

An introduction to nuclear power engineering

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The objective of the course is to provide the audience with a basic understanding on how the nuclear power systems work. During the course it will be explained why the nuclear power systems are indispensable in order to fulfill rapid decarbonization goals. The students will have the opportunity to understand how the nuclear power systems work, what kind of radiation is present inside the reactor and how the radiation interacts with the structural components of the nuclear power plants. Some possibilities on how to model the irradiation effects will be also discussed.

Main topics:

1. The importance of nuclear power systems
2. Basics of nuclear physics
3. Interaction of radiation with matter
4. Basics of nuclear reactor physics
5. Overview of nuclear power reactor types
6. Materials for nuclear power systems
7. Impact of radiation on the properties of structural materials

The total number of lecture hours: 30, laboratory exercises: 15 hours, self-teaching: 40, direct tutoring and consultations: 15 hours.

ECTS Points: 4