

Training Opportunity for “Spanish Trainees”

Se adjunta la relación de las plazas vacantes en la Agencia Espacial Europea para Spanish Trainees en el momento de la publicación de la convocatoria 2008 de Becas de Especialización de Organismos Internacionales

Los candidatos podrán solicitar un máximo de dos plazas, indicando su referencia y prioridad en el apartado de justificación de la solicitud.

Las vacantes ofertadas son indicativas, pudiéndose producir cambios durante el proceso de selección, por lo que se recomienda a los candidatos indicar su área el actividad de preferencia, si no se encuentra entre las plazas existentes

Reference	Specialist Area	Duty Station
ST-2008-TEC-EPS	On-board power systems	ESTEC/TEC-EPS

Overview of the Division missions:

The Power and Energy Conversion Division is responsible for project development support and technology development for space application for all that concerns power generation (essentially photovoltaic power, but alternatives are also looked at), storage (essentially batteries or fuel cells, but other alternatives are or can be considered), conditioning (essentially DC voltage is conditioned on board satellites in the range of a few watts to tens of kw) and distribution (current limiters, power controllers). The division is supported by several laboratories or facilities which allow hands-on work.

Overview of the field of activity proposed:

Power System Design and Architecture

Amongst ESA Spacecrafts, varieties of power systems building blocks and architectures driven by current mission constraints and technology trends have been and are being applied. Each of these systems is designed to accommodate particular needs from the viewpoint of mission orbits (LEO, MEO, GEO, Deep Space or Near Sun missions), on-board power loads (High, medium or low power, pulsed power, Solar Electric Propulsion etc) and are using different types of topologies (Direct energy transfer, Maximum Power Point Tracking etc).

The proposed training project consists of the following tasks:

- Researching on the possible optimisation of S3R Battery bus concepts applied to LEO missions while considering the improved performances provided both by the new solar generator and new battery technologies available.
- Studying the selection criteria and researching on the optimisation at power system level of a solar array maximum power point tracking system applied to LEO missions.
- Bread boarding and tests applied to both concepts will be performed in the power electronics laboratory.
- Performing some benchmarking with a simulation tool in order to further enhance/validate power system performance predictions capabilities.

Required Education:

The candidate shall have a Masters degree in physical science or electrical engineering and experience or interest in:

- circuit design,
- mathematical modeling,
- photovoltaic technology,
- energy storage technology
- space environment,
- testing.

Candidates must be fluent in English or French, the official languages of the Agency.

Reference	Specialist Area	Duty Station

ST-2008-TEC-ETC	Payload Systems Division	ESTEC
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Overview of the Division's mission:

The division is managing and providing the technical competence needed for the Agency's space projects in these areas:

- Systems, sub-systems and techniques for Communication, TT&C, navigation, remote sensing, and scientific applications.
- End-to-end and RF communication security aspects for the support of ESA's missions and application programs.
- Microwave and millimeter wave equipment and technologies, as required for payloads and user terminals.
- Definition, development, integration and testing of complex on-board payloads (such as active front-ends for communications and remote sensing, and the processing core of such systems).

Overview of the field of activities proposed:

A number of opportunities are available in the Communication-TT&C Systems & Techniques Section of the Payload Systems Division. In General the Sections offer opportunities in the following areas:

- 1) Study of advanced broadband fixed and mobile telecommunication systems with particular emphasis on modulation, coding, access methods, synchronisation, medium access control resource allocation etc. In particular, advanced signal processing techniques applied to on-board and ground satcom system design, system and sub-system simulation tools as well as current multimedia application validations both in the field of fixed and mobile communications.
- 2) Satellite TT&C systems, techniques and transponders both for near earth and to distant planets. Communication systems and novel ranging techniques for deep space missions Advanced DSP for future MODEM implementation in particular for miniaturized transceiver for proximity link. Novel modulation techniques for in-situ (on planet surface) communications.
- 3) In the field of Security:
 - Assessment of the needs for protection of communication networks of current and future ESA programmes;
 - Analysis of the impacts of changes on the design of the system stemming from integration of security modules, and proposing cost effective implementations;
 - Analysis and simulations of satcom end-to-end secure equipments as well as dedicated security modules;
 - study and experiment on the communications performance of secure TT&C communications links
 - Analysis and simulations of modern cryptography mechanisms and key management systems
- 4) In the field of telecommunication applications and laboratory experimentations the following topics are of interest:
 - Definition of satellite communication applications test campaigns
 - Experimentation on the performance of advanced satellite communication systems in the division telecom laboratory
 - Validation of advanced application platforms targeting next generation satellite communication networks
 - Set-up and validation of satellite communication networks
 - Analysis and simulations of communication networks for QoS verification

Educational and other requirements:

Applicants should have just completed, or be in their final year of a University course at Masters level in a technical or scientific discipline, in the fields of Telecommunications and/or Digital Signal Processing Engineering and/or Aerospace Engineering. Candidates must be fluent in English and/or French, the official languages of the Agency. Candidates should have a high degree of autonomy together with an attitude to work in a team environment. They should have good communication skills and an interest in innovative technologies.

