



WORKSHOP ON

Physics for peace and social development

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Online Meeting of the Balkan Physical Union

Physics education in Serbia

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Physics education in Serbia

Primary school (8 years)

(36 weeks in elementary school; 34 weeks in eighth grade)

Number of classes per class (weekly)

6th grade - 2

7th grade - 2

8th grade - 2

Recently, **free activities** have been introduced - through these activities you can also do some exercises related to physics.

Classes of students with special abilities in mathematics (Mathematical Gymnasium, "Svetozar Marković" Gymnasium Niš, First Kragujevac Gymnasium, "Jovan Jovanović Zmaj" Gymnasium Novi Sad, Valjevo Gymnasium)

VII - 3rd grade

VIII grade - 3

Physics education in Serbia

Secondary school (4 years)

(37 weeks, fourth grade 33 weeks)

	Science course	Social – linguistic course	General
I	2	2	2
II	2 + 1	1 + 0.5	1 + 0.5
III	2 + 0.5	1 + 0.5	1 + 1
IV	3 + 1	1 + 0.5	2 + 0.5

This number after the plus represents the number of hours of exercises

The Astronomy program is covered through regular physics classes in the fourth grade

Physics education in Serbia

Secondary school (4 years)

(37 weeks, fourth grade 33 weeks)

The contents of physics are also covered through elective programs:

Applied sciences 1

– first and second grade of high school - 1 hour per week

Applied sciences 2

– third and fourth grade of high school - 2 hours per week

Education for sustainable development –

- first and second grade of high school - 1 hour per week

- third and fourth grade of high school - 2 lessons per week

Applied sciences 1 - third and fourth grade of high school - 2 hours per week (although this subject is more related to chemistry and biology - directed towards medicine - but it has content from physics).

Physics education in Serbia

Secondary school (4 years)

(37 weeks, fourth grade 33 weeks)

Classes of students with special abilities in mathematics („Mathematical Gymnasium“ Belgrade, Gymnasium „Svetozar Marković“ Niš, First Kragujevac Gymnasium, Gymnasium „Jovan Jovanović Zmaj“ Novi Sad, Valjevo Gymnasium

1st grade - 4
2nd grade - 3
3rd grade - 4
4th grade – 4

Astronomy is studied as a separate subject

Vocational secondary schools

- Physics is studied for one or two years, depending on the direction and length of education.
- Physics content is also covered in some vocational courses, but the teachers are mostly not physics teachers.

Physics education in Serbia

University

School of Electrical Engineering

- Two semesters (Physics 1 and Physics 2) – 2 x 15 weeks – 3 + 2 + 2

Faculty of Technology and Metallurgy

- Two semesters (Technical physics 1 and Technical physics 2) – 2 x 15 weeks – 3 + 1.6 + 1.4

Faculty of Mechanical Engineering

- One semester (Physics and measurements) – 15 weeks – 2 + 2 + 1

Faculty of Civil Engineering

- One semester (Technical physics) – 15 weeks – 3 + 1 + 1

Faculty of Mining and Geology

- One semester (Technical physics) – 15 weeks – 3 + 2

Faculty of Pharmacy

- One semester (Physics) – 15 weeks – 2 + 1

Faculty of Medicine

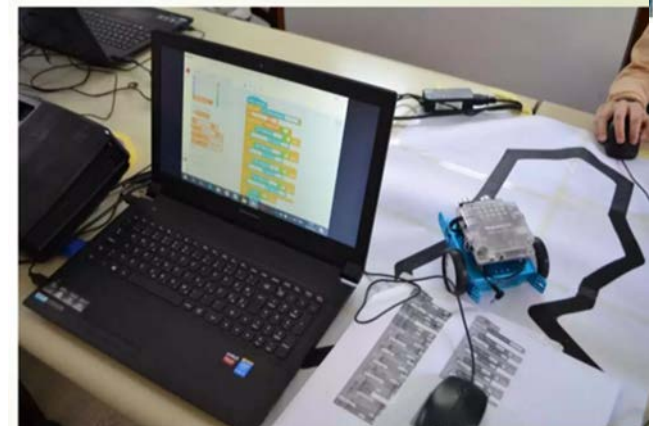
- One semester (Biophysics in radiology) – 15 weeks – 2 + 1

Physics education in Serbia

Physics Camp

7 days during winter holidays

- physics classes
- laboratory exercises
- IT section
- popular lectures in the field of physics and astronomy
- free activities



Physics education in Serbia

Physics Camp

The first Physics Camp was held from January 3 to 10, 2007.

Camp No.	No. Participants	6 th grade	7 th grade	8 th grade	High school
I	40	7	25	8	
II	71	43	17	11	
III - 1	51	21	13	17	
III - 2	74	23	39	12	
IV	53	20	20	13	
V	76	25	28	23	
VI	76	31	29	16	
VII	83	38	23	22	
VIII	135	32	62	30	11
IX	142	37	45	59	1
X	106	8	38	56	4
XI	108	50	41	17	
XII	109	30	55	24	
XIII	101	33	32	17	19
XIV	83	11	36	23	13
XV (summer)	45	9	23	13	
XVI	61	21	16	13	11
XVII	120	9	47	34	30
Total	1534	448	589	408	89

Physics education in Serbia

PROBLEMS

- Serbia lacks ~ 300 physics teachers, ~ 300 informatics teachers and ~ 500 mathematics teachers
- Last years, at all universities in Serbia, up to 10 students per year are enrolled for "physics teaching" studies
- Up to 10 students per year obtain a physics teacher's diploma
- ~ 30 new teachers are needed to replace retired physics teachers

Physics education in Serbia

How to solve the PROBLEMS

Proposals of the Union of the Faculty of Natural and Mathematical Sciences of the Republic of Serbia to solve the problem of the lack of science teachers in primary and secondary schools and the status of study programs for the teacher education

- **Improving the material position and reputation of teachers in society** (This goal can be directly and quickly achieved by increasing teachers' salaries. Teachers' salaries should be at least 50% higher than the average salary in Serbia. In the long term, the achievement of this goal would be helped by solving the housing issue for teachers on more favorable terms, as well as protecting the integrity of teachers by introducing new regulations and measures.)
- **Abolish the mandatory five-year education and the obligation to hold a master's degree for primary school teachers**
- **Repeal of the rulebook on the type of vocational education and defining the competencies of teachers for certain subjects**
- **Scholarships for students of study programs for teacher education**
- **Introduction of double-subject studies** (mathematics - physics, physics - chemistry, chemistry - biology) for teachers in primary schools.
- **The inclusion of representatives of the NMSF Union in all working groups related to education**