

Universitatea din București
FACULTY OF PHYSICS
DOMENUL DE STUDII UNIVERSITARE DE MASTER: FIZICĂ/PHYSICS
PROGRAMUL DE STUDII UNIVERSITARE DE MASTER: PHYSICS OF ATOM, NUCLEUS, ELEMENTARY PARTICLES, ASTROPHYSICS AND APPLICATIONS
Limba de predare: ENGLEZĂ
FORMA DE ÎNVĂȚĂMÂNT: CU FRECVENȚĂ
DURATA STUDIILOR: 2 ANI (4 Semestre)
Număr total de credite ECTS: 120
Nivelul: 7
Promoția:

Anul I - Semestrul I
Anul universitar 2026-2027

Nr. Crt.	Cod disciplină	Denumirea disciplinei	Categorie formativă (DF/DS/DC)	Regim (DOB/DOP/DFA)	C	S	L/LP	P	Total ore	Total ore online	ECTS	Forma de evaluare
1.	DOB.101.PAN	Statistical Quantum Physics	DF	DOB	1	1	0	0	2	0	6	EXAM
2.	DOB.102.PAN	Interactions of the ionizing particles with matter	DS	DOB	2	0	2	0	4	0	6	EXAM
3.	DOB.103.PAN	Groups theory and applications in Physics	DF	DOB	1	1	0	0	2	0	4	EXAM
4.	DOB.104.PAN	Computational Methods for Atomic and Nuclear Physics Modelling	DS	DOB	1	1	0	0	2	0	5	EXAM
5.	DOB.105.PAN	Ethics and academic integrity	DC	DOB	1	0	0	0	1	0	3	VERIFICARE
6.	DOP.106.PAN	Opțional pachet DOP.106	DS	DOP	2	0	2	0	4	0	6	EXAM
7.	DFA.107.PAN	Volunteering	DC	DFA	0	0	0	0	0	0	1	VERIFICARE
TOTAL					8	3	4	0	15	0	30	

C = curs; S = seminar; L/LP = laborator / lucrări practice; P = proiect.
discipline fundamentale (DF) discipline de specializare (DS) discipline de domeniu (DD) discipline complementare (DC)
discipline obligatorii (DOB) discipline opționale (DOP) discipline facultative (DFA)

Pachet opționale Anul I, Semestrul 1	Disciplina
Opțional pachet DOP.106	Radionuclides, environmental radioactivity, and nuclear waste management
	Applications of Nuclear Physics in life sciences and medicine

Discipline facultative:
Volunteering

Anul I - Semestrul II
Anul universitar 2026-2027

Nr. Crt.	Cod disciplină	Denumirea disciplinei	Categorie formativă (DF/DS/DC)	Regim (DOB/DOP/DFA)	C	S	L/LP	P	Total ore	Total ore online	ECTS	Forma de evaluare
1.	DOB.108.PAN	Radiation sources, dosimetry, and radiological protection	DS	DOB	2	0	1	0	3	0	7	EXAM
2.	DOB.109.PAN	Medical and Nuclear Electronics	DS	DOB	2	0	2	0	4	0	7	EXAM
3.	DOP.110.PAN	Opțional pachet DOP.110	DS	DOP	2	0	2	0	4	0	8	EXAM
4.	DOP.111.PAN	Opțional pachet DOP.111	DS	DOP	2	0	2	0	4	0	8	EXAM
5.	DFA.112.PAN	Simulation codes in Nuclear Physics	DS	DFA	2	2	0	0	4	0	4	EXAM
6.	DFA.113.PAN	Nuclear archaeology	DS	DFA	2	2	0	0	4	0	4	EXAM
7.	DFA.114.PAN	Volunteering	DC	DFA	0	0	0	0	0	0	1	VERIFICARE
TOTAL					8	0	7	0	15	0	30	

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Pachet opționale Anul I, Semestrul 2	Disciplina
Opțional pachet DOP.110	Models for nuclear structure, nuclear and photonuclear reactions
	Experimental physics of heavy-ions at low energies
Opțional pachet DOP.111	Detection methods in Physics of atom, nucleus, elementary particles, and Astrophysics
	Large experiments in Nuclear Physics, Particle Physics and Astrophysics

Discipline facultative:
Simulation codes in Nuclear Physics
Nuclear archaeology
Volunteering

