



**Fostering a young,
creative and inclusive
European Space Community**

SpaceEU Teacher Training Programmes

“Astronomy and Climatology: A Journey Through the Solar System”



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Country:	Spain
Organization:	Centro Autonómico de Formación e Innovación (CAFI)
Target audience:	In-service primary teachers
Place:	Online: 5 hours; Face-to-face: 15 hours (5x3 hours)
Period of implementation:	February–March (to be confirmed)

Course description

Introduction

This training programme has been developed in the framework of the spaceEU project. This is a course for primary school teachers who are interested in teaching science in their classes in a cross-curricular, entertaining and innovative way but still with scientific rigour. The course will cover several topics related to astronomy and climatology using existing and new materials.

Main Course description

Astronomy is an ideal subject to be approached from a STEM perspective while using the scientific method. The course intends to familiarise primary-school students with the Solar System, integrate experiments in contents related to the space and climate, browse several repositories related to the space (e.g. Space Awareness and ESERO) and curate contents, design new classroom materials based on the “learning by doing” methodology to study contents related to the space and climate and share the newly-created resources.

Content:

- Earth–Sun model: day/night, seasons.
- Earth–Moon–Sun model: eclipses.
- Atmosphere and climate
- Solar System: objects, distances, compared climatology

- Light pollution

Placement / practicum / assignment

All sessions will be conducted in a workshop manner whereby attendees will analyse different activities, and then follow a “learn by doing” methodology. The following three main areas will be assessed: elements of inquiry (hands-on approaches and process skills related to inquiry learning), immersion in inquiry and connections to the classroom. This last section will be essential, since it will focus on help participants make connections between what they have experienced in the workshops and what they can do in the classrooms to incorporate more science inquiry.

Follow-up

We consider it essential to take care of the follow-up to make sure there is an impact beyond the momentum created on the day. Teachers need to bear in mind that the course (and the workshops within it) are part of a bigger project to move it to the next stage, that is, taking it to their classrooms.

Creation of practical materials such as reports, presentations or visual representations of what they covered will be encouraged.

Training materials

Schedule and structure

All the sessions (except the last one) will have the following structure:

- 1-hour Presentation of the contents to work on that day and distribution of the participants into two groups.
- 1-hour Workshops:
 - Group A: Astronomy experimentation
 - Group B: Climatology experimentation
- 1-hour Workshops:

- Group A: Climatology experimentation.
- Group B: Astronomy experimentation.

Day 1:

- Topic: Real and apparent motion of the Sun. The Sun as a star. Related ESERO activities.
- Astronomy workshop: Sunspots. Sun rotation, magnetism.
- Climatology workshop: Seasons. Day and night. Midnight Sun.

Day 2:

- Topic: Rocky planets of the Solar System, characteristics and motions. Related ESERO activities.
- Astronomy workshop: Eclipses, types of eclipses, distances and scales...
- Climatology workshop: Atmosphere. Greenhouse effect: Mercury vs. Venus, Are there stations on Mars?

Day 3:

- Topics: Outer Solar System, observation, motions and characteristics. Related ESERO activities.
- Astronomy workshop: Giant Planets and planetary rings. Satellites.
- Climatology workshop: Giant cyclones, cloud bands and other effects.

Day 4:

- Topics: Asteroids and comets, characteristics and motion. Star showers, recommendations for their observation.
- Astronomy workshop: Tail comets. Star shower, craters...
- Climatology workshop: Cloud formation. Non anthropogenic climate changes...

Day 5:

- Presentation of the projects designed in the classroom. Conclusions.

Finally, and out of program, there is the possibility of visiting an Astronomical observatory.

Resources and materials description

- <http://www.space-awareness.org/es/activities/1605/day-and-night-in-the-world/>
- <http://www.space-awareness.org/es/activities/1604/las-estaciones-alrededor-del-mundo/>
- <http://www.space-awareness.org/es/activities/1412/blue-marble-in-empty-space/>
- http://www.esa.int/Space_in_Member_States/Spain
- <http://www.space-awareness.org/es/activities/6033/the-big-meltdown/>
- <http://www.space-awareness.org/es/activities/6028/climate-zones/>
- <http://www.space-awareness.org/es/activities/6025/global-warming-of-the-atmosphere/>

Links to resources and materials

Available under the institutional virtual learning environment at:

<https://www.edu.xunta.es/fprofe/detalleActividade.do?DIALOG-EVENT-consultar&clave=S1901061>.

This is a password protected VLE and access is only granted to lecturers and students on that module on a requirement basis only, due to the nature of the content therein and to data protection regulation.

