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AfroTrans project

Road Transportation Systems Engineering Development in the Sub-Saharan Africa - Modern EU Master Programme & Capacity Building
ERASMUS-EDU-2023-CBHE

T2.4 **Teaching methodologies** for new 12 Master courses, **designing requirements on the master thesis** with the approval of the new MSc program

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Agenda

What we want to say is:

1. Teaching methodologies for new 12 Master courses
2. Designing requirements on the master thesis with the approval of the new MSc program

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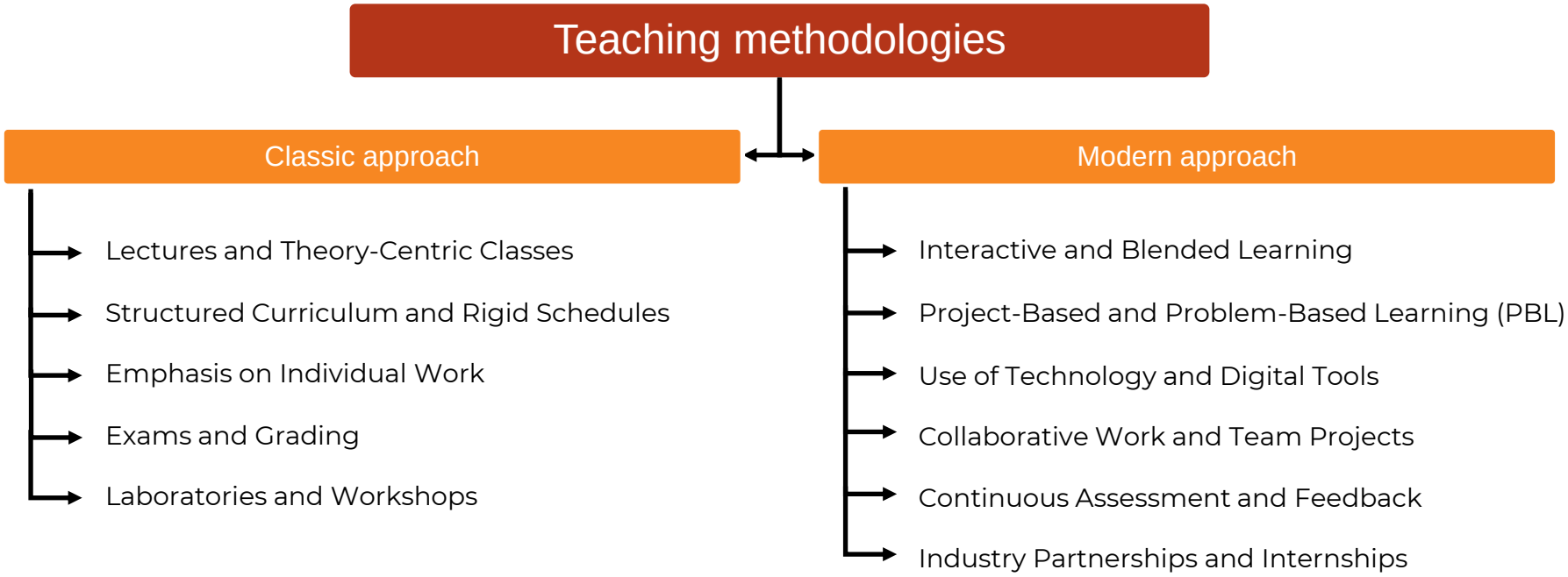
TEACHING METHODOLOGIES

Teaching methodologies



The classical approach to teaching in technical universities relies heavily on traditional lectures and structured curricula, with a strong focus on theoretical foundations.

The modern approach to teaching in technical universities incorporates interactive and hands-on methods to engage students and enhance their practical skills. This approach leverages technology and places an emphasis on real-world applications.

Classic approach

- **Lectures and Theory-Centric Classes:** Professors deliver in-depth lectures, often using blackboards, overhead projectors, or slides. Classes focus on fundamental principles and theories, with less emphasis on real-world application during the lesson.

- **Structured Curriculum and Rigid Schedules:** Courses are typically well-defined, with a strict syllabus that covers the standard technical and theoretical knowledge expected for a given subject. Students follow a predetermined path, with little room for deviation or flexibility.

- **Emphasis on Individual Work:** Classical methods often promote individual assignments and tasks, with limited group work. Students are encouraged to develop their understanding and solve problems independently.

- **Exams and Grading:** Evaluation is primarily based on written exams and grades, often focusing on memorization and problem-solving skills rather than practical application or creativity.

- **Laboratories and Workshops:** Though theory-heavy, classical approaches often include laboratory sessions where students can see theoretical concepts in action. These labs are usually highly structured with specific instructions and objectives.

Modern Approach

- **Interactive and Blended Learning:** Modern methods emphasize interactive classes where students actively participate in discussions, simulations, and collaborative projects. Blended learning, combining online and in-person sessions, allows for flexible learning environments.
- **Project-Based and Problem-Based Learning (PBL):** Instead of purely theoretical instruction, students work on real-world projects and problems. This approach encourages critical thinking, creativity, and practical application, preparing students for industry challenges.
- **Use of Technology and Digital Tools:** Modern methods make extensive use of digital platforms, simulations, and software, allowing students to experiment with concepts in a virtual environment. Online resources, interactive modules, and recorded lectures are widely used to enhance the learning experience.
- **Collaborative Work and Team Projects:** Students are encouraged to work in teams, which reflects industry practices and develops interpersonal and problem-solving skills. Group projects simulate workplace environments and teach students to collaborate effectively.
- **Continuous Assessment and Feedback:** Rather than relying solely on exams, the modern approach uses continuous assessment methods, such as regular quizzes, peer reviews, and portfolio submissions. Feedback is provided more frequently, helping students understand their progress and areas for improvement.
- **Industry Partnerships and Internships:** Many technical universities with a modern approach actively partner with industries, offering internships, co-op programs, and guest lectures from industry experts. This provides students with practical insights and opportunities to apply their knowledge.

Recorded lectures

YouTube rumble vimeo DAILYMOTION

VISUM #10 - Filtry, atrybuty użytkownika, tryb zaznaczania grupowego

790 wyświetleń • 3 lata temu

VISUM #9b - Transport zbiorowy - infrastruktura tramwajowa, ciągi piesze

579 wyświetleń • 3 lata temu

VISUM #9a - Transport zbiorowy - Rozkład jazdy, podłączenia PuT

1 tys. wyświetleń • 3 lata temu

VISUM #8 - Transport zbiorowy - Podstawowa konfiguracja, przystanki, linie

1,4 tys. wyświetleń • 3 lata temu

VISUM #7 - Parametry graficzne

809 wyświetleń • 3 lata temu

VISUM #6 - Rejony transportowe i podłączenia

1,1 tys. wyświetleń • 4 lata temu

VISUM #5 - Edycja węzłów i skrzyżowań, wstęgi, liczba pasów i przepustowość

1,2 tys. wyświetleń • 4 lata temu

VISUM #4 - Kolorowanie sieci transportowej, edycja odcinków

1 tys. wyświetleń • 4 lata temu

VISUM #3 - Kodowanie sieci drogowej

1,1 tys. wyświetleń • 4 lata temu

VISUM #2 - Systemy transportowe, typy odcinków, rysowanie sieci

2 tys. wyświetleń • 4 lata temu

VISUM #1 - Wprowadzenie, interfejs, podkład mapowy

3 tys. wyświetleń • 4 lata temu

Wykłady

Przykładowe zagadnienia egzaminacyjne

Wykłady + ćwiczenia - środy - 8:00-11:00

W przypadku chęci konsultacji na zajęciach, zostaną Państwo dodani do kolejki. Kiedy skończę k
poczekalni. Proszę o cierpliwość. Zapraszam także na konsultacje poza zajęciami.

