EUROPEAN COMMISSION
DIRECTORATE-GENERAL
HUMAN RESOURCES AND SECURITY
HR for Specific Sites & Services
HR for JRC

October 2022 Call for expression of interest – scientific trainees

As the science and knowledge service of the Commission, the mission of the Joint Research Centre is to support EU policies with independent evidence throughout the whole policy cycle. The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain).
Further information is available at: https://ec.europa.eu/jrc/en
The place of traineeship can be one of the following JRC sites: Ispra (Italy), Geel (Belgium), Petten (the Netherlands) or Karlsruhe (Germany).

The JRC is an equal opportunities employer that encourages diversity in its applications.

Thematic areas

The JRC focuses on strengthening the knowledge base for policymaking; global challenges (health; culture, creativity and an inclusive society; civil security for society; digital, industry and space; climate, energy and mobility; food, bioeconomy, natural resources, agriculture and environment); innovation, economic development and competitiveness; scientific excellence; and territorial development and support for Member States and regions.

For the October 2022 call, the JRC seeks to recruit a number of scientific trainees, in different thematic areas relevant for the organisation. The thematic areas are clustered in 18 fields as listed below.

If a candidate's profile fits in more than one field, the applicant should choose the field in which s/he is more specialised.

The scheme focuses on candidates with strong scientific background. However, some fields (1, 2 and 17) also give the opportunity for candidates with more generalist profile to apply. Depending on the application fields, candidates will be expected to perform desktop work and/or experimental tasks.

Fields for the October 2022 call are as follows:

1) Knowledge management and visual communication, data visualisation (including knowledge management for nuclear safety and decommissioning)

- Relevant for candidates with humanities and/or communication backgrounds, digitalisation and knowledge of management of scientific publications.
- Possible projects under this field are (but not limited to):

      o   Knowledge management, citizen engagement, science communication and networking, including event management, in a multi-disciplinary environment at the interface between science-policy-society. Visual communication (including graphic design, photo and video editing), data visualisation, digital communication and content management.

2) Science communication and scientific networking in a multi-disciplinary environment at the triangle of science-policy-society. Foresight & knowledge management (identification of emerging disruptors and evaluation of policy gaps)

- Relevant for candidates with sociology, communication backgrounds.
- Possible projects under this field are (but not limited to): contributions for the Knowledge Centre for Global Food and Nutrition Security.
    - Trainees will mainly be tasked with the production of knowledge tailored to policy needs (skills in analysing, synthesising and writing in a communicative manner using infographics)

3) Modelling and quantitative data analysis (statistics, GIS, spatial modelling, new data)

- Relevant for various profiles and thematic areas: all candidates with knowledge of modelling, various modelling tools and techniques are welcome to apply
- Possible projects under this field are (but not limited to):
    - Collection, elaboration of geographical and statistical data at various spatial and temporal scale for the analysis of the status and trends of cities and regions within and outside the European Union. Data and subjects of study might cover specific themes (e.g.: urbanisation, economy, transport etc.) or a combination of themes for integrated assessment. GIS and/or statistical skills would be positive assets.

4) Data science: Population trends, Demographic analysis and Migration

- Relevant to all candidates specialised in data analytics and data science, in various thematic areas, including the development of data analysis tools and interfaces to large Earth Observation datasets.
- Possible projects under this field are (but not limited to):
    - Building the taxonomy for Disaster Risk Management:
        - Participation to the definition and fine-tuning of the Disaster Risk Management Knowledge Centre (DRMKC) taxonomy with United Nations Office for Disaster Risk Reduction / European Commission DG HOME and DG ECHO.
    - Extracting dynamic risk drivers of humanitarian crisis and constructing possible scenarios from Humanitarian Needs Overview reports in the context of the INFORM Initiative
    - Literature review and data collection of the vulnerability indicators projections under different climate change and socioeconomic pathways needed for the further development of INFORM climate change risk tool

5) Resilience, Innovation, Economics, Macro-Economic modelling, Composite Indicators and Scoreboards, Micro econometrics and Macro econometrics, Applied statistics, Fiscal policy analysis, Financial markets and corporate finance, Sustainable finance

- Relevant for candidates with:
    - scientific background, expertise in economics/econometrics, DSGE modelling and data science.
    - research and policy interests in: development of macro-econometric models and associated methodologies (DSGE models in particular) to be used for macro-economic policy analysis and for supporting macro-economic projections and forecasting; Macro econometrics and data science.
- Possible projects under this field are (but not limited to):
    - Macroeconomic and Fiscal Surveillance (MACFIS) project: provide scientific support to European Commission policy process and decision-making in relation to the broad area of the macroeconomic and fiscal surveillance, with particular emphasis on the European Semester and Recovery and Resilience Facility (RRF) implementation. This is achieved by implementing, simulating and estimating a wide range of macro-econometric models (from small/medium scale to large scale ones): GAP, GM, QUEST and macro-econometric nowcasting models.
    Activities also entail underpinning research and methodological studies on structural macro-economic models (GM model), macroeconometric GAP and nowcasting models.

