

Astronomy Education in Turkey



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: Turkey, in contrast to other European countries, has a young population. Turkey's population is 83 million of which 23 % consists of children aged under 14 and %15.6 consists of people aged between 14–25. Compulsory education in Turkey begins at age 5, and lasts through 12th grade for 13 years. After kindergarten it splits into three levels of four years each (4+4+4 system). Pupils complete four years of elementary education before entering middle school in the fifth grade. Four years of middle school are followed by four additional years at the upper-secondary level. It is free of charge in state schools but there are private education foundation schools which offer a higher quality education environment for an annual fee. The education system at this level falls under the purview of the Ministry of National Education, which sets the school curricula, and prepares and approves textbooks and teaching aids for state schools. The language of instruction is Turkish. Most private schools offer a secondary language.

Admission to general schools is based on the "Transition from Primary to Secondary Education" examination at the end of grade 8. There are several different types of schools in the general high school stream. These include foreign language high schools, science high schools and so-called Anatolian high schools that use a foreign language medium (typically English, French or German) for instruction in some subjects. In general high schools in grade 10, students declare a concentration in one of several different streams such as natural sciences, literature and mathematics, social sciences, art, foreign languages and mathematics. After four years of study, graduates are awarded the Secondary School Diploma, which gives access to the university entrance examinations. Admission to university is centralized.

500000 Syrian refugee children (out of 3.6 million Syrian refugees) are attending Turkish primary and secondary schools. Thousands of college-aged Syrian refugees are currently enrolled in Turkey's higher education institutions.

Distance education is provided to ensure equal opportunities for all Turkish citizens, and to support the primary and secondary education system. Distance education includes open primary schools, open high schools and vocational and technical open high schools.

In order to ensure that gifted or talented children at the age of pre-school, primary or secondary education are aware of their individual skills and maximize their capacities, "Science and Art Centres" have been established as the institutions giving education in their spare time.

Education facilities: Student classrooms are designed to have 1.5-2m²/student and at least 20 m². Labs arranged for Physics, Chemistry, Biology, Science and Technology lessons may differ in schools but at least 1.5 m²/student. Usage area for each student in music, art, technology, design and similar application classrooms cannot be less than 1.5-2 m²/student. Library should be at least 50 m² and indoor gym at least 80 m².

Services such as boarding schools and bussing are offered in order to ensure that primary and secondary education children living in rural areas receive education of a high quality.

Governance and organisation: Turkey has seven regions, 81 provinces, and a highly centralized system of government. The Ministry of National Education sets policies and oversees the administration of all stages and types of education up to 12th grade. The head of the ministry appoints Directorates of National Education to work at the provincial level. These directorates work under the direction of provincial governors. Schools and other local actors have little autonomy. The current curricula used is valid since 2018.

Higher education institutions fall under the purview of the Council of Higher Education. The council is responsible for planning, coordination, and governance of the higher education system.

Teacher Training: Teachers at the pre-school, elementary, and secondary levels are required to have a four-year bachelor's degree in order to teach in Turkey. Teacher training curricula incorporate specialization subjects, pedagogical subjects, practice teaching and a teacher certification. Students can earn either a bachelor's degree in education, or complete postgraduate training following a bachelor's degree in a non-teaching discipline.

A one-year a professional proficiency certificate entitles holders to teach English and selected subjects at the elementary and pre-school levels, whereas elementary and secondary school teachers in subjects like history, geography, mathematics or physics are required to complete a master's degree.

Three carrier levels are determined for the teaching profession after the candidacy period as "teacher", "expert teacher" and "master teacher" in order to encourage competition for better teaching statues by the Law. The Ministry of National Education provides in-service face-to-face and online training activities for teachers. In-service training activities are centrally planned by the ministry Teacher Training and Development General Directorate and its provincial units.

Astronomy in the curriculum: In primary school astronomy content is found in Science lesson plans starting from grade 3 increasing in grades 5-6-7 up to 8. Astronomy content is issued as the first topic in the related academic year. In grade 3 the science lesson plan starts with Our Planet. In grade 4 it starts with The Earth's Crust and the Movements of Our Earth and later under Human and Environment chapter Light Pollution is covered. In 5th grade starts with recognising the Sun, Earth and the Moon. In 6th grade first chapter is Solar system and Eclipses and in 7th grade Solar System and Beyond. In Grade 8 Seasons and Climate is the first chapter. In secondary education astronomy is covered in physics courses but it is also offered as a selective course in grades 9 and 10. In most cases although students are enthusiastic to take this course, physics teachers are appointed and they issue physics topics instead of astronomy. The reason for this is that physics teachers are not well equipped to teach astronomy since they haven't taken astronomy lessons in their higher education. After a due diligence and needs analysis AstroBilgi Committee has started astronomy teacher training workshops in 2006 and accomplished 55 workshops in various cities through out the whole country since then. In every organization min. 50 teachers were trained. These workshops are performed in coordination with Turkish Astronomical Society (TAD). AstroBilgi lecturers who are responsible for the academic training part of the workshop consist of 11 astronomy professors, astrophysics researchers, amateur astronomers and trained k-12 school teachers (all NAEC Team). The local organisers are usually the provincial directorate for national education, state schools, private schools or science-arts centers which is an official unit established by the Ministry of National Education for informal education. The local municipalities also provide financial support in some occasions. The main goal is to inform teachers about the basic and current issues of astronomy, recent explorations and innovative and inclusive teaching methods that they can use in their classrooms.

In 2009 Galileo Teacher Trainings were organised by Turkish Astronomical Society and continued until 2013. These teacher trainings provide a process of interaction that extends to students and parents with public events also taking place during trainings.

Istanbul Provincial Directorate of National Education has established a unit so-called Istanbul Astronomy and Space Sciences Teacher Academy in 2019. They organise long term 14-week astronomy teacher trainings by a protocol with Istanbul University Department of Astronomy and Turkish Astronomical Society. On the other hand face-to-face and online daily trainings and seminars are also organised.

A recent development is a new curriculum study by the Ministry of Education. They are thinking of opening more extended astronomy and astrophysics courses and preparing textbooks for secondary education in grades 9, 10 and 12. Some NAEC Team members will be working with the ministry on this study.

Astronomy education outside the classroom: There are science centers in big cities that have astronomy and universe section and some of them have planetariums. Some university observatories organise periodic public events. University student clubs also organise public astronomy events such as seminars and star parties in some big cities. Amateur telescope makers and astrophotography enthusiasts also have clubs making small workshops time to time.

The International Astronomical Union's National Astronomy Education Coordinator (NAEC) Team for Turkey: Aysegul Teker Yelkenci (Chair, Contact Person), Serdar Evren, Mert Kocer, Tahsin Demirciler

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