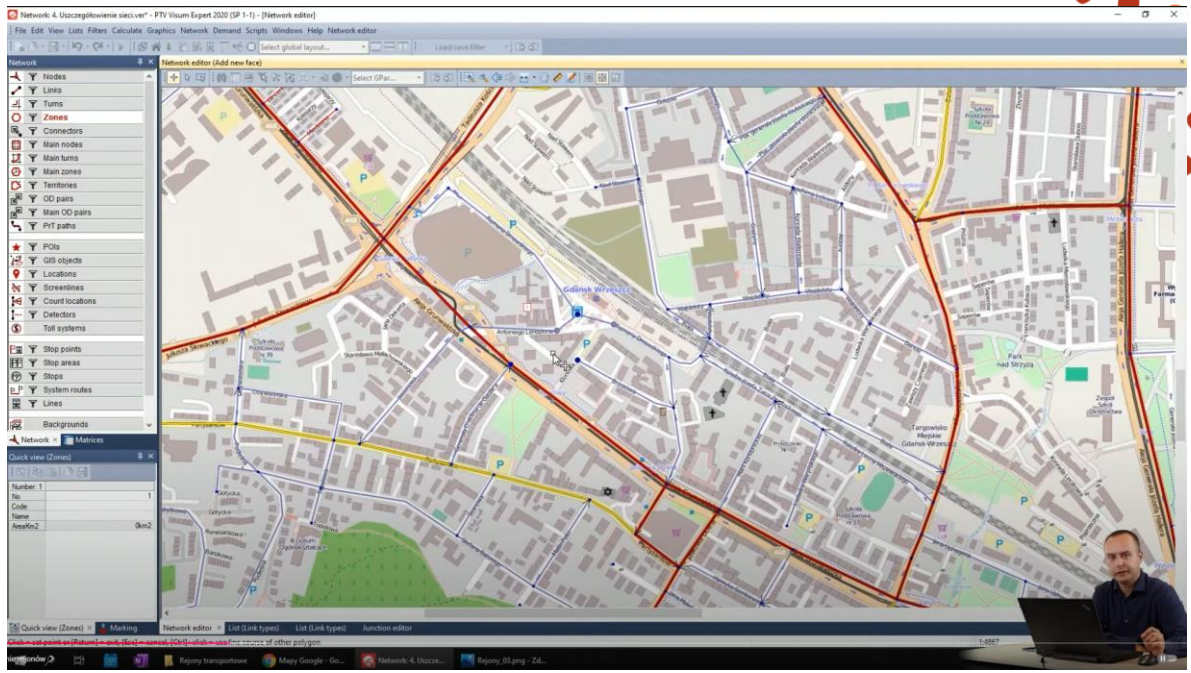
Ustawa o PTZ

Struktury sieci transportu zbiorowego

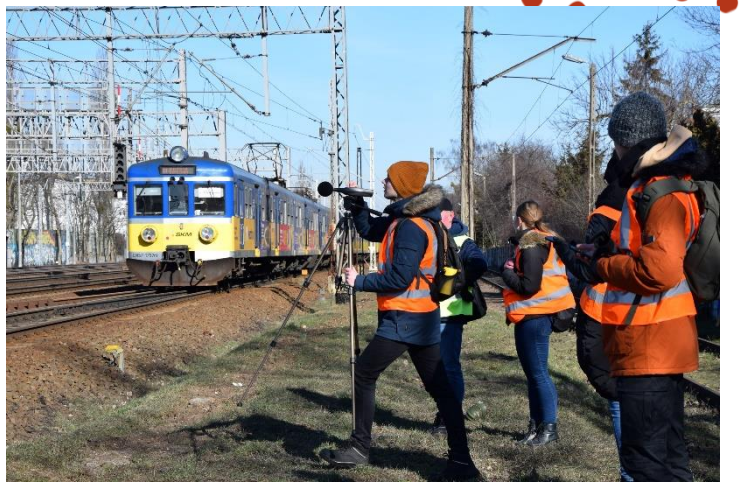
Projektowanie sieci transportu zbiorowego

Przykładowa płachta linii 106

Przykładowa płachta linii 199



Field activity



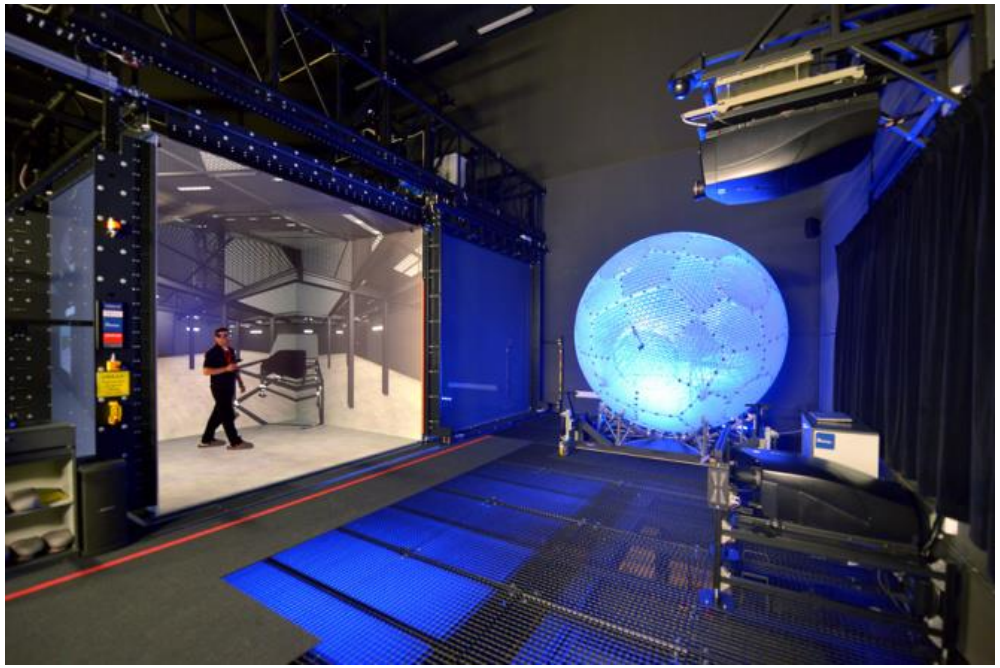
Field activity

Fieldwork in Transportation studies typically involves practical activities aimed at analyzing and solving real-world transportation challenges. These activities may include:

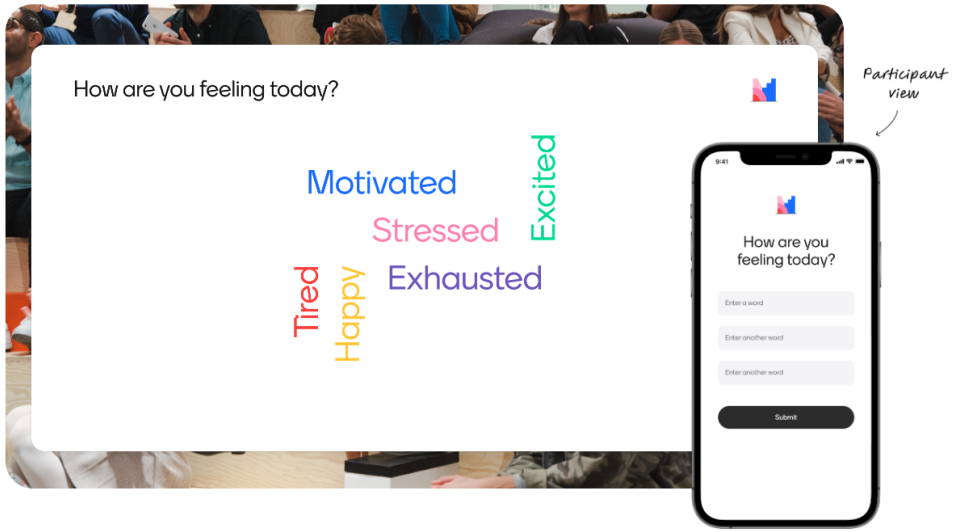
- **Traffic analysis:** Observing and measuring traffic flows, vehicle counts, and congestion patterns in urban and rural areas.
- **Getting new knowledge:** Observing how transport devices operate in practice.
- **Infrastructure assessment**: Inspecting roads, railways, bridges, or other transport infrastructure to evaluate their condition and functionality.
- **Data collection:** Gathering information on public transportation usage, freight movement, or passenger behaviors through surveys or automated systems.
- **Safety evaluations:** Identifying hazards and proposing measures to enhance safety in transport networks.

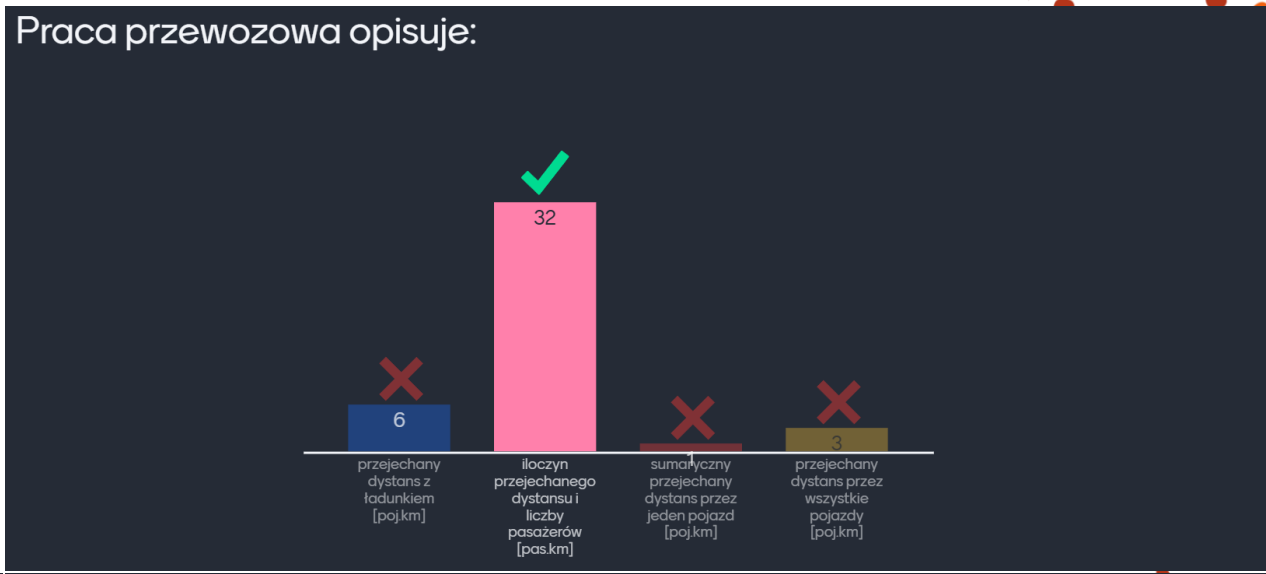
These tasks help students gain practical skills and prepare them for solving transportation issues in professional environments.

