



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION
OFFICE OF THE PRIME MINISTER

European Space Agency Traineeship Opportunities

Call Rules 2019

Version 1.0

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1 Introduction

- 1.1 In a knowledge-based economy, it is imperative to have a strong base of scientific research that ultimately leads to intellectual and economic growth for society.
- 1.2 Through an agreement between the European Space Agency (ESA) and the Malta Council for Science and Technology (MCST), two training opportunities are being offered to Maltese individuals in space-related research areas, specifically the following:

- **Geohazard Applications** [MT-2019-EOP-SDE(1)]
- **Maritime and Coastal Applications** [MT-2019-EOP-SDE(2)]
- **Effect of ship emissions on the air quality situation of islands in the Mediterranean Sea** [MT-2019-EOP-SDS]

The above-mentioned research areas have been made available based on vacant trainee opportunities within ESA departments. Specific details on each of these opportunities, including eligibility criteria, are available within the annex of this document.

2 Nominations & Financing

- 2.1 The key objective of this scheme is to identify Maltese individuals who would like to specialise in space-related research, particularly, in one of the above research fields. The ESA Traineeships Board will shortlist eligible candidates based on merit for final selection of two candidates by the European Space Agency. For the nominees selected by the European Space Agency, the Malta Council for Science and Technology shall fund the following:
- (a) The travel costs to the country where the research is taking place and back to Malta. MCST will pay for one trip to the research centre and one trip back to Malta at the end of the course. MCST is not liable to pay for any travelling in between these two journeys
 - (b) A subsistence amount of **€2050 / month**, for twelve months to the selected candidate.

2.2 Throughout the short-listing process, preference will be given to applicants who have not benefited from prior ESA-related scholarships and traineeships offered by Maltese entities. Furthermore, an emphasis will also be placed on the potential for the selected Applicant to exploit any of the research/training undertaken during the Traineeship upon his/her return to Malta.

3 Explanatory Notes and Definitions

- 3.1 **Agreement** shall mean a legally binding document to be signed by the Traineeship Awardee as beneficiary of the Traineeship and the Malta Council for Science and Technology. The Agreement shall include these Regulations. The Agreement has to be signed by not later than three months after the commencement of research or the publication of rankings, whichever comes last.
- 3.2 **Applicant** shall mean a person who submits a Traineeship application.
- 3.3 The **Malta Council for Science and Technology (MCST), for and on behalf of the Foundation for Science and Technology** is the entity which administers the ESA Traineeships and which has an agreement with the European Science Agency. It is through this Agreement that the Maltese Applicant may be nominated for research. MCST is also entrusted with the ranking of Applicants as part of the ESA Traineeships Board, for the awarding of Traineeships and overseeing the scheme.
- 3.4 **MQF (Malta Qualification Framework)** shall act as a translation device to make national qualifications more readable across Europe, promoting workers' and learners' mobility between countries and facilitating their lifelong learning.
- 3.5 **Traineeship** shall mean an award of financial aid for an Applicant to further education or research in a particular field of science. At the end of the Traineeship, the Traineeship

Awardee is to have proof that s/he has completed successfully the programme of research for which the Applicant has applied for.

3.6 **Traineeship Awardee** shall mean the Applicant who is granted the Traineeship.

4 Eligibility

4.1 In order to apply for an ESA Traineeship, an Applicant must apply in his/her own capacity **by close of business Wednesday, 7th August 2019.**

- 4.1.1. (a) Be a Maltese citizen who has been residing in Malta for the past five (5) years. Provided that for the purposes of calculating this 5-year requirement, consideration shall not be given to such period of time during which such Maltese citizen has been residing outside Malta for study, health or work purposes or any other purpose which the MCST may consider, or
- (b) Be a Maltese Citizen who is a worker or self-employed person in Malta, or
- (c) Be a national of an EU/EEA state or a family member of such EU/EEA national (as defined in LN 191 of 2007 and in LN 205 of 2004 respectively for EU and EEA nationals), provided that such person has obtained permanent residence in Malta in accordance with LN 191 of 2007 and in LN 205 of 2004 respectively for EU and EEA nationals, or
- (d) Be a national of an EU/EEA state who is in Malta exercising his/her Treaty rights as a worker, self- employed person or person retaining such status in accordance with LN 191 of 2007; or
- (e) Be a third country national who has been granted long-term residence status under LN 278 of 2006.

