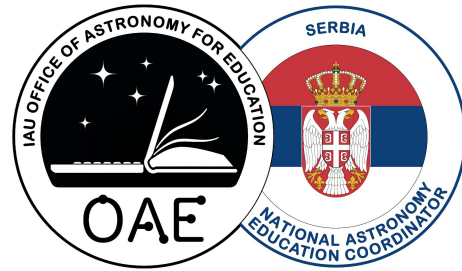


Astronomy Education in Serbia



This overview is part of the project "Astronomy Education Worldwide" of the International Astronomical Union's Office of Astronomy for Education.

More information: <https://astro4edu.org/worldwide>

Structure of education: Education in Serbia is divided into preschool (age of 5 or 6), primary school, secondary school and higher education levels. As of 2006, preparatory preschool programme is mandatory and free. Eight-year-long primary education is compulsory and free (since 1952). It is divided into two cycles, each consisting of 4 years/grades. At the first cycle (lower four grades) all the subjects except for foreign languages and arts are taught by a single teacher in charge of each class. In four upper grades each subject is taught by a different teacher, specialized in a particular field. Secondary education is free but not compulsory. Secondary schools are divided into three types – grammar school or gymnasium (general and specialized, both lasting 4 years), secondary arts school (4 years) and secondary vocational school (2 to 4 years). There are four types of special gymnasiums (Mathematics, Physics, Computer Science and Philology). At the end of secondary education, students are required to undertake a graduation exam – “Matura”. All twelve years of education at public (state) schools are free of charge. There are also a few private schools which charge fees. Schools are in Serbian language, and for national minorities there are classes in mother tongue. Higher education in Serbia comprises of 2 types of studies: Academic studies organized at the Serbian universities and Vocational/applied profession-oriented studies organized either at universities or at colleges of applied studies. Academic studies have a 3-cycle system: Basic (undergraduate) academics studies that last for 3 to 4 years, Master studies (1 to 2 years) and Doctoral (PhD) studies lasting for at least 3 years. Serbia has 8 public (state) and 9 private universities.

Education facilities: In primary school, a class usually consists of 15–30 students. School buildings are generally well-maintained. Sometimes there are maintenance problems, problems of internet connections or a lack of space. One- or two-day school trips to places around Serbia are organized by the particular primary or high school.

Governance and organisation: Education in Serbia is regulated by the Ministry of Education and Science of Republic of Serbia. National Education Council gives its opinion on the changes in curriculum proposed by the Institute for the Advancement of Education and Upbringing. The final decision is made by the Minister. The curriculum was last reformed in 2014.

Teacher Training: Teachers in primary and secondary education must hold a Master degree, whereas those involved in tertiary education are required to hold a PhD. Professional development of teachers is required and specified by law. Teachers have to dedicate a certain part of their working time to professional development training in order to keep their position and license. The Society of Physicists of Serbia organizes annual meetings of physics and astronomy teachers where teachers are acquainted with the latest discoveries and news in astronomy. International seminars for physics

teachers have been organized since 2012 as well. A regular special session dedicated to astronomy education is included in the program of triennial Serbian Astronomical Conferences.

Astronomy in the curriculum: In the primary school curricula astronomy topics are taught as part of the courses of Natural History (4th grade) and Geography (5th grade). Early in primary education children are taught to recognise the Sun, Moon and planets. In Geography they learn about Milky Way, stars, the Sun and Solar system, Earth's rotation and revolution and the consequences, the Moon and lunar phases, Earth's atmosphere and climate changes. Additional topics are taught in astronomy clubs organized by the enthusiastic teachers of physics, mathematics or geography. For 25 years (from 1969 to 1994) astronomy was taught in the 4th year of grammar schools as a separate course with one class hour per week. In 1990 astronomy topics are incorporated in the 4th year course of Physics. Students learn about gravity, coordinate systems in astronomy, time, distances to celestial bodies, physical processes, radiation, astronomical instruments, Sun and Solar system, stars, galaxies and cosmology. Only seven special schools in Serbia (e.g. Mathematical High School in Belgrade) have astronomy as a separate course. Many attempts to reintroduce Astronomy as a separate and compulsory course in all grammar schools remained without success. Moreover, as of recently, the number of hours of astronomy within Physics is drastically reduced as a consequence of the reduction of hours in Physics. Astronomy courses are taught at five state universities. University of Belgrade is the only one with the Department of Astronomy (at the Faculty of Mathematics) where students can major in astronomy from the first study year. Study programs were last accredited in 2014.

Astronomy education outside the classroom: An important role in extracurricular (informal) education for talented secondary school students is played by the Petnica Science Center (PSC) founded in 1982. The program of astronomy in PSC includes 6-7 seminars per year. Research projects realized by the participants in the most advanced group are presented at the annual conferences "A step into science" and published in "Petnica notebooks". Since 2002 Serbian teams have been participated very successfully in the International Astronomical Olympiads. Public astronomy education is realized mainly through the activities of 23 amateur astronomical societies/clubs all over Serbia. Many lectures have been given in two planetaria (in Belgrade and Novi Sad). The mobile planetarium as a tool for astronomy communication is also in use. Popular lectures on the latest discoveries in astronomy are often given at "Kolarac" Foundation in Belgrade, Belgrade Youth Center, Students' Cultural Center and Serbian Academy of Sciences and Arts.

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