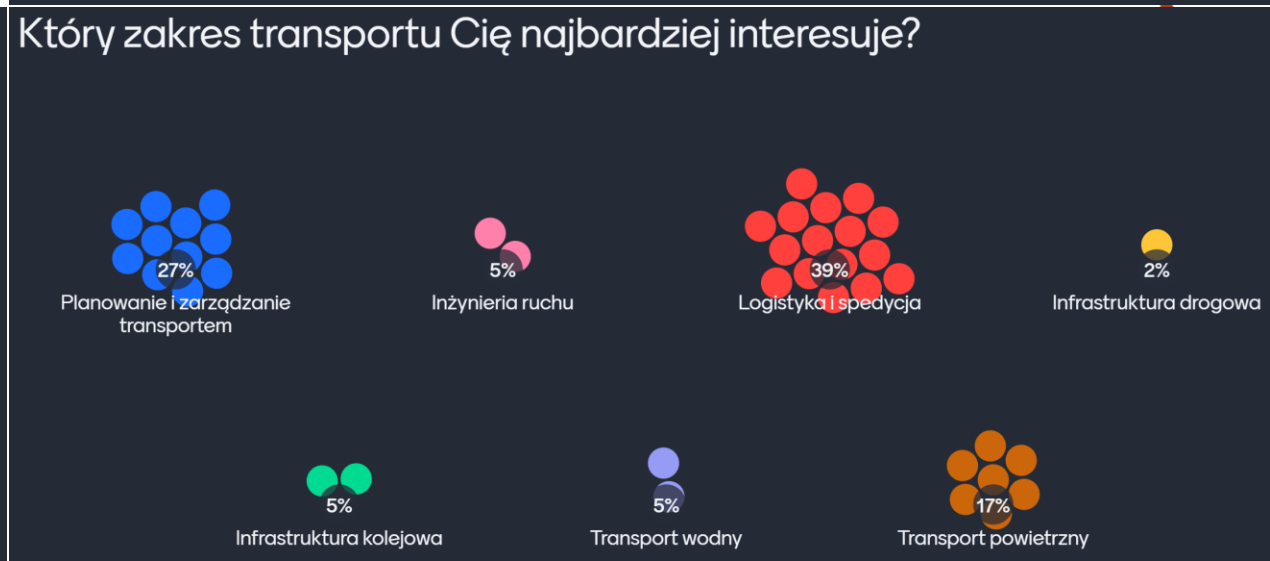
Laboratories



Interactive lessons

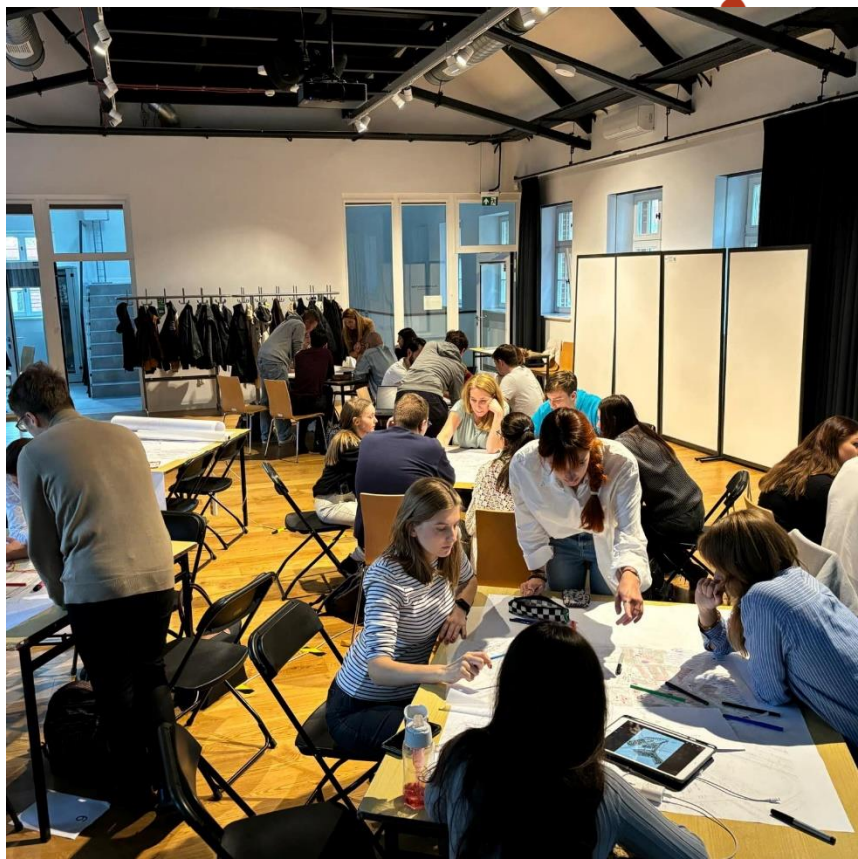






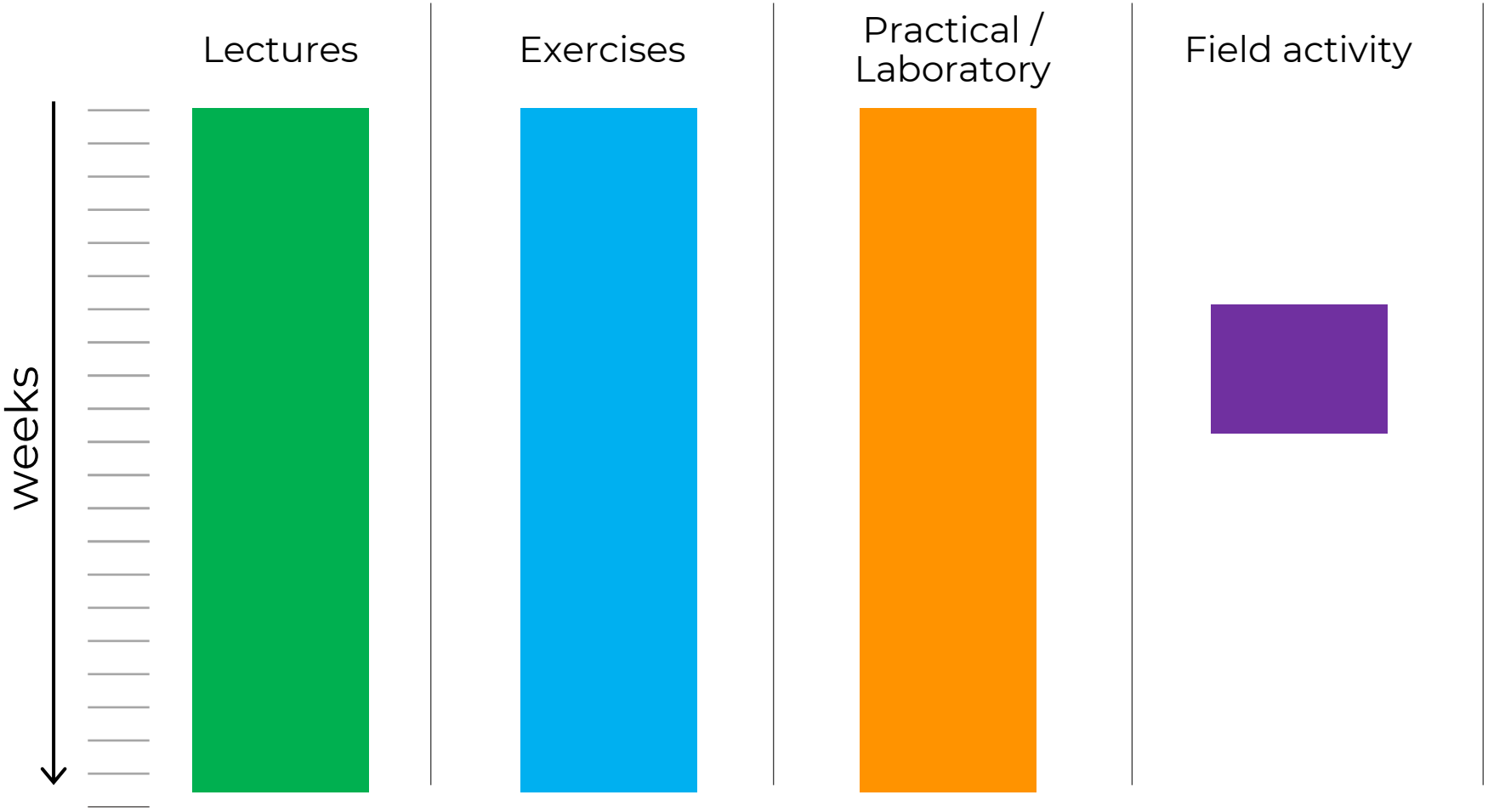
Workshop

- Collaborative Work and Team Projects
- Cooperation with industry
- Interdisciplinary cooperation