- 4.1.2 Applicants in possession of the required education qualifications as specified in the specific training opportunity text, in the annex of this document.
- 4.2 It is the responsibility of Applicants, in possession of qualifications awarded by foreign Universities/Higher Education Institutions, to produce an evaluation report on comparability of qualifications issued by the Malta Qualifications Recognition Information Centre (MQRIC) within the Ministry of Education and Employment (as per Mutual Recognition Of Qualifications Act – *Act XVIII of 2002*). A copy of the said report issued by the MQRIC, or the designated authority in case of warrants, shall be attached to the application, with the original presented at the interview.
- 4.2.1 Applicants whose qualifications are obtained from a foreign University or Higher Education Institution listed on the website of MQRIC as Approved Institutions(<https://ncfhe.gov.mt/en/register/Pages/register.aspx>), are not required to produce the evaluation report on comparability of qualifications as long as the course is listed as one of the regular courses of the University.
- 4.3 Applications submitted by employees of the Public Service/Public Sector require the endorsement of the Permanent Secretary of the Ministry concerned through the Head of the relative Department subject to written confirmation whether leave of absence for the duration of the course has been granted. If leave of absence with full pay is granted, the Malta Council for Science and Technology may review the amount of subsistence cost allocated after consultation with the proper Government authorities.
- 4.4 Applicants in possession of other national/ESF (or a combination of both) public grants or national/ESF/Commonwealth (or a combination) scholarships shall be eligible for the ESA Traineeship Awards, provided that the Regulations governing the other scheme allow the temporary suspension of the scholarship vis-à-vis the deadlines concerning the duration of the course and/or the University where the applicant is undergoing studies allows such a

temporary suspension of studies. In the event that an Applicant is granted an ESA Traineeship and the Malta Council for Science and Technology becomes aware, after the grant of such a Traineeship, that the Traineeship Awardee had, at any point in time, whether prior to the award of the ESA Traineeship, or after such award, accepted any such national/ESF public grant or national/ESF/Commonwealth scholarship without a formal written approval, the Traineeship Awardee shall be liable to refund the Amount/s up to then granted to him/her in full, and this without prejudice to any other legal action which may be taken with this regard.

- 4.5 If selected, the Applicant is expected to commence the traineeship **between the 1st September 2019 and the 1st December 2019**, or as otherwise directed by the European Space Agency. The start date will be agreed following selection of the awardees.

5 Types of Traineeships

- 5.1 The Malta Council for Science and Technology shall forward to the European Space Agency, a ranked list of candidates who wish to specialise in space-related fields of research. The European Space Agency will then select the candidates who will be granted the Traineeship as indicated in Clause 1.2 above.

6 Administration of the ESA Traineeships Scheme

- 6.1 The ESA Traineeships Scheme is administered by the Malta Council for Science Technology.
- 6.2 The ESA Traineeships Board, set up by MCST, shall operate the process of nomination. The ESA Traineeships Board shall be responsible for all matters concerning the selection and determination of appropriate nomination/s according to the rules.

7. Application Forms

- 7.1 Applicants are invited to apply using the appropriate application forms template available at the Malta Council for Science and Technology website.
- 7.2 The form must be completed **in full, signed** and submitted to the Malta Council for Science and Technology together with the following documents:
- i) Applicant's University/College transcripts (detailed);
 - ii) MQRIC evaluation reports (where applicable);
 - iii) Copy of the Identity Card (both sides); and
 - iv) Curriculum Vitae.
- 7.3 Applications for Traineeships, together with any other associated documentation referred to in section 7.2 are to be scanned and sent to space.mcst@gov.mt. Alternatively, they may be sent by post to:
- Stephen Grixti
Senior Executive on Space Initiatives
Malta Council for Science and Technology
Villa Bighi
Kalkara, KKR1320, Malta
- 7.4 Two (2) Reference Letters from academic / professional referees are to be sent by the Applicants to their respective referees of their choice. Completed forms (and any other reference letter they may wish to submit), are to be scanned and sent to space.mcst@gov.mt by **close of business Wednesday, 7th August 2019**.

