is the branch of engineering that involves figuring out how to make or do things better by reducing production costs, increasing efficiency, improving the quality of products and services, ensuring worker health and safety, protecting the environment and complying with government regulations.

Mechanical Engineering is the study, design, development, construction and testing of termal or mechanical sensors and devices, including tools, engines and machines.

PhD Supervisors: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/CMMI-1.pdf
Partners: OMCO, BorgWarner, Continental, Groupe Renault Romania, Vitesco Technologies, BMT Aerospace, BMT Romania, TotalGaz Industries, Schaeffler Romania, Autoliv Braşov, Rulmenţi Bîrlad, Aerostar Bacău/Iaşi

Should I pursue a doctorate in the field of Industrial Engineering or Mechanical Engineering?

- Yes, if you are passionate about a specific topic in industrial or mechanical engineering domain;
- Yes, if you what to conduct your own research in industrial or mechanical engineering;
- Yes, if you pursue a long-term career goal;
- Yes, if you want to demonstrate your high intellectual potential.
- Yes, because in the world of academia this is essential;
- Yes, because you will gain some important transferrable skills (presentation and public speaking skills, time management, networking).

The industrial or mechanical engineering doctorate program prepares master's graduates in some specific or multidisciplinary topics and the PhD graduates will be albe to tackle the world's most pressing societal and industrial challenges. They will be able to develop knowledge, new methods of investigation and design, research activities in public or private bodies and with managerial competencies. For writing the research thesis it is important to apply fundamental principles of engineering science to efficiently design and/or analyze systems in both manufacturing and service industries. In today's complex and competitive world, PhD engineers in Industrial Engineering optimize complex processes and systems that improve quality, productivity, and safety.

International Cooperation

Erasmus+ Agreements		Cotutelles
1. Technical University of Varna, Bulgaria; 2. Université Lille 1, France; 3. COST – Collegium Sciences et Techniques – Université d'Orléans, France; 4. Universite Claude Bernard Lyon, France; 5. Ansbach University of Applied Sciences (Hochschule Ansbach), Germany; 6. Aristotle University of Thessaloniki, Greece; 7. University of Udine, Italy; 8. Università degli Studi di Modena e Reggio Emilia, Italy; 9. Università degli Studi di Napoli Federico II, Italy; 10. Università degli Studi di Palermo, Italy; 11. University of Cagliari, Italy; 12. Università degli Studi di Parma, Italy;	13. Universidade Nova de Lisboa, Portugal; 14. Universidade de Aveiro, Portugal; 15. Instituto Politecnico de Tomar, Portugal; 16. Politechnika Slaska, Poland; 17. Poznan University of Technology, Poland; 18. Universidad de Valladolid, Spain; 19. Universidad de A Coruna, Spain; 20. Universidad de Cadiz, Spain; 21. University of Cordoba, Spain; 22. Universidad de Malaga, Spain; 23. Gazi University, Turkey; 24. Selçuk/Konya University, Turkey	1. Ansbach University of Applied Sciences (Hochschule Ansbach), Germany; 2. Tor Vergata University of Rome, Italy 3. Silesian University of Technology, Gliwice, Poland

Research Perspectives

- Study of obtaining parts from composite materials by 3D printing;
- Appling LEAN methodologies in the management of automotive activities;
- Molds for thermoforming using additive manufacturing;
- Functional optimization of cooling systems used in automotive;
- Study of advanced manufacturing technologies;
- Functional study of an internal combustion engine with textured cylinders;
- Creative synthesis of devices for holding aerodynamic profiles;
- Functional optimization of a bionic hand;
- Monitoring and diagnosis in manufacturing systems;
- Optimization of the prosthetic systems;
- Textured surfaces for liquid wood parts;
- 3D printing of reinforced plastics;
- Research on the characterization of the parts obtained by 3D printing;
- Research on the construction and operation of grippers in the structure of industrial robots;
- Studies on production, transport, transformation, distribution and consumption of hydraulic and thermal energy;
- Research on hydromechanical equipment from hydropower plants and pipeline systems.

