

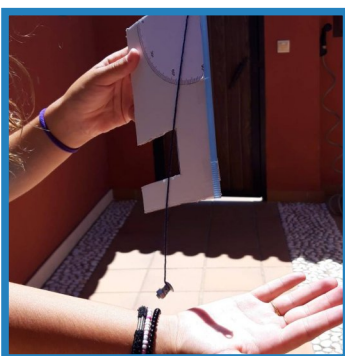
**EDITORIAL
ASTRONOMICAL NEWS
LAST NASE COURSES
TEACHING MATERIALS**

Editorial

The number of NASE courses continues to increase at a good pace, and now exceeds 300, and what is even better, many of them have returned to face-to-face attendance, after two years of pandemic. We have given more flexibility to the courses, being able to do shorter courses only in Astronomy, Astrophysics, Astrobiology or Astroculture, or several of them. In addition to this, being able to do some sessions on line allows the presence of trainers from their country of origin.

Also in the news was the good participation in this year's NASE project with IAU/UNESCO, on "Latitude for travel and navigation". The NASE proposal consisted of trying to calculate the latitude where the participants were, any day between 20 March and 23 September 2022. The proposal was included in the International Day of Light, which commemorates the day on which a human-made laser beam was first switched on.

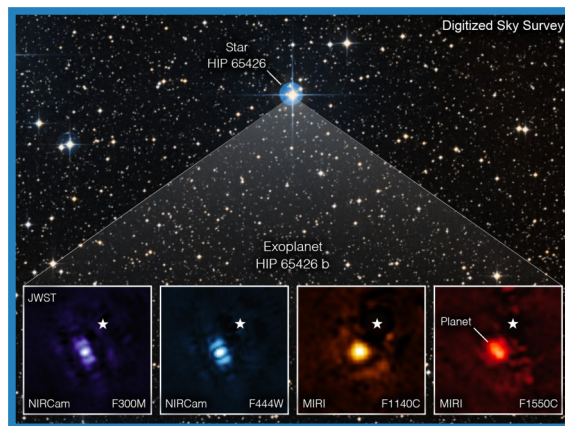
And breaking news: the NASE website is updating. Improves appearance and content. Coming soon...



News

NameExoWorlds 2022 campaign

The first NameExoWorlds campaign, in 2015, named 19 ExoWorlds (14 stars and 31 exoplanets orbiting them). In 2019 there was another campaign that offered each country the opportunity to name a planetary system comprising an exoplanet and its host star, visible from that country and bright enough to be observed through small telescopes. In the 2022 campaign, the 20 systems to be named by NameExoWorlds 2022 are of particular interest, as they are among the first exoplanet targets of the James Webb Space Telescope (JWST). Information on how to propose names can be found on [this IAU website](#).



Use of NASE course material in science teaching in Honduras.

During the first school semester, the seventh grade students in groups 1 and 2 of the morning classes of the IGTARF (Instituto Gubernamental Técnico Abelardo R. Fortín) at the Centro de Ciencias Naturales Comayagüela in Honduras are perfecting their astronomical knowledge by reflecting on our place in the universe. In previous years, they have usually made "models" of the solar system that are far removed from reality, as they do not take into account the scales of size or distance. On this occasion the students made a model of the solar system on a diameter scale, taken from the NASE course, in which they can easily appreciate the enormous difference in size between the planets and our sun. The schoolchildren were amazed to make such comparisons at a time when they were motivated to learn more about the planets. The learning results have been favourable, so it has been decided to incorporate the activity into the annual planning of the natural sciences subject. The teachers responsible for this activity were Ricardo A. Pastrana and Katia Domínguez.