Alternatively completed forms may be delivered by post in a sealed envelope to:

Stephen Grixti
Senior Executive on Space Initiatives
Malta Council for Science and Technology
Villa Bighi
Kalkara, KKR1320, Malta

- 7.5 Late and incomplete applications shall not be considered by the Malta Council for Science and Technology.
- 7.6 In case of applications submitted by post, all Applicants are to request an acknowledgement for receipt of application from the receiving office if the form is submitted by hand. Alternatively, applications may be sent by registered post. The Applicant has to ensure that the application is received by the respective deadline. The Malta Council for Science and Technology does not assume any responsibility for applications not received in time.
- 7.7 The application deadline is **Wednesday 7th August 2019, close of business.**

8 Selection Process

- 8.1 The role of the ESA Traineeships Board is to evaluate and nominate candidates to ESA.
- 8.2 Eligible Applicants shall be called for an interview on a pre-agreed date and time. No alternative arrangements shall be made to change the date and time of the interview unless there is an exceptional circumstance (supported by written proof) that warrants the change in such date and time. The aforementioned exceptional circumstance shall be examined, and such alternative date and time may be communicated by the Board, at its discretion.

8.3 In the case of Applicants unable to attend for the interview due to being abroad, such interview may take place via teleconference. It is the Applicant who has to ensure to be at a place where such facilities are available and that the video and audio link on his/her end, is adequate to ensure a proper interview throughout. The ESA Traineeships Board does not assume any responsibility if the interview fails to materialize properly due to any technical reason. An alternative date for interview may be given by the ESA Traineeships Board depending on the circumstances which lead to the failure of such an interview.

9 General Conditions of Award

- 9.1 Applicants will be notified of their ranking by the Malta Council for Science and Technology.
- 9.2 If the nominated Applicants are accepted by the European Space Agency to follow the research, the Awardees shall have to sign an Agreement which stipulates the terms and conditions of such award. The ESA Traineeships Board reserves the right to review the provisional nomination if any information reveals that the Applicant is ineligible for the Traineeship.
- 9.3 Applicants shall be expected to take up the award from the date stated in the Agreement and confirmed by the European Space Agency.
- 9.4 Should any conflict arise between the interpretation of clauses in these Regulations and the Agreement, the Regulations shall prevail.
- 9.5 If for any reason, the Applicant cannot start his/her research on the date indicated by the European Space Agency, the ESA Traineeships Board reserves the right, on notification of such intention, to nominate the next person on the ranking list.

- 9.6 The Malta Council for Science and Technology reserves the right to publish the names of successful Applicants. These names may be published on the website and/or publications of the Malta Council for Science and Technology and/or any other Government entity. In applying for an award, the Applicant gives consent for such publication in the event that her or his application is successful.
- 9.7 Awards are to fund the research stipulated within the Agreement and funding will not be extended to enable the Awardee to complete an additional research and/or qualification other than that for which the selection was made.
- 9.8 Any intellectual property including patents directly arising from or derived from the research funded by the Traineeship and carried out by the Awardee shall be covered by an Intellectual Property Rights (IPR) agreement that acknowledges that the research work carried out is partially funded by the ESA Traineeships Scheme.
- 9.9 The ESA Traineeships Scheme may seek to obtain any rights in intellectual property owned by the Awardee.
- 9.10 On award of a Traineeship, the ESA Traineeships Board and/or the Malta Council for Science and Technology shall make any information submitted by the Applicant available to public authorities for accountability purposes.
- 9.11 Traineeship Awardees are expected to take on full-time responsibilities with ESA. Those Awardees who intend to commit to or continue paid employment during the duration of their Traineeship shall need to seek approval from the Malta Council for Science and Technology and the European Space Agency, prior to the commencement of their Traineeship. Approval must also be sought should the Awardees decide to commence employment throughout the Agreement period. In cases where the Awardee is seeking to receive or receives a salary over and above the subsistence offered through this Traineeship, the Malta Council for Science and

Technology reserves the right to change the subsistence rate specified in Section 2.1(b). Unapproved employment shall be deemed to be a breach of these Regulations and the Agreement signed between the Traineeship Awardee and the Malta Council for Science and Technology, and shall lead to the termination of the Traineeship and the obligation on part of the Traineeship Awardee to reimburse all the amounts awarded until such time.