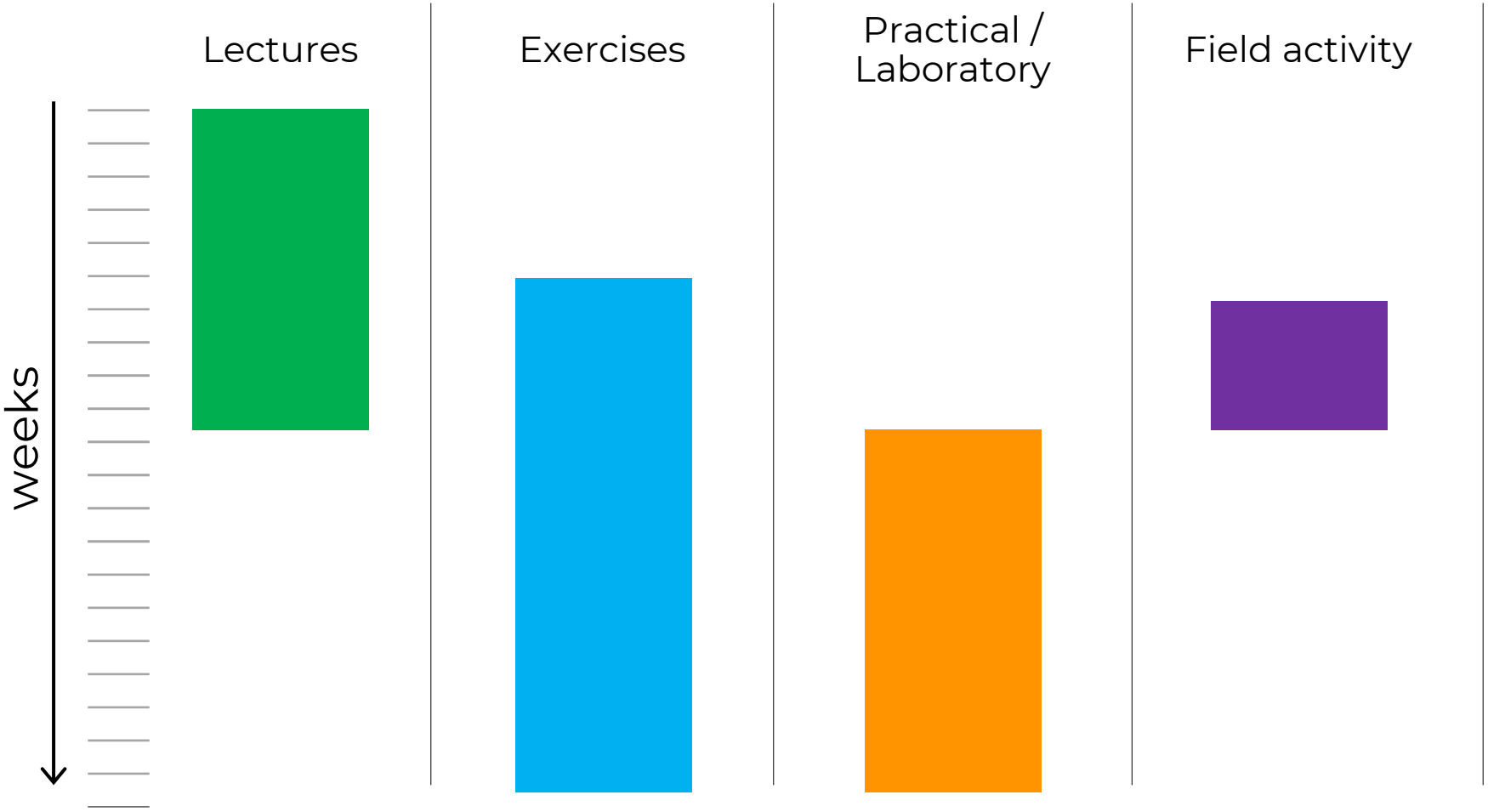
The structure of the course subject

from the teaching methods point of view



The structure of the course subject

from the teaching methods point of view



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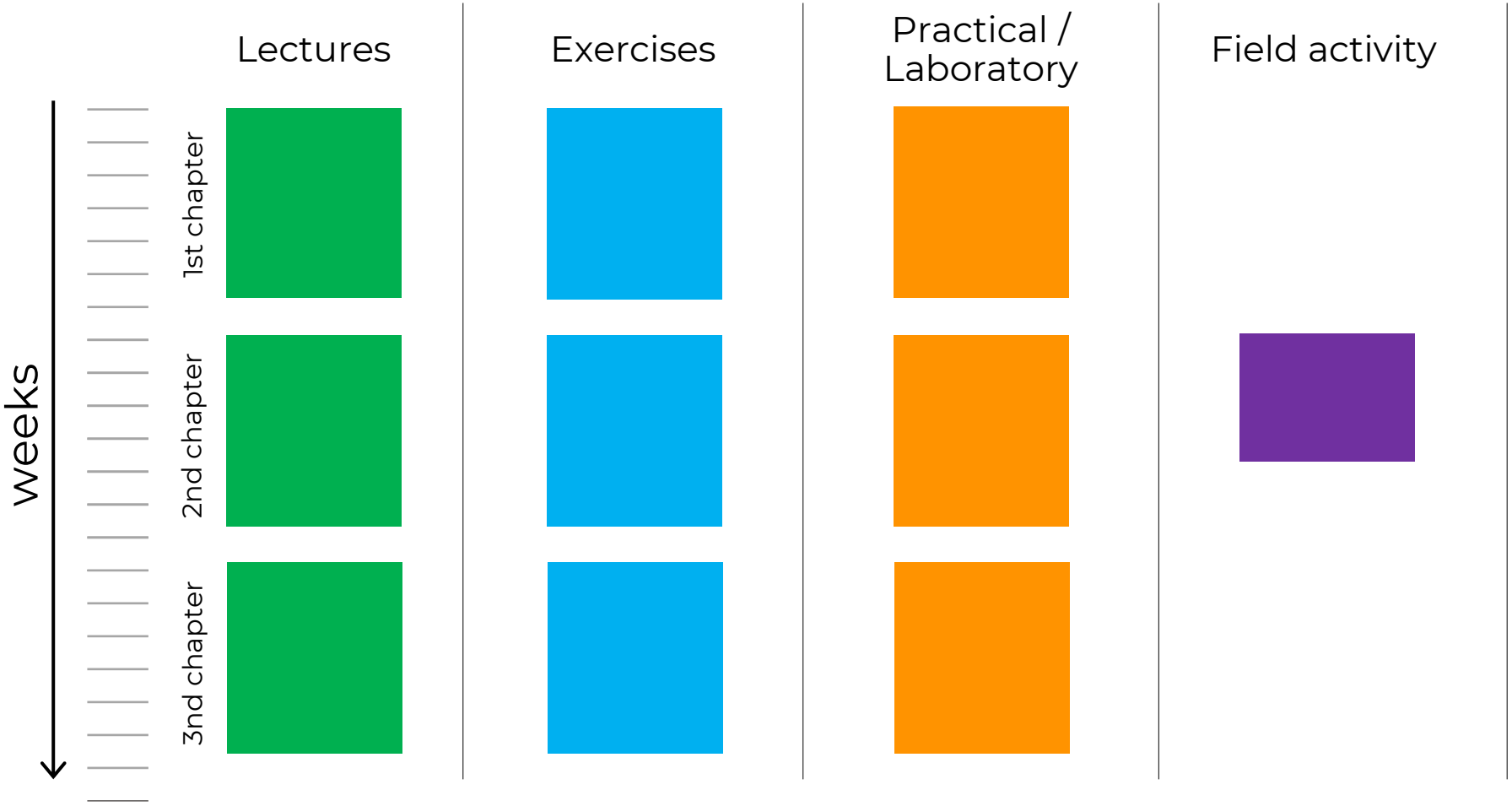

