

Class Title: OpenMC

12–15 November 2024

Minimum enrollment required: 20 participants

Course fee: 450 EUR

This 4-day interactive course is intended to give students a thorough introduction to the usage and application of the OpenMC Monte Carlo code. The course will be interactive and students will work hand-in-hand with the instructors to develop models, run the code, and explore a wide variety of features.

Topics to be covered include:

- **Geometry:** constructive solid geometry; surfaces, cells, universes, lattices, CAD-based geometry
- **Sources:** statistical distributions, source options
- **Tallies:** filters, scores, and tallies; cell instances; meshes; triggers
- **Post-processing:** working with statepoint files; Pandas dataframes; tally arithmetic
- **Nuclear data:** cross section configuration; introspection of data; automated data generation; cross section visualization
- **Depletion:** depletion operators; time integration methods; activation calculations
- **Multigroup cross section generation:** automated generation of MGXS over spatial domains; group structures; MGXS libraries
- **Visualization:** Geometry and tally visualization with the OpenMC plotter application
- **Coupling:** C/C++ API, multiphysics calculations

The class will be based on the latest version of OpenMC as of the start of the class. During the course, students will be provided with a cloud-based Jupyter notebook interface accessible through any web browser. It is **not** required to have OpenMC installed on your laptop; however, students are welcome to install OpenMC in advance.

Students are expected to have basic knowledge and familiarity with Python 3. Resources for learning basic Python will be provided in advance.