Professional course

Digitalizing Mobility: Practices, Trends, Solutions

Handbook

Basic Info

- ✓ 2. Edition course dates: 11 March – 04 April 2025
- ✓ Course duration: 3 Weeks + 3 Days In-Presence (40 hours blended lessons, 35 hours self-study work)
- ✓ Language: English
- ✓ Location: TU Berlin - Euref Campus, Berlin
- ✓ Certification: TU Berlin Certificate of Professional Education (3 ECTS)
- ✓ Assessed and graded
- ✓ Format: Blended learning
- ✓ Lecturers: Gabriele Grea, Dr. Massimo Moraglio, other Experts/Speakers
- ✓ Recognized as Bildungszeit

Why this course

The Certificate Course Digitalizing Mobility is designed for those seeking innovative solutions to the challenges of digitalization in the transportation sector.

The course places a strong emphasis on presenting the main trends of digitalization, the similarities of its application in the different fields of transport, and the latest developments, as digital twins and AI. Through close exchange with the lecturers and expert guest speakers, participants will gain specialist´s knowledge, whilst also working intensively on their own, practical project all along the course.

In short, this course is the key to advancing your professional development and shaping an innovative future in the transportation sector. Be ready to gain new insights and to unleash your creative abilities into the digital transformation of mobility!

Learning goals

After successful completion of the course, participants will be able to:

- ✓ Outline real-world cases, gleaned from European managers and policy makers
- ✓ Analyze and use current and future trends in ICT and mobility in 4-6 different sub-fields
- ✓ Evaluate application fields, potentialities (and bottlenecks) of digitalization
- ✓ Formulate successful, future-oriented thinking about digitalization of the transport industry
- ✓ Design and appraise, individually, a solution for a real-world challenge at the intersection of mobility and digitalization that demonstrates understanding of managerial, business, and planning aspects associated with its implementation
- ✓ Communicate and defend proposed solution for the mobility and digitalization challenge to a peer and professor audience, focusing on its adequacy and impact on a real-world challenge

Content

All along the course, each participant is engaged in a personal project, which will be developed in the 4 weeks of duration, being presented at the end of the lessons.

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Methodologically, the course will be developed around an individual case-study for each participant, with a final presentation in the last day. This will empower the participants to develop their own idea, seeking how to manage and organize the digitalization in mobility though a problem-based learning environment. The course will tackle current themes through the lens of business, tech, policy and a user's perspective.

The course includes a mix of lectures, hands-on exercises, so to provide participants with a holistic learning experience. Participants are encouraged to actively engage in discussions and apply learned concepts to real-world scenarios.

After an overview about the role of ICT in transport (looking at digitalization in the context of 'business as usual' and disruptive innovations), the course will dive into the following key thematic points:

- ✓ Vehicle, infra and railway management with IT-driven predictive maintenance etc.
- ✓ Digital twin and AI in transport systems
- ✓ MaaS Sharing/ flexible transport
- ✓ CCAM and city logistics

Assessment

Assessment task title	Individual Project on Digitalization in Mobility
Assessment type	• First presentation (week 3) of the Individual project; 20% of the final grade. • Final presentation of the project (week 4, day 3) demonstrating solution application. 80% of the final grade.
ILOs to be assessed	ILOs 1 to 6
Assessment rationale	The project assessment will let the participants to develop their own project in the field of digitalisation in mobility aligning it with the inputs gained during the course, thus developing critical thinking, understanding the trends and learning from other transport sub-fields experience. The participants need also to understand and prepare solutions and be able to communicate and defend their choice.
Assessment pre-requisites	As background for the work and development for the personal project, the participants need to build up their own knowledge (week 1 to 3, via literature reading, video, searching for similar projects). In order to pick up the appropriate case, in week 1 and 2 the main lecturers will nudge the participants to choose their own project. If any participant has no clue, the main lecturers will provide cases.
Assessment weighting	First presentation on Week 3 (20%), and final presentation on Week 4 day 3 (80%).
Possible assessment outcome	Assessments will receive one of the following outcomes: • Pass • Not yet passed