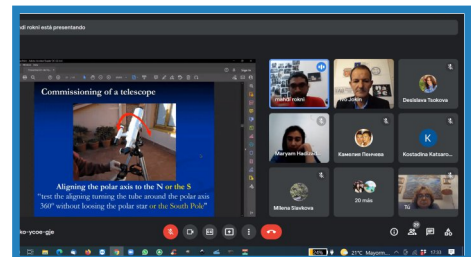
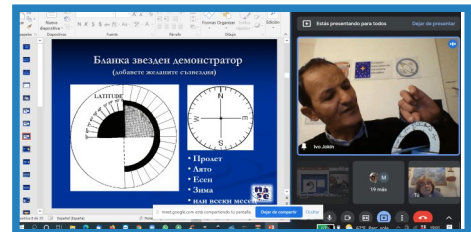


Courses

264 Course in Dolna Mitropolia (Bulgaria) - December 16-18, 2021

In cooperation with Municipality Dolna Mitropolia and Municipal center for extracurricular activities.

Some comments: I really liked the course! I learned a lot of useful and interesting things! We heard and saw wonderful ideas and information. I will definitely take the time to do at least one activity with my students soon.



265 Course in San Salvador, El Salvador, December 2021

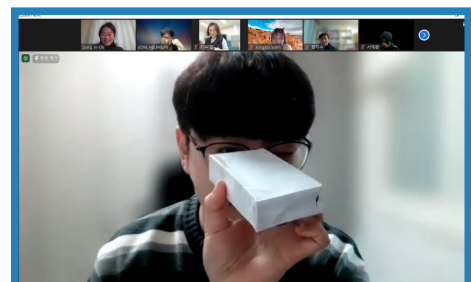
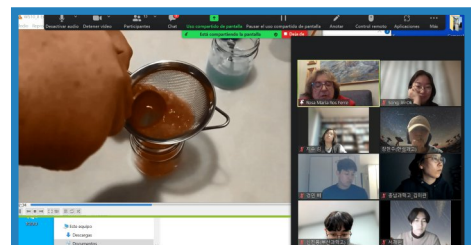
The attendees recognized that this type of course is very valuable for making teachers' difficulties visible, overcoming them and understanding the importance of astronomy, especially in the framework of classes at primary and secondary levels, where astronomy topics are included in the curricula.

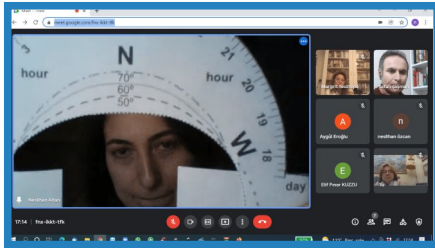


266 Course in Busan (South Korea) - January 10-11, 2022

In cooperation with Korea Science Academy of KAIST and National Organizing Committee for IAUGA2022 Busan.

It was useful because I was able to learn a lot of information that can be applied to students (astronomical observation), clubs for middle school students. If you think more about it, it seems that there are ideas that can be developed and applied to science high school students as well. Yesterday, I was impressed with Herschel Project. There are many ideas to develop further to apply in the classroom.





269 NASE Course in Istanbul (Turkey) - January 20-22, 2022

In cooperation with ERENTAY EĞİTİM DANIŞMANLIK.

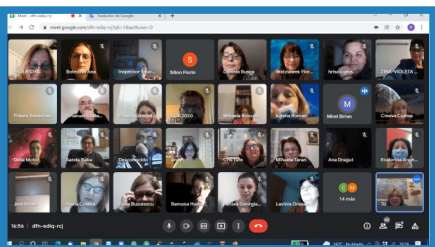
These workshops were very useful because I learned how to teach with intuitive and simple methods rather difficult concepts of astrobiology. It was amazing to me how scientists found out that the Sun is a third generation star.



270 NASE Course in Bucharest (Romania) - January 27-28, 2022

In cooperation with Bucharest Observatory of the Astronomical Institute of the Romanian Academy and the Institute for Transdisciplinary Studies in Science, Spirituality and Society.