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Faculty of Electronics, Telecommunications and Information Technology

Doctoral area of study: Electronic Engineering, Telecommunications and Information Technologies
https://etti.tuiasi.ro/studii/doctorat/

Find in yourself the power to follow your dreams and the wisdom to choose the dreams to be followed and choose a doctoral training in a cutting-edge field of current scientific research: *Electronic Engineering, Telecommunications and Information Technology.*

Doctoral coordinators: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/IETTI.pdf
Partners: Continental Automotive Romania; Vitesco Technologies; OSRAM Continental Romania; Infineon Technologies Romania; Microchip; Orange; Huawei; Ericsson; ELECTRA; ANCOM; Miele; DAM Application

Why should you attend doctoral studies in the field of Electronic Engineering, Telecommunications and Information Technologies?

Placed in the center of current research, electronics and telecommunications contribute significantly to the enrichment of knowledge and of the development of future top technologies and the generation of innovative solutions for the progress of society and increasing quality of life. The research areas grouped under the name of *Electronic Engineering, Telecommunications and Information Technologies* are among the most dynamic in current scientific research and ensure the development of applications with significant impact on the evolution of society. The research directions offered to PhD students are diverse and very actual: power electronics, efficient transmission of information on fixed and mobile media, sophisticated signal processing, analog/digital VLSI circuits, complex human-computer interface applications, intelligent technologies (neural systems, fuzzy systems, genetic algorithms, machine learning, deep learning, artificial intelligence).

International cooperation

Erasmus + agreements	Cooperation agreements (Erasmus KA3, KA 107, MoU, research cooperation agreements, etc)	Co-supervision
- Institut National des Sciences Appliquees de Lyon, INSA, France (F LYON12); - Universite d'Orleans, France (F ORLEANS01); - Universite Paul Sabatier Toulouse III, Franța (F TOULOUS03); - Universite de Poitiers, France (F POITIERS01); - Telecom Paris Tech, France (F PARIS 083); - University of L`Aquila, Italia (I L-AQUIL01); - Universita`di Roma "Tor Vergata", Italia (I ROMA02); - Universita della Calabria, Italia (I COSENZA01); - Northumbria University, Great Britain (UK NEWCAST02); - Universidade do Minho, Portugal (P BRAGA01); - Universidad Politecnica de Valencia, Spain (E VALENCI02); - Istanbul Technical University, Turkey (TR ISTANBU04);	- Yanka Kupala State University of Grodno, Belarus (www.en-grsu.by); - Mansoura University, Egypt (www.mans.edu.eg); - Institut Teknologi Sepuluh Nopember Surubaya, Indonesia (www.its.ac.id); - International University for the humanities and Development - IUHD, Ashgabat, Turkmenistan (https://iuhd.edu.tm/);	

- – Ankara University, Turkey (TR ANKARA01);

Research perspectives

- contributions on the use of artificial intelligence concepts in autonomous systems;
- contributions to the correlative analysis of the vocal signal in various forms of speech in Romanian;
- contributions to the design of polar and turbo codes;
- applications of *deep learning* architectures in cyber security;
- contributions regarding the intelligent management of vehicular traffic;
- contributions to improving the reliability of power converters;
- contributions regarding the optimization of the VLSI implementation of some blocks used in telemedicine;
- contributions to the development of human-machine interfaces with applications in assistive technologies;
- deep neural systems for traffic management;
- thermal image processing for recognition purposes.

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Web: https://etti.tuiasi.ro/studii/doctorat/

Faculty of Electrical Engineering, Power Engineering and Applied Informatics

Doctoral fields: Electrical Engineering and Power Engineering
http://www.phd-school.ee.tuiasi.ro/
"Energy and persistence conquer all things." Benjamin Franklin
Electricity, most innovative and inexhaustible gift offered to mankind!

PhD advisors: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/ETH-1.pdf
http://www.phd-school.ee.tuiasi.ro/staff-of-electric.html, 15 Electrical Domain Certified PhD supervisors
http://www.phd-school.ee.tuiasi.ro/staff-of-power.html, 5 Power Domain Certified PhD supervisors

Top partners: ANCOM- National Authority for Management and Regulation in Communications, Continental Automotive Romania, DELGAZ Grid SA, Transelectrica SA, Vitesco Technologies, Hidroelectrica SA, SMART SA, Arcelor Mitttal Iași, SC DAS SRL, SC Electromontaj SA

Why enroll in doctoral studies in the field of Electrical and Power Engineering?