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETM(1)	Microwave Passive Hardware	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The TEC-ETM section in ESA-ESTEC is part of the RF Payload Systems Division. With the technical expertise of the TEC-ETM staff members and access to state of the art measurement laboratories the section supports a wide range of ESA technical programs and fosters the advancement of Microwave and Millimetre Wave Techniques, Technologies and Software Tools to help European and Canadian Industry to remain competitive on the World Space Market.</p> <p>In particular this includes passive components, such as frequency filters and output multiplexers (OMUX) and the associated problem of high-power measurements (passive intermodulation (PIM), Corona and Multipaction Breakdown), RF micro-electromechanical systems (MEMS)</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The selected person will be working in the field of Microwave Passive Hardware for Space Application. Goal of this opportunity is to assist evaluating novel ideas of designing, building and testing Passive S Hardware. This includes dual band filters, multiport coupling matrices and feed networks.</p> <p>Some work in the RF lab is required, to carry out low power RF measurements and assist in high power Multipaction tests.</p>		
<p><u>Required Education:</u></p> <p>Telecommunication engineer with a good knowledge of Mathematics, Electromagnetics and Microwave Components. Knowledge of Satellite Systems is desirable.</p> <p>Candidates must be fluent in English or French, the official languages of the Agency.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETM(2)	Microwave engineering	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>RF Payload Systems Division provides expert support to space missions and carries out technology development activities in the area of microwave engineering.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>Participation in millimetre-wave technology development activities. Development of millimeter-wave measurement, calibration and modeling methods for devices and circuits for frequencies up to 300 GHz including on-wafer measurements for frequencies up to 170 GHz.</p>		
<p><u>Required Education:</u></p> <p>MSc in Electrical Engineering, with specialisation in microwave engineering. Some experience on mic measurements would be an advantage.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETM(3)	RF & Microwave Equipment Testing and Acceptance	ESTEC
<p>Overview of the Division missions: Microwave and Millimetre-wave section (ETM), Payload and Systems division, Electrical Engineering Department at ESTEC.</p> <p>The mission of the division is to:</p> <ul style="list-style-type: none"> - Develop advanced RF& Microwave technologies and Systems capable to fulfill next generation satellite applications - Support current ESA projects in the field of expertise related to on-board RF payloads (design , characterization, validation) 		
<p>Overview of the field of activity proposed:</p> <p>The aim of this training period will be three folds:</p> <ul style="list-style-type: none"> - Develop a Test bench for the thorough characterisation of Non linear RF equipments and modules (e.g. TWTA, SSPA, down/up converters, HPA etc...) in presence of real world application signals used for validation and acceptance of the Telecom/Navigation RF payloads - Implement a virtual Test Bench where part of the hardware is simulated part of the hardware is tested. - Understand more in depth the distortion due to non-linear behaviour of RF and microwave power amplifiers in presence of modulated signals. <p>The different steps envisaged for this training period are:</p> <ul style="list-style-type: none"> - Familiarise with TEC-ET vector Signal Analysis test system - Undertake validation test campaign to demonstrate the capability of the test setup in various telecom and navigation bands (e.g L/S/C/X and Ku band) and demonstrate the measurement accuracy of vector modulated signals in the various bands - Characterise the various RF equipments to demonstrate they can meet their specifications in presence of real world application signals (e.g. spread spectrum navigation signals, telecom Multicarrier signals etc...). Characterisation include environmental conditions (e.g temperature etc...). - Distinguish between RF test setup distortion and the non linear distortion introduced by the RF equipment. Apportion and calibrate the test setup response in order to extract the contribution of the RF equipment only. - Implement links between simulation tools and RF test setup to undertake a virtual test bench. Part of the hardware of the payload will be represented by a simulator and part of the payload will be represented by the real hardware connected to the TEC-ET Vector Signal Test setup. <p>The candidate will need to work with standard RF test equipment used for acceptance test campaign of RF payloads but also with very advanced test equipment like vector modulation signal source, Modulation Vector Signal Analysers, Microwave Oscilloscopes used for the acceptance of the most advanced telecom and navigation payloads. Simulation tools like ADS will be used in order to represent part of the payload and to provide the link with the RF test equipment within the simulation.</p>		
<p>Required Education: Microwave / Telecommunications Engineer or University Degree, familiar with RF test equipment and simulation software like ADS. Design experience of RF/Microwave circuits is an asset.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETN(1)	Radionavigation	ESTEC (TEC-ETN)
<p><u>Overview of the Division missions:</u></p> <p>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></p> <p>Radionavigation software receivers for space missions: prototyping and testing.</p> <p>Software receivers, i.e. software defined radios, for radionavigation are a promising area of business not only in mass market but also in space missions, where they target to reduce cost and complexity in payload design by running in the on-board computer or in an additional one.</p> <p>The trainee will work in the following areas:</p> <ul style="list-style-type: none"> • Feasibility of software receivers for GPS and GALILEO on board: Specification • Prototyping of critical functionalities in Matlab and C/C++ • Elaboration of a protocol of acceptance tests to be used by ESA in future related activities. • Lab testing of prototyped functionalities and other software receivers 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</p> <p>Previous contact with a radiofrequency lab would be desirable</p> <p>Previous knowledge of radionavigation would be desirable</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETN(2)	Radionavigation	ESTEC (TEC-ETN)
<p><u>Overview of the Division missions:</u></p> <p>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></p> <p>Radionavigation receiver testing</p> <p>- Testing of the GPS POD receiver for the EO missions. This receiver will be delivered to ESTEC next year, and it will be the HW platform of the Swarm and GMES sentinels receivers. The performances will be tested with the Spirent RF GNSS simulator under the mission's scenarios. Several navigation algorithms can be tested off-line.</p> <p>- Testing of the Proba-3 relative GPS performances with the FF LEO test bed. GPS will be used for an HEO orbit of 24 h. GPS signals will be available only during 1 h at the perigee. Extensive testing is needed to consolidate the use of Relative GPS.</p>		
<p><u>Required Education:</u></p> <p>Degree in Telecommunications or Aerospace Engineering or similar</p> <p>C/C++ and Matlab programming ability</p> <p>Previous knowledge of radionavigation would be desirable</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETP(1)	Advanced telecom payloads	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The division is managing and providing the technical competence needed for the Agency's space projects in these areas:</p> <ul style="list-style-type: none"> • Systems, sub-systems and techniques for Communication, Telemetry, Tracking and Control (TT&C), navigation, remote sensing, and scientific applications • End-to-end and RF communication security aspects for the support of ESA's missions and application programs • Microwave and millimetre wave equipment and technologies, as required for payloads and user terminals • Definition, development, integration and testing of complex on-board payloads (such as active front-ends for communications and remote sensing, and the processing core of such systems) 		
<p><u>Overview of the field of activity proposed:</u></p> <p>The Trainee will be participating in an R&D working group on advanced flexible telecom payload concepts. In particular, he/she will be very active in the simulation and evaluation of different next generation multibeam payload architectures using on board digital processors and flexible output sections offering on board flexibility in terms of bandwidth and power to beam. Payload architectures using active or semi-active antennas will also be object of evaluation.</p>		
<p><u>Required Education:</u></p> <p>Electrical engineering with specialisation in RF and microwaves Basic knowledge of satellite telecommunications techniques Knowledge of MATLAB</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ETP(2)	Radar and SAR	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The division is managing and providing the technical competence needed for the Agency's space projects in these areas:</p> <ul style="list-style-type: none"> • Systems, sub-systems and techniques for Communication, Telemetry, Tracking and Control (TT&C), navigation, remote sensing, and scientific applications • End-to-end and RF communication security aspects for the support of ESA's missions and application programs • Microwave and millimetre wave equipment and technologies, as required for payloads and user terminals • Definition, development, integration and testing of complex on-board payloads (such as active front-ends for communications and remote sensing, and the processing core of such systems) 		
<p><u>Overview of the field of activity proposed:</u></p> <p>The trainee will be involved in the two following fields of activity:</p> <p>1) <i>Ka-band SAR</i></p> <p>Operational frequency of SARs is increasing continuously and the next interesting frequency now within the reach for spaceborne technology is Ka-band. Promising applications are seen in single path interferometry for 3 dimensional SAR providing 3 D images of our planet for surveillance and environment monitoring. This frequency is currently under study at ESA and JPL (US) as well looking for new advanced instrument concepts.</p> <p>The trainee will work on the system definition and performance assessment of Ka-band interferometric SAR.</p> <p>2) <i>Digital beam forming</i></p> <p>Digital Beam Forming (DBF) techniques become more and more interesting for spaceborne SAR due to the higher flexibility and stability of such kind of instrument. The flexibility leads to new modes of operation outperforming analogue solutions. However classical calibration and testing approaches as used for today's analogue beam forming are no longer useful or even applicable. New ideas are needed for calibration and verification of these advanced instruments.</p> <p>The trainee will be involved in the development of advanced calibration methods and SAR instrument verification strategies.</p>		
<p><u>Required Education:</u></p> <p>Electrical engineering with specialisation in RF and microwaves Basic background in radars Knowledge in running simulations on the ADS tool.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ECM	Optimization methods for the Space Trajectory Analysis project	ESTEC
<p><u>Overview of the Division missions:</u> The Control Systems Division is responsible for project support and technology development of space applications covering the fields of:</p> <ul style="list-style-type: none"> • Control systems and Sensors, including <ul style="list-style-type: none"> ○ Attitude Control system design, modelling, analysis, testing and verification, covering both operational and FDIR aspects ○ Control law algorithm analysis, design, implementation (S/W and H/W) and testing ○ Attitude Sensors design development testing and verification • Navigation, Guidance and control, including <ul style="list-style-type: none"> ○ Rendezvous system design, analysis and verification ○ Entry, Descent and Landing guidance and control system design, analysis and verification ○ Planetary navigation and ascent vehicle system design, analysis and verification ○ Formation flying control systems ○ Advanced control and estimation techniques • Dynamics and Mathematical Analysis including <ul style="list-style-type: none"> ○ Trajectory analysis (ascent and descent) simulation and optimisation, ○ Advanced mathematical modelling and analysis 		
<p><u>Overview of the field of activity proposed:</u></p> <p>The student will be working on trajectory optimization methods for the STA project. The “Space Trajectory Analysis” or STA software suite is conceived as a research tool to support the analysis phase of a space mission having the ability to analyze, determine, simulate, and visualize a wide range of space trajectories. STA is lead by ESA in conjunction with 9 Universities.</p> <p>Presently, in version 1.0 of STA uses optimization for some of its modules (i.e. fly-by module, entry module, etc). The student will be supporting ESA on the development of an optimization layer for the version 2.0 of STA using Qt libraries.</p> <p>The following details the activity to undertake:</p> <ul style="list-style-type: none"> - Provide support in the domain of mathematical modelling and optimization methods for space trajectories. - Definition and development of generic optimization layer to support the development of the STA project. - For this purpose the trainee shall analyse new and existing methods mathematical modelling and optimization - Investigate the use of genetic algorithms and/or hybrid methods. - Upgrade and improve existing software. 		
<p><u>Foreseen start period:</u> Sept/Oct 2008 <u>Duration:</u> 1 year</p>		
<p><u>Required Education:</u></p> <p>University degree or equivalent qualification in engineering or mathematics. Good command of computer programming languages: C++, C, MATLAB. A good knowledge of English is required. French would be an asset.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-MC	Thermal & ECLS Engineering	ESTEC

