

**COURSE CODE:** AAF1555

**COURSE NAME:** NEUTRONIC DESIGN OF NUCLEAR SYSTEMS

**SEMESTER & YEAR:** Fall Semester (September-December), II year

**INSTRUCTOR:** Renato Gatto

**HOURS:** TBA

**LOCATION:** TBA

**CFU (Credits):** 3

**TOTAL NO. OF CONTACT HOURS:**  $3 \times 8 = 24$

**PREREQUISITES:** Enrollment to the 2nd year of the II level degree (laurea magistrale) in Energy Engineering, and having attended the course “Nuclear Reactor Theory”

**OFFICE HOURS:** After class, or by appointment (Palazzo Baleani, call 06 4991-8603 or email to [renato.gatto@uniroma1.it](mailto:renato.gatto@uniroma1.it))

**COURSE AIMS:** The main objective of this class is that of providing to the students who have already studied the theoretical framework of neutron transport and reactor physics the opportunity to apply their knowledge to numerically solve the diffusion/transport and burn-up equations in critical and subcritical multiplying systems.

**LEARNING OUTCOMES:** In the first part of the course the students are expected to be able to write by themselves numerical codes to solve the mono-dimensional multi-group multi-zone diffusion equation in simple geometries as well as the Bateman equations for burn-up calculations. In the second part of the course the student are expected to acquire the basic knowledge necessary to utilize well-established reactor physics codes (deterministic and/or Monte Carlo) to study realistic multi-dimensional neutronic design problems.

**TEXTBOOK:** Lecture notes provided by the Instructors.

**GRADING POLICY:**

-ASSESSMENT METHODS: Attendance + numerical projects

-ATTENDANCE REQUIREMENTS: Attendance is mandatory

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