6) Analysis of the Digital Transformation and its impacts on society, economy and the environment. Education and skills for the digital and green transitions.

- Relevant for candidates interested in research combining technology, social and economic aspects; understanding the impact and strategic role of: digital technologies, data and digital platforms for the economy and society; and to support the modernisation of public sector.
- Relevant for candidates interested in research on education and training (E&T) practices, skills and competences in a life-long learning perspective as well as on automation implications of labour markets and re-skilling needs.
- Possible projects under this field (but not limited to):
    - Mapping the digital industrial ecosystem (actors, activities, relationships,)
    - Analysing impacts of policies and investments on digital transformation
    - Analysis of technical and organisational enablers for European data spaces
    - Economic Analysis of the data and platform economy
    - Analysis of the role of digital innovation
    - Innovation of digital governance and modernisation of the public sector
    - Schools and regional authorities in Spain, Portugal and across Europe are producing digital strategy documents on the use of digital technologies, a large number of which is based on the SELFIE tool. This analysis will help reveal how digital transformation is enacted at school level.

7) Data science, data processing and analysis (including big data and support to policy)

- Relevant to all candidates specialised in data analytics and data science, in various thematic areas
- Possible projects under this field are very diverse and not only limited to:
    - Support to JRC COVID-19 Test Methods and Devices Performance Database management and to EU digital COVID certificate information transfer. The trainee will be part of the team that curates the JRC COVID-19 Test Methods and Devices

Performance Database, analysing documentation and information sent by manufacturers, and reviewing related literature.

- o Data science for skills intelligence analysis: using data from online job vacancies for analysing emerging skills demands and the task content of jobs in Europe, in collaboration with CEDEFOP (European Centre for the Development of Vocational Training). Skills in data science and experience in R, Python, Stata sought.
- o Algorithmic management of work: studying how the use of algorithms for the coordination of work by companies impact on work organisation and job quality, and also how policies could increase the transparency and fairness of algorithms at work. Social Sciences background and knowledge/skills on digital technologies which could assist in the analysis of qualitative data and literature review.
- o Digital transformation and the future of European social protection systems: studying how the digital transformation is affecting European social protection systems, and how European policies can respond. Social Sciences background and knowledge/skills on digital technologies could assist in the analysis of qualitative data and literature review.
- o Support to the Observatory of Critical Technologies for defence, space and related civil industries, which implements Action 4 of the "Action Plan on Synergies between civil, defence and space industries" (COM(2021) 70 of 22 Feb 2021). Provide regular monitoring and analysis, including risk analysis, of existing and emerging Critical Technologies, their potential applications, value chains including key players, needed research and testing infrastructure (in particular in relation to standardisation and certification), desired level of EU control over them, and existing or potential gaps and dependencies.

8) Artificial Intelligence - trustworthy Artificial Intelligence and transparency of algorithms, Applied Artificial Intelligence

- Possible projects under this field are very diverse and not only limited to:
  - o Analysing the impact of artificial intelligence on human behaviour
  - o Fairness and transparency of AI and algorithms
  - o Child-robot interaction
  - o Evaluation of AI systems and methods
  - o Algorithm-supported decision making
  - o Data-driven policy making
  - o Diversity in AI

9) Technology monitoring & assessment (evolution, trends, emerging and disrupting technologies); technology foresight; technological sovereignty; strategic autonomy; value/supply chain analysis; dependency risk analysis; gaps analysis; Resilient infrastructure.

- Possible projects under this field are very diverse and not only limited to:
  - o Check of alignment with Green Deal principles of all CEN (environmental) standards.
  - o Support to strategic value chains and trade flows analysis. Securing the sustainable supply of raw materials is essential in building a strong EU industry and economy, as more and more innovative technologies are using scarce or critical raw materials.
  - o Monitoring the geographical mapping of trade along raw materials supply chains and analysing aspects of the markets for the products along these supply chains could help

EU policy makers in being better informed on the real needs of EU companies and consumers when opening to international trade.

- o Support to the Observatory of Critical Technologies for defence, space and related civil industries, which implements Action 4 of the "Action Plan on Synergies between civil, defence and space industries" (COM(2021) 70 of 22 Feb 2021). It will provide regular monitoring and analysis, including risk analysis, of existing and emerging Critical Technologies, their potential applications, value chains including key players, needed research and testing infrastructure (in particular in relation to standardisation and certification), desired level of EU control over them, and existing or potential gaps and dependencies.

