

Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2010-TEC-ETN(2)	GNSS Signal and Navigation message evolutions	ESTEC
<p><u>Overview of the Division missions:</u> The RF Payload Systems Division is responsible for space instrumentation and communication systems, subsystems, equipment and technologies. This covers:</p> <ul style="list-style-type: none"> • Communication systems and subsystems design and validation; • Radio Navigation systems, subsystems and equipment (GPS, EGNOS, GALILEO); • Systems for TT&C communication, remote sensing and scientific applications; • Satellite payloads (e.g. repeaters for telecommunications or navigation instruments for earth remote sensing or scientific applications) • Microwave and millimetre wave equipment and technologies; • Complex on-board payloads for communications and remote sensing, and processing core of such systems, including optically based implementations; • Systems testing for performance evaluation or validation. <p>The expertise of the Division is essentially used for :</p> <ul style="list-style-type: none"> • Preparation and implementation of various ESA R&D programmes • Support to ESA projects • Consultancy to customers outside ESA • Training and supervision of students, graduates, research fellows • European Standardisation of technologies • Organization of workshops and conferences <p>The trainee will be integrated into the Radio Navigation Systems and Techniques Section. The section is involved in:</p> <ul style="list-style-type: none"> • Radio navigation systems studies • Support to the EGNOS and Galileo projects for system design, development and testing • Advanced research and development in the field of radio navigation techniques and technologies • Development of receivers for GPS, EGNOS and Galileo 		
<p><u>Overview of the field of activity proposed:</u> Planned GNSS Signal in Space have been subject to many studies but still offer a large set of element for further investigation and performance consolidation (e.g. compatibility and interoperability issues, assessment in real channel etc.) particularly with the availability of real signal in space or HW Signal generators. On top existing/unused or even new frequency allocation for Radio-navigation transmission offer the opportunity for new services to be defined aiding /improving the capability of the existing one. New Signal and Message structure are analyzed in order to improve accuracy of the tracking, speed of the acquisition, Time to first fix etc. trading off complexity, power, BW etc.</p> <p>The trainee will work in the following areas:</p> <ul style="list-style-type: none"> • GNSS Message/Signal performance assessment (Inter/Intra-system interference, etc.) • Analysis and design of new GNSS Message/Signal structure • Prototyping of critical functionalities in Matlab and C/C++ • Lab testing of prototyped functionalities in the European Navigation Lab at ESTEC 		
<p><u>Required Education:</u></p> <p>Degree in Telecommunications Engineering or similar</p> <p>C/C++ and Matlab programming ability Previous contact with a radiofrequency lab would be desirable Previous knowledge of radionavigation would be desirable Background in Signal processing would be desirable</p>		