

TDX

Technology Driven Innovation



Student Handbook
03/2026 - 07/2026

WELCOME



Welcome to TDX - **Technology Driven Innovation!** This course will give you the opportunity to integrate existing and developing technologies into ideas for solutions with a palpable positive impact. You will be able to engage with the local economy, co-create with technology owners and interdisciplinary team partners, and solve real-world challenges in partnership with diverse stakeholders. We are excited to accompany you while you grow your entrepreneurial capacity, aptitude for science-based innovation and ability to think in systems, not symptoms!

In TDX, we will identify disruptive applications and business models of **cutting-edge technologies** developed in the labs from our own TH Mannheim with the overall objective of solving social needs. What makes this course special? Instead of starting with a societal challenge, we start with a technology in order to find new, inventive applications for existing problems and challenges. You will work in interdisciplinary teams where you each develop your own concepts over the course of one semester.

As part of the course, you will also travel to **IdeaSquare - the innovation space at CERN**. The one week i2Planet experience at CERN will

accelerate your ability to think out-of-the-box and you'll be exposed to cutting-edge technology that serves in a multidisciplinary environment, as well as explore the biggest secrets of our universe, all while strengthening your team spirit.

This booklet will provide you with an overview of the TDX course, including goals, the people that will support you along the way and an overview of what you can expect during the course of the semester.

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GLOSSARY

DELIVERABLE

Tangible outcomes of your work that will be handed in during the course of the project.

DEEP TECH

Deep tech refers to the cutting-edge, disruptive technologies that are built on profound scientific discoveries, engineering innovations, or advancements in research areas that have the potential to radically transform industries, economies, and lives.

DFGN

The Design Factory Global Network - a network of innovation hubs in universities and research organisations in five continents of the world.



DOCUMENTATION

Written work in progress of ideas, deliverables, and methods.

i2PLANET

A novel teaching methodology created by IdeaSquare in CERN to encourage creativity and foster systems thinking by taking students on an imaginary journey to an exoplanet and back to Earth. i2Planet is now IdeaSquare's flagship programme, offered to multidisciplinary student teams tackling wicked problems.

KICK-OFF

Event to start of the TDX course. The kick-off is created for students to get to know each other, get sorted into teams and get an introduction into the project.

LGM

Large Group Meeting - weekly recurring meetings within the TDX course where all teams are present, either for lectures or milestone meetings. You receive input for new methodologies and get feedback from coaches & peers.



SUDS

Slightly Unorganized Design Sessions - an informal event for students, coaches and other stakeholders to get together, cook, share ideas and get inspired in a relaxed environment.

T-TEAM

Teaching Team - the coaches & lecturers that will accompany you on your way through the TDX course.

The TDX course will advance your entrepreneurial and technological skills, as well as provide you with the ability to master a tech-driven innovation process while balancing technological capabilities, societal needs and market potential. The course aims to help you enhance three key abilities:

The ability to master a tech-driven innovation process

You will develop novel applications and solutions for emerging technologies by researching their societal relevance and evaluating their potential for positive social impact, and analyze the gap between scientific discoveries and societal needs by applying the Design Thinking process and scientific method to define innovation opportunities

Entrepreneurial skills

You will collaborate effectively in interdisciplinary teams by recognizing and valuing diverse expertise and perspectives and applying shared knowledge toward a common innovation goal.

Additionally, you will manage your own learning and project responsibilities by evolving information and reflecting critically on decisions made during an explorative innovation process.

