

11<sup>th</sup> International Conference of the Balkan Physical Union

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# Models of Studying Physics in European Universities – Specificities in Balkan Countries



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HEI	Field of study	Study program	ECTS credits	Max no students	
University of Bucharest	Sciences	Physics	180	50 + 40 (English)	Accredited
		Biophysics	180	50	Accredited
		Medical Physics	180	50	Accredited
		Computational & IT Physics	180	50	Accredited
	Engineering	Applied (technological) physics	240	50	Accredited
Babeş-Bolyai University of Cluj-Napoca	Sciences	Physics	180	40 + 25 (Hungarian)	Accredited
		Medical Physics	180	60	Accredited
		Computational & IT Physics	180	30 + 25 (Hungarian)	Accredited
	Engineering	Applied (technological) physics	240	20 + 15 (Hungarian)	Accredited
Al. I. Cuza University of Iaşi	Sciences	Physics	180	40 + 40 (English)	Accredited
		Biophysics	180	40	
		Medical Physics	180	40	Accredited
		Computational & IT Physics	180	40	Accredited
	Engineering	Applied (technological) physics	240	30 + 50 (Rep. Moldova)	Accredited
West University of Timișoara	Sciences	Physics	180	35	Accredited
		Medical Physics	180	50	Accredited
		Computational & IT Physics	180	50	Accredited

HEI	Field of study	Study program	ECTS credits	Max no students	
<b>Politehnica University of Bucharest</b>	Engineering	Engineering Physics	240	50	Accredited
<b>University of Craiova</b>	Sciences	Physics	180	50	Accredited
		Computational & IT Physics	180	50	Accredited
<b>University of Oradea</b>	Sciences	Physics	180	25	Accredited
		Medical Physics	180	50 + 40 (English)	Accredited
<b>Ovidius University of Constanța</b>	Engineering	Applied (technological) physics	240	30	Accredited
<b>Dunarea de Jos University of Galați</b>	Sciences	Medical Physics	180	50	Authorized (Provisory accreditation)
<b>Vasile Alecsandri University of Bacău</b>	Sciences	Computational & IT Physics	180	30	Authorized (Provisory accreditation)
<b>Valahia University of Targoviște</b>	Sciences	Physics	180	40	Accredited

	Sciences	Engineering
Duration	6 semesters/3 years	8 semesters/4 years
ECTS credits	180	240
School activities	14 + 3 weeks	14 + 3 weeks
No. hours/week	22-28	26-28
Total no. hours	1848-2352	3152 – 3376
No. of courses/semester	5-8	4-10
Curriculum	35-45% – fundamental 35-50% – field specific 10-20% – program specific	>17% – fundamental >38% – field specific >25% – program specific <8% – other
Curriculum	70-83% – compulsory 17-30% – electives + optional ...	
Practical training	112-160 hours	280-240 hours
No students	150/series & 25/group	160/series & 30/group

	Sciences	Engineering
Field specific courses	Mechanics + Oscillations & Waves	Mechanics + Oscillations & Waves
	Molecular physics + Heat	Molecular physics + Heat
	Electricity & Magnetism	Electricity & Magnetism
	Optics	Optics
	Electrodynamics	Electrodynamics
	Quantum mechanics	Quantum mechanics
	Physics of atoms and molecules	Physics of atoms and molecules
Program specific courses	Calculus + ...	Calculus + ...
	Electronics	Electronics
	Nuclear physics	Nuclear physics
	Plasma physics	Plasma physics
	Solid state physics	Solid state physics
	Spectroscopy & lasers	Spectroscopy & lasers
	Metrology	Metrology
Other	High energy physics	Physics of nuclear reactors
		Nondestructive testing; Optoelectronics; Automation; Data acquisition; ...



## Typical jobs after graduation:

- Engineering
  - NDT,
  - Energy
  - Operations & maintenance
- ICT jobs
  - Programming,
  - Data acquisition,
  - Data analysis
- Teaching
- Research
- Other ...



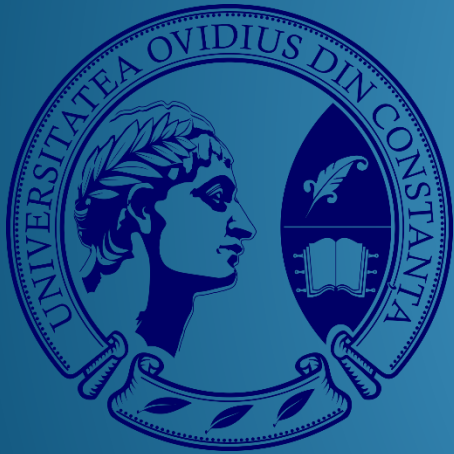
# Challenges

- Poor job market for physicists & declining interest in S&E → weak recruitment
- Aging infrastructure & unattractive teaching → high drop-out rates
- Insufficient funding → programs closed or difficult to maintain
- Lost expertise → high costs of importing international specialists

## ... and some new hopes

- National Plans for Recovery and Resilience
  - Dual training infrastructure & programs → better collaboration with industry
  - Digital transformation → improved operations and service to students
  - Improved infrastructure → increased quality of training & more attractive campuses

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**Thank you for your attention!**

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