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/552
and insert your application as requested.

The deadline for the application is **15 June 2026.**

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

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 16 June 2026 along with detailed instructions on how to proceed with the payment of the registration fee.

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

COURSE WITHDRAWAL

In case of proven and serious circumstances preventing from participating to the course, the participant has got two options:

1) To obtain the refund of the registration fee, provided that the subject student has duly informed the course staff by 17 June 2026
2) To keep on hold the registration fee, assuming the relevant amount is used for the following course session. In line with the above, this option is viable, as long as the course staff has been properly informed, again by 17 June 2026
Politecnico di Milano is only liable for the refund of the registration fees already honored.

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.

RESPONSIBLE ORGANIZATION

Department of Energy

COURSE DIRECTORS

Enrico Zio, Politecnico di Milano
Francesco Di Maio, Politecnico di Milano

DURATION, MODE OF DEPLOYMENT & LOCATION

The course will be held from **24 to 26 june 2026** from 9.30 to 18.00 (CET). It will be held in hybrid setting (both physical and virtual attendance is allowed) at the Department of Energy.

REGISTRATION FEE

€ 2800 (full registration fee)* | € 1300 (PhD students)*
PhD students should attach to the online registration form the official certificate of enrollment in the phd program of their university, for the current year.
*15% discount if the participant registers also to the course Fundamentals of Quantitative Risk Assessment (more info about the Fundamentals course here)
A 15% discount is applied to Politecnico di Milano personnel (PhD students, postdocs, researchers, and professors).
Discounts are not cumulative.
VAT is not applicable to the registration fees due to art. 10 DPR 633/26.10.72 and subsequent modifications.

COURSE STAFF

Specializing Master and Continuing Education Office
Department of Energy, Politecnico di Milano
e-mail: courses-deng@polimi.it
website: www.corsoriskassessment.energia.polimi.it

ADVANCED QUANTITATIVE RISK AND RESILIENCE ASSESSMENT Course

II Edition | 24-26 June 2026

POLITECNICO MILANO 1863 | DIPARTIMENTO DI ENERGIA

Organizers:
Laboratory of Analysis of Signals and Analysis of Risk (LASAR) (www.lasar.polimi.it)
Energy Data and Information Lab (EDILAB)

Support:
ARAMIX Srl, Milano, Italy
IEEE – Reliability Society, Italian Chapter
MINES ParisTech, PSL Research University, CRC, Sophia Antipolis, France

COURSE PARTICIPANTS

The course is mainly dedicated to risk analysts and engineers, resilience engineers, technical designers of industrial plants, safety and maintenance managers, asset managers, technicians and operators of surveillance, protection and control of the safety of a facility, researchers and PhD students in the area of Reliability Analysis and Risk Assessment.

TRAINING FORMAT

Lectures will be held in English. All participants will receive a complete set of the presentation slides with specific examples and case studies, selected reference lists and resources in electronic format. The first part of the course is devoted to the presentation of the classical Monte Carlo simulation methods for risk and resilience assessment and management, and advanced concepts on uncertainty (probabilistic, fuzzy, interval) and sensitivity analysis (variance- and distribution-based). In the second part of the course, advanced methods for risk and resilience assessment will be illustrated, including Bayesian Networks and Dynamic Bayesian Networks, Artificial intelligence and Evolutionary algorithms, complex systems and Human factors modelling. Hands-on sessions provide the participants with the opportunity of directly applying the methods to practical case studies (some of these will be held using MATLAB). Finally, in the last part of the course, participants will also be given the opportunity to discuss their experience and technical problems, related to methods and applications.

CERTIFICATE OF ATTENDANCE

At the end of the course, the participants will receive a certificate of attendance, provided that they have attended at least 80% of the course lectures.

MISSION & GOAL

Systems are increasingly exposed to hazards of disruptive events, such as unexpected system failures, climate change and natural disasters, and malicious terrorism attacks. In practice, risk assessment is applied to inform risk management on how to protect from the potential losses caused by the disruptive events. The focus is on the accident scenarios, their possible consequences and likelihoods, and the uncertainties therein. The post-accident recovery process is not considered. Yet, given that the sources of hazard leading to disruptive events are extremely uncertain and, thus, difficult to describe and model quantitatively, and that the systems are highly connected to each other so that the impact of the disruption extends beyond the boundary of the individual systems, an extension of the framework of assessment is necessary, calling for an integrated risk and resilience assessment framework that incorporates aspects beyond those of prevention, typical of risk assessment, in order to allow accounting for pre- and post-accident scenarios analysis. In this sense, the course intends to present the methodologies that allow the integrated assessment of risk and resilience. In particular, the course intends to offer adequate technical-scientific knowledge on advanced risk and resilience assessment methods and provide the most recent methodological tools for their rigorous treatment.

COURSE CONTENTS

Monte Carlo simulation and Bayesian Networks (basic, multi-state and dynamic) for risk and resilience assessment and management; Uncertainty and sensitivity analysis, and Human factors in risk and resilience assessment and management; Resilience optimization; Artificial intelligence for risk and resilience assessment and management.

Hands-on:
Monte Carlo simulation, sensitivity analysis, Bayesian Networks.

Round-table:
Presentation and discussion of Case Studies, Researches, Experiences.

LECTURERS (TBC)

Piero Baraldi (PhD)
Full Professor
Department of Energy, Politecnico di Milano

Michele Compare (PhD)
CEO
ARAMIS Srl, Milano

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