



VIRTUAL ENGINEERING IN AUTOMOTIVE DESIGN (in English)

Fundamental domain: *AUTOMOTIVE ENGINEERING*

Master Domain: *MECHATRONICS AND ROBOTICS*

Faculty: *MECHANICAL ENGINEERING*

Coordinator: Prof. Doru TALABA, Ph.D., talaba@unitbv.ro

Study duration/Credits no.: 2 years /120 credits

Learning type: full time

Brief description

The main objective of master program *Virtual Engineering in Automotive Design* is theoretical and applicative training in the field of automotive design engineering based on virtual reality technologies through development of applications concerning identification, structuring, conception, design, implementation, and experimentation of physical processes, as well as operation, construction, and technologies

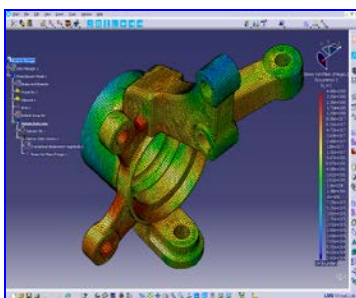
The mission of the Virtual Engineering in Automotive Design master study program at TRANSILVANIA University of Brasov is to attract graduates of undergraduate programs of study Automotive Engineering (in English), Automotive, Transportation and Traffic Engineering, Mechanical Engineering, Mechatronics, Robotics, Automation, and ICT in order to develop knowledge and skills in automotive design.

This Master program is developed in collaboration with INA Schaeffler Group that participate of teaching course modules by specialists invited (Doctor Engineers) and assure practical stages and research support for final projects.

Teaching will be carried out in English taking into account the language skills, particularly English language of the teaching staff members and students graduating from undergraduate programs in English. Teaching in English will open up the program to international students in the framework of European training programs for short periods, one or two semesters. On the other hand, this Master program will allow teaching of course modules by lecturers from abroad or from interested companies.

Competences

- Knowledge of modern-vehicles' working processes and constructive solutions;
- Assimilation of the calculation methods needed for vehicles' design or efficient use;
- Abilities in simulation of complex automotive mechanical systems;
- Knowledge and practical training regarding virtual reality and/or augmented reality technologies and techniques;
- Knowledge and practical training in electrical, electronic and mechatronic systems of automotives.;
- Knowledge of computer based engineering (CAD, CAE, CAM, CAT - design, computation, manufacturing and testing);
- Ability to conceive, design and simulate mechanic and mechatronic systems using modern methods (multibody, finite element, virtual reality);





Transilvania University of Brasov – Master Study Programmes
Mechanical Engineering Faculty

Structure

Master program *Virtual Engineering in Automotive Design* has in second year two optional study directions *Virtual Engineering in Automotive Mechanical Design* and *Virtual Engineering in Electrical and Hybrid Automotive Design* respectively. The last direction is dedicated to training of competences and abilities primarily for research of excellence.

1 st Year	1 st , 2 nd Semester	Virtual Engineering in Automotive Design (Inginerie virtuală în proiectarea Autovehiculelor)	
2 nd Year	3 rd Semester	Virtual Engineering in Automotive Mechanical Design	Virtual Engineering in Electrical and Hybrid Automotive Design

The curricula contains the following disciplines:

1st Semester - Simulation in Product Development, CAD and Graphics programming, Multi-body systems dynamics: theory and simulation, Tribology, Advance Mechanical transmissions in automotive engineering, Fundamentals in Electronics and Computers,

2nd Semester - Advanced simulation in Automotive Design, Multi-physics simulations, Finite Element Analysis in Automotive Design, Virtual and augmented reality in automotive design and maintenance,

3rd Semester - Experimental systems for testing the automotive elements, Virtual Instrumentation, Virtual crash modelling and testing, Automotive mechatronics systems, Virtual manufacturing in automotive technologies, Electro-mobility and autonomous vehicles, Automotive energy management, Automotive Sensors and computer systems.

4th Semester - Practical stage and final project.

Possible Occupations

After going through this Master Degree program, graduates can be integrated in one of the following occupations: mechatronic systems designer, operating engineer, system engineer, research assistant in informatics, computer consultant, expert mechanical engineer, automation engineer, research engineer in electro – mechanics, research engineer in mechatronics, research engineer in automotive, systems and computers design engineer, electro-mechanical design engineer, mechanical design engineer, researcher, programmer, etc.

Perspectives

Graduates of this degree can be beneficiaries of the following perspectives: doctoral training, teaching career in higher education, automotive design expert, expert in applied informatics, expert in mechatronics etc.