Overview of the field of activity proposed:

Thermal Engineering: (TEC-MCT)

1. Thermal Design & Modelling: Perform thermal modelling including steady state/transient analyses of instrument and satellites following familiarisation with project requirements and Agency's tools (ESARAD, ESATAN).
2. Cryogenics: Explore the application of cryogenic technologies for zero boil-off storage of cryogenic propellants and In-Situ Resource Utilisation (ISRU), i.e. extracting from local environment and storing of consumables (e.g. CO₂, O₂, H₂)
3. Heat Transfer & Heat Rejection: Investigate and assess heat transport technologies (capillary and mechanically pumped two-phase loops, single-phase loops, heat pipes) for thermal control (e.g. deployable radiators, laser head thermal control) of future ESA spacecraft (in the field of e.g. Science, Earth Observation, Telecom).
4. Thermal Protection: Investigate and assess thermal protection technologies (both – re-usable and ablative) for ongoing and future missions (e.g. planetary exploration and sample return missions) and re-usable launchers. Perform thermal modelling and analysis on component and system level.

Environment Control and Life Support : (TEC-MCT)

5. ECLS Technologies: Investigate technologies for air, water and waste recycling and food production, covering physico-chemical and biological methods (e.g. Melissa). Possibilities exist to perform experimental work in the ESTEC ECLS laboratory.
6. ECLS Quality Aspects: Investigate detection and monitoring methods for chemical and biological contaminants in air, water and food for quality control of life support systems. Possibilities exist to perform experimental work in the ESTEC ECLS laboratory.
7. ECLS System Aspects: Investigate overall system aspects of ECLS systems (e.g. mathematical modelling, control laws, simulation) covering overall architecture and technology trade-offs
8. Habitability: Investigate system as well as technology aspects of human factors issues in manned space vehicles and planetary bases.

