HOW TO PARTICIPATE

In order to apply for this course please click the link below: https://www.polimi.it/en/education/specializing-masters-and-postgraduate-programmes/master-detail/569

and insert your application as requested.

The deadline for the application is May 21, 2026.

Admission to the course follows a first-come, first-served basis.
Minimum number of participants: **10**
Maximum number of participants: **40**

Please note that 25 seats are reserved for Transmit project partners, while 15 additional seats are available for external participants.

If the minimum number participants is reached, the course will start as planned. If not, the course will be postponed or cancelled. This communication will be sent to participants by **May 25, 2026.**

If necessary, the Direction may modify the programme, the Faculty and the course teaching method.

COURSE WITHDRAWAL

In the event that the participant is unable to attend the course, they must inform the course Staff (school-deng@polimi.it) by May 26, 2026.

The Institution/Company is allowed to replace a participant with another employee before the course starts, assuming the course staff has been promptly informed accordingly.

The Department of Energy non-institutional training activities and special projects for university teaching comply with the UNI EN ISO 9001-2015 standard.

ORGANIZING INSTITUTION

Department of Energy – Politecnico di Milano

Co-ORGANIZING INSTITUTION

RCCS, Heriot Watt University

COURSE DIRECTOR

Prof. Giampaolo Manzolini, Politecnico di Milano

COURSE CO-DIRECTOR

Prof. Davide Bonalumi, Politecnico di Milano
Prof. Mijndert van der Spek, Heriot Watt University

DURATION & MODE OF DEPLOYMENT

Sunday 7th – Tuesday 9th June 2026
On campus attendance

LOCATION

Politecnico di Milano | Candiani-Durando Campus

REGISTRATION FEE

No registration fee required. Course funded by POLIMI as part of the INITIATE Union's Horizon 2020 Europe research and innovation project and by the COST Action CA21127 – Techno-Economic Analysis of Carbon Mitigation Technologies (TrANsMIT).

COURSE PROGRAM CHAIRS

Prof. Giampaolo Manzolini, Politecnico di Milano
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COURSE STAFF

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POLITECNICO MILANO 1863 | DIPARTIMENTO DI ENERGIA

Summer School

Advanced Topics in CCUS and CDR Technology Assessment

07-09 June, 2026

The INITIATE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 958318

INITIATE
A STEPWISE PROJECT

COST Action CA21127 – Techno-Economic Analysis of Carbon Mitigation Technologies (TrANsMIT)

TRANSMIT

TARGET AUDIENCE

The School is open to:

- PhD students
- Early-stage researches/engineers (upon availability of seats)

SELECTION PROCESS

PhD students from POLIMI are automatically enrolled.
In case more than 40 PhD students apply, the application will be revised and confirmed by the organizing committee, giving priority to PhD students and, if needed, assessing the coherence of the research activities with the topics of the Course and the motivation letter.

TRAINING FORMAT

Lectures will be offered by Italian and international professors expert of Techno-economic and Life cycle assessment , as well as process modelling. Assessment application, Q&A and discussion session will conclude each seminar.
Teaching Language: **English**

COURSE CONTENTS

The short course on the techno-economic and environmental assessment of CO_2 capture and utilisation (CCU) and Carbon Dioxide Removal (CDR) technologies is designed to provide participants with a comprehensive introduction to the advanced concepts and practical tools required for evaluating CCU/CDR systems . The course begins with an overview of key performance indicators (KPIs), including capture efficiency, energy penalty, specific CO_2 avoided, cost of CO_2 captured, and life cycle greenhouse gas emissions. Participants will learn how to define and calculate these KPIs, understanding their relevance in both academic and industrial contexts. The theoretical foundation will be complemented by practical sessions in which attendees apply the assessment framework to specific, well-defined use cases. Through guided exercises, participants will assess the techno-economic feasibility and environmental impacts of these applications, using advanced methodologies such as process simulation and life cycle assessment (LCA). By the end of the course, students will be able to critically evaluate various CCU/CDR options, interpret benchmark data, and communicate results using established KPIs. This training is particularly relevant for researchers, engineers, and decision-makers aiming to contribute to the development and deployment of sustainable CO_2 management solutions.pre-existing knowledge of standard LCA and/or TEA are expected.

CERTIFICATE OF ATTENDANCE

At the end of the Summer School, the participants will receive a certificate of attendance, provided that they have attended at least 70% of the lectures.

AGENDA - TBC

Time	7 JUNE
09:00 11:00	Manzolini - Mijndert Welcome coffee - registration
11:00 13:00	Manzolini -Mijndert Presentation of the summer school, logistic aspects, Introduction to the projects (INITIATE/ TRANSMIT)
	Lunch
14:30 16:15	Manzolini KPI of CCUS
	Coffee break
16:30 18:00	Zecca case studies of CCUS

Time	8 JUNE
09:00	Mjindert
11:00	TEA: Location
11:00 13:00	Mjindert Prospective TEA: background systems
	Lunch
14:30 16:15	Mjindert Prospective TEA: foreground systems
	Coffee break
16:30 18:00	Mjindert Prospective TEA: integration

Time	9 JUNE
09:00 11:00	Davide Bonalumi LCA: Location
11:00 13:00	TBD Prospective LCA: background systems
	Lunch
14:30 16:15	TBD Prospective LCA: foreground systems
	Coffee break
16:30 18:00	Davide Bonalumi Prospective LCA: integration

ECTS/CFU CREDITS & EXAM MODE

Attendance at the Summer School allows the acquisition of 3 ECTS credits, recognized upon the exam completion (for PoliMi PhD students). The exam consist in a short review paper or a numerical model application to a case study of interest to the PhD student (topic and deadline to be agreed with the teacher) and it is part of the PhD program in Energy and Nuclear Science and Technology.

LECTURERS

Giampaolo Manzolini | Politecnico di Milano

Davide Bonalumi | Politecnico di Milano

Nicola Zecca | Politecnico di Milano

Mijndert van der Spek | Heriot-Watt University