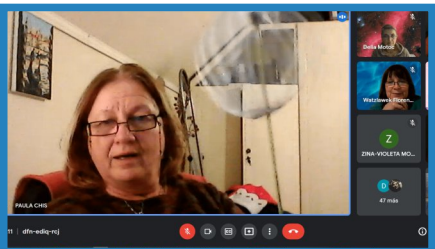
22 teachers, with some prior knowledge of astronomy, attended. The level of satisfaction they showed is 90%.



271 Course in Delhi (India) - January, 29-February, 6, 2022

In cooperation with Spaceport India Foundation.

These types of workshops will be very good to introduce in schools so that students can understand how things work, and it is interactive DIY activity for all.



273 Course in Ekaterinburg (Russia), Feb1-4, 2022

In cooperation with KantrSrkup School of Astronomy.

Very interesting, the presentations are very interesting. The videos are just great, I get a lot again. Thanks a lot. It was very interesting and useful.



276 Coclé (Panama) -February 7-8, 2022

In cooperation with the Department of Physics, University of Panama, ASTRANOVA, Sirius SAAC and Colegio San Agustín.

It's been a course for school teachers. There were some drawbacks, which were tried to solve, and lessons have been learned for other similar courses.



277 NASE Course in Barcelona (Spain) - February, 7-9, 2022.

In cooperation with CESIRE, Departament d'Educació, Generalitat de Catalunya

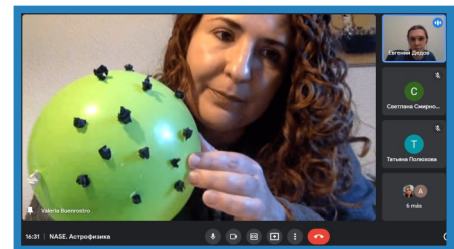
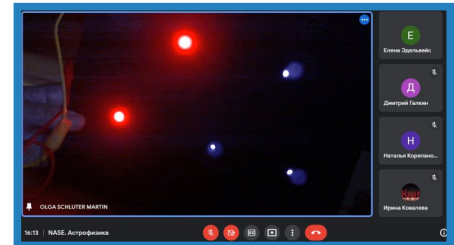
The workshops of NASE's Astronomy course were held at the Faculty of Education of the University of Barcelona, with students of the Master of Secondary School specializing in Biology, Geology, Physics and Chemistry.



279 Course in Ekaterinburg (Russia) – February 8-11, 2022

In cooperation with KantrSrkip School of Astronomy.

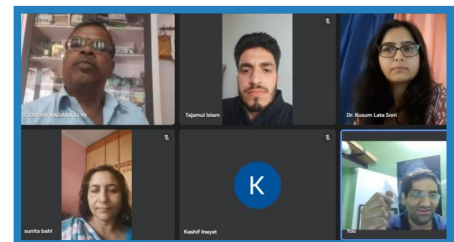
This topic seemed incredible to me because something like cosmology is something that young people like a lot, and there is not much cosmology in astronomy today. This course gives many ideas on how to demonstrate very complicated processes with the help of simple instruments.



281 NASE Course in Delhi (India) - 13 February-16 March, 2022

In cooperation with Spaceport India Foundation

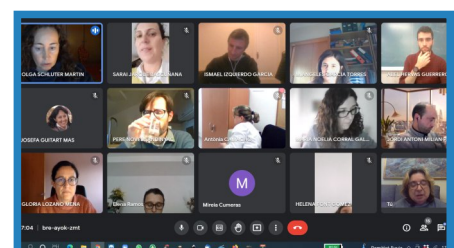
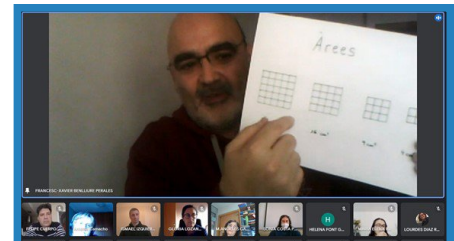
I enjoyed all the sessions for working examples in simple methods for difficult concepts also. I was able to explain to my students in simple ways what I learned in these sessions.