The first doctoral thesis to be defended at the Polytechnic School "Gheorghe Asachi" (operating uninterruptedly in the form of an independent institution of higher technical and engineering education since 1938) has been defended (March 18, 1939) by Eng. Gérard d'Albon , under the scientific leadership of the great scientist Ștefan Procopiu (nominated candidate for the Nobel Prize, the first dean of the newly established Faculty of Electrical Engineering), with a topic in the field of electromagnetism. Over time, the doctoral studies organized in the current Faculty of Electrical Engineering, Power Engineering and Applied Informatics have evolved in accordance with the academic, economic and social context, in accordance with the proposed mission and objectives, being perfectly connected with national and European policies and strategies for research. We train highly qualified specialists for research, design, higher education or the productive and social sphere, with a versatile orientation, able to assimilate and integrate theoretical and practical knowledge in the development and modernization of the economic sector, with an immediate absorption on so dynamic and very competitive labor market.

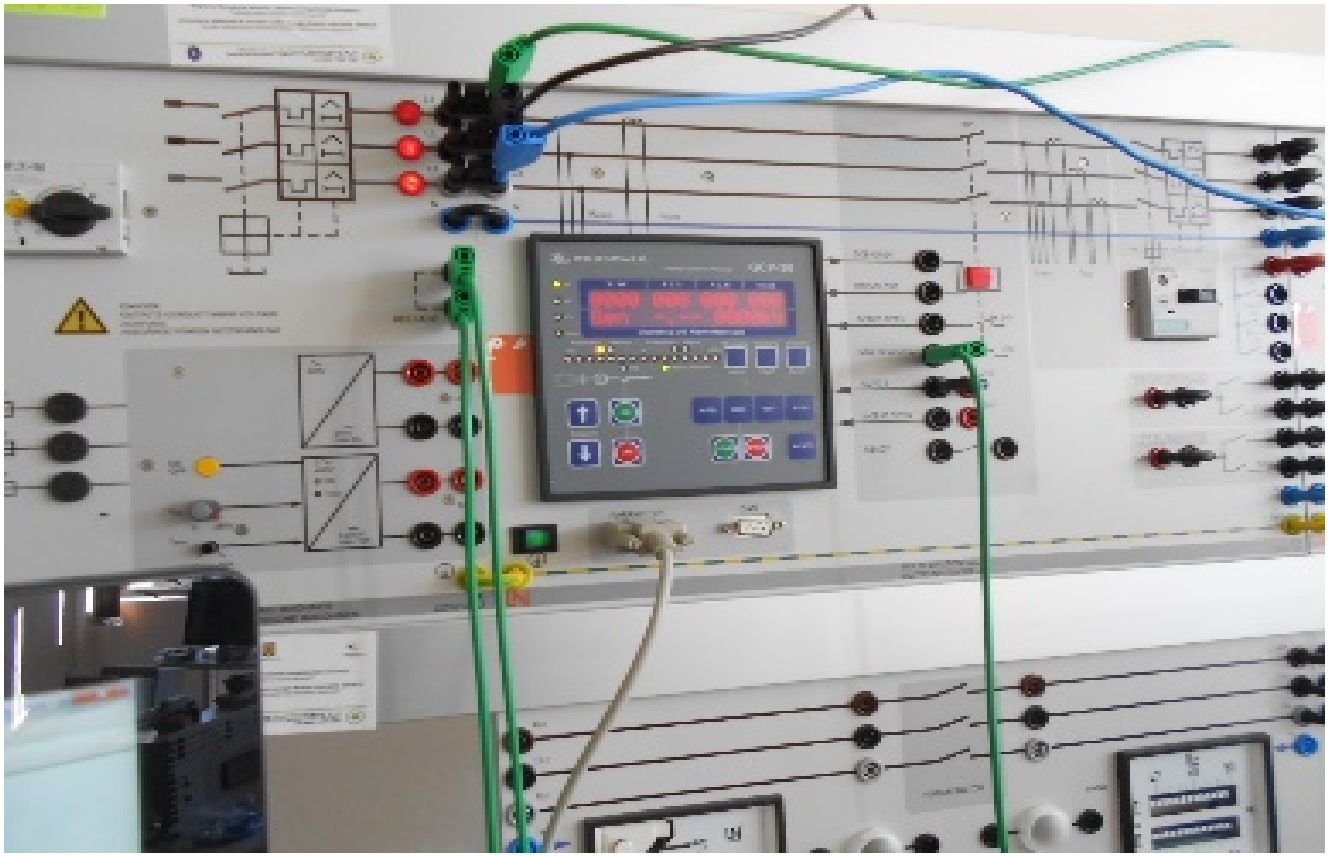
International cooperation

Erasmus + agreements	Country
University of Cyprus; Cyprus University of Technology	Cyprus
Université le Havre; Université d`Angers; Université d'Orleans; COST - Collegium Sciences et Techniques - Université d'Orleans; Centrale Supelec Rennes, Institut National de Sciences Appliquées Strasbourg- Université de Strasbourg	France
Technische Universitaet Chemnitz,	Germany
University of Iceland	Iceland
Universita degli Studi Mediterranea di Reggio Calabria; University of Catania; University of Turin; Universita degli Studi Roma Tre; Università degli Studi del Sannio, (UNISANNIO) -Benevento	Italy
Riga Technical university	Latvia
Universidade Nova de Lisboa; University Institute of Lisbon (ISCTE-IUL)	Portugal
University of Ljubljana	Slovenia
Karabuk University; Mersin University; Firat University; Kahraman maras Sutcu Imam University	Turkey

Research perspectives

- Internet of Things, sensors and transducers networks;
- Digital processing of signals and images, virtual instrumentation, environmental measurements;
- Driver assistance systems in traffic, autonomous cars, automotive;
- Intelligent electrical networks;
- Optimizations in power systems;
- Renewable energies, maintenance and reliability;
- Transient electromagnetic regimes, High Voltage Techniques, environmental pollution control;