Thermal & ECLS Analysis & Verification: (TEC-MCV)

9. Analysis methods: Identify, assess and prototype advanced algorithms for: hybrid local finite element/global lumped parameter analysis models; analysis of complexity/robustness of mechanical systems e.g. with Ontonix software; parameter variation/sensitivity analysis/design optimisation/accuracy estimation in combination with stochastic methods; radiative heat transfer modelling – possibilities for improvements from state of the art computational physics (particle systems), photorealistic rendering, digital movie making and real-time computer games; hybrid surface and solid thermal analysis models to better interface with CAD and more realistically model 3D heat flow.
10. Analysis tools: Contribute to development and validation of : ESATAN/FHTS (thermal/thermo-hydraulic analysis package); EcosimPro (object oriented continuous systems simulation package) for advanced ECLS models.
11. Open product data access/exchange standards: Study the unification of the standard data modelling technologies ISO 10303 (STEP), UML2/SysML/ XML/Schema and RDF/OWL through application of OMG's Model Driven Architecture (MDA) and XMI model interchange, including prototyping model transformations using ESA's open source expressik tool; Contribute to development of CAD/CAE data exchange standards for ECSS and ISO.
12. Mechanical Systems Laboratory: Participation in the daily testing activities of the laboratory; to get familiar with the organisation and execution of tests and the evaluation of test data.

Required Education:

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:

1. to 4. Physics, thermal / mechanical engineering university degree or equivalent, with basic knowledge of thermodynamics, radiative and conductive heat transfer, cryogenics, fluid/thermal simulations, computer systems.

5. and 7. Physics, chemistry or physical-chemistry, biology, biotechnology, microbiology, electro-/photo-chemistry, system engineering, modelling, simulation techniques.

6. Physics, chemistry, biology, biotechnology, microbiology for working on microbial detection.

8 Physics, biology, thermal/mechanical engineering, ergonomic, psychology, architecture.

9. to 11. Thermal/mechanical engineering with basic knowledge of thermal/ECLS analysis, numerical methods and software engineering.

12 Experimental physics or aeronautical/mechanical engineering.

Reference	Specialist Area	Duty Station
ST-2008-TEC-MM(1)	Optics and Optoelectronics	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The Mechatronics and Optics Division provides engineering support for space projects and executes technology developments in the areas of Automation and Robotics, Mechanisms, Life and Physical Sciences Instrumentation, Optics and Optoelectronics. The Division is supported by a number of laboratories and facilities which allow hands-on work.</p> <p>The competence domains of optics and optoelectronics are covered within the Division by two separate Sections, namely:</p> <ul style="list-style-type: none"> • The Optics Section, dealing with optical system design, engineering and verification; optical component technology, including micro-optics, fibre and passive integrated optics; interferometry and spectro-radiometric imaging; • The Optoelectronics Section, dealing with optoelectronic device technologies, including laser technology, photonic integrated optics, non-linear optics and detector technology. 		
<p><u>Overview of the field of activity proposed:</u></p> <p>Depending on the specific professional orientation and background of the candidate(s), the training opportunity(ies) will be made available either in the Optics or in the Optoelectronics Section. The Trainee will participate in the conception, analysis and development of optical and/or optoelectronic systems and components for use in space. In assistance to ESA engineers working in these domains, the holder of the training position will be given a specific task which may include:</p> <ul style="list-style-type: none"> • feasibility assessment of new optical design concepts and/or opto-electronic devices; • critical review and analysis of design solutions for optical instruments and/or opto-electronic devices; • participation in the experimental verification of component and subsystem performances (Optics and Optoelectronics Laboratory); • assistance in the implementation of R&D contracts; • participation in the writing of technical specifications for R&D contracts. 		
<p><u>Required Education:</u></p> <p>Applicants should have, or be in their final year for a University or Graduate engineering degree in Optical Engineering, Opto-electronics, and/or Physics. A good grasp of system aspects and a good understanding of other engineering disciplines is desirable, e.g., mechanical, structural, electrical, etc. 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.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-MM(2)	Instrumentation for Life and Physical Sciences	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The Mechatronics and Optics Division provides engineering support for space projects and executes technology developments in the areas of Automation and Robotics, Mechanisms, Life and Physical Sciences Instrumentation, Optics and Optoelectronics. The Life and Physical Science Instrumentation Section of this Division is responsible for the specification, development and verification of technology for instrumentation in Life and Physical Sciences planetary exploration related technology. This includes:</p> <ul style="list-style-type: none"> • Cultivation, processing and analysis/diagnostics systems for biology and bioprocessing • Exercise and diagnostics systems for human physiology • Experiment cells, processing and analysis/diagnostics for fluid physics, crystal growth, particle processing and high temperature material science. • Cleanliness, bio-contamination control and human physiology/medicine related topics in long term exposure of man to space including countermeasures <p>As part of its mandate, the Section also operates a Life and Physical Science Instrumentation Laboratory, to support biological investigations on a technological level, allowing rapid 'breadboarding' and technical verification using a variety of analytical tools, including equipment for microgravity and hypergravity simulation. The laboratory also supports the Exploration Programme in the area of instrumentation for search for traces of life on other planets.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The trainee will provide support on selected projects and on research and development activities within the above defined areas. This can be in the form of:</p> <ul style="list-style-type: none"> • theoretical assessment of specific problems in one of the above mentioned fields; • practical verification of R&D developed hardware (breadboards); • theoretical and practical feasibility assessment of innovative ideas with the help of early prototypes; • support to test campaigns for project related hardware in the laboratory; • market surveys, establishment of requirements and scientific needs of users 		
<p><u>Required Education:</u></p> <p>Graduated Engineers/Scientists, preferably with specialisation in one or more of the above mentioned fields; or University degree in physics, biology, bioengineering, biotechnology, biomedical engineering. Experience in practical or laboratory work is considered an asset.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-MPE	Propulsion and Aerothermodynamics (Electric Propulsion)	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The Propulsion and Aerothermodynamics Division is responsible for project support and technology development for space application for all what concerns propulsion for spacecraft and launchers (essentially chemical and electric, but more advanced propulsion concepts investigated) and aerothermodynamics (tools, including experimental, numerical and physical modelling for internal and external flows applicable to re-entry, launchers and propulsion systems).</p> <p>Furthermore, the division performs mission analysis to derive propulsion requirements that will be later on used to design manufacture and test thrusters.</p> <p>In particular, Scientific missions such as Lisa-pathfinder, LISA, GOCE, Bepi Colombo and telecommunication missions such as Alphas and small GEO require electric propulsion systems with very stringent requirements. The division supports the projects teams in the domains of electric propulsion, performing specific research on the candidate technologies.</p> <p>Furthermore, the division holds the ESA Propulsion Lab which is employed to assess the different technologies, in particular electric propulsion.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <ol style="list-style-type: none"> 1. Research, Development and Testing activities on current electric propulsion systems, microthrusters and also on advance concepts. This work will cover analysis, testing and modelling activities for research and development projects. Development of methodologies, tools and diagnostics employed on these projects. 2. Plasma Physics, Gas dynamics and Electro-mechanical engineering: understanding of the physics involved in the generation and acceleration of plasmas, ions and electron beams is extremely important to carry out the design of electric propulsion systems and to monitor the possible interactions of the propulsion system with the spacecraft. Manufacturing techniques and electro-mechanical engineering knowledge is extremely important on the development of propulsion systems, from early research to final product. 3. Knowledge of the past and current industrial scenarios. Key actors in the sector, their infrastructure, organisation and historical evolution are extremely important to the understanding of the complex industrial relations and the possibilities of new adventures within the ESA programmes. Good knowledge of the activities carried out in the different companies will also be required. 4. Mission analysis to derive propulsion requirements that will be used later on as input to design activities 		

