

# Astronomy Education in Ukraine



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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>

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**Structure of education:** Children begin formal schooling at age 6 after several years of nursery (optional) and kindergarden (optional from 3 y.o., compulsory from 5 y.o.). There then follows eleven years of secondary school. 9 years of school are compulsory, and you need to take 2 years more for entering the university or other higher education institution. Teachers evaluate students according to 12-point system. Secondary school in Ukraine consists of three levels: the first – 4 years at primary school (provides primary general education), the second – 5 years at basic (complete) school (provides basic general secondary education), the third – 2 years at high school (provides a complete general secondary education). Each student must pass the state final certification at each level of complete general secondary education, and the External Independent Evaluation (EIE) at the end of 11th grade. The certification has 2 subjects after 1st level (Ukrainian language, Math), 3 – after 2nd (Ukrainian language, Math, and one subject by choice of school), 4 – after 3rd (Ukrainian language, Math, History of Ukraine, then other subjects by choice of students, among Physics, Biology, Chemistry, Geography, Foreign Language). The task of schooling is the comprehensive development of the child, providing him/her with the knowledge base that society requires of him/her. The school should promote professional self-determination, physical development and the formation of basic moral and ethical norms. All eleven years of education at public (state) schools are free of charge. There are also private (independent) schools which charge fees. Most schools are Ukrainian language and are non-religious. Gifted children can enter specialized classes with in-depth study of individual subjects or initial pre-vocational training, specialized schools, gymnasiums and lyceums. You may not go to school at all – the student has the right to accelerate secondary education and pass external exams.

Additional development of abilities and talents is achieved in extracurricular education. Such educational institutions include sports sections, art schools, various student clubs and similar organizations, public or private.

Vocational and technical education (which is possible upon completing 9 years at school) is focused on obtaining a specialty. Therefore, it should go to those educational institutions that provide a working profession. These are vocational schools and lyceums (art, technical, higher), agricultural firms and factories, and similar institutions. This also includes centers for vocational education, promotion and retraining of workers. Vocational schools often cooperate with companies – customers of training, where a student can be trained directly in the workplace.

The higher education in Ukraine (possible after successful completing of 11th grade at school) provides fundamental scientific, professional and practical training, retraining and advanced training of students. Forms of higher education are diverse: full-time, part-time, distance or combined, which combines several of these forms. Since 2008, the obligatory condition for admission to a higher education institution is to pass an External Independent Evaluation (EIE).

After higher education you can get a degree – in graduate school (“aspirantura”) and doctoral studies (“doctorantura”). This involves writing and defending a dissertation - PhD or doctoral, respectively - as well as gaining scientific and teaching experience.

**Education facilities:** Ukrainian schools have typical class sizes about 30 pupils. School buildings are generally well-maintained. One of the problems of modern teaching of astronomy at school is that laboratory physics workshops are equipped with not interesting or out of date devices, as well as the lack of telescopic equipment for night sky observations. Thus, most schools in Kyiv (a total of 520) and in Ukraine (a total of 20,100) do not have access to telescopes, while about 4,000 schools have good access to the Internet.

**Governance and organisation:** Public (state) schools are run by local district and city councils. The Curriculum is set by the central government in Kyiv under the Ministry for Education and Science approval. Recently (2020) the President signed the law by which schools have more space and freedom for implementing their own curricula.

**Teacher Training:** There are nearly thirty Ukrainian pedagogical universities, five have a relatively long tradition of preparing teachers to teach astronomy at school. None of them trains specialists in the specialty "teacher of astronomy". Usually it is a teacher of "physics and astronomy", or "physics, astronomy and computer science". This is due to the fact that the school course of astronomy is very small in terms of teaching hours.

**Astronomy in the curriculum:** Astronomical education in Ukraine has a very long tradition going back to around 1577, and continued at the time of the Soviet Union. During 1991-2000, astronomy was not taught as a separate subject in the secondary school of Ukraine. It was restored in the Standard curriculum of secondary schools for 2001/2002 in the amount of 17 teaching hours course in general and technological classes, and in natural and mathematical classes - 34 hours course, in the 11th grade. New textbooks, manuals, teaching programs had to be developed in order to return astronomy back to school curriculum. Today in Ukraine astronomy is studied in higher educational establishments, secondary schools, and its separate elements also in preschool educational establishments. The basic component of preschool education (State Standard of Preschool Education of Ukraine) has an educational line "Child in the natural environment", the content of which contains available to preschool children ideas about the nature of Earth and the Universe. It was announced that in September 2018, Ukraine would begun to introduce an experiment to study the integrated course "Natural Sciences" in 10th grade. This is a combination of astronomy, biology, geography, economics, physics and chemistry in one subject. Experimental programs are developed for classes in the social and humanitarian, sports and artistic and aesthetic directions. Thus, an integrated course can be taught only for students who do not plan to take the EIE in natural subjects, and teachers of natural subjects can read the course without the obligatory completion of refresher courses.

**Astronomy education outside the classroom:** There are active planetaria, science centres and museums, amateur astronomy clubs, public outreach events at the observatories, blogs, social media groups, magazines.

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For specific information about astronomy education in Ukraine or on this document please contact the Office of Astronomy for Education ([oea@astro4edu.org](mailto:oea@astro4edu.org)).