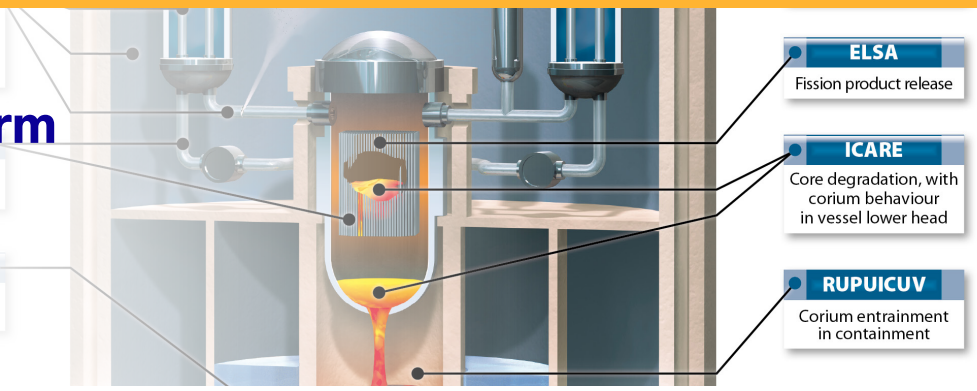
ASNR ACADEMY
Autorité de sûreté nucléaire et de radioprotection

NUCLEAR SAFETY — ***COURSE IN ENGLISH***

ASTEC
Accident Source Term Evaluation Code



Codes: CI2160 / CO1020

Session:
15-19 June 2026

Registration deadline:
15 May 2026

Duration: 5 days (35 hours)

Location:
Aix-en-Provence, France

Price: 2 560€

REGISTRATION BY MAIL

Objectives

To provide a basic understanding of the ASTEC software capabilities and its application in reactor accident source term assessment and severe accident management. It should be noted that participants cannot be expected to acquire an in-depth theoretical knowledge of severe accident phenomena from the brief description of ASTEC physical modeling principles presented in this course.

Learning Outcomes

Participants will acquire:

- An understanding of ASTEC software capabilities.
- Sufficient understanding of the software use to perform first calculations for the purpose of interpreting severe accident experiments and developing NPP accident scenarios.

Target Audience

The training course is intended for the benefit of professional engineers and scientists with university-level degrees involved in NPP safety analysis related especially to severe accidents. Participants will require knowledge of severe accident phenomenology and an experience in running computer codes.

Special Conditions

A valid ASTEC License or at least in the examination phase with an export authorization issued by the SBDU is a necessary condition to register for the training course, with some exceptions.

Prerequisites

No prerequisites are required.

Examination

Knowledge testing (multiple choice exam) will be performed on the full course content and successful candidates will be issued with a Knowledge Certificate.

Teaching methods

Lectures, discussions and practical sessions are included.

Working group exercises are supervised by experienced experts belonging to the ASNR ASTEC team.

Program

The Accident Source Term Evaluation Code (ASTEC) has been developed over a number of years for the simulation of severe accident sequences in water-cooled nuclear power plants. The software simulates all severe accident phenomena, except steam explosion and loss-of-containment mechanical integrity, from the initiating event up to the possible release of radioactive products (“source term”) from the containment.

The main ASTEC applications include nuclear reactor safety analysis source term evaluations, and development of severe accident management guidelines.

The current V3 version is applicable to water-cooled reactors including PWR, VVER and BWR and, to some extent, to pressurized heavy-water reactors.

The software builds on the European body of knowledge on severe accidents. It has been subjected to an intensive validation through more than 300 experimental tests, including separate-and coupled- effect tests, integral tests (e.g. Phébus FP in-pile tests) and, in particular, OECD/NEA ISP exercises. The validation matrix is being continuously expanded based on the results of ongoing international programs (PEARL, STEM2-OECD, CCI-OECD, ThAI-OECD, etc.).

Following a general presentation of the software structure and user tools, the lectures focus on various modules used to simulate severe accident phenomena, each one addressing either NPP zones during the whole scenario or specific parts of the scenarios.

At the end of the module, a roundtable discussion session addresses issues identified by participants. It is followed by an evaluation during which participants give their impressions of the module, with a review of the degree to which the needs expressed on the first day of training were met.

Contact :
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Online catalogue
https://academy.asnr.fr/en/

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