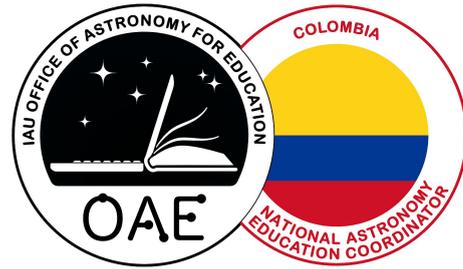


Astronomy Education in Colombia



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: The Colombian educational system is structured as follows: initial, basic primary, basic secondary, vocational secondary, and higher education (University). Initial Education with: toddlers, walkers, kindergarten and transition. Basic elementary consists of five grades, each one year long, named from first to fifth grade, entering at 6 years of age. Middle or high school consisting of four grades, each one year long, named from sixth to ninth, usually entering at 11 or 12 years of age. Secondary education that includes the tenth and eleventh grades as important moments of preparation for university life. Some private schools have educational level 12 intended to prepare students for higher education. Public educational institutions are free and according to the National Constitution must be secular. However, there are institutions that profess religions, mainly Catholic or Christian. All the official entities of the country teach in Spanish, with very few institutions offering a totally bilingual education.

Education facilities: In 2018 Colombia had more than 10 million students enrolled in elementary and middle school, of which 20% belong to private education and 80% to public education. A number of 91.9% of the official teaching staff hold a professional degree, the rest corresponding to technicians; in addition, 41.1% of the professionals, have postgraduate degrees. In terms of gender balance, 75% of teachers in primary school are women, while in secondary school women represent 52%. In primary education, the average number of students per teacher is 35 for urban areas and 25 for rural areas; in the case of high school these numbers are 30 in urban areas and 20 in rural areas.

Governance and organisation: Public (state) schools are administered by the Secretariats of Education of each capital city and some municipalities. The educational system and its organization are established by the central government through the Ministry of National Education. The General Education Law of 1994 establishes some curricular guidelines (pedagogical components) for each area and the study plans are determined by the curricular standards distributed by cycles for two or three degrees of the fundamental areas (2006), each school has the autonomy to organize content according to these standards. However, there are basic learning rights in terms of the minimum content that must be met in any educational institution by grade.

Teacher Training: In Colombia, teacher training is offered through various Bachelor's programs in public and private universities. For the initial level of education there is a Bachelor's Degree in preschool education and/or early childhood education. High school teachers have different backgrounds from undergraduate programs in physics, mathematics, biology, chemistry, electronics, philosophy, social sciences, foreign languages, music, performing arts visual arts, sports, or natural sciences. Electives in science and astronomy are offered in several of these programs. On the other hand, teachers can be trained in authorized normal higher schools (<https://www.mineducacion.gov.co/>)

1759/articles-345504_anexo_2_listado_ENS.pdf). Anyone can apply to the undergraduate or normal programs, without psychological or aptitude evaluations applied for that purpose.

Regarding astronomy issues at the higher education level, there is an undergraduate degree in astronomy and postgraduate (master's and doctorate) programs for teaching and doing research in astronomy, added to others specialized in science teaching from different academic disciplines.

Astronomy in the curriculum: Astronomy is not a subject specifically contemplated in the study plans. It is found in an isolated way in the curricular standards of areas such as Natural Sciences, Social Sciences and Mathematics, for instance in the firsts years of secondary school (1st to 3rd) topics dealing with registering the movement of the Sun, Moon and stars in a period of time, are part of the contents, likewise, various forms of representation of the Earth. In 4th and 5th grade the main elements of the solar system are described and relationships of size, movement and position are established, making use of the cardinal points, Cartesian coordinates and scales. In grades 6th and 7th the planet Earth is approached as part of the solar system, its formation, movements, imaginary lines and time zones. Likewise, inquiries about scientific and technological advances that have made the exploration of the universe possible. In later grades, no specific content is established, but there are topics related to Astronomy from Mathematics, Physics, Chemistry and other subjects.

Astronomy education outside the classroom: Colombia has eight (8) science centers that promote astronomy and science topics by offering special programs for schools, such as pedagogical routes and guided visits. There are 18 astronomical observatories in schools and 13 in universities, which promote and disseminate astronomy at the institutional and local level. Additionally, 11 planetariums and more than 50 amateur groups offer academic and didactic activities for teachers, students and the general public. This environment has fostered the formation of astronomy clubs in many institutions in the country and encouraged individuals to become interested in astronomy, therefore strengthening the diversity of academic events to promote research, teaching and dissemination of astronomy. Young people are now more motivated to study scientific areas thanks to the greater opportunities they have to be in contact with these topics through the multiple initiatives mentioned before.

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