

## Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2010-TEC-MSM	Mechanism Engineering	ESTEC
<p><b>Overview of the Division missions:</b>            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 Structures Section TEC-MSM is in charge of all mechanism engineering aspects.</p>		
<p><b>Overview of the field of activity proposed: Mechanism Engineering (TEC-MSM)</b>            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:</p> <ol style="list-style-type: none"> <li>1. Support conceptual studies and provide assistance in the monitoring of R&amp;D contracts.</li> <li>2. Support critical review of design / analysis / test activity and simulation / characterisation / validation up to simulation correlation of space mechanism systems, covering the here-after aspects :               <ul style="list-style-type: none"> <li>• overall mechanisms definition, design and engineering;</li> <li>• mechanisms performance evaluation and analysis;</li> <li>• mechanisms technologies (relative to tribology, actuators, sensors, pyrotechnics, mechanical components, including micromechanical devices);</li> <li>• mechanisms drive and control laws;</li> <li>• mechanisms operation simulation.</li> </ul> </li> <li>3. Perform Mechanism analysis and simulations using software package like Matlab, Simulink, Adams, Flux ... etc.</li> <li>4. Participation to project review processes regarding Mechanism equipments like: Solar array drive mechanisms, pointing and scanning mechanisms, actuators, bearing technologies and tribology, electrical motor and drive electronics, hold-down and released devices, reaction wheels, accelerometers, gyroscopes, launcher and re-entry mechanisms, landing systems, seals, valves, parachute systems, separations systems ...etc.</li> <li>5. Participation to CDF (Concurrent Design Facility) studies and involvement into the study sessions and report preparations.</li> <li>6. Participation in the writing of technical specifications and statements of work for R&amp;D contracts). get familiar with the organisation and execution of tests and the evaluation of test data. More specifically, participate to thermal balance / thermal cycling tests on small-scale space equipment and payloads and support the measurement campaigns of key thermal and mechanical properties of space materials such as the thermal conductivity, the thermal efficiency of multi-layer-insulation (MLI) and the coefficient of thermal expansion.</li> </ol>		
<p><b>Required Education:</b></p> <p>Applicants should have just completed, or be in their final year of a University course at Masters level in a technical or scientific discipline. Candidates must be fluent in English or French, the official languages of the Agency. Specific knowledge is very different, depending on the field of activity selected:</p> <ol style="list-style-type: none"> <li>1 and 2/ Physics, thermal / mechanical engineering university degree or equivalent, with basic knowledge of radiative and conductive heat transfer and thermal simulations.</li> <li>3 and 4/ Thermal/mechanical engineering with basic knowledge of thermal analysis, numerical methods and software engineering.</li> <li>5/ Experimental physics or aeronautical/mechanical engineering.</li> </ol>		