

World of Vehicle Engineering

Vehicles or cars belong to the most complex products we are using in our daily life. If you want to understand, to analyze, to develop, or to design them you have to deal in very different areas. We will help you to develop your technical skills regarding mechanics, electronics, material sciences, mathematics, physics, fluid and thermodynamics, information technology and you will have the opportunity to amend your competencies with economic, social and legal aspects of your later profession.

Besides the important theoretical training the university offers exiting opportunities to join to the student racing teams. The most important ones for vehicle engineering:

- SZEnergy: solar and battery driven city car
- Arrabona Racing Team: part of the international formula student community
- SZEngine: provides a purpose designed and built in internal combustion engine for the formula student racing car

In these teams you can apply your knowledge, you can practice teamwork, and you might have the opportunity to become a manager and will compete on international level. And it is great fun!

Sustainability, environmental and climate protection are the most important current topics for vehicle engineering. But other boundary conditions are changing as well. More than 50% of mankind is living in cities. Air pollution, noise, traffic jams and safety are continuous challenges. The new generations (Z and Alpha) have new habits of learning, mobility and recreation. All this requires continuously new solutions from the engineers. Alternative drive systems or new energy vehicles (NEV) will increase their market share, but none of them is the universal solution for every mobility market or task. Since that we assume, that the co-existence of different technologies will be characteristic for the next decades. Beside battery electric and fuel cell vehicles the combustion engine will still exist, but more and more fueled by alternative fuel like e-fuel or hydrogen and hybridization will be widely used.

Self-driving cars will influence the mobility as well, and they will improve significantly safety and fuel efficiency.

What drives inventions, what drives development?

How to deal with these issues? An example for alternative fuels: if we have real renewable energy like electricity and we have water, we gain hydrogen. If we have hydrogen we can use any source of carbon (carbon dioxide) of the air. E-fuels can be: E-gas, E-power, E-hydrogen, E-diesel, E-gasoline. All can be used in the usual combustion engine.

Cars develop more and more to rolling computers, the percentage of the software may increase above 30% in the premium segment. Since the computer can control nearly all systems of a vehicle IT safety will be a fundamental part of road safety. It's very clear that it is necessary for every engineer to develop his skills on this area.

In fact as an engineer, you will see you have to deal with very complex systems. At the university we are all hoping to gain some knowledge but it is the main purpose of education to improve your abilities (self-learning), logical thinking, and ability of solving complex problems, working and thinking in teams. You have to improve your language competences (most literature available in English). At the end, we will put this all together in a very complex system and if you find your clear orientation in this complex system in that very moment, you are an engineer.

An engineer is not in the position to see the future but he is in the position to create the future.