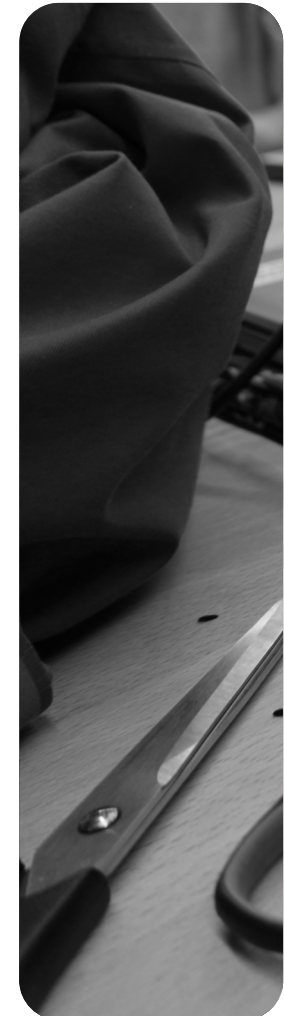
Technological Skills

You will work on understanding Deep Tech, collaborate with researchers, as well as analyze and understand emerging technologies by critically evaluating the capabilities and potential of innovative technologies.

In addition, you will learn to communicate the technological value by articulating the value proposition of new technologies and their applications to various stakeholders.

By the end of the course, you will be proficient in identifying, developing, and assessing the potential impact of novel technologies in addressing societal needs, and understand and appreciate diversity between business, design and engineering.

We hope to provide an environment where your ideas can grow into concepts and prototypes that have the power to shape the future!



LEARNING OUTCOMES



FINAL DELIVERABLES

Throughout the course, you will continuously work on refining your ideas by creating prototypes and presenting your progress. The main outcomes at the end of your TDX journey are:

- A **report** specifying the (societal) problem as well as the concept of the tech-driven solution that is solving the problem
- The **presentation** of the tech-driven solution
- A **representation** of the solution which demonstrates the main functionalities in a comprehensive way. The representation can have various forms. Examples are a functional prototype, a simulation, a video
- A **video** and **posters** of the solution and a poster of the team

The deliverables should demonstrate depth in both the analysis and the solution, as well as the understanding of the process, and include a full scan of the opportunities in which the technologies can be utilized. The outcomes should focus on what can be achieved, rather than what is to be produced.

Grading is conducted as continuous assessment. We will assess you based on your learning journey, project outcome, and participation in the overall project.

TDX is an interdisciplinary, **challenge-based** course. The main learning happens through solving a real-life innovation challenge as a team through an experimental, prototype-based process. It will be your responsibility to navigate through the innovation process by yourself, with the guidance of coaches, both from inno.space and external.

INNOVATION PROCESS

The methodology that TDX is built on a tech-driven innovation process based on **Design Thinking** - a way of working that looks at

innovation through three lenses: *desirability, feasibility, and viability*.

The innovation process aims to bring a novel technology to the market by looking at new potential fields of applications and users. It aims to integrate the possibilities of technology with the needs of people, and the requirements for business success.

The process is divided into **three phases**, displayed below, which each consist of a divergence- and convergence phase.

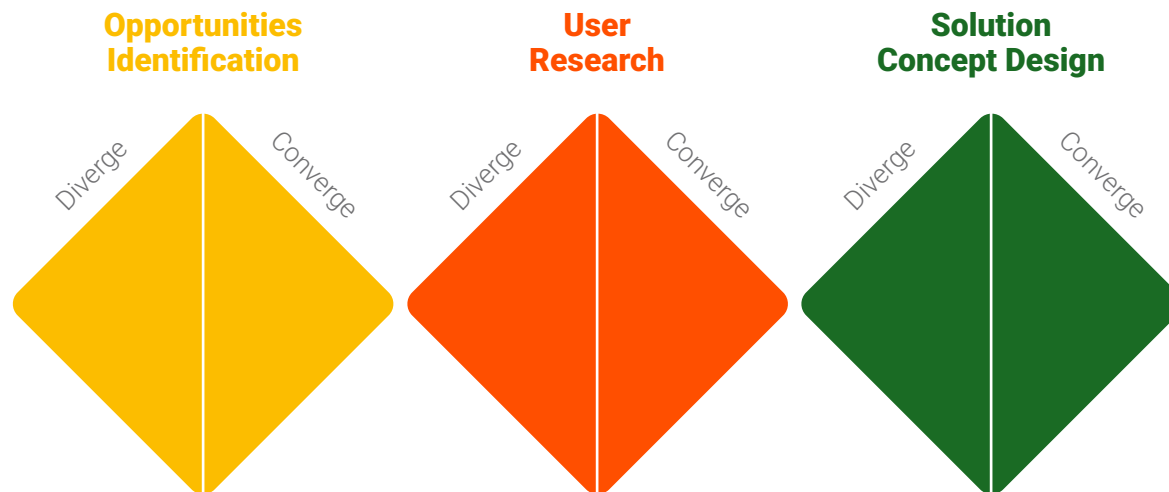
The course will take place in a range of

