

## Neutronic Aspect of Nuclear Reactor Design

The aim is to present the key features of the core design, with focus on the main modifications brought in EPR design (Gen 3) to increase the safety and efficiency of the core behavior. After a short remind of the general safety approach, the overall objectives of core and fuel design are provided, as far as their declination in the EPR core design: presentation of the components of the EPR core reactor, including diverse in-core instrumentation, focus on neutronic aspects through reactivity control means, characteristics of fuel assemblies, and core loading strategy. Some bases about core thermal-hydraulic design and codes/coupling used for simulation of core behavior in safety studies will also be provided.

Duration: 3h

Language: English

Participants: 10 to 30

Location: classroom



Basics

Prerequisites: None

### Your profile

Engineer or technician beginner, or any person including in a non-technical trade, wishing to learn about the key features of the core design, with focus on the main modifications brought in EPR design (Gen 3) to increase the safety and efficiency of the core behavior.

### During the training, you will:

- Review the general Safety approach
- Discover the overall objectives of core and fuel design, as far as their declination in the EPR core design
- Discover the components of the EPR core reactor, including diverse in-core instrumentation
- Focus on neutronic aspects through reactivity control means, characteristics of fuel assemblies and core loading strategy
- Learn some basis about core thermal-hydraulic design and codes/coupling used for simulation of core behavior in safety studies

### After the training, you will be able to:

- Understand the core and fuel design
- Present the components of the EPR core reactor, including diverse in-core instrumentation
- Analyze the neutronic aspects through reactivity control means
- Apply some basis about core thermal-hydraulic design and codes/coupling

### Advantages

- Face-to-face training

### Content

#### Theoretical module:

- Introduction
- Power Generation and Reactivity Coefficients
- Reactor Core Design
- Fuel Assembly Design
- Nuclear Core Design
- Thermal Hydraulic Core Design
- Conclusion

### Evaluation

- None