

Field: NUCLEAR SAFETY

Topic: SAFETY ASSESSMENT OF EXISTING AND NEW NUCLEAR INSTALLATIONS FOR EXTERNAL HAZARDS

Course type:	TRAINING	Objective
Date:	4-8 March 2024	The course provides trainees with information on the methods and criteria used in screening and assessment of external hazards such as extreme meteorological conditions, geophysical, hydrological and man-made hazards, as well as the main principles of safety design against their effects. To improve related competences, key elements of safety assessment and licensing will be discussed, highlighting possible differences occurring for new and existing nuclear facilities.
Duration:	One week	
Location:	Belgrade, Serbia	
Working language of the course:	English	

Outline of course content

The course aims to provide participants with a basic understanding of the selection, screening and detailed assessment of external hazards, including hazard assessment, plant response and fragility analysis. The definition of design basis loads and proactive measures, as well as the evaluation of plant protection will also be discussed. The scope of the course covers the issue of external hazards from several different origins, including extreme weather, geological, hydrological and man-made hazards. The course will also provide the trainees with up-to-date information on design provisions against external hazards. Moreover, potential differences in safety assessment and licensing of new nuclear facilities and existing facilities will be discussed.

A short summary of the course is as follows:

- First, an overview of external hazard assessment will be given, including a brief presentation of the main analysis steps and the different hazard categories. A separate lecture will present the selection and screening of external hazards.
- Opportunity will be provided for the trainees to discuss the current status and future plans for assessing external hazards (together with the status of building nuclear facilities) in their own countries.
- Two specific lectures will be devoted to hazards related to the field of geosciences. These presentations will cover the main issues of hazard assessment and plant protection against earthquakes, and will discuss additional hazards, e.g. surface faulting, liquefaction and seismically induced soil settlement.
- Three lectures will discuss hazard specific approaches to external hazards due to extreme meteorological conditions as well as hydrological and man-made hazards. The specific features of these hazards and consequent specifics of the related hazard assessment and plant response will be addressed. In addition, a separate lecture will deal with the handling of the combinations of external hazards.
- One presentation will cover the design provisions against external hazards for new and existing nuclear facilities, as well as the differences in acceptance criteria for newbuilds and operating plants.
- One lecture will discuss the methodological aspects of probabilistic safety assessment for external hazards.

Technical schedule and delivery methods

The course consists of one module taking a working week (i.e. 5 workdays) with course elements as follows:

- **Classroom lectures:** the course is organized in 13 theoretical lectures.
- **Tabletop exercise:** a time of work in groups (4-5 persons each) is allotted in order the trainees could test their knowledge and evaluate the achievements.
- **Technical visit:** in the morning of the fourth day, a technical visit is planned to a nearby nuclear facility or research centre specified later.

Target audience

This course is intended for experts and professionals of Nuclear Regulatory Authorities (NRAs) and Technical Support Organisations (TSOs), preferably with existing knowledge of and responsibilities related to safety analyses.

Target number of participants: 15 – 25

Prerequisites and requirements for participants

Participants should have an adequate level of knowledge in English (at least an 'Independent user' level defined by the [CEFR](#)). A university degree and at least 2 years of experience in functions relevant to the content of the course is also a prerequisite. Qualifications obtained in engineering or physics faculties with nuclear specialization would be an asset.

The relevancy of the course topic in the work and institutionally justified interest in participating will be considered as well as the need and opportunity for filling competence gaps. Regional connections to the course location are prioritized and efforts are made to ensure gender equality, so these aspects may also be taken into account as selection criteria.

Terms of participation

The project is implemented under the European Union (EU) external assistance programme called the European Instrument for International Nuclear Safety Cooperation (INSC) and aims to support the National Nuclear Regulatory Authorities (NRAs) and their Technical Support Organisations (TSOs) in non-EU countries in strengthening their capabilities with regard to their regulatory tasks and responsibilities in the field of nuclear safety and radiation protection.

Employees of the NRAs or their TSOs in the Beneficiary Countries are eligible for financially supported participation in the T&T courses. Beneficiary Countries of the project are published on the website <https://training.ek-cer.hu/>.

Costs

Travel costs and subsistence allowances (including the international and national travel tickets, per diems, shuttle services, insurance and visa costs) for participants will be covered by the project.

Application

Application via the website <https://training.ek-cer.hu/>, according to the process and deadlines indicated there.

Examination

Technical and linguistic tests will be written as part of the application and selection process to assess the underlying knowledge and preparedness of applicants. Knowledge and development of selected participants will be assessed through technical tests throughout the course.

Participants attending the full course will be issued with attendance certificates. Successful participants will receive certificates confirming their knowledge achieved and skills acquired.
