Astronomy Education in

Austria

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: Formal schooling starts at the age of 6 with four years of primary education. At the age of 10, pupils continue either in middle school or secondary school (Gymnasium). Both types of school are compulsory for four years. After middle school, students may switch to Gymnasium, to vocational education or to higher vocational education schools. In all cases, school is compulsory until the age of 15. Gymnasium and schools for higher vocational education lead to final exams in four and five years, respectively. These allow access to universities.
Austria is currently transforming its school system to become fully inclusive with an increasing fraction of students with special needs integrated into the mainstream school system.

Education facilities: Classes have typically less than 28 pupils. In some subjects these numbers are further reduced. Schools follow a national curriculum but are allowed to make some adaptions to the number of hours per week dedicated to a specific subject. There is a growing number of school clusters, i.e. primary and middle or secondary schools in one place.
The infrastructure in schools is generally good. Typically, reliable internet access is available. As a consequence of the Corona virus crisis, the Federal Ministry invested in the build-up of digital learning with the setup of learning platforms, provision of online education material and investment in the IT infrastructure of schools.

Governance and organisation: Most primary and middle schools and some vocational schools are run by the provinces or local city councils. Secondary schools and the majority of the higher vocational schools are under the supervision of the Federal Ministry of Education, Science and Research. About 10% of the students visit private schools.

Teacher Training: Primary school teachers study at one of the 14 Colleges of Teacher Education. They offer a four-year Bachelor programme plus a one-year Master programme. Teaching qualifications at the secondary level require studying at university (partly in cooperation with the Colleges of Teacher Education) where students receive training in two subjects and need to accomplish a Master's degree. Due to an urgent need for teachers in some subjects at the moment, there is also the possibility for selected career changers to receive a teacher accreditation by completing a special set of pedagogical courses. In-service teacher training is primarily offered via the Colleges of Teacher Education, sometimes in collaboration with research or public outreach institutions, and typically include a handful of astronomy-related courses per year. Since 2020 the Department of Astronomy and the Teachers College at the University of Graz collaborate on the basis of combined bachelor theses on astronomical topics for teachers.

Astronomy in the curriculum: Astronomy plays a rather small role within the curriculum and is not a compulsory subject. Very few secondary schools offer some kinds of astronomy courses as an optional subject. Physics, Biology and Chemistry, rarely combined into Science, are compulsory subjects in both middle and secondary schools. Astronomical topics are focused within Physics.
The primary school curriculum includes basic competences in cardinal directions and the position of the sun. At grade 8 (middle / secondary school) the Physics curriculum foresees teaching of basic knowledge on the Sun-Earth-Moon system including motion, eclipses, phases of the moon and the gravitational force plus a view on the Solar System as a whole (sun, planets and other celestial bodies). For the advanced grades (9 to 12), the curriculum includes the location of Earth within the universe, Kepler's laws, and modern cosmology (GRT, structure and evolution of the universe). Content on stellar structure and evolution had previously been included but was removed during the most recent curriculum reform.
In addition, there are several points in the curriculum, where a connection with astronomical content is possible (spectroscopy, nuclear physics, …).
Additional study programs exist for selected students of outstanding talent and a keen interest in particular topics, which might not be covered in detail in the nominal curriculum. Some programs are organized throughout the school year. Since 1999, the school directorate of the state of Lower Austria hosts an international summer school to foster such interest. In this week-long school, students in groups of 10 receive a compelling summary on a topic, including astronomy. In addition, several universities in Austria offer a summer programme for school kids (Kinderuni) including astronomy courses. These programs exist on all levels of primary and secondary education.

Astronomy education outside the classroom: There exists a very active community of Austrian amateur astronomers offering local observing programmes for school classes and interested individuals. Research institutes at the universities frequently organize public talks and guided tours for school classes. There are several planetariums, public observatories, and museums throughout Austria (but primarily within the major cities) providing learning opportunities on various topics of astronomy for school classes and kindergarten including astronomy presentations, live experiments, and day- and nighttime observations. These entities are connected through the Austrian Society for Astronomy and Astrophysics (ÖGAA).

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