- Availability and adequacy of power systems;

- Power quality, quality management in electrical systems;
- Electrical apparatus and equipment, FACTS devices;
- Nano- / micro-composites and technologies for electromagnetic applications, ecotechnologies;
- Complex electromagnetic insulation and shielding systems, electromagnetic compatibility;
- Intelligent sampling and processing of biological signals;
- Mobile robotics, human movement analysis, rehabilitation robotics, neuroprostheses;
- Brain-computer interfaces, functional electrical stimulation for neuromotor recovery;
- Polarization, dielectrophoresis, screen-printing, dielectrics, bioimpedance.



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Faculty of Mechanical Engineering

PhD fields: Mechanical Engineering / Materials Engineering
https://mec.tuiasi.ro/studii/doctorat/

Engineering.... is a great profession. It is the fascination to see how an embodiment of the imagination is transformed with the help of science into a plan. PhD in Mechanical Engineering creates the possibility to be the ENGINE of your generation!

PhD supervisors: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/Mec-1.pdf

Parteners: BORGWARNER ROMANIA SRL; ARCELORMITTAL TUBULAR PRODUCTS; CONTINENTAL AUTOMOTIVE ROMANIA IASI; NORTHEASTERN UNIVERSITY BOSTON USA; CNUD EFCO ROMANIA SRL; PREH ROMANIA S.R.L.; NATIONAL TECHNICAL UNIVERSITY OF ATHENS, GREECE; ENSYRO SRL CLUJ NAPOCA; TESS INDUSTRY IASI; ELECTROPUTERE VFU PASCANI

Why study for a PhD in Mechanical Engineering / Materials Engineering?

CCPD-Mec manages and facilitates specific interdisciplinary research in modern laboratories with exceptional endowment having the following motivations: - research related to the needs of zonal economic operators; - modern materials and technologies for automotive applications; biodegradable and biocompatible materials; - optimizing the operation of the car's propulsion systems - research for increasing the reliability of the bearings; - development of knowledge in the field of vibroacoustic diagnosis; - modeling the wear phenomena in complex industrial systems; - the study of the mechanical behavior of human biological structures; -robots with various applications; applied research in thermal systems (cogeneration, refrigeration, renewable energies).

Completion of doctoral studies creates the premises for a university career in scientific research and the accumulation of professional skills at the highest level for future industry leaders.