Required Education:

Physicists, aeronautic engineers, mechanical and electrical engineers have the best background to grow the field of electric propulsion.

Reference	Specialist Area	Duty Station
ST-2008-TEC-SH	Technology Harmonisation and Strategy	ESTEC (NL)
<p><u>Overview of the Division missions:</u></p> <p>The Technology Harmonisation and Strategy Division is part of the Department Systems, Software and Technology and is responsible for:</p> <ul style="list-style-type: none"> - Definition of the ESA technology strategy as part of the overall ESA strategy. Identification of short and long term European technology needs and priorities leading to the development of the future European space technology plans. - Ensuring the European-wide coordination and harmonisation in the field of technology R&D activities for space involving ESA, national agencies, the European Commission and industry. - Observing worldwide Technology development and management process both in space and non space sectors. <p>The Head of the Technology Harmonisation and Strategy Division is supported by:</p> <ul style="list-style-type: none"> - a Technology Strategy Section (TEC-SHS) - a Technology Harmonisation Section (TEC-SHH) 		
<p><u>Overview of the field of activity proposed:</u></p> <p>The trainee will have the opportunity to be related to the following type of activities</p> <ul style="list-style-type: none"> - Analysis of space technology R&D needs in Europe. - Mapping and assessing the R&D and industrial status in Europe. - Worldwide Technology watch. - Benchmarking. Comparison with other countries (USA, Japan, Russia, India, China). - Analysis of strengths, weaknesses, opportunities and threats of European Space Technologies - Preparation of technology R&D roadmaps. - Evaluation of the output of past ESA technology developments. - Development of strategies for technology innovation in the European space industry <p>Specifically, the traineeship will be focused on the spin-in of non-space technologies for space applications including</p> <ul style="list-style-type: none"> • Analysis of non-space sectors with technologies suitable for efficient implementation in space • Establishment of processes for spin-in • Selection of case studies and analysis of feasibility 		
<p><u>Required Education:</u></p> <p>Engineering degree with interest in technology management and innovation.</p>		

Reference	Specialist Area	Duty Station
ST-2008-TEC-ST	Technology Transfer Programme	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>ESA's Technology Transfer Programme Office (TTPO) aims to stimulate the beneficial and commercial uses or adaptations of space technologies for non-space applications by:</p> <ul style="list-style-type: none"> • identifying new business for space providers • maintaining and increasing expertise in the European space industry • facilitating creation and business growth of start-up companies through incubators • promoting wider use and acceptance of space technologies and systems • fostering technology exchange and spin-offs between the space and non-space sectors <p>TTPO operates mainly through its network of technology brokers in Member States who act as intermediaries between space and non-space industries. Essentially the brokers identify technologies developed for ESA's space programmes which might be suitable for transferring to non-space sectors and for finding potential applications for these technologies – especially those which enhance the quality of everyday life by bringing benefits to society as well as industry. They also try and identify technologies and applications developed within non-space industries which might be of potential interest to be spun-in to the space sector.</p> <p>An important activity of the TTPO is managing the European Space Incubator and associated ESI Network which provides assistance to young entrepreneurs wishing to develop products and services based on space technologies, systems and expertise.</p> <p>For further information on the Technology Transfer Programme please refer to http://www.esa.int/ttp</p>		

Overview of the field of activity proposed:

The Trainee will be involved in the following activities:

- making an initial evaluation of the technical and financial possibilities to transfer and/or commercialize technologies identified in dedicated work packages relating to commercial evaluation as an outcome of ESA contracts (particularly TRP and GSTP). If the Commercial Evaluation clause is contained in the Statement of Work, the Contractor must identify applications for the technology being developed under the contract. The Trainee will be expected to analyze the output of the Commercial Evaluation Work Packages and decide what additional steps need to be taken in order to further the development of the technology with a view to transferring it to the non-space sector.
- relating to the above, the Trainee will keep up-to-date with all technology development contracts and studies (especially those resulting from TRP/GSTP funding) and ensure that the Technology Transfer Brokers in each member State are kept informed of the companies and universities involved for the purposed of technology extraction.
- making an initial assessment of proposals for feasibility studies – resulting from an Open Call – relating to ideas and possibilities for the transfer of a space technology to a given non-space application and ascertaining whether these ideas are feasible or not and should be conducted by external experts. Since funding for feasibility studies is limited a suitable selection has to be made from the proposals. The Trainee will help in evaluating the proposals as they come in and selecting those for study, as well as helping to select the expert who will carry out the study, and subsequently monitoring progress.
- ascertaining how the TTPO can benefit from ESA's Networking/Partnering Initiative which aims to increase exchanges between universities, research institutes and industry in order to increase cross-fertilization of technological innovation. The Trainee will be expected to help identify both spin-off and spin-in technology opportunities.
- the Trainee will also be expected to follow developments and provide support where necessary to the brokers (particularly Spain and Portugal) under the National Technology Transfer Initiative.
- the Trainee will also help actively contribute to other existing activities in the TTPO when required.