Assessment

Guidance on completion of the assessment task	This assessment is an individual task developed with the help of the lectures and experts, as well as via peer learning. The presentations are made of a PPT and a short presentation (max 15 minutes for the final one). Annexes and other material can also be part of the final presentation. 1. Week 1: students will learn the requirements for the individual projects, pick up on case (or ask for one to the main lecturers) and begin to develop their concepts; 2. Week 2: begin the preparatory lessons and materials, and meet the experts who will support them throughout the course. Students will present their concept for the individual project, receive feedback from the course lecturers and industry experts to refine and fine tune their idea. Once this is done, they will begin to develop it; 3. Week 3: students will continue the online readings and activities, and developing and drafting their individual projects. First Presentation of the Final Project Drafts will also take place in the Online session of Week 3. They will prepare for the in-person unit of the course, meeting the lecturers The initial presentation is centered on the selected case, with a focus on each participant. It includes: i) Explanation of its relevance to the course, ii) Providing context for the case, iii) Identifying key problems, and iv) Proposing 2-3 potential solutions, along with an evaluation of their suitability and potential impact on real-world challenges. Following the presentation, participants are encouraged by the main lecturers to choose one solution for the final presentation. 4. Week 4, day 3: Final presentation. The final presentation, also tailored to each participant, includes: i) A brief recap of the case's background information (summarizing the initial presentation), ii) prepare a solution for the case's problem, and iii) A roadmap for implementing the solution, considering its adequacy and potential impact on real-world challenges. Participants are expected to defend their choices and address user perspectives, while demonstrating an understanding of the managerial, business, and planning aspects associated with implementation.

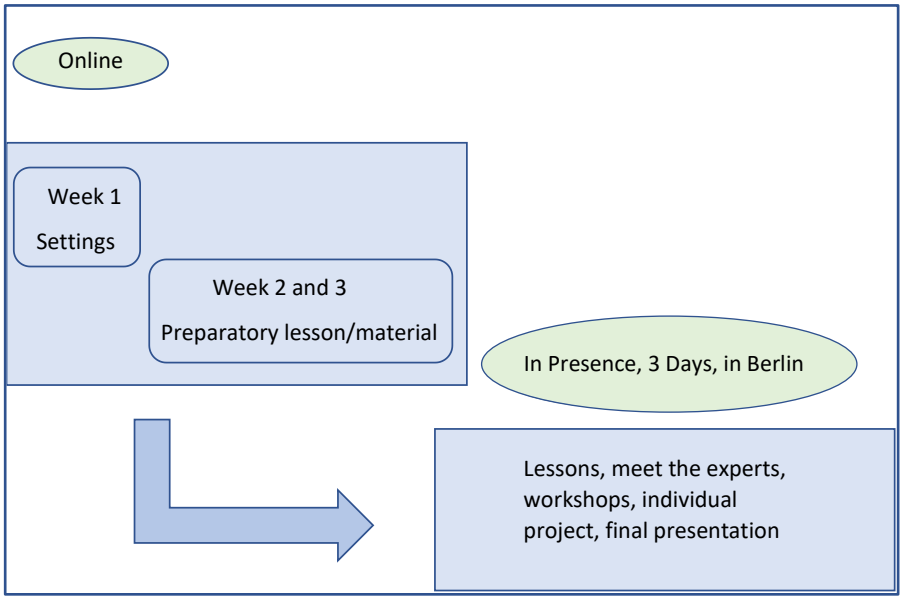
Assessment

Assessment criteria	See rubric table below.
Assessment support	From week 1 day 1 (and all along the first three weeks of the course) the participants will receive (in written and in each of the online sessions), clear indication about the expected goals of the assessment. From week 1 day 1, the participants will be encouraged to contact, via mail, any moment in the 4 weeks of activities, any of the two leading lecturers (or both) so to clarify any element, doubt, or issue. The first presentation on week 3 will be more than a first assessment, but also a stepping stone for collecting and gauging the participants ability to cope with the course´s goals and gain feedback. Any information about the assessment, and the course, will be available any moment on Moodle, the learning platform used for this course.
Submission deadline: time and date	04 April 2025 (final presentation).
How to submit	The presentations will be live. PPTs and any other annex files will be submitted (via Moodle, the learning platform of the course) just before the first and second presentation.
Expected feedback date	We will provide results and feedback LATEST by 17:00 CEST on 15 April 2025.
What to do in the event you cannot submit	In the event you are unable to submit please contact your course tutor Massimo Moraglio (moraglio@tu-berlin.de) in the first instance to explain the circumstances in order that we can support you to complete the course successfully.
What happens if you do not achieve a pass grade?	If you have not met threshold requirements for a pass grade, you will be provided with one further opportunity to complete this assessment following feedback. Your course tutor will provide you with a new deadline for any resubmissions you make.
Use of artificial intelligence (AI) tools	Allowed, as much as support to (not substitution of) your project.