Anul II - Semestrul I
Anul universitar 2026-2027

Nr. Crt.	Cod disciplină	Denumirea disciplinei	Categorie formativă (DF/DS/DC)	Regim (DOB/DOP/DFA)	C	S	L/LP	P	Total ore	Total ore online	ECTS	Forma de evaluare
1.	DOB.201.PAN	Relativistic nuclear Physics. Anomal states and phase transitions in nuclear matter	DF	DOB	2	0	2	0	4	0	8	EXAM
2.	DOB.202.PAN	Elementary particles phenomenology. Elements of Cosmology and astroparticle Physics.	DS	DOB	2	2	0	0	4	0	8	EXAM
3.	DOP.203.PAN	Opțional pachet DOP.203	DS	DOP	1	0	2	0	3	0	7	EXAM
4.	DOP.204.PAN	Opțional pachet DOP.204	DS	DOP	2	0	2	0	4	0	7	EXAM
5.	DFA.205.PAN	Volunteering	DC	DFA	0	0	0	0	0	0	1	VERIFICARE
TOTAL					7	2	6	0	15	0	30	

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Pachet opțional Anul II, Semestrul 1	Disciplina
Opțional pachet DOP.203	Nuclear fission and fusion. Nuclear reactors and nuclear energetics
	Radioactive beams, nuclear bosonic condensation, and new types of nuclei
Opțional pachet DOP.204	Nuclear magnetic resonance. Physical principles and applications
	Atomic and molecular clusters

Discipline facultative:
Volunteering

Anul II - Semestrul II
Anul universitar 2026-2027

Nr. Crt.	Cod disciplină	Denumirea disciplinei	Categorie formativă (DF/DS/DC)	Regim (DOB/DOP/DFA)	C	S	L/LP	P	Total ore*	Total ore online	ECTS	Forma de evaluare
1.	DOB.206.PAN	Research activity practice (120 ore / 10 săptămâni)	DS	DOB	0	0	0	10	10	0	15	PROJECT ASSESSMENT
2.	DOB.207.PAN	Dissertation thesis preparation (60 ore / 2 săptămâni)	DS	DOB	0	0	0	5	5	0	5	PROJECT ASSESSMENT
3.	DOP.208.PAN	Opțional pachet DOP.208	DS	DOP	2	0	1	0	3	0	5	EXAM
4.	DOP.209.PAN	Opțional pachet DOP.209	DS	DOP	2	0	1	0	3	0	5	EXAM
5.	DFA.210.PAN	Complements of nuclear and photonuclear reactions	DS	DFA	2	2	0	0	4	0	3	EXAM
6.	DFA.211.PAN	Current experimental problems in Atomic and Nuclear Physics	DS	DFA	2	0	2	0	4	0	3	EXAM
7.	DFA.212.PAN	Nuclear security	DS	DFA	2	0	2	0	4	0	4	EXAM
8.	DFA.213.PAN	Volunteering	DC	DFA	0	0	0	0	0	0	1	VERIFICARE
TOTAL					4	0	2	15	21	0	30	

* În cazul activităților de practică este media pe săptămână
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1.	DOB.214.PAN	Public defense of master thesis	DS	DOB	0	0	0	0	0	0	10	EXAM
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Pachet opțional Anul II, Semestrul 2	Disciplina
Opțional pachet DOP.208	Spectroscopic methods and techniques for investigation of the nuclear and subnuclear systems
	Properties of atomic and molecular systems. Experimental models and techniques
Opțional pachet DOP.209	Lasers, plasma, and acceleration methods. Experimental applications at ELI-NP
	Plasma physics in the study of nuclear, astrophysical, and cosmological processes

Discipline facultative:
Complements of nuclear and photonuclear reactions
Current experimental problems in Atomic and Nuclear Physics
Nuclear security
Volunteering

Sinteze pentru verificarea conformității cu standardele ARACIS

Categ oria	Total ore	% ore	ECTS	% ECTS	Observații / standard domeniu
DF	112	12.87	18	15	
DS	744	85.52	99	82.5	
DD	0	0	0	0	
DC	14	1.61	3	2.5	

Categ oria	Total ore	% ore	ECTS	% ECTS	Observații / standard domeniu
DOB	544	62.53	74	61.67	
DOP	326	37.47	46	38.33	
DFA	232	26.67	22	18.33	

Tip activitate	Total ore	% din total
Curs	362	41.61
Seminar	70	8.05
Laborator/Lucrari practice	258	29.66
Proiect*	180	20.69
Practica	120	13.79
total	870	

*Include practica

Numărul orelor de practică (fără elaborarea lucrării de licență)	120
Numărul orelor de practică pentru elaborarea lucrării de licență	60
Total ore practică	180