

The Research and Innovation Perspective on Sustainable Transport in Debrecen

Conference on #ReskillEU - new jobs for energy and transport in Europe
08. November 2023.

Prof. Dr. Husi Géza



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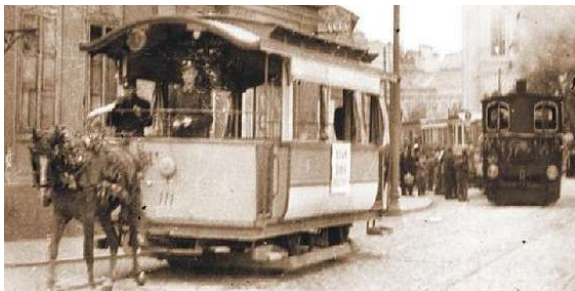
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Only 100 years.



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Self-introduction



Master's degree in Mechanical Engineering
Master's degree in Mechatronics Engineering

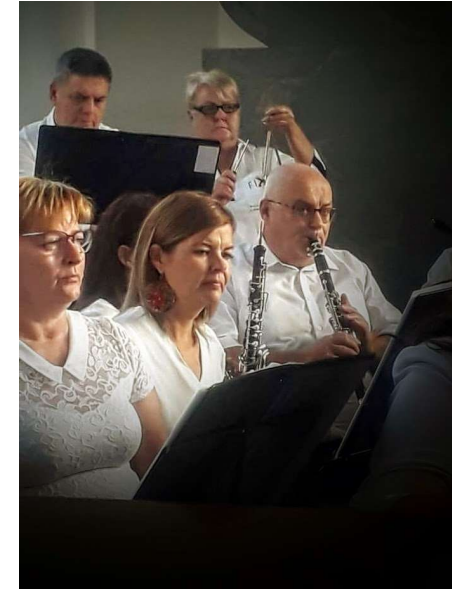
Full professor
Dean



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Head of professional pilot BSc program



Clarinetist of the Lyra Symphonic Orchestra, Debrecen

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Introduction of Debrecen



Traditional Industries:

Bearing Manufacturing

Agriculture

Food Industry (canning, meat processing, dairy)

Printing Industry

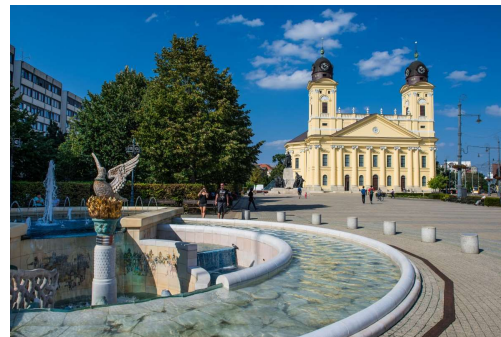
Emerging Key Industries:

E-Mobility, Machinery, and Aerospace Industry (EcoPro, Skyways, EVE Power)

Electronics & IT

Business Services – BSC (Business Support Center)

Healthcare and Pharmaceutical Industry

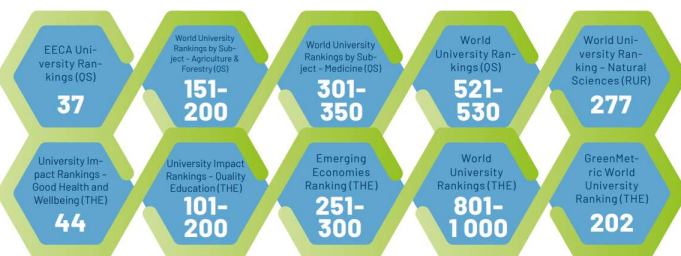


Over 1,400 hectares of new industrial areas, ranking in the top 30 within the EU!

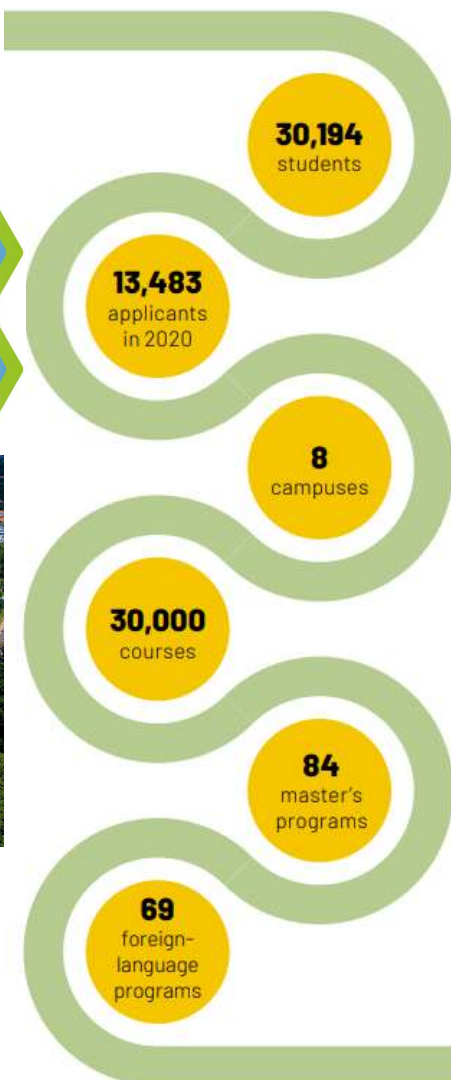
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Introduction the UD and Engineering Faculty