Online three weeks

The next edition of the course is planned for March 2025. The following two editions may follow in June 2025 and September 2025. The course comprises 75 hours in total (3 ECTS).

The course content is divided into two main phases, for a total of 4 weeks.



The first phase runs for 3 weeks, online, with 2-3 hours remote lessons each week.

1. In week 1, on Tuesday, 11 March 2025 (16:00-18:00 CET) beyond the kick-off, the students will be introduced to the course goals and expectations. They will learn the requirements for the individual projects, pick up on case (or ask for one to the main lecturers) and begin to develop their concepts.
2. In week 2, the students will begin the preparatory lessons and materials, and on Tuesday, 18 March 2025 (16:00-18:00 CET) meet the experts who will support them throughout the course. They will present their concept for the individual project, and receive feedback from the course lecturers and industry experts to refine and fine tune their idea. Once this is done, they will begin to develop it.
3. In week 3, students will continue the online readings and activities, and developing and drafting their individual projects. They will prepare for the in-person unit of the course, meeting the lecturers on Tuesday, 25 March 2025 (16:00-18:00 CET). The participants will make the First Presentation of their Project Drafts to provide a Project Update to showcase Where they stand

<table>
<tr><th colspan="2">Contents/timing</th><th>First week - 11 Mar 2025 4-6pm CET</th><th>Second week - 18 Mar 2025 4-6pm CET</th><th>Third week - 25 Mar 2025 4-6pm CET</th></tr>
<tr><td rowspan="8">Online</td><td rowspan="5">With the lecturers</td><td>Course Presentation
Content intro</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Presenting goals and expectations – Presenting individual project</td></tr>
<tr><td rowspan="3"></td><td>ITC in transport: success stories (and why)</td><td rowspan="2"></td></tr>
<tr><td>Presenting the experts</td></tr>
<tr><td colspan="2">Getting ready for the in-presence week – Submit your blurb</td></tr>
<tr><td colspan="2">Content inputs</td></tr>
<tr><td rowspan="3">Individually</td><td>Thinking about individual project</td><td colspan="2"></td></tr>
<tr><td></td><td>Developing draft of individual project</td><td>Presenting the project</td></tr>
<tr><td colspan="3">Reading and online activities</td></tr>
</table>

In presence

1. The second phase consists of 3 Days, in-person, at the TU in Berlin. This week will comprise lessons, meeting the experts, workshops, and completing and presenting the individual work. On Day 1, students will meet in Berlin, will have a tour de table, review the course agenda, outlines and objectives. The inputs on Day 1 include “IT in mobility: trends and scenarios”, “Digitalization and PT, new market, new players”, and, two “Meet the experts” sessions. In the day, we will have a Micro excursion to ZeeMo Base (Vehicle2Grid center at the EUREF Campus).

2. Day 2 starts with inputs on “Smart City/ Smart Citizens”, “For All, But not for Everyone? ITC Social and Demographic” followed by a Round Table Dicussion with Industry Experts on “Digital Twin: buzzword or game-changer?”. After lunch with the speakers, the students will have another Meet the experts, this time on “Sharing/flexible transport”. The day will include also a studio-like work on the individual project.

3. Day 3 starts with two sessions of Meet the experts, followed by the Final Presentation by the participants of their individual projects, as developed by them in the past four weeks.

The diagrams below provide a more detailed breakdown of the content and activities in both units.