9.12 Traineeship Awardees shall be requested to write a report at the end of the first 6-months of the Agreement period (mid-term report) and another report upon completion of the Traineeship describing the research/training undertaken with ESA. A template and guidelines for both these reports will be provided by the Malta Council for Science and Technology, and only reports that conform to the criteria and specifications provided by MCST will be accepted for review. The Malta Council for Science and Technology retains the right to consider termination of the Traineeship should the Awardee fail to provide a mid-term report or should the content of the report not follow the templates and guidelines provided. The Malta Council for Science and Technology also retains the right to publish any information within these reports on the organisation's website and any other relevant medium.

9.13 The Malta Council for Science and Technology encourages Traineeship Awardees to publish any of the research findings that emerge during the Traineeship on peer-reviewed journals or to present these findings in relevant conferences and events. Copies of all publications resulting from the Traineeship shall be sent to the Malta Council for Science and Technology, within 30 days of being made public. The Malta Council for Science and Technology should also be notified within 30 days following the submission of a patent application by the Awardee that is connected with the research/training undertaken during the Traineeship.

9.14 Following consultation with the European Space Agency, the Malta Council for Science & Technology may publish any publications sent by the Awardee in Malta and these may become freely and electronically available on open access publication. Furthermore, on signing a Traineeship Agreement, the Awardee commits himself/herself to participate in one or

two public dissemination events in which the research undertaken at ESA is described and the support offered through the ESA Traineeship Scheme is acknowledged.

9.15 The date for the duration of the Traineeship cannot be extended beyond 12 months.

10 Termination prior to completion of programme

10.1 Traineeship Awardees who for any reason discontinue their placements shall inform the Malta Council for Science and Technology in writing with immediate effect.

10.2 The Malta Council for Science and Technology shall on thirty (30) days written notice Terminate the award if the Traineeship Awardee's -

- progress is deemed unsatisfactory by ESA or the research institute; and/or
- discontinues the placement without justifiable cause; and/or
- is in breach of any provision of these Regulations, and does not remedy the breach within thirty (30) days of receipt of written notice requiring him/her to do so.

10.3 Traineeship Awardees who have their award terminated under conditions stipulated in Clause 10.2 (first two [2] bullets only) during the first three calendar months of his/her placement, shall be exempted from refunding any amounts paid by the Government of Malta as per Clause 2.1(b). The first three [3] month period shall be considered as a probation period. Following this probation period, the Awardee shall be required to refund the entire award, if the Awardee is found in breach of Clause 10.2. The refund shall be done within three (3) months of terminating the research period.

10.4 Scholarship Awardees who cannot pursue further their placement due to unforeseen health situations or exceptional circumstances as approved by the Malta Council for Science and Technology shall not be deemed to be in breach of these regulations.

In such situations, the Traineeship Awardee must provide justifiable explanation as to why the placement was not completed. For termination, documented evidence, medical certificates and testimonials must accompany each claim. The Malta Council for Science and Technology is in no way bound to waiver all claims put forward. The Malta Council for Science and Technology reserves the right to appoint its own expert, be it medical or otherwise to advise and assess the case of the claimant.

11 Interpretation of the Rules

This document endeavours to establish comprehensive and unambiguous rules governing The Maltese Traineeship Scheme 2019. However, should circumstances arise where the rules are inadequate, unclear, and ambiguous or conflicting, the Council shall exercise its discretion in the interpretation of the rules or will extrapolate the rules as necessary through the setting up of ad hoc committees.