Research perspectives

- Research on the regenerative braking system of vehicles;
- Study of tribological processes in mechanical, mechatronic and biological micro systems;
- Experimental research on the combustion of alternative fuels and hydrogen mixtures;
- Advanced materials used for hydrogen storage for automotive applications;
- Biodegradable metallic materials used in medical applications;
- Surface engineering by thermal and cold coatings for military applications;
- Research in the field of bearing capacity of components when plastic deformations occur;
- Developed new systems for complex road traffic monitoring;
- Solar-assisted cogeneration and trigeneration systems;
- Hybrid systems for producing energy from local resources;
- New limit state theories, with applications to the study of compound demands;
- Vibroacoustic diagnostic systems in the automotive field;
- Robots with applications in agriculture and intelligent systems with natural interaction.

International Cooperation

Erasmus + agreements	Cooperation agreements (Erasmus KA3, KA 107, MoU, research cooperation agreements, etc.)	Co-supervision
- National Technical University of Athens, Greece - Aristotle University of Thessaloniki, Greece - I.N.S.A. de Lyon – France - Minho University, Guimaraes, Portugal - Universite d'Artois, France - HTW des Saarlandes, Germany - Vrije Universiteit Brussel, Belgium - Royal Military Academy of Brussels, Belgium - Technical University of Kaiserslautern, Germania - – Blaise Pascal University, Clermont Ferrand, France	- Ben Gurion University of the Negev, Israel - Naresuan University, Thailand (KA107) - University La Sapienza ROMA 1, Italy - University of LORRAINE, France - Technical University of Lisbon, Portugal	

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Faculty of Materials Science and Engineering

Doctorate domain: Materials Engineering
https://sim.tuiasi.ro/studii/doctorat/

From carbon nanotubes to superelastic and shape memory steels, from metallic biomaterials to multifunctional ceramic layers, future's materials are waiting for you in our labs, in order to connect you with Science and Engineering World.

Our PhD students participated to several international conferences such as HTMSAs 2015, at Wildbad Kreuth, Germany
Certified PhD supervisors: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/SIM-2.pdf

Partners: ARCELOR MITTAL TUBULAR PRODUCTS Iasi, SC RANCON SA, SC R & D Consultancy & Services, NETZSCH, Institute of Macromolecular Chemistry P. Poni, Iași, National Institute for Technical Physics, Iași, IAŞI Regional Railway Branch, CABLERO STEEL GROUP SRL, Istanbul Technical University, Catholic University of Leuven

Why attending doctorate studies in the domain Materials Engineering?

Materials represent one of the most dynamic sectors of economy. Permanently, the discovery of new materials is reported. After carbon nanotubes and metallic foams followed the materials nanostructured by severe plastic deformation or self-repairing materials. A large variety of research subjects is offered, starting from structural metallic materials (steels; cast iron; aluminum, copper, titanium and magnesium alloys, etc.) to the latest multifunctional materials (shape memory alloys, nanofluids for thermal transfer, biomaterials for prosthetics and implantology, thin layers and osmotic membranes). By investigating the structure, down to nanometric level, PhD students may contribute to the science progress and the development of future's materials.

International Cooperation

Erasmus + Agreements	Cooperation Agreements	Joint Supervision
- Technical University of Lisbon, Portugal - Montanuniversitat Leoben, Austria - University of Beira Interior, Portugal - University of Vigo, Spain - University of Poitiers, France - Technical Univesrity Of Athens, Greece - University of Chemical Technology and Metallury, Bulgaria - Universita degli Studi di Campagna, Italia	- URFU-South Ural State University- Russia - Tambov State Technical University – Russia - Ruhr-University from Bochum, Germania - University of Parma, Italia - NTNU, Norway - NETZSCH, Selb, Germany	Alexandru Ioan Cuza University, Iasi

Research prospectives

- superelastic and shape memory materials (national liders)
- new fluids for energetic effectiveness, including alternative energy resources
- advanced materials used in medical applications, including sickness control and spreading prevention
- obtaining and characterization of metallic biomaterials
- obtaining new ferrous and non-ferrous alloys (high entropy of self-repairing)
- fire resistant composites and nanocomposites
- surface engineering, including corrosion phenomena reduction
- geopolymers obtaining and characterization
- obtaining technologies for transparent metallic materials
- metallic/ ceramic multilayer structures for biomedical applications
- advanced metallic materials (bulk and thin layers) vibration and sound mitigation

- hyperresistant materials produced by advanced biotechnologies (e.g. obtaining long hyperresistant filaments with spider web structure).