	Day 1 Wednesday 2 Apr 2025	Day 2 Thursday 3 Apr 2025	Day 3 Friday 4 Apr 2025
09:30	Digitalization, what is next: new markets, new players	Smart city / smart citizens	Meet the experts: Significant + Scaleable Improvements through Digitalization in Public Transport *(Jan Röhl)*
10:30	IT in mobility trends and scenarios	MM For all, but not for everyone? ITC, social and demographic	
11:00	Meet the experts: Maturity of autonomous vehicle solutions: aspects of financing and fleet management *(Arwed Schmidt)*	Round table: *Digital twin: buzzword or game changer?* *Nadia Giuffrida* *Stefan Röll TBC* *Daniele Mancuso TBC*	Meet the experts Where we stand and where we will go with MaaS? (*Camille Vedel*)
13:00	Lunch	Lunch	Lunch
14:00	Micro excursion to ZeeMo Base (Vehicle2Grid center)	Working cases Updating the case, presenting, discussing	Individual project presentation, assessments, self-assessment (80% of the final grade)
15:00 17:00	Meet the experts: Next-generation city logistics: leveraging technology for efficient and sustainable urban deliveries (*Nadia Giuffrida)*	Meet the experts: Sharing/flexible transport *(Tjalle Groen)*	

Each day of the week has an overarching theme, so the participants have the chance to elaborate the input and their own project along a pattern. This will let them to iterate on their individual project, following the previous days' feedback.

The participants will arrive in Berlin with their individual project already drafted and validated in the online session. Once arrived for the face-to-face lessons, these are the overarching theme:

Day 1. Find the challenge, that is, better define the problems and the bottlenecks of the digitalization project. Seek stakeholders and solutions.

Day 2. Manage the new service, that is, define and assess the managerial, business and planning issues linked to the project. Fine tune the project, due to its presentation on day 3.

Contents timing	Day 1 Wednesday	Day 2 Thursday	Day 3 Friday
Overarching theme	Find the challenge & Stakeholders and solutions	Manage the new service & Fine tune the case-study	Presentation

Methodology

This course includes a mix of lectures, interactive workshops, hands-on exercises, case studies, and individual projects to provide participants with a holistic learning experience. Participants are encouraged to actively engage in discussions and apply learned concepts to real-world scenarios. The course content is subject to updates based on the latest developments in the field of digitalized transport.

It does this through problem-based training and teaching, providing real-world current and future thinking from experts in the field, and hands-on experience in individual projects. This framework aims to cultivate creativity, critical thinking, problem-solving skills and an "outside-the-box" lens when addressing the mobility challenges associated with ICT in the transport industry.

We also put great importance on the current experience and examples coming from the industry. The workshops with managers and policy makers working in the transport and mobility field will encourage the exchange of ideas, experiences and best practices and foster potential opportunities for future partnerships and collaborations.

Prerequisites

- ✓ English level of at least B2
- ✓ Laptop/PC + headset with microphone

Dates

This certificate course comprises a phase of guided self-study, followed by a phase of intensive, in-person sessions in Berlin.

Course schedule:

- ✓ 11 March 2025 (virtual classroom session), 2 hours
- ✓ 18 March 2025 (virtual classroom session), 2 hours
- ✓ 25 March 2025 (virtual classroom session), 2 hours
- ✓ 12 March – 1 April 2025 independent learning (reading, case study, videos)
- ✓ 2 – 4 April 2025 on-site in Berlin (expected hours from 09:30 – 17:30 (CET))

Cooperation

This course is supported by EIT Urban Mobility, an initiative of the European Institute of Innovation & Technology (EIT), a body of the European Union. The aim is to positively change the way people move around in cities in order to make them more livable. You can find more information at eiturbanmobility.eu

This support enables participants to access a special, reduced fee for this TU Berlin Academy course.

Joint Data Processing with EIT KIC Urban Mobility S.L
The TU Berlin Academy, TUBS GmbH collaborates with EIT KIC Urban Mobility S.L in organizing the course „Digitalizing Mobility: Practices, Trends, Solutions“. When conducting the learning activities with EIT KIC Urban Mobility S.L, the TU Berlin Academy (TUBS GmbH) acts as a Joint Data Controller together with EIT KIC Urban Mobility S.L. In order to fulfill this purpose we process personal data as described in our privacy policy. Any questions related to ensuring privacy rights in the context of joint continuing education may be addressed to the TU Berlin Academy (see contact details in the privacy policy).

