Study program	Level of studies		**Third cycle**	
	Title of the study program		**Doctoral studies in physics**	
Course title	**MONTE CARLO SIMULATIONS IN RADIATIONS PHYSICS**			
Course ID	Semester	Course status	ECTS credits	Teaching hours
PAP7071	**I /II**	**Elective**	**10**	**30**

Course aims and expected learning outcomes	The aim of the course is to educate students about the capabilities of the Monte Carlo simulations in particle physics. To understand the importance
	of the relevant phyisics determing the applicability of the simulation. To learn how, with what limits simulations can be used in real world problems raging from shileding calulation to radiaoactive meterial production. And at the end to have gained the releveant experiennce with the code FLUKA for general use.

COURSE CONTENT

Lecture 1: Monte-Carlo Method

Lecture 2: FLUKA Introduction

Lecture 3: Input, Output and Plotting

Lecture 4: Physics models

Lecture 5: Sampling, Biasing and Transport

Lecture 6: Scoring and Running Options

Lecture 7: Combinatorial Geometry

Lecture 8: Electro-magnetic interactions

Lecture 9: Nuclear and Heavy Ion Interactions

Lecture 10: Neutron

Lecture 11: The FLUKA User Routines

Lecture 12: Applications – Dosimetry applications

Lecture 13: Voxels and Medical Applications

LITERATURE	ASSESSMENT OF LEARNING	
	Assessment Method	Points
1.https://fluka.cern/ 2. https://www.fluka.org/fluka.php	Practice/Project	20
	Seminar paper	30
	Presentation	50
	Total	100

Remarks