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Faculty of Industrial Design and Business Management

Doctoral domains:
Industrial Engineering,
Engineering and Management,
Chemical Engineering
https://dima.tuiasi.ro/doctorat-2/

"A goal should scare you a little and excite you a lot." Joe Vitale
The fields of Industrial Engineering, Chemical Engineering and Engineering and Management are important components in reshaping the future of a fascinating industry, that of textiles and fashion. Robots that assemble and cut textiles, artificial intelligence algorithms that predict trends, mirrors that incorporate virtual reality for testing clothes, and a host of many other innovations, show how technology automates, customizes and accelerates the fashion space. All these trends are also reflected in the challenging approaches in doctoral studies that thus open new perspectives.
PhD Supervisors: https://doctorat.tuiasi.ro/wp-content/uploads/2022/02/DIMA-1.pdf

Partners: GEMINI CAD SYSTEMS, Katty Fashion, INCDTP București, S.C. Aerostar S.A., Continental AG, S.C. Biocomp S.R.L., S.C. MAGNUM SX. S.R.L., ADR Nord-Est, REDU, ASTRICO Nord-Est

Why pursue doctoral studies at the Faculty of Industrial Design and Business Management?

The purpose of a doctorate is to make a unique contribution to knowledge and to discover something new. Doctoral studies can certainly contribute to:

- development of fundamental knowledge in the field of specialization;
- development of original research on the topic addressed;
- mastering the analytical and methodological skills necessary for the evaluation and conduct of research in the field of specialization and other related fields;
- the ability to critically analyze, evaluate and synthesize new and complex ideas;
- the ability to further develop the progress made in technological, social or cultural terms in an academic and professional context;
- demonstrating the ability to communicate research results in a clear and efficient manner;
- demonstrating the ability to work with other people from different ethnic, educational and professional backgrounds;
- achieving the standards associated with prestigious national and international publications;
- improving interpersonal skills, such as networking and strengthening relationships, including international ones, which are invaluable in future careers.

International Cooperation

Erasmus + Agreements		Co-tutelles
- University College Gent - Faculty of Science and Technology, Belgium - Tomas Bata University in Zlin, Czech Republic - Technical University of Liberec, Czech Republic - Universite de Haute-Alsace, France - University of the Aegean, Greece - Technologhiko Ekpaideftiko (TEI) Pirea, Greece - Universita degli Studi Mediterranea di Reggio Calabria, Italy - Universite d'Angers, France - Polytecneio Kritis, Greece	- Universidad de A Coruna, Spain - Universidad de Granada, Spain - Lodz University of Technology, Poland - University of Bielsko, Poland - Univerza v Ljubljana, Slovenia - University of Maribor, Slovenia - Uludag University, Turkey - Bursa Teknik University, Turkey - Ege University, Turkey - Namik Kemal University, Turkey - University of Gaziantep, Turkey	- Lille University, France - University Nord Pas de Calais, ENSAIT, France - University from Boras, Sweden - Soochow University, China

Research Perspectives

Responding to the evolutionary dynamics of the complex environment of values and opportunities, the doctoral studies within the Faculty of Industrial Design and Business Management focus on interdisciplinarity and international cooperation in research, which outlines some main perspectives:

- development and efficient realization of new complex textile structures;
- much more efficient processing techniques;
- new concepts and technologies on recycling;
- development of substitutes for risky and polluting chemical processes;
- adoption of solutions based on biochemistry and organic materials, and better exploitation of natural fibre resources;
- advanced materials used in medical applications, including combating and preventing the spread of disease;
- design and virtual design of materials and products based on fibers and other textile products;
- digitization and flexibility of production processes in factories;
- development of new customized solutions, adaptation of offers and services to the requirements of the new type of consumer;
- digitization of solutions for the entire value chain in the fashion industry, and new business models;
- new approaches in the context of the circular economy.

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