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. **The 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 **online self-paced 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 flipping leads to higher student engagement, better achievement of the learning outcomes and increases the interactions between the students and the teachers.

After successfully completing 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.

The **target audience** for the course is:

- MSc students, PhD students and Post-Doc students having some background knowledge in nuclear engineering.
- Nuclear engineers.
- Reactor physicists.
- Nuclear safety analysts.
- Research scientists in the above fields.

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. The certificate will briefly describe the course contents, the number of hours the different course elements represent and the number of equivalent ECTS credits (European Credit Transfer and Accumulation System). **The course is worth 3 ECTS**.

As a course participant, you get access to:

- An online **Learning Management System** with 24/7 access to all teaching resources for 4 months.
- During the **online self-paced preparatory phase**:
  - A set of **handbooks** written for the course.
  - **Video lectures** associated to the handbooks.
  - **Quizzes** to test your understanding.
- During the **interactive phase**:
  - **Engaging activities** aimed at applying the principles learned during the preparatory phase.
  - **Expert support** from the teachers.
  - Possibility to **network** with the other participants.

You can read some **testimonies** of our past attendees on our website at this **link**.

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 course is fee-based. Fees vary according to geographical location (developed or emerging country) and participant status (student or professional).

Payment of the course will be requested after having applied and having received confirmation that you have been accepted for the course. People accepted for the course will then get a link to pay online. The course fees are as follows:

- Course fee for professionals – Developed countries: 1875 EUR (VAT included).
- Course fee for professionals – Emerging countries: 300 EUR (VAT included).
- Course fee students – Developed countries: 100 EUR (VAT included).
- Course fee students – Emerging countries: 50 EUR (VAT included).

You can find more information on fees and the list of developed and emerging countries on our website at this **link**.

The course platform opens on October 30th, 2026, for the online self-paced preparatory work, and the interactive sessions are organized between November 30th and December 4th, 2026, at Budapest University of Technology and Economics, Budapest, Hungary, and on the web.

Apply for the course between August 31st, 2026, and September 20th, 2026, at:

great-pioneer.eu/registration

Participants choosing the onsite version of the course must also cover their own expenses (travel, food, and accommodation). Possibilities, if any, to apply for financial support for onsite attendance are indicated in the application form above.

Questions can be sent to **contact@great-pioneer.eu**