Required Education:

Applicants should possess a good degree in a technical or scientific discipline. In addition, diplomas or experience in relevant areas such as technology transfer, technology assessment, commercialization, marketing, economics, business administration, legal affairs, entrepreneurship, innovative design or public relations would also be useful.

Candidates must be fluent in English.

Candidates should also be motivated, show initiative and be capable of working with a minimum of supervision.

Reference	Specialist Area	Duty Station
ST-2008-TEC-SW	Software Systems Division	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The Software Systems division is responsible for Software engineering technologies, methods, tools, architectures, and standards for Space projects. It is concerned with aspects of System-software co-engineering, requirements engineering and modelling, design methods, automatic code and test generation, languages and compilers as well as software engineering environments. Modelling and Simulation for system engineering and in support of testing and verification aspects are part of the portfolio of the division, as well as support for the necessary infrastructure.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The Software Systems Division is executing several Technology Research Programs concerned with System-Software Co-Engineering approaches to harmonize heterogeneous methods applied in different disciplines, identification of Reference Architectures to streamline the space platform development based on modularity and reuse, Model-Based Development methods to provide for Software System architecture and design verification in the early development phases and subsequent automatic system generation.</p> <p>To achieve these objectives System and Software development processes, methodologies and tools are being developed. The state-of-the-art technologies for modelling, simulation, verification and automatic code generation are being introduced into Space Software System Development. Reference Architectures for On-Board Software Systems and their constituent reusable Building Blocks are being investigated and developed.</p> <p>As a Trainee in the Software Systems Division the candidate will have the opportunity to contribute to the advancement of the Space Domain Software Systems Engineering. The candidate will be involved in the practical integration of the results from the Technology Research Programs. The candidate will be responsible for validating onboard software technology on an end-to-end avionics test bench, the "Virtual Spacecraft Reference Facility", in the Avionics System lab of ESA/ESTEC</p>		
<p><u>Required Education and other requirements:</u></p> <ul style="list-style-type: none"> - Software engineering, methodology, languages and tools - Knowledge of embedded software - Pro-active attitude 		

Reference	Specialist Area	Duty Station
ST-2008-SRE-PS	Solar Orbiter Project Engineer	ESTEC, SRE-PS
<p><u>Overview of the Division missions:</u></p> <p>Define, develop, build, qualify, launch and commission Solar Orbiter, the next heliophysics project of the European Space Agency's Scientific Program.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The selected candidate(s) will conduct activities in one or two of the following possible fields depending experience and background:</p> <ol style="list-style-type: none"> 1. Spacecraft system engineering: assisting the Solar Orbiter System Engineering Manager with Generation and maintenance of spacecraft budgets (including mass, electrical power, propellant, data storage, data transmission, processor load, inertia properties, pointing accuracy); perform system and sub-system trade-offs based on Industry-provided input data. 2. Technology development: monitor and analyze status of several technology development activities (e.g. solar generators, sun sensors, instrument detectors, antenna elements, optical devices, electronic components, mechanisms); contribute to the reporting and decision-making process within the Solar Orbiter project concerning technology development activities; maintain the project's Technology Development Plan accordingly. 3. Instrument interface: analyze the interface requirements and spacecraft resource needs of various scientific instruments proposed as part of Solar Orbiter payload complement (including mass, power, data transmission, pointing, thermal conditioning); contribute to the reporting and decision-making process within the Solar Orbiter project concerning instrument interfaces; maintain the instrument resource table accordingly and contribute to the maintenance of the Experiment Interface Document specification. 4. Thermo-optical Instrument Interface: this is a more specialized and focused task, at the intersection of the fields described above: analyze the devices which interface the instruments, the spacecraft body and the Heat Shield sub-system (including thermal isolators, thermal baffles, optical baffles, high-temperature doors, radiator interfaces); contribute to the assessment of the Industry-generated definition of their Development; maintain the relevant development plan. 		
<p><u>Required Education:</u></p> <p>University degree in Aerospace Engineering or closely related field or Engineering Physics, preferably advanced degree with an emphasis or demonstrated interest in the fields of activity proposed.</p>		

Reference	Specialist Area	Duty Station
ST-2008-[a.r.]	Digital Signal Processing	ESOC- Darmstadt- Germany

Overview of the field of activity proposed:

Autonomous receiver simulation and testing

An autonomous receiver is able to demodulate and decode a received signal, without any previous knowledge of the signal structure. It is doing so by analysing from carrier to code the attributes of the received signal, and extracting its main properties. Each step in the demodulation process uses its own methods, and makes use of the results of the previous ones to consolidate its own, and vice-versa; the results of the next step are used by the previous one to refine the search.

The present study will focus on the search and prototyping of the demodulator algorithms that will lead to these advanced receivers, fulfilling all of ESA requirements for future missions.

The automatic selection of the received data rate (limited set of different bit rates), based on the analysis of the received signal, will simplify operations, and reduce the risk of a wrong configuration. It will make the system more robust to failures, as the receiver will switch to the right data rate, whenever the transmitter has changed configuration, for example in an emergency mode, reducing the probability of data loss.

The list of tasks is described hereafter:

- Produce a prototype in SIMULINK of a complete autonomous receiver
- Acquire data in laboratory and test simulation with real data.
- Map the algorithms on the architecture of current and foreseen Telemetry demodulators at ESA, and verify applicability.
- Produce Final report of the work performed.
- Prepare Final presentation.

Required Education:

Electronic engineering degree or equivalent. Expertise in programming in Matlab or similar.
Telecommunications engineering

Reference	Specialist Area	Duty Station
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ST-2008-OPS-GA	Antenna & Radar Systems	ESOC Darmstadt (Germany)
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Overview of the Division missions:

The ESA tracking network consists of ground stations located in Europe, South America, Africa and Australia. The Ground Station Systems Division (OPS-GS) is responsible for the design, development and procurement of the ground stations, their technical upgrade and continuing engineering from creation of the stations until end of life.

In addition to this, specialised subsystems, which cannot be obtained on the commercial market, are developed under ESOC responsibility and maintained by OPS-GS in cooperation with industry.

