GRE@T-PIONEER

Course on

Radiaton protection in nuclear environment

Radiation protection is a crucial part of the operation of a nuclear installation and a specific **interdisciplinary** field requiring knowledge of reactor physics, neutron and gamma transport calculations, shielding design, instrumentation, health physics, and radiation protection standards and regulations. **This course** aims to **modernize** the radiation protection briefing obligatory for any student or trainee entering a nuclear installation, couple radiation protection and health physics with the **particle transport calculation tools** and methods touched upon in other GRE@T-PIONEeR courses and present the specificities of **shielding and dose rate calculations**.

The **pedagogical format** of the course is based on a **hybrid flipped classroom**. In this format, you need to complete some **preparatory work** (representing about 40 hours of work) before attending **interactive classes** organized during 5 consecutive days (representing about 40 hours of work). Those classes are given in a hybrid set-up, with participants following the classes either onsite or remotely on the web. Research in engineering education demonstrated that such a teaching format leads to better learning outcomes and increases the interactions between the students and the teachers.

After the course you will be able to:

- Understand the most important **health physics** concepts and **radiation protection** regulations.
- Calculate the **dose** received from a radiation source.
- Apply **analytical methods** and corrections to describe radiation fields in simple geometries.
- Understand the principles, advantages and challenges of **deterministic and Monte Carlo modelling** of complex geometries.
- Perform efficient Monte Carlo calculations using **variance reduction** techniques.

In order to **pass the course** and be issued a **course completion certificate**, you need to obtain at least 50 points (out of 100 max. points). All activities (both during the preparatory work and the interactive classes) are graded.

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The course is given by:

- Assoc. Prof. Máté Szieberth, Budapest University of Technology and Economics, Budapest, Hungary.
- Prof. Rafael Macian, Technical University of Munich, Munich, Germany.
- Assoc. Prof. Szabolcs Czifrus, Budapest University of Technology and Economics, Budapest, Hungary.
- Gergely Klujber, Budapest University of Technology and Economics, Budapest, Hungary.

The interactive sessions are organized between April 8 and 12, 2024 at Budapest and on the web.

Register before January 28, 2024, 23:59 at:

great-pioneer.eu/register