12 Further Information

For further queries, please contact:

Stephen Grixti

Senior Executive on Space Initiatives, MCST

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Annex

ESA Traineeship opportunities 2019

Training Opportunity for Maltese Trainees

Reference	Title	Duty Station
MT-2019-EOP-SDE(1)	Geohazard Applications	ESRIN
<p><u>Overview of the unit's mission:</u> The Data Applications Division in the Department of Science, Applications and Climate based at ESA/ESRIN in Frascati, Italy, is in charge of engaging scientific, public and commercial sector user communities, identifying their needs, implementing EO data exploitation projects, tools and platforms to address these needs, and progressively transferring validated results and applications from research to operations. The Division builds up new scientific and end-user communities and works with them in targeted R&D and demonstration activities, that range from science up to pre-commercial applications development, to advance Earth system knowledge, maximise ESA missions impact in society and underpin the definition of future EO systems. The Division is responsible for coordinating ESA's EO training and education activities.</p>		
<p><u>Overview of the field of activity proposed:</u> The use of techniques such as Differential Interferometry SAR processing in geophysics research has been growing since the early demonstrations completed in the 1990s. With the rapid increase in the number of SAR satellites and the availability of scalable cloud-based processing resources, the access to this technique has expanded significantly beyond the domain of specialist Earth Observation data processing science to mainstream volcanology, tectonics, solid Earth geophysics and geotechnical engineering.</p> <p>The scope of this activity is to develop and demonstrate structured approaches for applying a combination of Permanent Scatterer and Small Baseline Subset Interferometry techniques to medium resolution C-band SAR and high-resolution X-band SAR to obtain an optimized approach for land surface motion characterization. This shall base based on the fusion of complementary datasets and data processing techniques. In addition, it may be of interest to develop and test AI based techniques to automatically detect clustering and other features in the land surface movement data. Depending on the areas of interest chosen and the availability of complementary datasets, it may also be of interest to combine in-situ datasets with the InSAR data to relate the land surface measurement to the actual lithospheric processes taking place</p> <p>The trainee is encouraged to use the Geohazard Exploitation Platform as the basic EO processing tool and to consider how additional datasets can be integrated into this processing environment. The trainee is expected to work alongside on-going project teams developing methods to exploit the Geohazard Exploitation Platform for geotechnical and geophysical applications</p>		
<p><u>Required education:</u> MSc in Physics, Applied Mathematics, Geophysics, Earth Science, Remote Sensing, Physical Geography, Hydrology or Applied Computer Science Experience in signal processing, radar systems or AI based data processing would be an asset</p>		

Training Opportunity for Maltese Trainees

Reference	Title	Duty Station
MT-2019-EOP-SDE(2)	Maritime and Coastal Applications	ESRIN

Overview of the unit's mission:

The Data Applications Division in the Department of Science, Applications and Climate based at ESA/ESRIN in Frascati, Italy, is in charge of engaging scientific, public and commercial sector user communities, identifying their needs, implementing EO data exploitation projects, tools and platforms to address these needs, and progressively transferring validated results and applications from research to operations. The Division builds up new scientific and end-user communities and works with them in targeted R&D and demonstration activities, that range from science up to pre-commercial applications development, to advance Earth system knowledge, maximise ESA missions impact in society and underpin the definition of future EO systems. The Division is responsible for coordinating ESA's EO training and education activities.

Overview of the field of activity proposed:

Satellite data have been contributing to a wide range of marine and coastal research activities and operational monitoring systems. Examples include coastal water quality monitoring, benthic habitat status assessment, coastal erosion characterization, maritime surveillance and investigation of land-ocean and ocean-atmosphere exchange processes within the Earth system.

The following fields of activity are proposed for a Maltese Trainee (Candidates should select maximum one or two):

