Course description (topics)

<table>
<tr><td colspan="5">Title of the course:
Strategic Smart mobility – Individual project</td></tr>
<tr><td colspan="5">Tutors of the course , contact details: András Húnfalvi, Dániel Ruppert
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<tr><td>Code:
M-FR-105-SMART-MOBILITY</td><td>Related curriculum (programme/level): MA1</td><td>Recommended semester within the curriculum:</td><td>Credit:
5</td><td>Number of class hours: 96
Student working hours:</td></tr>
<tr><td>Related codes</td><td>Type: (seminar/lecture/class work/consultation, etc.)</td><td>Can it be an elective course? no</td><td colspan="2">In case of elective what are the specific prerequisites:</td></tr>
<tr><td colspan="5">Course connections (prerequisites, parallells):
Parallel with Strategic Design – project „B”</td></tr>
<tr><td colspan="5">Aim and principles of the course:

Micromobility is a particularly complex area of industrial design. It has to take into account both transport as a multi-actor system and the mobility devices that move the system.

During the design course students will work on a mobility topic of their own interest. During the course, they design around the theme of transportation in the near future, taking into account social, cultural and market conditions. At the end of the semester, a concept vehicle will be presented through visual designs and models.
The aim of the course is to enable students to design elaborate concepts based on the conclusions of sound research, but of high aesthetic quality, even within the tight timeframe of a market project.</td></tr>
<tr><td colspan="5">Learning outcomes (professional and general competences to be developed):

Knowledge:
To gain a comprehensive understanding of how to design the future of mobility and transportation. In the process of planning, students will also gain technical, environmental and social background knowledge of the mobility system. Students will be required to take a holistic approach to mobility, not only by examining the transport problems of the present, but also by forming an opinion on the transport of the future.

Ability:
Acquire industry standard vehicle design skills from communication drawings to modelling and project presentation. Students will gain practice in developing a topic of their own choice, within the framework of the specification, to meet industry requirements.

Attitude:
Individual projects require a deep commintment topic enabling the students to dive into the subject of their individual interest according to their goals in the field of mobility. Lecturers help students to find the topic that completes the best their portfolio besides being an important part of their curriculum.</td></tr>
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Autonomy and responsibility:
Creates an independent design concept, to be implemented independently and professionally.
Works autonomously and responsibly in multidisciplinary projects and activities.

The *Smart Mobility: Individual Project* course provides students the opportunity to explore a self-directed research or practical project within the evolving field of smart mobility. Students will be encouraged to identify their own areas of interest, ranging from sustainable transportation solutions and urban mobility innovations to emerging technologies like autonomous vehicles, electric transport systems, and mobility-as-a-service (MaaS) platforms. Throughout the course, students will receive tailored guidance and mentorship from experienced lecturers, as well as access to external industry experts who will provide additional insights and support.
This project-based course fosters independent research, critical thinking, and problem-solving skills, allowing students to develop a deep understanding of smart mobility challenges and solutions. Students will be expected to apply interdisciplinary approaches and leverage cutting-edge technologies to investigate real-world mobility issues. At the conclusion of the project, students will present their findings and deliverables, demonstrating their ability to contribute to the future of transportation.

Key Features:

- Self-directed project aligned with personal interests in smart mobility
- Mentorship and support from academic faculty and external industry experts
- Focus on innovation, sustainability, and technological advancements in mobility
- Opportunities to present findings to academic and professional audiences
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This course is ideal for students who wish to explore the intersection of technology, sustainability, and transportation systems, and who are eager to make an impact on the future of mobility.

The aim of the course is to enable students to design well-developed concepts of high design quality, based on the conclusions of an in-depth research. The project will focus on systemic design, the use of digital technologies (VR) and the high aesthetic quality of the final result.

During the evaluation, students will present their designs using VR technology, in a life-size, immersive presentation of their project.

Tasks and activities:
– Mobility systems analysis
– Trend analysis
– Problem definition, formulation of future user needs and usage patterns
– Creative conceptualisation
– Using digital design methods: creating and presenting 3D models using VR technology, creating simple animations
– Creating physical ergonomic model sketches
– Ergonomic concept design
– Presentation

Assessment:
(in case of more teachers are involved and they evaluate seperately, separate assessments per teacher needed)

- Attendance, maximum number of absences: 3
- Presentation of the design concept and the design process on poster
- Digital presentation
- Ergonomics proof-of concept models
- 3D model, animation, VR presentation

Assessment criteria

– Activity on lessons
– Is the topic of the task well-founded, what is the social and/or technological justification, in what kind of environment do you imagine the vehicle?
– The design method used for the topic
– How familiar is the designer with the technical, social, ergonomic and anthropological aspects of the subject?
– To what extent is the solution to the problem in accordance with the brief?
– Does the depth and detail of the task - research, sketches, 3d and physical models - reach the expected level?
– Is the overall design stage – presentation of the concept, its visual and verbal communication, etc. – adequate?

Evaluation's formula:
Presentation at the end-of-semester evaluation

How is the mark calculated (how is the result of each assessed requirement reflected in the final mark? {e.g. proportions, points, weights}):

How the grade is calculated

●	Activity, attendance	10 %	91-100%:	excellent (5)
●	Concept quality	20 %	81-90%:	good (4)
●	Visual materials (sketch, rendering, anim.:)	30 %	71-80%:	average (3)
●	Quality of presentations	20 %	61-70%:	adequate (2)
	Examination presentation	20 %	0-60%:	unsatisfactory (1)

Required Literature:
- Stuart Macey & Geoff Wardle: H-Point, The Fundamentals of Car Design & Packaging

Recommended Literature:

OTHER INFORMATION:

What equipment does the student need to obtain to complete the lesson?

- Digital drawing board required (available in the Mobility Lab)

Recognition of knowledge acquired elsewhere/previously/validation principle:
- No exemption from attending and completing the course will be granted,

● Exemptions from the acquisition of certain competences and the completion of certain tasks may be granted, ● some tasks may be replaced by other activities, ● full exemption may be granted.
Out-of-class consultation times and location: