



# Job description

## JOB TITLE

**System Engineer / Project Manager  
for the student nanosatellite project IonSat  
at the École polytechnique**

## SERVICE MISSION AND CONTEXT

**L'École polytechnique**, under the supervision of the Ministry of the Armed Forces, is a public institution of a scientific, cultural and professional nature recognized as a world-class center of excellence. It has 2,400 students, including 1,900 Polytechnique students, 600 doctoral students and 2,000 teaching, research, technical and administrative staff.

**The Centre Spatial de l'École polytechnique** (Space center of École polytechnique, CSEP), created in 2010, proposes and supervises space projects for École polytechnique students. It is at the origin of one of the first French student nanosatellites, X-CubeSat, launched into orbit on May 17, 2017 as part of the European QB50 program and the JANUS program of the French space agency CNES. The CSEP brings together and coordinates, through its projects, students, teacher-researchers, industrialists and French and European space agencies. Today, more than fifty students work on the projects, which are supervised by a technical director, a satellite project manager, and three part-time doctoral tutors. The CSEP is financially and operationally supported by the education patronage program *Espace, science et défis du Spatial* (Space, Science and Challenges), led by Professor Pascal Chabert.

**IonSat** is a 6U nanosatellite project equipped with an electric propulsion engine, dedicated to demonstrating the feasibility of nanosatellite missions in very low orbit (250km). It is at the frontier of space applications, and is positioned in the NewSpace philosophy. The project started in 2017 and validated its preliminary design review in May 2020. With a strong educational vocation, the project is currently led by twenty students, supported by numerous space actors: startup (ThrustMe), industries (Thalès Alenia Space), agencies (CNES, Onera).

## JOB DESCRIPTION

### Main Mission of the function:

The candidate ensures the continuation of the IonSat project, for the detailed design, assembly and qualification, and operation phases. He/she will be expected to provide expertise in **embedded systems or electronics**.

### Main activities:

- Pilot the detailed design of IonSat with the students, in collaboration with CNES experts and sponsors such as Thalès Alenia Space, and in particular the aspects related to embedded systems: on-board computer, attitude control, orbit control;
- Ensure the technical coherence of the system thanks to its expertise;
- Take responsibility for technical reviews of subsystems and system;
- Ensure that the budget and planning constraints are respected;
- Organize relationships with project partnerships, and participate in the search for funding, new partners, providers and suppliers, and launch solutions;
- Define and manage the assembly, integration, testing and validation phases of the satellite (AIT/AIV), and conduct some of the AIT/AIV activities;
- Supervision of students on all aspects of the project, from technical research to communications at international conferences;
- Participation in the recruitment of the personnel necessary for the success of the project.

The mission will be carried out with great autonomy and freedom of action, in a very dynamic and innovative environment. You will be involved in all aspects of the satellite project, with a strong emphasis on ambitious technical realizations. The project takes place within the JANUS ecosystem, which coordinates similar projects in France and provides technical support. You will benefit from the dynamism of the French university space center community, the integration with the École polytechnique prototyping center (X-Fab) and the proximity and natural links with the École polytechnique laboratories.

### PROFIL

The candidate must have a solid background in space engineering, electronics or embedded systems, with a master's, engineer or doctorate level related to one of these disciplines. Experience in project management and/or nanosatellite integration and testing is desirable. The ideal profile has at least five years of experience, but more junior profiles will also be considered.

The École Polytechnique Space Centre is looking for a proactive candidate. The mission requires the following skills or characteristics, and candidates are invited to come forward and apply even if they do not have all the skills described :

- You have strong skills in space engineering, electronics or embedded systems, and transversal knowledge in space missions;
- You like to work independently, to take initiatives in a varied environment;

- You like the contact with students, and are sensitive to the idea of bringing concrete experiences in the university world;
- You have strong technical skills and an interest in embedded systems, programming on microcontrollers; you have an interest in radio communication systems;
- You are interested in satellite propulsion, orbitography, mission analysis;
- You want to bring agility to the space sector, and you are interested in the dynamics of NewSpace;
- You have good written and oral communication skills with your colleagues, hierarchy, administration, students, you have good English language skills.

### LOCATION

École Polytechnique, Palaiseau (91120), France.

The CSEP offices are located in the heart of the campus, in the Drahi-X Novation Center, which also houses the incubator, accelerator, and prototyping space of École Polytechnique's Department of Entrepreneurship and Innovation.

### ADDITIONAL INFORMATION

Beginning of the contract: as soon as possible

Type of contract: 36-month fixed-term contract

Job description published in November 2020

### CONTACTS AND RECRUITMENT PROCEDURE

Desired format of the application: a CV and a cover letter.

Additional information: two names and email addresses of persons who will be able to recommend you on request, an example of past or current technical achievements (free format).

Please send your application to:

Antoine TAVANT (technical director): antoine.tavant@polytechnique.edu

Pascal CHABERT (professor at the École polytechnique) : pascal.chabert@polytechnique.edu