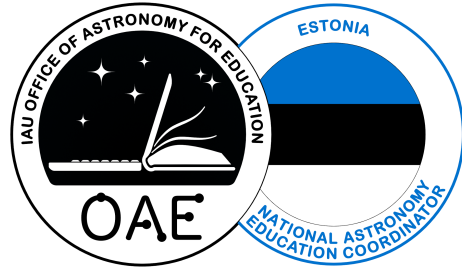


Astronomy Education in Estonia



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: General education is divided into basic and upper-secondary education. **Basic secondary** education starts for students usually at the age of 7 and is divided into three stages: Stage I - years 1-3, stage II - years 4-6 and stage III - years 7-9. Graduating the basic school requires the student to learn the curriculum at least on a satisfactory level together with passing three basic school graduation exams consisting of the Estonian language or Estonian as a second language, mathematics and an exam on a subject of the student's choice as well as completing a creative assignment.

The curriculum at **upper secondary** school (years 10-12) is arranged into mandatory and voluntary courses. The national curriculum sets out subject syllabuses by courses. A course is defined as a 35-hour (@ 45 minutes) study cycle. Graduation from upper secondary school requires the student to complete at least 96 individual courses, passing the state exams consisting of the Estonian language or Estonian as a second language, mathematics and a foreign language exam, passing one school exam as well as completing a student research paper or practical work during the entire study period.

All the 4 stages are free of charge for the students, that means no tuition fees. Also, students can choose to study on an international curriculum (IB or EB). These study programs are offered only in a few schools in Tallinn and Tartu. The academic year runs from 1 September to 31 August in the following year. Each academic year consists of four terms, half-terms and holidays. Autumn holidays 1 week, Christmas holidays 2 weeks, spring holidays 1 week and summer holidays 12 weeks.

Education facilities: The number of students in a class in stages I - III is limited to 26. This is the maximum number of students in a class or study group allowed by law. In larger cities like Tallinn and Tartu, the majority of schools have classes that will have this number of students. Regional schools have mostly fewer students per class or even mixed classes containing students from different years. In upper secondary school, the number of students in a class is not limited and numbers can reach 30 or in extreme cases even 40 students per class. The facilities are usually good, a lot of schoolhouses have been renovated in the last decades and all of them have electricity, running water, fast internet connections, computers and other equipment. Most schools are very well equipped with 3D printers, Vernier and Pasco sensors and Lego mindstorm robots. All the newly formed state upper secondary schools will have state of the art facilities and equipment.

Governance and organisation: The basic secondary schools are managed by the local government. The upper secondary schools are managed by the local government or by the Ministry of Education and research. The Ministry has initiated the establishment of state upper secondary schools in regional centres.

Teacher Training: All school teachers finish university with a masters degree. Primary school teachers' study program is 5 years. Upper secondary school teachers study 3 years for a baccalaureate degree in any subject they want to teach (physics, biology, geography...) and additional two years for acquiring a masters degree in teaching in their chosen subject. Usually all the new teachers are qualified to teach two separate subjects (for example biology and geography). There are two main universities for teachers Tallinn University and Tartu University. The same universities offer the masters curriculum as a session learning course as well for working teachers who don't have the necessary academic education.

Astronomy in the curriculum: In Basic secondary education there are no school courses in astronomy, instead astronomy content can be found in Environmental Studies. In stage II students are taught the basics about the Sun and other stars, planets, the solar system, constellations and the universe. In upper-secondary education, astronomy is taught in the fifth mandatory physics course amongst other things. The learning outcomes of this course concerning astronomy are: students - can name and distinguish astronomical observation equipment on Earth and in space, - know the scale of our solar system and the objects in it, - can explain the evolution of stars and planetary systems, - can explain the birth and evolution of the universe based on the „Big bang theory“. The voluntary physics course „*Teistsugune füüsika*“, which is taught only in a few schools, contains more comprehensive astronomical history and methods, space technology, solar system, stars, galaxies, different theories and models.

Astronomy education outside the classroom: There is one main astronomical centre: University of Tartu Tartu Observatory which is situated in Tõravere, 21 km from Tartu. The observatory has a visitor centre with excursion, and space-related workshops open to the public. These are popular with all the schools in Estonia. Except for the Covid -19 period, the number of visitors per year is approx 6000. Here is the home page <https://kylastuskeskus.to.ee/eng/> There is also an Old Observatory in Tartu, which is open to visitors. There are about 5 stationary and some mobile planetariums in Estonia.

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