The structure of the course subject

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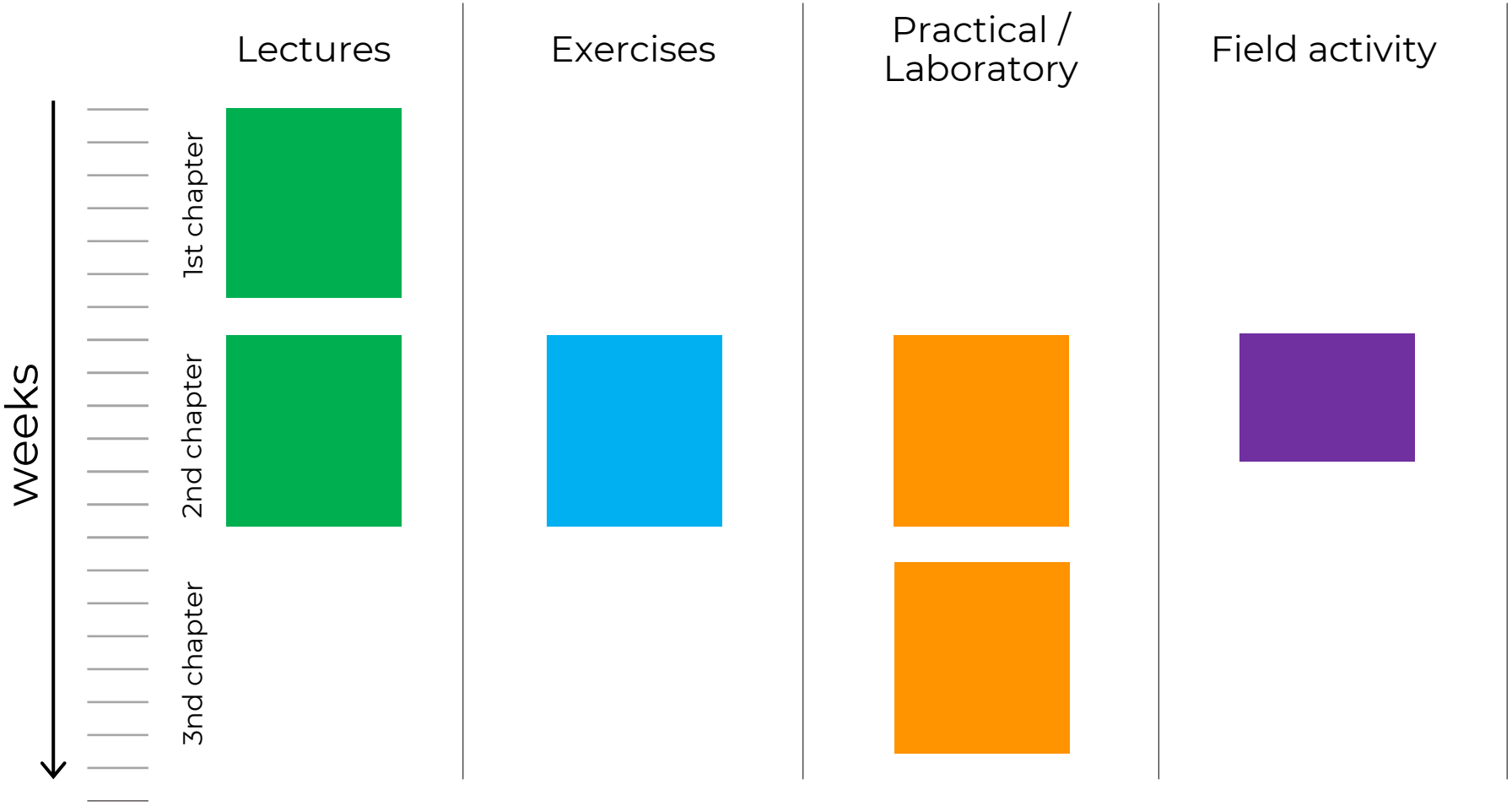
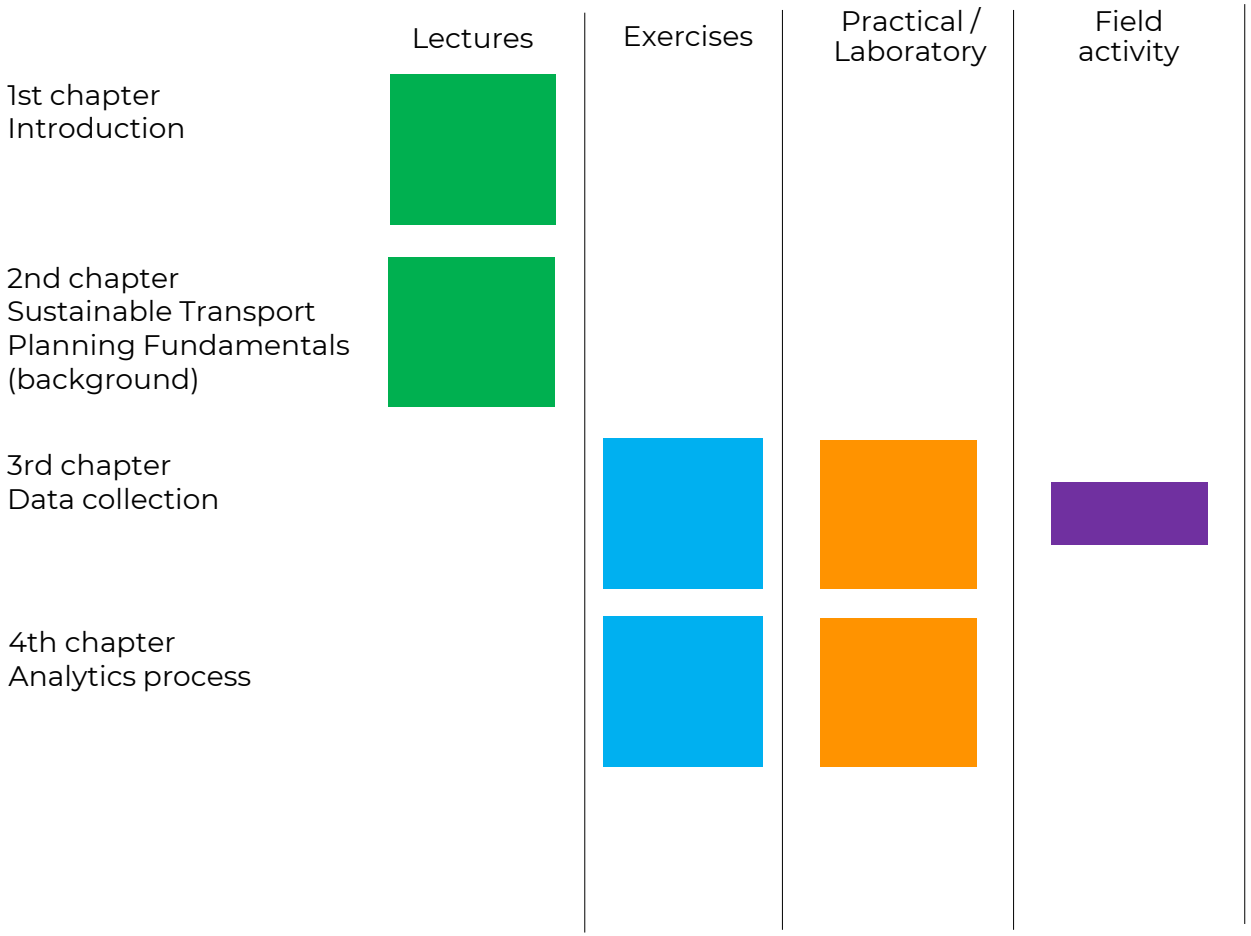