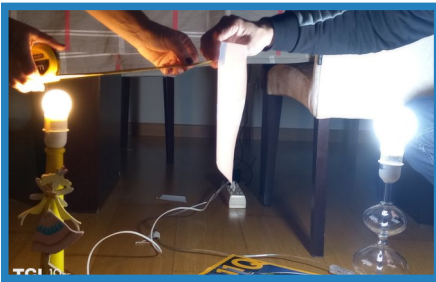


282 NASE Course in Barcelona (Spain) - 2 March-30 May, 2022.

In cooperation with CESIRE, Departament d'Educació, Generalitat de Catalunya.

The final work consisted in the design of an interdisciplinary project proposal to be carried out in their school, inspired by the activities of the NASE course.





284 Course in Porto (Portugal) - March, 5-19, 2022

In cooperation with Planetario do Porto.

We have participants from Portugal (from the districts of Braga, Bragança, Faro, Leiria, Lisbon, Porto, Setúbal, Vila Real), and from Mozambique.



286, 287 and 294 NASE courses in Orihuela (Spain) - March, 16-April 30, 2022

In cooperation with CEFIRE - MUDIC of Orihuela.

There was a course on Astrobiology, another on Astroculture, and another on Astrophysics, over three weekends. Highly motivated teachers from different parts of the province of Alicante and Murcia took part. The teachers were surprised by the materials used in the sessions, and were very pleased with the content.



288 NASE course in Arba Minch (Ethiopia) - March, 24 - 25, 2022

In cooperation with ESO and the Ethiopian Space Science and Technology Institute.

We hosted in total 44 participants (10 females), who were public school teachers, teachers trainers from several Ethiopian universities, and ESSTI and ESSS staff members and volunteers actively involved in astronomy/science outreach activities in Ethiopia. We also had 2 colleagues from Tanzania and Zambia as participants.



289 NASE Course Tachira (Venezuela) - April, 2-24, 2022

In cooperation with Centro Astronómico Caronte.

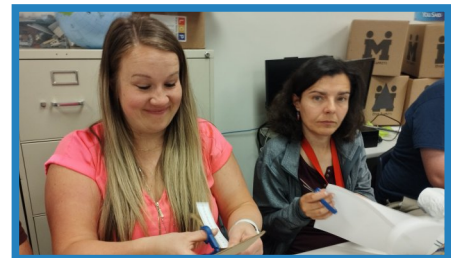
The quality of the information provided, the level of the teachers on the course and the didactics used during all the modules were invaluable. This type of course is very necessary in these times of so many changes in education.



291 NASE course in Layton (United States of America) - April, 21 - May, 6, 2022

In cooperation with North Davis Preparatory Academy.

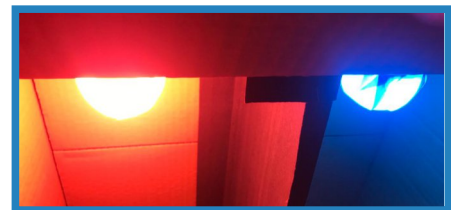
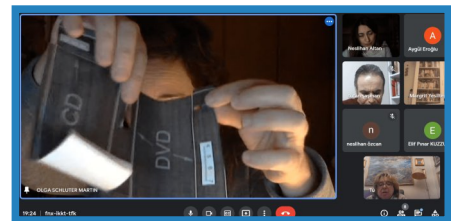
The course has been very well received by the teachers of this bilingual academy. Practically all the Spanish-speaking teachers, and some of English-speaking teachers, have participated in it. The teaching profile is totally heterogeneous, mixing not only the two languages, but also the levels (Primary and Secondary) and the subjects (Language, Mathematics and Science).



292 NASE Course in Istanbul (Turkey) - January 20-22, 2022

In cooperation with ERENTAY EĞİTİM DANIŞMANLIK.