different formats:

- **Lectures:** Theoretical input is provided in short sessions
- **Group work:** You will be responsible to navigate through the innovation process by yourself, with the guidance of our coaches
- **Coaching sessions:** Coaches will talk to you weekly to check your project progress and consult you
- **i2Planet week:** The i2Planet week follows an experimental approach, and is enriched with deep dives and lectures regarding different inspirational topics provided by CERN scientists in addition to lab visits

The innovation process relies heavily on research tools like desk research, mind mapping, benchmarking, functional analysis, and expert interviews. All the evidence, problems, and opportunities identified from the research are then summarized into a frame that is used as an instrument of synthesis and selection of the most appropriate opportunity area.

Visualization is a key element in this process phase, as it allows sharing of knowledge and discovery opportunities that may lead to innovative solutions.



LECTURERS & COACHES



Prof. Kirstin Kohler

Kirstin is the main coordinator of inno.space Design Factory. After shifting from the industry, she became a professor in the faculty of Computer Science. In her spare time, when she has any, she enjoys being with her family, going out to nature, and knitting.



Manuel Walter

Manuel is an educator and prototyping pro at the inno.space Design Factory in Mannheim. He participated in the Design Thinking Project CBI A3 during his Master's studies in Information Engineering. In his free time, Manuel likes to work on his personal projects, spend time in nature and go paragliding.



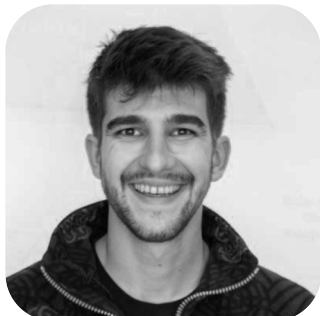
Chutimon Espedal

Chutimon is a course and project manager at inno.space Design Factory in Mannheim. During her Master's studies in Process and Chemical Engineering, she participated in the Design Thinking Project CBI A3 in 2023-2024. Chutimon enjoys baking, traveling, and going to cute cafes in her spare time.



Katharina Salewski

Katharina is a PhD candidate working with AI-based coffee variety identification. She participated in the Design Thinking Project CBI A3 in 2023-2024 during her Master's in Computer Science and is now a supporting member of the inno.space Design Factory Mannheim.

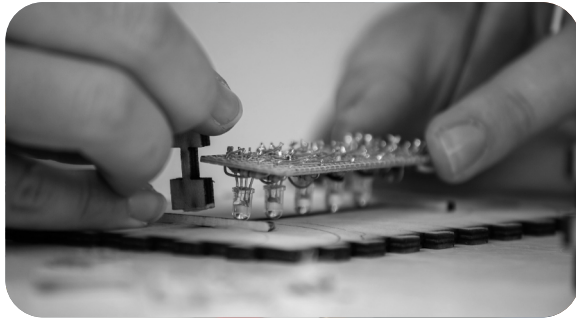


Ole Werner

Ole obtained his M.Sc. in Behavioral Change at Radboud University Nijmegen. Via the DFGN, Ole got in touch with CERN IdeaSquare, and is now putting his knowledge and thoughts to work for the innovation space since November 2022. Next to his work, Ole enjoys improv acting, doing sports, and photography.