Examples

examples of pre-developed course concepts

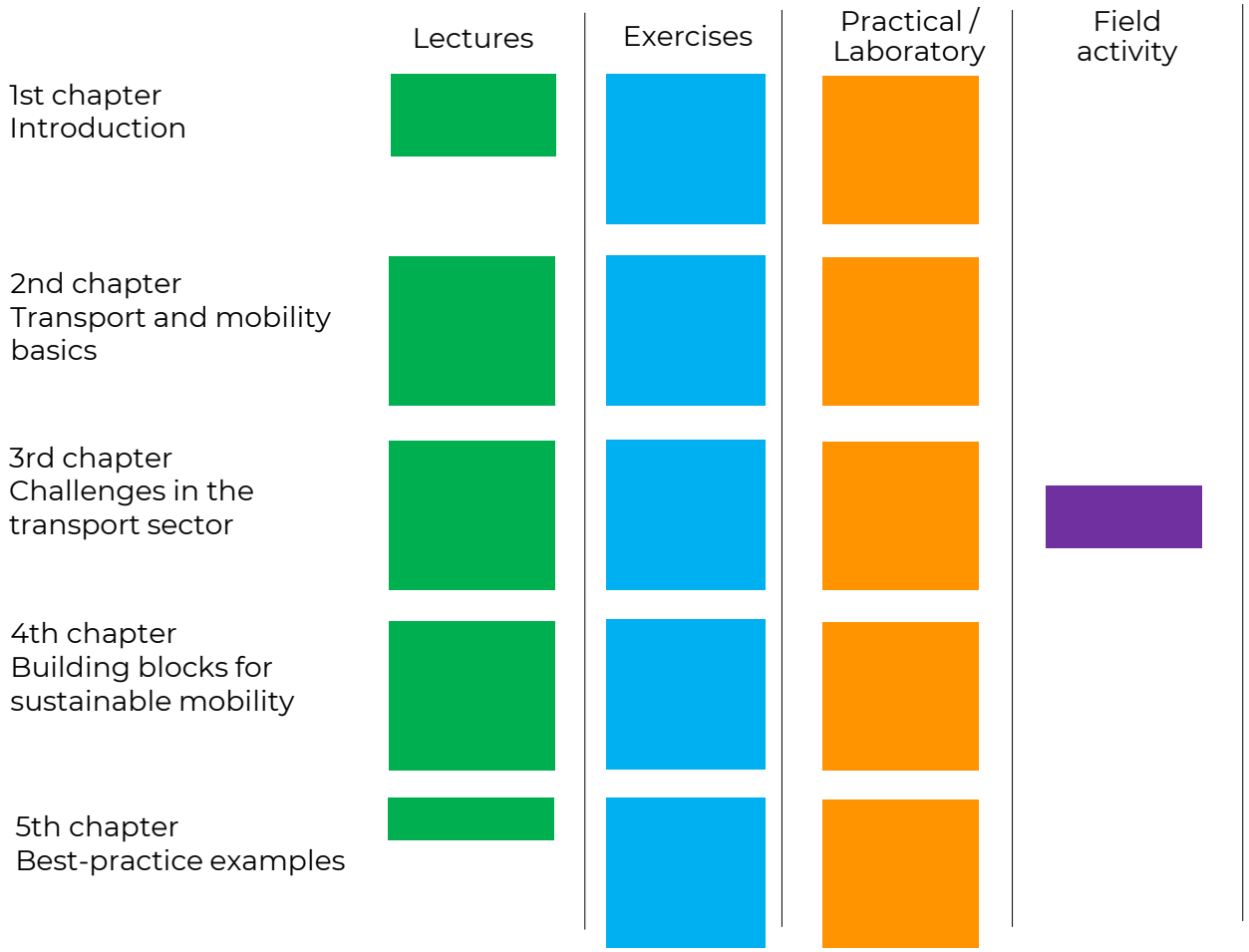
No.	Types of classes	Minutes	Short Name	Topic	Sub chapter
CHAPTER 1 - Preliminary part					
1	Lecture	45		The objectives and the role of transport planning.	
2	Lecture	45		Main problems in transport planning	
3	Lecture	45		Expected outcomes of transport planning in pro-ecological and pro-social terms	
CHAPTER 2 - Sustainable Transport Planning Fundamentals (background)					
1	Lecture	45		Sustainable development in transport.	
2	Lecture	45		Basic relationships between transport and land use (interaction, means of transport, functional classifications).	
3	Lecture	45		Environment friendly transportation (green transport)	
4	Lecture	45		Planning levels (national, regional, corridor, local, etc.).	
5	Lecture	45		Transport policy, its objectives and priorities.	
6	Lecture	45		Contemporary directions and principles of transportation planning (including intermodal transport integration, integration with land use planning, integration with other spheres of planning.)	
7	Lecture	45		Assessment of transport needs in short and long term planning.	
8	Lecture	45		Planning assessment of mobility, security, capacity, environmental impact.	
9	Lecture	45		Preventing transport exclusion.	
10	Lecture	45		Planning of the transport system to achieve short-and long-term objectives.	
11	Lecture	45		A comprehensive study of transport behaviour. Analyses of transport data (displacement, mobility, distribution of traffic, transportation demands, availability).	
12	Lecture	45		The essence of transport forecasting	
13	Lecture	45		Planning of the transport system to achieve short-and long-term objectives.	
14	Lecture	45		The stages of the development plan for transport infrastructure. Technical concepts of the development of transport networks.	
15	Lecture	45		Planning the integrated transport points.	
16	Lecture	45		Concepts and methodologies of evaluation of options (capacity, safety and impact on the environment, economic efficiency and financial viability).	
17	Lecture	45		Strategies to mitigate transportation problems (mobility management, security management, software improvements, the application of ITS).	
18	Lecture	45		Planning the development of automobile roads, rail and inland waterways.	
19	Lecture	45		Planning the development of infrastructure of maritime and air transport. Urban transport planning.	
20	Lecture	45		Public participation and partnership in the planning of transport networks.	
CHAPTER 3 - Data collection					
1	Practical	90		General characteristics of the selected problem area	
2	Practical	90		Search for existing planning studies, solutions, and development concepts.	
3	Practical	135		Data collection on a selected problem area	
4	Practical	45		Preliminary identification of transport issues	
5	Field activities	135		Field inventory	
6	Field activities	135		Field inventory	
7	Practical	45		Organizing data from field inventory	
8	Practical	45		Building a database for further analysis	
CHAPTER 4 - Analytics process					
1	Practical	180		Development of a diagnosis for the transport system in the analyzed area	
2	Practical	45		Identification of planned non-transport development in the analyzed area	
3	Practical	90		Development of a general concept for transport system development	
4	Practical	90		Development of alternative transport system scenarios and variants	
5	Practical	135		Description or visualization of the concept	
6	Practical	90		Evaluation of goal achievement and compliance with existing documentation	
7	Practical	45		Evaluation of compliance with sustainable development principles	
8	Practical	45		Implementation plan concept	



Examples

examples of pre-developed course concepts

No.	Types of classes	Minutes	Short Name
CHAPTER 1 - Introduction (1 hr.)			
1A	Lecture	20	Introduction and course structure
1B	Practical	40	Exercise 1: Transport and mobility in the sustainable City
CHAPTER 2 - Transport and mobility basics (10 hrs.)			
1A	Lecture	90	Transport and mobility basics
1B	Practical	30	Exercise 2: Thought experiment – late-night shopping
2A	Lecture	90	Description of parameters for everyday mobility
2B	Practical	30	Exercise 3: Transport parameters
3A	Lecture	90	Modal split
3B	Practical	30	Excercie 4: Modal split
4	Lecture	90	Modes of transport and means of transport
5	Lecture	90	Choice of means of transport
6	Practical	60	Excercie 5: Accessablity in rail transport
CHAPTER 3 - Challenges in the transport sector (14 hrs.)			
1A	Lecture	90	Challenges facing the Transport Sector
1B	Practical	30	Exercise 6: Challenges facing the Transport Sector
2	Lecture	45	Land consumption and its consequences
3	Lecture	45	Emission in road traffic
3A	Practical	30	Exercise 7: Sound emission and their sources
3B	Field activities	60	Excursion: How sound emission arise in road traffic
4A	Lecture	120	Energy consumption
4B	Practical	60	Exercise 8: Means of transport and their energy consumption
5A	Lecture	90	Traffic Safety
5B	Practical	40	Exercise 9: Traffic safety in figures
6A	Lecture	60	True cost of the transport sector
6B	Practical	40	Exercise 10: Challenges in transport sector
7	Practical	130	Chapter summery excercises
CHAPTER 4 -Building blocks for sustainable mobility (12 hrs.)			
1	Lecture	90	The basic principles
2	Lecture	90	Stakeholders in transport
3A	Lecture	120	Transport planning process
3B	Practical	60	Exercise 11: Transport planning as a process
3C	Practical	60	Exercise 12: Transport planning process in flux
4A	Lecture	90	Transport policy and instruments
4B	Practical	30	Exercise 13: congestion charge through experment
5A	Lecture	90	Subsidy policy
5B	Practical	30	Exercise 14: Incentives of subsidy policy
6	Lecture	60	Individual behaviour
CHAPTER 5 -Best-practice examples (14 HRS.)			
6A	Lecture	180	Best practice examples-four cities
6B	Practical	120	Virtual city trip
7A	Practical	240	Exercise 15:Local example project
7B	Practical	300	Exercise 16: Best-practice city trip



DESIGNING REQUIREMENTS ON THE MASTER THESIS

Main assumptions

definitions, terminology

- **Master thesis:** A written work done by the student at the end of the master's studies.
- **Thesis supervision:** An authorized academic teacher or a specialist from outside the university who meets the requirements defined at each university.
- **Reviewer**: A person with the qualifications of the supervisor of the diploma thesis .
- **Assistant supervisor (not obligatory):** A specialist supporting the supervisor in conducting the diploma thesis.
- **The topics of diploma thesis:** Are submitted by the supervisors of the theses.

