



NUCLEAR PHYSICS I	
Enrollment year	2019/2020
Academic year	2020/2021
Regulations	DM270
Academic discipline	FIS/04 (NUCLEAR AND SUBNUCLEAR PHYSICS)
Department	DEPARTMENT OF PHYSICS
Course	
Curriculum	Didattica e storia della fisica
Year of study	2°
Period	2nd semester (01/03/2021 - 11/06/2021)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	GIUSTI CARLOTTA (titolare) - 6 ECTS
Prerequisites	A basic knowledge of quantum mechanics is required.
Learning outcomes	<p>Learning and in-depth learning of some nuclear physics concepts.</p> <p>The course has a theoretical character. Aim of the course is not only to learn or deepen specific concepts or notions, but to learn a method to deal with nuclear physics from a theoretical point of view.</p>
Course contents	<p>The course deals with the problem of the nuclear interaction: its main and essential features, such as, for instance, its spin-dependence, its non central character, its charge independence, are deduced from the nucleon-nucleon scattering and deuteron properties. A realistic nucleon-nucleon potential is built and its behavior at short, medium, and large distance is discussed. In the last part of the course a short introduction to the many-body problem in nuclear physics is presented.</p>

Frontal lessons. Some lesson will have a seminar character.

**Recommeneded or required
readings**

M.A.Preston, R.K.Bhaduri: Structure of the Nucleus, Westview press.

For the last part of the course it will be suggested to the interested students reading some review papers

Oral examination.

The student will be asked to give a short presentation on a topic of his choice within the course program. The evaluation will be given on the basis of the clarity and mastery of the presentation.

Another general question will be asked to check that also other parts of the program have been studied.

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