Activities carried out by OPS-GS include:

Active RF, e.g. high power amplifiers, low noise amplifiers, frequency converters.

Passive RF, e.g. feed systems, frequency selective surfaces, waveguide components and filters.

Mechanical/structural, e.g. antenna structures, antenna reflector and mirrors, support structures, thermal control, mechanical transmission systems.

Servo systems for main and sub-reflector positioning, pointing and calibration systems.

Auxiliary systems like air conditioning, water cooling systems.

Power systems, for non-interruptible power, power diesel generators, power distribution.

Digital signal processing, e.g. modulators, demodulators, ranging processors.

Frequency & Timing systems and distribution needed for high precision navigation (based on atomic clocks).

Coding, covering forward error correction encoding and de-coding systems.

Systems engineering, including monitor and control, integration of the ground stations.

Trainees will typically work in collaboration with Technical Officers (TOs) in charge of simulating, defining, procuring, testing elements needed in ESA Ground stations, in one of the specific areas listed above.

Overview of the field of activity proposed:

Training opportunity is offered in the frame of the work to be performed for a GSTP architectural study on the definition of ground system requirements for UHF radar. Such radar is one of the key elements of the future European Space Surveillance Awareness system.

This provides an excellent opportunity to learn about radar systems, signal processing techniques, phase array technology and infrastructure related aspects. Contacts with Engineering staff and external Contractors is integral part of the activity, as well as the opportunity to get practical experience that could be later applied on development of any complex RF system. Guidance and supervision will be given by an experienced RF system manager.

Required Education:

Applicants should have recently 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. For this position, a degree in Electronic Engineering or equivalent would be suitable. Applicants should have a good grounding in Matlab programming. A good knowledge of antenna systems, i.e. phased array, and of radar systems, i.e. monostatic/bistatic radars, would be appreciated.

Reference	Specialist Area	Duty Station
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ST-2008-EOP-GQ	Scientific and/or engineering support	ESRIN
<p><u>Overview of the Division missions:</u></p> <p>In the Earth Observation Ground Segment operation department, the Data Quality and Algorithm Management Office is responsible to:</p> <ul style="list-style-type: none"> - Perform Validation and Monitoring of data and products quality of Operational EO missions handled by ESA - Perform Long Loop Sensor performance assessment for EO sensors - Support Calibration and Validation activities for new missions during the development and the commissioning phase and responsible for coordination of sensor calibration and product validation during the phase E of on-going missions. - Support algorithm definition and processors development during the phase C/D and responsible for algorithm and processors maintenance and evolution during the phase E of on-going missions. <p>Its terms of reference include also the</p> <ul style="list-style-type: none"> - Establishment of Standards and Procedures for Product Quality - Definition and Coordination of Quality Services 		
<p><u>Overview of the field of activity proposed:</u></p> <p>Three themes are proposed in the context of this training. One of them will be chosen depending on both the education and the interest of the candidate.</p> <ul style="list-style-type: none"> - Cal/Val portal - development of tools to support and the use of the cal/val portal http://calvalportal.ceos.org/CalValPortal/welcome.do - Development and implementation of CEOS best practices. Documentation relative on that project can be found in the CEOS Cal/Val portal in resources and workshop. - Scientific and engineering support to improve the characterisation and the calibration of the Meris level 1 product (instrument setting and Algorithms improvement). 		
<p><u>Required Education:</u></p> <p>Applicants should have a university degree or equivalent qualification in engineering, together with experience in Earth Observation mission analysis and payload ground segment operations. Knowledge of Earth Observation missions and its ground segment are required.</p> <p>Applicants should have a high level of self-motivation, the capability to work effectively in a team and have excellent organisation skills.</p> <p>The working languages of the Agency are English and French. A good knowledge of one of these two languages is required. Knowledge of another member state language is an asset.</p>		

Reference	Specialist Area	Duty Station
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ST-2008-LAU-PVL	GNC & Avionics	ESRIN
<p><u>Overview of the Division missions:</u></p> <p>VEGA Division; Launch Vehicle Project Section; “GNC, Avionics and Software” Office</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>Simulation of orbital phase dynamics and P/L separation phases. To support the development of the simulator coordinating Project needs and technical support development activities.</p>		
<p><u>Required Education:</u></p> <p>Aerospace Engineering degree or equivalent.</p>		

Reference	Specialist Area	Duty Station
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ST-2008-SRE-SDO(1)	GAIA SOC System Tests	ESAC
<p><u>Overview of the Division missions:</u></p> <p>The Gaia mission is planning to map to micro-arcsecond accuracy 1% of the stellar population of our galaxy - that is around one thousand million objects. Each object will be seen about 100 times over the five year mission. The data reduction of the ~100 Terabytes of downlinked data is estimated to require a petabyte storage system.</p> <p>The processing will be community wide effort performed by the Gaia Data Processing and Analysis Consortium (DPAC) in which ESAC play a coordination role.</p> <p>The ESAC team is heavily involved in DPAC especially in the overall architecture and the core processing. The core processing includes initial data treatment and the Astrometric Global Iterative Solution (AGIS) to solve for the many unknown astrometric parameters. The processing is distributed over five locations and ESAC will form the hub for data exchange via the Main Database. This main database will form the input for all processing and will be augmented with the output of all processing to arrive at a new version.</p> <p>The production of processing software for Gaia has started and will continue through operations to final catalogue production in 2019.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The candidate will work in the Gaia science operations team responsible for system testing at ESAC, running the large scientific validation tests and the preparation and execution of the DPAC Integration Tests culminating in the End-to-End tests. They will participate in the preparation and execution of systems tests and assist in the analysis of results.</p> <p>The candidate will have the opportunity to develop tools and scripts to automate the preparation, execution and evaluation of tests, monitor and control ESAC systems.</p>		
<p><u>Required Education:</u></p> <p>University degree or equivalent in computer science or related fields. A Java background and familiarity with common Java tools such as Eclipse, JUnit, Ant and Subversion would be advantageous.</p>		