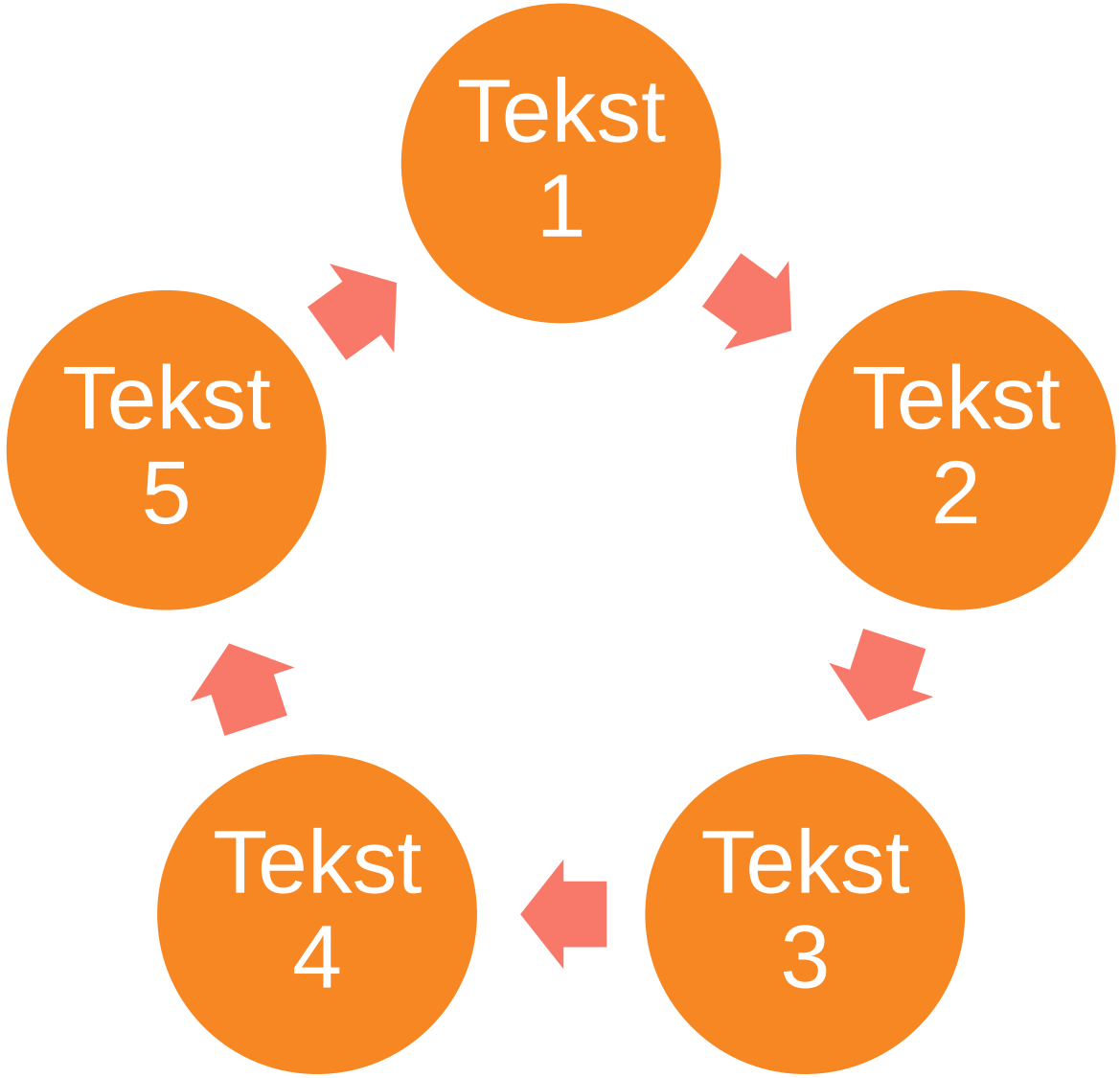
Students choose the topics of their diploma theses during the penultimate semester of studies.

The subject of Msc thesis

The subject of the master's thesis: is the development of an issue of analytical, design, technological, monographic or experimental (laboratory) nature. In addition to the engineering elements, the master's thesis should also include elements of a research nature and, in the case of a thesis that is not a typical project, a literature review of the issue that is the subject of the diploma thesis.

AfroTrans project


AfroTrans
project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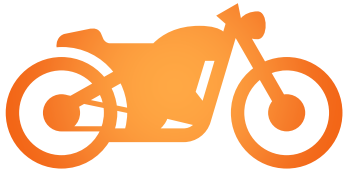



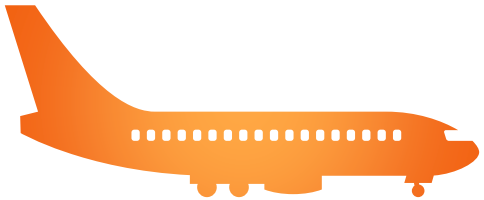
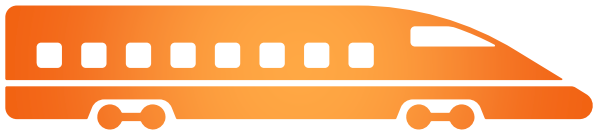





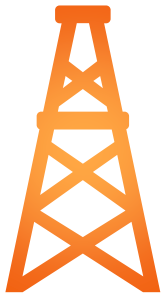






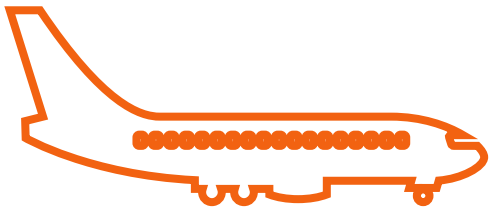






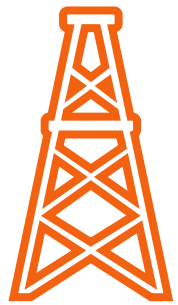






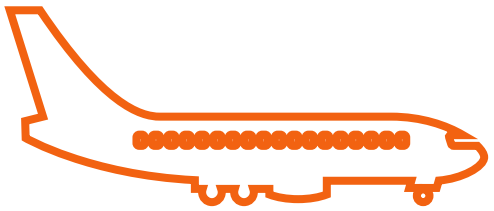






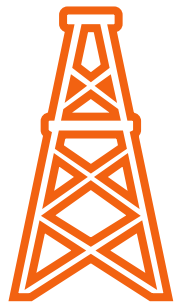

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