PROJECT PHASES

TDX consists of the three phases developed for the Tech To Market process. Additionally, the project will start with a phase allocated for **team building** and introductions to TDX, and end with the **presentation & dissemination** of the project outcomes.



TEAM BUILDING

The course starts with two weeks of introduction and team forming. During this early phase, you will also meet your technology partner. In the third course week, the excursion to CERN takes place. There, you will get insights into CERN's experiments and labs, and participate in the **i2Planet** mission. You will be immersed in a narrative where humans seek to explore an imaginary exoplanet Planet Y, and are challenged with inhabiting this exoplanet.

OPPORTUNITY IDENTIFICATION

After you are back from CERN, the project will officially start with a challenge based on the novel technology you have been assigned.

You will explore the technology to understand and generate a wide range of potential applications with societal impact. You will explore various opportunities and look for unconventional alternatives. The end result of this phase will be your identification of the most appropriate **opportunity area** for the technology to be applied.

USER RESEARCH

Once the fields of application of the technology have been defined, the next phase involves a stage of user research, which is based on the understanding of users' needs, problems, and desires through ethnographic research.

In this stage, you will aim to identify which users' problems can be solved by introducing the technology by applying methods from design thinking.

SOLUTION DESIGN

This stage is dedicated to the development of the solution concept. You will develop rapid

prototypes to render ideas tangible, elicit user feedback, and learn from failures. During this phase, your team incrementally advances toward defining the final **solution concept**.






DISSEMINATION

During the last two weeks of the project, the project results are disseminated and the final presentation as well as an exhibition is prepared and conducted by your team.

You will pitch your results to a larger audience and explain your concept while showing your tangible proof of concept at the university's end of semester exhibition.



COURSE PLAN

-  Team Building/Dissemination
-  Opportunities Identification
-  User Research
-  Solution Concept Design
-  Events

The course calendar is roughly mapped to phases of the innovation process in the sense that certain weeks have dedicated themes, project goals or hard milestones. Methods that support the various phases of the innovation process navigate your team through your journey and are applied after being introduced in a lecture.

Weekly lectures (around 1,5 h) provide

methodological input on the innovation process and will guide you through the project. All lectures will take place at **inno.space** (Building K, room 019).

Additionally, a weekly coaching takes place. During this, you will present your weekly project work and discuss difficulties and learnings. Coaching takes place with teams individually.

MARCH 2026

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	Kick Off: Team forming, project & tech introduction 18	19	20	21	22
23	24	25	26	27	28	Travel week: i2Planet @ CERN IdeaSquare, Geneva 29
30	31					

APRIL 2026

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	
		Travel week: i2Planet @ CERN IdeaSquare, Geneva	1	2	3	4	5
6	7	Tech exploration: Meet the researchers	8	9	10	11	12
13	14	Methods for opportunity exploration	15	16	17	18	19
20	21	Methods for opportunity exploration	22	23	24	25	26
27	28	Intermediate presentation: Phase 1 milestone	Due: Definition of application field	29	30		

MAY 2026

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	
				1	2	3	
4	5	Methods for user research	6	7	8	9	10
11	12	Methods for user research	13	14	15	16	17
18	19	Method input: Low fidelity prototyping & testing	20	21	22	23	24
25	26	Intense prototyping workshops	27	28	29	30	31

JUNE 2026

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1	2	Intermediate presentation: Phase 2 milestone Due: System specification 3	4	5	6	7
8	9	Mid-fidelity prototyping 10	11	12	13	14
15	16	Expectation for final deliverables Due: Team poster/project poster 17	18	19	20	21
22	23	Project Work Due: Demonstrator/Video 24	25	26	27	28
29	30					

JULY 2026

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
		Final presentation: Phase 2 milestone and iExpo participation with booth Due: Project presentations & exhibition 1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	Due: Project Report 17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



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