Main teachers

GABRIELE GREA (Linkedin-Profile)

Gabriele Grea is Scientific Consultant and Researcher in the field of transport and territorial economics. His activity concerns in particular the themes of smart and sustainable mobility, infrastructures and territorial development. He has undertaken projects in the fields of urban mobility, regional, urban and infrastructures planning, energy policies and ICT for transport and mobility.

He has been involved in a range of R&D Projects funded by the European Commission (Horizon 2020, 7th and 6th Framework Programme, Interreg, Marco Polo, DG TREN-DG MOVE Projects) since 2002. He is an Expert Fellow at the Department of Institutional Analysis and Public Management of Bocconi University in Milan, where he is lecturer in Urban Mobility Management and Smart Cities; and sustainable and intelligent mobility in the Master Course MEMIT (Master in Economics and Management of Transportation, Logistics and Infrastructure). In addition, he teaches business modelling for sustainable mobility at Technische Universität Berlin, in the MBA in Sustainable Mobility Management.

DR. MASSIMO MORAGLIO (Linkedin-Profil)

Dr. Massimo Moraglio is an Academic Coordinator of the MBA Sustainable Mobility Management at the Technische Universität Berlin. His research focuses on technology and its wide effects on economic, social, and cultural fields, exploring its long-term trends. He gives attention to the crucial topics of sustainability, justice, and environmental studies, focusing on transitions, futures, and cultural shifts.

Through his work in academia and consultancy, he built a wide network with industry managers, public agency officers, and NGO advocates. He has acquired and managed many research grants from national and international (both private and public) funding schemes, opening meaningful international dialogue on issues of long-term assessment of technology and its transition toward a smart and sustainable future.

His publications number 120+, encompassing books (as an author, editor, and co-editor) and articles in international journals. He has co-organized and participated in 60+ national and international conferences.

Guests speakers and experts

- Arwed Schmidt Easymile, Germany
- Nadia Giuffrida Poli Bari, Italy
- Tjalle Groen, mpact, Belgium
- Jan Rohl, Austria
- Camille Vedel, CITEC, Italy
- Round table speaker

  Nadia Giuffrida

  Stefan Roll TBC

  Daniele Mancuso TBC

Lodging a complaint or request a refund

Participants will be encouraged to give feedback through the following avenues:
Expectations survey (prior to course start)
Direct feedback to lecturers mid-course; ongoing possibility to provide feedback via moodle learning management system and direct to Academy (info@academy-tu.berlin)
Survey at completion of course

Should complaints arise, the Academy team will work together with participant(s) and lecturers to try to find a resolution, based on the individual circumstances

If resolution is not possible, our AGB's (general terms and conditions) apply, as published on the website (see sections 4 and 5)

Here the main points of the AGB in English:

Cancellation by the participant

4.1 Withdrawal from the course by the participant is only permitted in writing by e-mail to the TU Berlin Academy for Professional Education.
4.2 The participant may withdraw from the course up to four weeks before the start of the course without incurring any costs. In the event of cancellation between four weeks and fourteen days before the start of the course, a processing fee of €50.00 must be paid.
4.3 If a course has to be postponed and an alternative date is offered, the participant may refuse the alternative date within 2 weeks of notification of the new date. In this case, the contract shall be deemed cancelled and any fees paid shall be refunded. In other cases, the participant must pay the agreed course fees or these will not be refunded.
4.4 The participant shall be released from the obligation to pay the course fee if he/she provides a suitable replacement person to take part in the course before the start of the course.
4.5 If the participant cancels the course, there is no entitlement to a refund for teaching and learning units not completed.

Cancellation

5.1 Participants in a course may not terminate the contract after expiry of the cancellation period specified in point 4 above.
5.2 The contractual relationship may be terminated by either party for good cause without notice if there are facts on the basis of which the terminating party cannot reasonably be expected to continue the contractual relationship until the agreed termination or until the expiry of a notice period, taking into account all the circumstances of the individual case and weighing up the interests of both parties to the contract. The terminating party must inform the other party of the reason for termination in writing immediately upon request.
5.3 Cancellations can only be made in writing by e-mail.