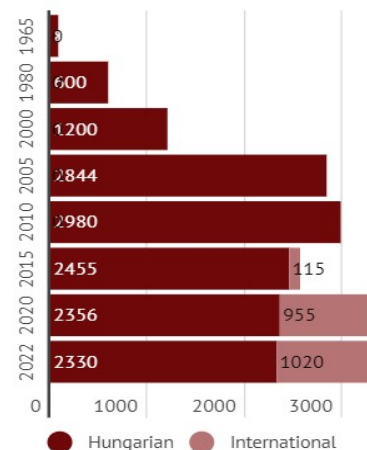
UD IN INTERNATIONAL RANKINGS



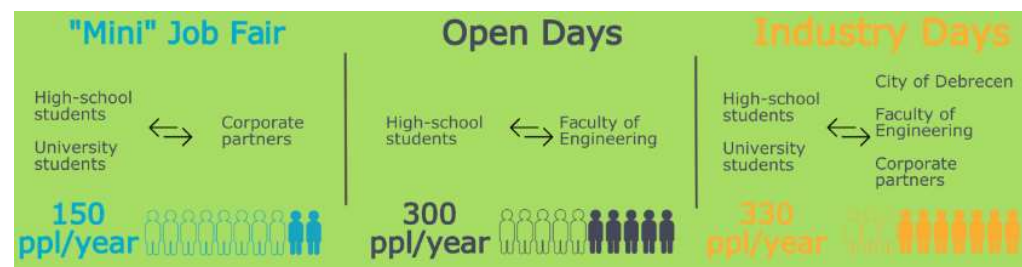
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Overview of the training programs of the Faculty of Engineering



Bachelor Programmes (BSc)		Master Programmes (MSc)	
7 semesters (210 credits)		4 semesters (120 credits)	
		Mechanical Engineering	
		Engineering Management	
		Mechatronics Engineering	
		Environmental Engineering	
		Civil Engineering	
		Architecture	
		Professional Pilot	
		Building Engineering	
		Vehicle Engineering	<i>plan</i>
		Electrical Engineering	



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Sustainable Transport: Defining and Addressing Theoretical Modern Approach

We cannot deny either climate change or the ecological issues of our planet. The future of humanity is a matter close to the hearts of all conscientious individuals. Therefore, we must emphasize that environmental protection and sustainability are not solely political matters.

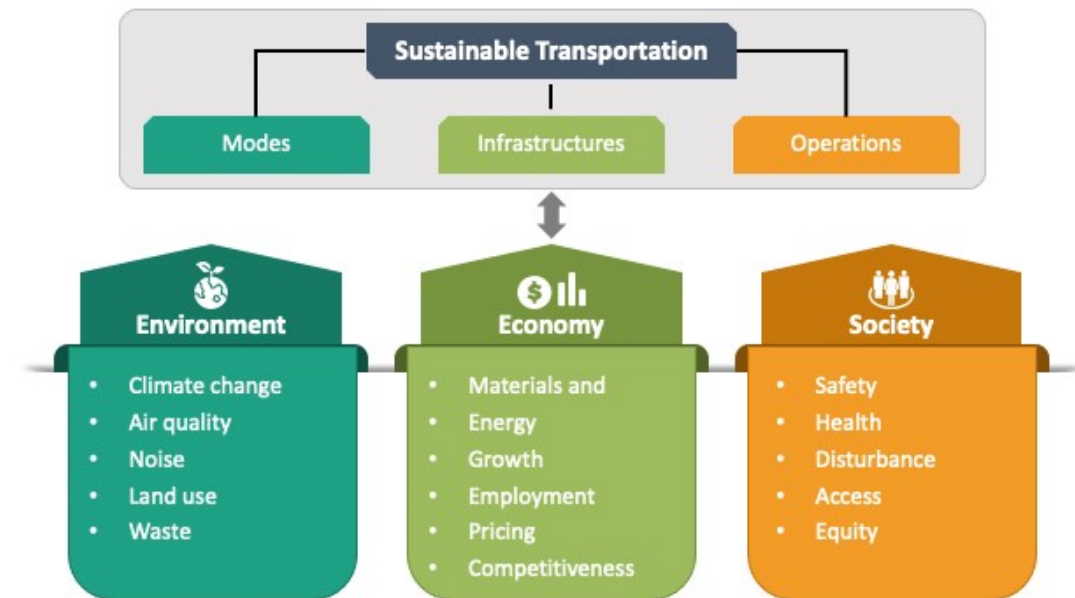
Sustainable transport refers to the methods of freight and passenger transport that minimize adverse impacts on the environment, society, and economy.

