

Astronomy Education in Kazakhstan



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: Compulsory education in Kazakhstan duration is for 11 years, in some private schools up to 12 years. Children usually start school at the age of six or seven. From three to six years old, they can attend kindergartens (preschool), or homeschooled. The first stage of education, grades 1-6, covers students up to 11 years old, secondary education up to 17 years old. Public education is free. Almost all students undergo the Unified National Test (UNT), which is both an entrance exam to universities and a final exam after graduating school. There are also private (independent) schools that charge fees and account for 5% of all students. Most of the schools are non-religious, but pupils from the minority Muslim and Catholic communities attend Catholic schools and madrassas. There are also boarding schools (lyceums) with an extensive study of natural sciences and languages, where students spend weekdays in dorms, and weekends at home.

Education facilities: Educational institutions in sparsely populated rural areas are legally entitled to open a school with at least five school-age children. After grade 9, children can stay in (usually) secondary schools or enroll in vocational schools (lyceums), humanitarian high schools (gymnasiums), primary vocational schools offering basic vocational education, or colleges offering secondary vocational and higher professional education. In colleges, students have the opportunity to graduate with an upper secondary education if they entered after grade 9 and/or go to continue to higher education in universities; the other option is to go to enter the university after grade 11. College graduates are able to continue education at the university where they can skip the first or second year and graduate with bachelor's degrees in a shorter time. All Kazakh schools have access to water supply and a relatively good internet connection (many schools, especially in rural areas, have problems with equipment and the number of computers per student)

Governance and organisation: Implementation of the state policy in the field of education is carried out by the Government of the Republic of Kazakhstan, the Ministry of Education of the Republic of Kazakhstan.

Teacher Training: The appointment of teachers to positions in Kazakhstan is done at the teaching organization level, although the salary scale is centrally regulated. There is no minimum degree required to be assigned for the position. Teachers can work either full-time or part-time, with an option on distance learning.

Astronomy in the curriculum: There are no special courses in astronomy in schools, the subject called "Natural Science" is given in elementary grades, it systematizes and explains the basic concepts of all natural sciences, where general information about the Universe along with physical concepts are given. Starting from the 7th grade, astronomy is being implemented in teaching, where

children learn about the solar system, including the sizes of planets, their orbits and solar and lunar eclipses, some concepts of celestial bodies and their movements. University level astronomy is given in two cities of Kazakhstan: in Almaty at the al-Farabi Kazakh National University, as well as at the M. Kozybayev North Kazakhstan University, these universities are focused on the development of teachers majoring in "astronomy" and "physics". Universities provide lectures, practicals, and laboratory classes in the following disciplines: general astronomy, practical astrophysics, the basics of astrophysics, astrophysics of the Solar system and the Galaxies, nonstationary stars, astrometry, extragalactic astronomy. One of the motivating factors in space exploration is the location of one of the largest launch sites in the world, Baikonur, which inspires in people a lifelong dedication to science..

Astronomy education outside the classroom: Fesenkov Astrophysical Institute (FAI) is a leading scientific organization for fundamental research in the field of astronomy and astrophysics in Kazakhstan, which is part of three research institutes of the National Center for Space Research. There is an astronomical club organized by KazNU students, who are one of the representatives of the Asteroid Day in Kazakhstan. The "Aktobe Regional Planetarium" is located in the city of Aktobe in the west of Kazakhstan. Every week, the planetarium organizes educational and popular lectures in astronomy, cosmonautics, amateur observations of the starry sky, and celestial phenomena for children. This planetarium is part of the Euro-Asian Community of Planetariums. The planetarium conducts lectures on astronomy in Kazakh and Russian languages. The purpose of the lectures is the promotion of science, assistance to school education in astronomy, physics, and geography, the formation of a scientific and materialistic worldview, the development of curiosity in astronomy <https://planeta-aktobe.kz/>. 2009 -the International Year of Astronomy – became significant for schoolchildren in Kazakhstan. The unique Observatory for children was opened in the National Scientific, Educational and Health Center "Bobek". The observatory is equipped with a large automated telescope "Halfmann", the "Planetarium ZKR-4" is installed in the Star Hall, modern equipment is available in the computer and multimedia rooms. <https://bobek.kz/>.

The International Astronomical Union's National Astronomy Education Coordinator (NAEC) Team for Kazakhstan: Chingiz Akniyazov, Ainash Amantayeva, Mukhagali Kalambay, Talgar Konysbayev, Saule Shomshekova

Document coauthors: Erlan Aimuratov, Gulnur Subebekova,

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