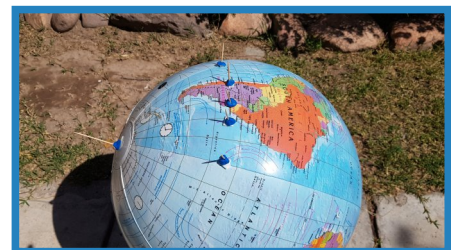
These workshops were very useful because I learned how to teach with intuitive and simple methods rather difficult concepts of astrobiology. It was amazing to me how scientists found out that the Sun is a third generation star.



293 NASE Course in Mendoza (Argentina) - April, 26 - May, 19, 2022

In cooperation with Universidad de Cuyo.

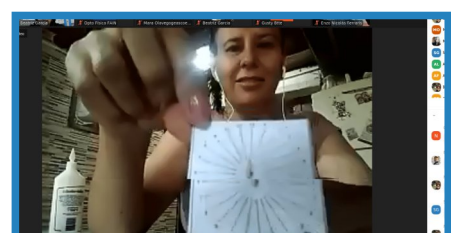
One of the NASE courses on Didactics of Astronomy in Mendoza is held once a year in association with the Faculty of Exact and Natural Sciences of the National University of Cuyo, as part of the compulsory undergraduate training of the Physics, Mathematics and Biology Teacher Training Course. It is also open to students of the Bachelor's Degree in Physics.



295 NASE Course in Neuquen (Argentina) - April, 29 - May, 21, 2022

In cooperation with Universidad Nacional del Comahue.

The NASE course is very well thought out, the contents are very appropriate and interesting, with very well designed didactic experiences within everyone's reach. The delivery and development of the course was impeccable.

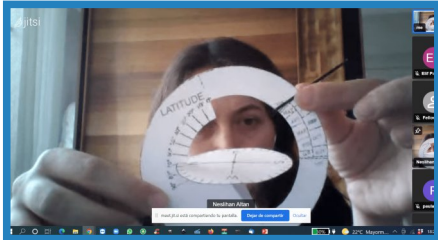




297 NASE Course in Istanbul (Turkey) - May 24-27, 2022

In cooperation with ERENTAY EĞİTİM DANIŞMANLIK.

Thank you for the tutorial. In this training, there were examples of using materials that are easily applicable and can be obtained with low expenditures. I think it is an excellent teaching material, especially by taking the surroundings of the school and showing the directions and the sunrise and sunset points. This material was also helpful in helping students' self-awareness perception.



299 NASE Course in Charcas (Mexico) - June 9-11, 2022

Completed on 11 June 2022.

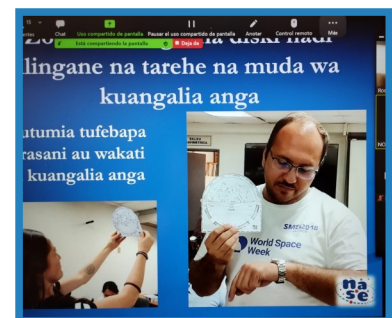
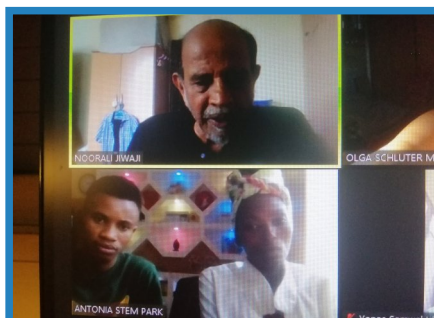
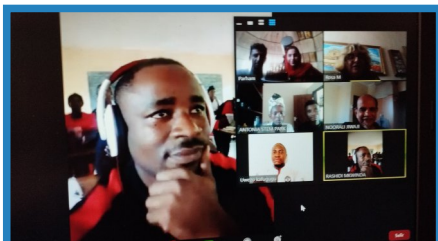
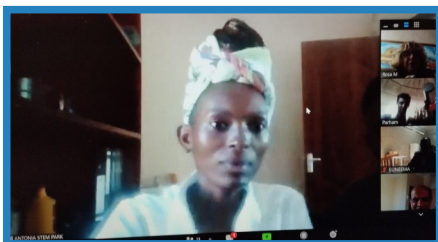
The attendees were very satisfied with the proposal, the level of the activities and the contents addressed. They enjoyed the workshops and the exchange with trainers and colleagues attending the course.