Reference	Specialist Area	Duty Station
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ST-2008-SRE-SDO-2	GAIA Main Database	ESAC
<p><u>Overview of the Division missions:</u></p> <p>The Gaia mission is planning to map to micro-arcsecond accuracy 1% of the stellar population of our galaxy - that is around one thousand million objects. Each object will be seen about 100 times over the five year mission. The data reduction of the ~100 Terabytes of downlinked data is estimated to require a petabyte storage system.</p> <p>The processing will be community wide effort performed by the Gaia Data Processing and Analysis Consortium (DPAC) in which ESAC play a coordination role.</p> <p>The ESAC team is heavily involved in DPAC especially in the overall architecture and the core processing. The core processing includes initial data treatment and the Astrometric Global Iterative Solution (AGIS) to solve for the many unknown astrometric parameters. The processing is distributed over five locations and ESAC will form the hub for data exchange via the Main Database. This main database will form the input for all processing and will be augmented with the output of all processing to arrive at a new version.</p> <p>The production of processing software for Gaia has started and will continue through operations to final catalogue production in 2019.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>Data must be transferred between six data centres in Europe where different astronomical processing will be performed. Results of processing in one centre may depend on or be improved by results coming from another processing system possibly running in a different centre. For example astrometric core processing, running at ESAC, influences many tasks but in turn is improved by the photometric data coming from Cambridge.</p> <p>The management of the MDB data and the integration of the different astronomical solutions from the various data centres is a non trivial task requiring careful thought, much communication and proper planning. Hence the DPAC and ESAC has started on this task already in 2006.</p> <p>The candidate will join the development team working on the Gaia Main Database. They will work on the development of tools to manage, integrate and visualize data received from the Gaia Data Processing Centres.</p>		
<p><u>Required Education:</u></p> <p>The candidate should have a background in Computer Science or a Scientific Discipline. The candidate should have a solid Java background and be familiar with common Java tools such as Eclipse, JUnit, Ant and Subversion. Experience in GUI development, work with large data sets, DBMS or Distributed Processing would be advantageous.</p>		

Reference	Specialist Area	Duty Station
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ST-2008-LEX-COV	Telecommunication / Aerospace Engineering	ESAC
<p><u>Overview of the Division missions:</u></p> <p>The ESA Education Office coordinates all the education activities proposed by the various ESA Directorates and the Education Office itself.</p> <p>In this framework, the ESAC Communication & Education Office (which depends from the ESA Education Office sited in ESTEC) supports the development of several ESA education initiatives in space Engineering and/or Space science, including the development of end to end satellite representative models, in close cooperation with universities; parabolic flights for students to perform their experiments in microgravity conditions.</p> <p>More information on ESA's Education activities may be found at www.esa.int/education</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>The candidate will be integrated in the ESAC Education and Communication office (which depends from the ESA Education Office). The candidate will support the development of several ESA education initiatives in space Engineering and/or Space science. This could include the follow-on of specific Education Student engineering projects carried out at ESA/ESAC; support to some of the existing or planned Engineering satellite developments in the Education Office.</p> <p>Specifically, the selected candidate shall support the following tasks:</p> <p>a) Support in the system engineering activities on the of education satellite-model project throughout their lifecycle (Satellite Design Education Support Kit - SatDESK), including the following duties:</p> <ul style="list-style-type: none"> - support the system engineering and mission specifications consolidation; - support in the coordination and supervision of the academic partners and the follow-on of standard ESA Space project management practises and associated documentation; - control of the management plans, system-level requirements and interfaces through the relevant databases and project documentation; - support in the monitoring of the technical baseline and associated review data packages to ensure compliance with requirements and applicable standards; - participation in the major project reviews. <p>b) Additionally, the candidate may be required to provide specific support in the specification of the mission & requirements of Open Source Educational SW for Science and Space Engineering (OSCAR initiative) and to collaborate with the local education actions in Spain or Portugal and on the new activities of specific Education Student engineering projects carried out at ESA/ESAC.</p> <p>This training possibility should allow the selected engineer to become familiarised with ESA Project Management Engineering practises (as per ECSS Standards) and the adequate understanding of an end-to-end satellite system and its associated technical subsystems.</p>		

Required Education:

Applicants should have just completed a University course at Masters level in a technical or scientific field. Knowledge in Communications or Aeronautics Engineering or experience in Space Engineering domain will be considered as an asset. Major interest should include System Engineering and Project management.

Candidates must be fluent in English or French, the official languages of the Agency.

Candidates should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team. Commitment to ESA's mission with high degree of focus on corporate needs, user satisfaction and quality, open to new ideas, motivation for education activities and outreach outline the skills needed for this post.

Reference	Specialist Area	Duty Station
ST-2008-GAL-NEM	Satellite Navigation	ESA Toulouse
<p><u>Overview of the Division missions:</u></p> <p>The GNSS-1 Project Office is responsible of the development of the EGNOS V2 system and its qualification. A System Qualification Review (SQR) of version 2.2 was successfully held in July 2008. The Project Office is managing the EGNOS initial operations contract, with an Operations Qualification Review (OQR) event successfully passed in July 2008. The Project Office is also managing the SPEED, MRS, NLES New Generation and RIMS New Generation activities under the GNSS Evolution Program. It is also responsible of preparing the necessary obsolescence procurements for the EGNOS product evolution. The Mission and System Evolution Section of the GNSS-1 Project Office is managing the following work lines:</p> <ul style="list-style-type: none"> • EGNOS Evolution path Mission consolidation • EGNOS System Infrastructure Evolution Path • EGNOS Performance and Applications • International and Standardisation activities • Space Segment • EGNOS Communication & Education 		
<p><u>Overview of the field of activity proposed:</u></p> <p>The incumbent will be responsible of providing support to activities of the Mission and System Evolution Section of the GNSS-1 Project Office, through:</p> <ul style="list-style-type: none"> • System Engineering analyses based on simulations; • The production of technical documents. • Maintenance and development of ESA EGNOS simulation and analysis tools. • Development of software solutions in support to the Section activities. • Support the review of Industry System Engineering and Software Tools technical documents • Support in the review of documentation corresponding to other activities managed or supported by the EGNOS Project Office. 		
<p><u>Required Education:</u></p> <p>Applicants should have just completed, or be in their final year of a University course at Masters level in a Engineering discipline. Candidates must be fluent in English or French, the official languages of the Agency.</p>		