Training Opportunity for Portuguese Trainees

Reference	Title	Duty Station
PT-2016-TEC-MSM	**Space Mechanisms**	**ESTEC**

Overview of the Unit missions:

The Structures and Mechanisms Division TEC-MS is the centre of competence of the Agency in all areas related to spacecraft and launcher structures and mechanisms, encompassing spacecraft and launcher lightweight structures, stable structures, advanced mechanical materials applications, structural dynamics, damage tolerance, deployable structures/booms, active structures, hold-down and release devices, electrical motors for space mechanisms, launcher and re-entry hot and cold structures, landing attenuation systems, seals, valves, parachute systems, separation systems, reaction wheels, gyros, bearings and tribology aspects. It provides support to projects, preparatory programs and technology programs.

Within this frame, the Mechanism Section TEC-MSM is the focal point for matters relating to the design, engineering and verification of space mechanisms. This entails in particular responsibility for:

- overall mechanisms definition, design and engineering;
- mechanisms performance evaluation and analysis;
- mechanisms technologies (relative to tribology, actuators, sensors, pyrotechnics, mechanical components, including micromechanical devices);
- mechanisms drive and control laws;
- mechanisms operation simulation.

Overview of the field of activity proposed:

The Trainee will participate in the conception, analysis and development of mechanisms for use in space projects. In assistance to ESA engineers working in this domain, the holder of the training position will be given a specific task which may include:

- assistance in the implementation and monitoring of R&D contracts;
- critical review of design / analysis / test activity and simulation / characterisation / validation up to simulation correlation of high accuracy mechanism systems, with particular emphasis to frequency domain performances representation and advanced signal analysis techniques;
- mechanism simulation, using software package like Matlab or Simulink;
- feasibility assessments of new mechanisms design concepts;
- critical review and analysis of design solutions for mechanisms and participation to project review processes;
- participation to CDF (Concurrent Design Facility) studies and involvement into the study sessions and report preparation;
- participation in the writing of technical specifications and statements of work for R&D contracts.

Required Education:

Applicants should have, or be in their final year for a University or Graduate engineering degree in Mechanical Engineering. A good grasp of system aspects and a good understanding of other engineering domains is desirable, e.g., electronics, structures, materials, control systems, etc. Proficiency in the use of engineering software tools is an asset, e.g., for mechanical, electro-mechanical, dynamic, and magnetic analysis. Candidates should have good interpersonal and organisation skills, and show genuine enthusiasm, dynamism and self-motivation. Candidates must be fluent in English or French, the official languages of the Agency.