300 NASE Course in Dar es Salaam (Tanzania) - June 18, 2022

In cooperation with the Astronomy and Space Science Association of Tanzania and Open University of Tanzania.

I value the general philosophy of NASE project. It was well executed. Astronomy has a lot to learn on. I value the dedication and efforts of NASE tutors to give us very practical explanations.

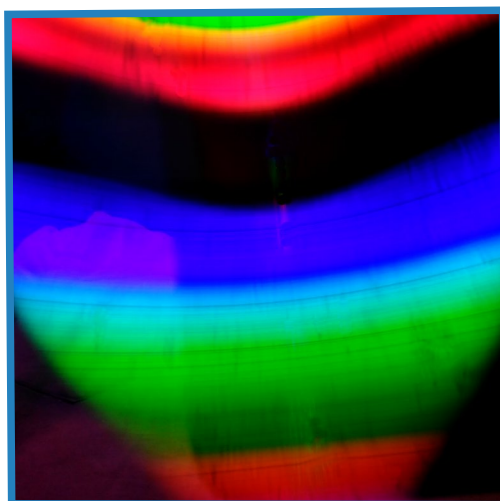
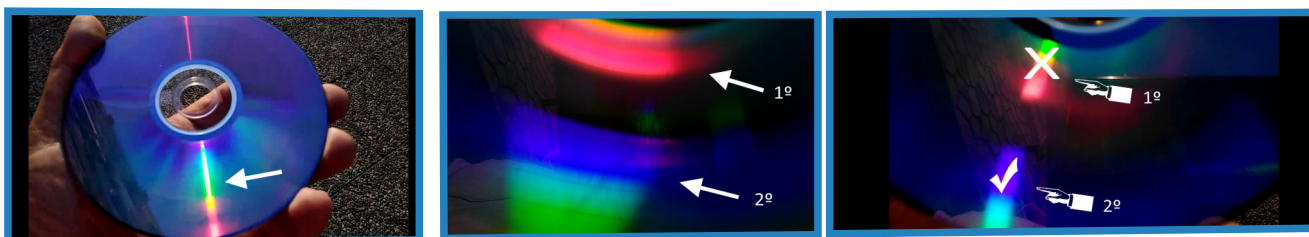


Materials

HOW TO OBSERVE THE FRAUNHOFER LINES WITH A DVD

It is not widely known that Fraunhofer lines can be seen with the naked eye in the reflection of sunlight on a DVD, thanks to the 1300 lines/mm it has.

If we stand in front of the Sun, with a DVD in hand and the reflective part facing upwards, we will immediately see an intense and radially colored reflection. If we look closely, we see that it contains two spectra, one due to the first order of reflection, and one more external due to the second order of reflection. This second is less bright, and it is the one we will use, as it is not dangerous for the eyesight.



If we get closer to that reflection, it widens, and we can see that it contains some black lines that look very sharp. By varying the position of the eye (usually a few cm from the DVD), we can go through the whole visible spectrum, filled with black lines of varying intensity, which are the Fraunhofer lines. They are easy to see in the green zone the triple of Magnesium, and in the yellow zone the double of Sodium. You can see all the Fraunhofer lines, some of which are the Balmer series of Hydrogen.

The first-order reflection can be observed closely at sunset, when the sunlight that reaches us is less intense. Compared to the second order, it has a brighter spectrum but with less spaced lines. It is also interesting to note that some new lines appear, corresponding to the Earth's atmosphere, more noticeable the more atmosphere the sunlight passes through.

With this simple device it is also possible to observe the spectrum of gases from the lamp lamps.

The montages are seen in this [video](#) and in this [video](#).