- Testing of methods for water quality parameter retrieval including fusion of Sentinel 3 and Sentinel 2 class observations, machine learning based retrieval methods and customized methods for specific regions with optically complex waters. Analyses such as EO based characterization of jelly-fish blooms etc will also be considered
- Development and demonstration of methods to apply satellite EO data for coastal mapping and coastal change characterization including development of methodologies for bathymetry retrieval and change mapping, coastline mapping and coastal erosion/deposition characterization, coastal sediment dynamics and coastal flood risk assessment
- Development and demonstration of methods to apply satellite EO data for coastal ecosystem and habitat characterization including benthic habitat extent mapping and status assessment, coastal habitat extent and status assessment, development of methodologies for coastal ecosystem status characterization and integration of satellite based Hyper-spectral data with conventional datasets
- Coastal ocean process characterization using satellite EO data, in-situ data and available local models. This can include coastal current nowcasting and forecasting, characterization of frontal structure dynamics, coastal wind and wave characterization
- Testing EO applications for blue economy developments including support to maritime spatial planning, aquaculture site selection and impact assessment methodology development, development of methodologies for monitoring sustainable tourism, resource assessment methodologies for next generation wind, wave and current energy systems and EO based monitoring coastal resource extraction activities including dredging and water desalination
- Development and testing of satellite EO based methodologies for background pattern of life characterization for coastal areas with respect to vessel movements
- Development and testing of EO based algorithms to detect and monitor discharges and pollution in the marine and coastal environment and characterization of discharge fluxes into the coastal environment (including marine plastics)
- Characterization of Mediterranean oceanographic processing using EO datasets. This may include AI/ML based approaches for characterization of fluxes, teleconnections etc or ocean process characterization (eg internal wave driven processes) or parameter retrieval (eg salinity, pH, temperature etc)
- Application of AI/ML based approaches to use satellite EO to characterize dynamics and exchange processes in coastal ocean areas

In addition, the candidate will be expected to participate to progress meetings for development contracts linked to marine and coastal activities as well as relevant Earth Observation workshops in ESRIN. To the extent possible it is also the intention that the candidate supports the elaboration of activities linked to ESA Regional Initiatives and Resilience

Required education:

MSc in Physics, Applied Mathematics, Geophysics, Earth Science, Remote Sensing, Physical Geography, Oceanography or Applied Computer Science
Experience in signal processing or AI based data processing would be an asset

Training Opportunity for Maltese Trainees

Reference	Title	Duty Station
MT-2019-EOP-SDS	Effect of ship emissions on the air quality situation of islands in the Mediterranean sea	ESRIN
<p><u>Overview of the unit's mission:</u></p> <p>The holder of this post will be integrated in the activities of the Science Section in the Data Applications Division within the Science, Applications and Climate Department of the Directorate of Earth Observation Programmes.</p> <p>The candidate will be part of a dynamic science team leading research and scientific activities, in partnership with European and international industry and academia, aiming at developing the next generation of EO methods, techniques and products, advancing Earth system science, pioneering Open science practices, exploring novel collaborative research tools and transferring this experience into novel EO mission ideas.</p> <p>As part of the Science Section, the candidate will be involved in projects and activities in the domain of Atmospheric Composition, specifically in the use of Sentinel-5p and Aeolus data along with other sensors in synergy, as well as auxiliary and in situ data.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>Air pollution is an international problem with several impacts on living organisms. It has been found to cause serious health effects, such as respiratory problems, including asthma, human eye, and skin irritation, and others. There are many open questions including the exploration of new technologies and methods like remote sensing and in-situ observations. For example, the investigation of air pollution created by the shipping industry by means of satellites observations has recently become a central topic of interest within the air pollution community, nonetheless spaceborne platforms alone cannot provide a full picture.</p> <p>To investigate the spatio-temporal variability of air pollution specifically on a regional scale new tools are being developed. In this context, the detection, tracking and understanding of pollutant transport on various spatial scales are of both local and global interest. Specifically, in remote areas, such as Mediterranean islands, where no or few ground-based monitoring network of the air pollution is available, the use of satellite data can provide an estimation of the regional distribution of pollutants, in order to assess the impact of specific events e.g., dust storm outbreaks or pollution from shipping. In addition, data from models such as CAMS can help to constrain the information available regarding pollution.</p> <p>This activity shall look into the exploitation of all available dataset regarding air pollution and apply them to a use case for Mediterrean islands. Emission scenarios shall be discussed, the generation, transport and destruction of air pollutants are to be analysed. What is the actual impact of pollution related to ship emissions on the islands downwind from the source.</p>		
<p><u>Required education:</u></p> <ul style="list-style-type: none"> • Master's degree in Physics, Mathematics, Earth Science, Remote Sensing, Computer Science, Engineering • Applicants should have just completed (conclusion not older than two years) or be in their final year of a university course at Master's level in a technical or scientific discipline. • Candidates must be fluent in English or French, the official languages of the agency 		