We must realize that our thinking needs to shift from a technocratic perspective to a more holistic systems approach. Holistic problem-solving, in addition to purely technical and economic solutions (efficiency, cost-effectiveness), must now consider new perspectives.

It is essential to consider that the value chain encompasses raw material extraction, storage, transportation, processing, utilization, waste management (recycling), some of which undoubtedly do not take place in our environment, while others burden it.



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Current Challenges



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The challenge is pollution. Pollution from transportation, specifically vehicle emissions, contributes to poor air quality and increases the risk of respiratory illnesses and other health issues.

The challenge is traffic congestion. Traffic congestion leads to wasted time, increased fuel consumption, and commuter frustration.

The challenge is the reliance on fossil fuels. The transportation sector heavily relies on fossil fuels such as gasoline and diesel, which contribute to greenhouse gas emissions and climate change.

The challenge is the negative environmental impact, including greenhouse gas emissions, local air pollution, and biodiversity loss.

The challenge is infrastructure and **condition of vehicles**, which can lead to inefficiencies, increased maintenance costs, and safety concerns.

The challenge is **development of new types of vehicle drives**.

(Parts of the text highlighted in red are UD's main research areas.)

Professional retraining for engineers.

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Sustainable Transport Research & Innovations in UD

Sustainable transport research is an area of study focused on developing innovative solutions and strategies to address the environmental, social, and economic challenges associated with transportation. Research initiatives in sustainable transport aim to explore and evaluate various technologies, policies, and practices that can reduce the negative impacts of transportation on climate change, air quality, and fossil fuel dependence.

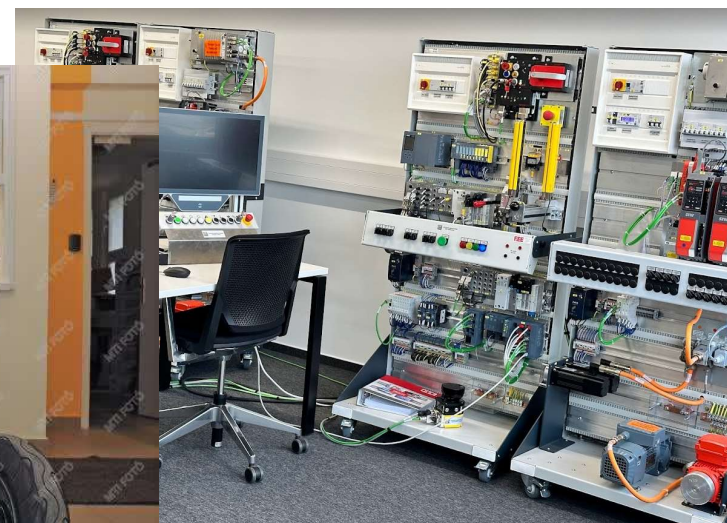
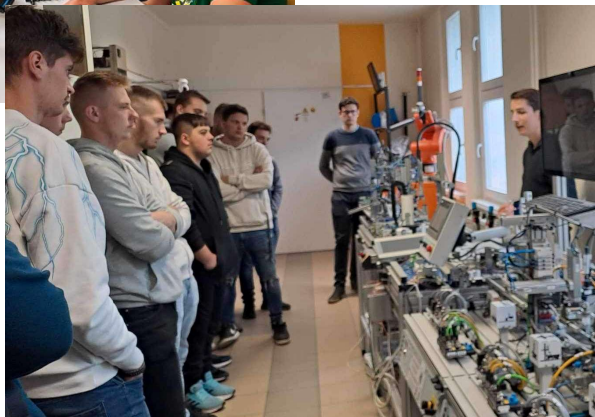


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Sustainable Transport Training Overview and Recommendations

Professional training and education play a crucial role in the sustainable transport sector. They provide individuals with the necessary knowledge, skills, and competencies to effectively contribute to the development and implementation of sustainable transportation solutions.



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Several key trends

Shaping the future of transportation involves several key trends and developments that are likely to have a significant impact on how people and goods move from one place to another. These trends include:

Electric Vehicles (EVs):

Autonomous Vehicles (AVs)

Mobility as a Service (MaaS)

Hyperloop and High-Speed Rail

Sustainable Transport

Last-Mile Solutions

Drone Delivery:

Smart Transportation Infrastructure

Sustainability and Environmental Initiatives

Urban Planning and Congestion Management

Alternative Propulsion Technologies

Intermodal Transportation



Conclusions

We cannot deny either climate change or the ecological issues of our planet.

Many of the challenges are known; what is needed for the solution are young individuals educated with a new way of thinking and a fresh perspective, along with older engineers who are capable of renewal.

Development is an ongoing process without an end. It is necessary to manage the innovation resources at the European level and find the synergy among them.

Trends will certainly change in a few years.



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Thank you for your kind attention!