

Astronomy Education in Mexico



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: Mandatory education in Mexico goes, officially, from kindergarten (3 years old) to high school (18 years old). In practice, however, most children start at age 6 or 7 with six years of primary education followed by three years of middle-school. Afterwards, students can choose to continue their education to become a technical professional or study three years of high-school, in order to apply for entrance to a University to earn a professional degree. In Mexico, about 90% of the students attend public free schools with the complementary 10% attending private schools charging fees of various amounts. This percentage will most certainly change as hundreds of private schools will close due to the covid-19 crisis. Mexico also counts with an education system for indigenous students, where lessons are taught in Spanish, Nahuatl, Tseltal, Tsotsil, Chontal, among other of the 68 indigenous languages spoken in Mexico.

Education facilities: Education facilities vary greatly in Mexico, depending if the school is public or private; urban, rural, or indigenous. In the public system there are schools with multi-grade classrooms, where one educator teaches children of all the primary levels. The number of children per classroom varies from less than ten in some cases to up to 50. Studies have shown that 25% of schools present some level of risk to the students as they have broken crystals, staircases and electric installations in bad shape, defective furniture, or poor hygienic facilities. 50% of schools lack laboratories, 40% lack libraries and at primary level only 36% have access to computers with internet connection.

Governance and organisation: The curriculum of all levels of mandatory education is set by the federal government through the Ministry of Public Education. However, schools at different levels may be run by either the federal government or the local government of the states conforming the federation, depending on agreements between the federation and each state. The curriculum reform of 2012 was replaced by a new one in 2019, a migration that is still in progress as the government has failed to provide the supporting material (text books) to implement it.

Teacher Training: At primary level, most teachers come from normal schools with undergraduate degrees. More recently, professionals with degrees in pedagogy, educational psychology and related studies are able to apply for positions as teachers in the public system.

At secondary and high school levels, teachers are required to hold an undergraduate degree related to the subject they teach and in some cases are required to take pedagogic courses. Teachers are encouraged to enroll in courses for further training and actualisation. Focused courses in astronomy designed for teachers are seldomly offered by research institutes, universities, planetariums and state science councils in a reduced number of locations.

Astronomy in the curriculum: There are no specialised school courses in astronomy. Instead, astronomy content can be found in “Knowledge of the environment” (a general term for science and social sciences in the first two years of primary school), Geography, Natural Sciences (years 2-6 of primary school), and in Physics in middle-school. Children are introduced to the phases of the moon in the 3th year of primary school, to the Solar System in the 4th and 5th years of primary school, history of Astronomy in the 5th year, and galaxies and the concept of the Universe in the 6th year. Only the Autonomous University of Sinaloa offers an undergraduate degree in Astronomy. Other universities with undergraduate degrees in Physics or Physical Engineering, offer elective courses in Astronomy within their programs.

Astronomy education outside the classroom: There are approximately 150 science or astronomy outreach centers (planetariums and science museums) across the country, plus research institutes, universities and local science councils that offer a permanent program of outreach activities related with astronomy, such as organized school visits to their installations, night observations using telescopes, visits to schools providing outreach talks, workshops and shows using mobile planetarium domes.

There is a long history of collaboration between professional and amateur astronomers in order to bring astronomy to students and the public in general. One of the most important organizations of such kind of collaboration is “Noche de las Estrellas”, coordinated through a national committee composed of representatives of some of the major astronomical research institutes and responsible of an event taking place every year where in one night more than 200 thousand people nationwide gather to observe the sky in more than a hundred sites, with the participation of thousands of students and teachers as visitors or as organizers.

The International Astronomical Union's National Astronomy Education Coordinator (NAEC)

Team for Mexico: Raúl Mújica (Chair), Bernardo Cervantes Sodi, Luis Aguilar, Vicente Hernández, Anahí Caldú (Contact Person)

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