10) Public Health (Non-communicable Diseases, particularly Cancer and Rare Diseases, Chemical Risk Assessments, non-animal methods) & Food & Feed safety & Integrity & Nutrition & Security and Agriculture; Analytical Chemistry; Nanomaterials; Zero Pollution ambition: Cheminformatics; One Health (epidemiology, surveillance, health risk assessment)

- This field will also include laboratory experience
- Possible projects under this field are very diverse and not only limited to:
  - o Knowledge management related to the area of safe and sustainable advanced materials and chemicals
  - o Project that supports the revision of the Directive on ceramic food contact materials. The revision foresees the development of test conditions for ceramic bakeware, the extension of the metals analysed (beyond lead and cadmium) and extension to other vitreous materials such as glass and enamel.
  - o Biodiversity and Chemicals: Desk research on evaluation impact of chemical pollution, especially due to pesticides use, on the biodiversity.
  - o Chemicals causing Germ Cell Mutagenicity: Desk research on evaluation of data collected for REACH registered chemicals to better understand to which extent mutagenicity in somatic cells might be predicting germ cell mutagenicity and lead to classification.
  - o Reference materials to monitor the impact of chemicals on human health and environment (often inherently correlated) and protection against most harmful contaminants. This entails their monitoring in environmental media (such as water and soil) but also human exposure to recognised hazardous chemicals like endocrine disruptors (including pharmaceuticals), per- and polyfluoroalkyl substances, microplastics but also emerging chemicals.
  - o Supporting the Knowledge Centre on Cancer
  - o Development of pesticides' indicators for antimicrobial resistance (AMR). The project is focused on the identification of the minimum concentration of pesticides i.e. azole capable to induce the resistance to the fungi.

11) Nuclear Science, Operational Nuclear decommissioning and Radioactive waste management

- Nuclear Science comprises energy and non-energy applications of nuclear materials; such as radioisotopes for targeted alpha therapy techniques to fight cancer and other diseases, scientific-technical knowledge in the field of decommissioning, site remediation, management of spent fuel and radioactive waste in support of Commission policies.
- Relevant for trainees with background in engineering, physics, chemistry, material science as well as Artificial Intelligence, modelling and robotics.

12) Ecosystem services and Natural Resources

- Relevant for all candidates with scientific background specialised in environmental issues, with particular focus on ecosystem services, sustainable resource use as well as agricultural production systems.
- Possible projects under this field are very diverse and not only limited to:
    - Bioeconomy and woody biomass - Assessment of biomass supply and uses and monitoring the sustainability of the EU Bioeconomy. This project supports the contribution of the sustainable and circular EU Bioeconomy to deliver the green transition and climate neutrality as called by the European Green Deal.
    - Knowledge Centre for Biodiversity. Indicators for the European Green Deal. The trainee will support the EC Knowledge Centre for Biodiversity (KCBD) on the identification and documentation of indicators potentially used to monitor and connect the EU Biodiversity Strategy with the Farm to Fork Strategy and the Zero Pollution Action Plan.

13) Climate Change (Adaptation and Mitigation), Sustainable transport (including technologies), climate neutral cities, air pollution

- Climate Change (Adaptation and Mitigation), Sustainable transport (including technologies), climate neutral cities, air pollution, industrial pollution
- Specific projects will also include laboratory experience
- Possible projects under this field are very diverse and not only limited to:
    - Electro-magnetic Compatibility testing in JRC Vehicle Emissions Laboratory: Laboratory experimental and analytical activities in testing cars and charging infrastructure (wired and inductive charging technology) for Electro-magnetic compatibility.
    - Application of machine learning techniques for super-resolution air quality modelling and mapping.
    - Air pollution health impact and cost analysis in Eastern Europe and Central Asia.

14) Sustainability assessment of products, facilities, economic activities, and consumption patterns, Sustainable Development Goals (SDGs), Territorial Engagement and Sustainable Urban and Rural Development

- Relevant for candidates with a scientific background in qualitative and quantitative analysis of sustainability, and with thorough knowledge of the Sustainable Development Goals (SDGs) framework, their synergies and trade-offs.
- Possible projects under this field (but not limited to):
    - Evaluation of patterns of urban and rural development in Europe. It includes both quantitative and qualitative elements to study the sustainability of territorial development in Europe.
    - EU taxonomy
    - Sustainable development, SDG and policy coherence - Mainstreaming Sustainable Development Goals in EU Policies.

15) Global security and Hybrid Threats

- Possible projects under this field are (but not limited to):

- o Building the taxonomy for Disaster Risk Management
  - Participation to the definition and fine-tuning of the DRMKC taxonomy
  - Expected output: analysis document, visual map of the list of terms and proposed structure of the terminology with relations among terms, possibly in a machine-readable format (e.g. excel, JSON)
  - Annotation of content from "Project Explorer", "DRMKC News", "Documents" and "Scientific outputs" with the use of a specific tool to be decided.
  - Extracting dynamic risk drivers of humanitarian crisis and constructing possible scenarios from Humanitarian Needs Overview reports in the context of the INFORM Initiative
  - Literature review and data collection of the vulnerability indicators projections under different climate change and socioeconomic pathways needed for the further development of INFORM climate change risk tool

16) Energy

- Hydrogen, batteries, digitalisation, interoperability, energy efficiency, renewables, industrial decarbonisation, heating and cooling, innovation and competitiveness, energy security and markets, social aspects, renovation of buildings
- this field will also include laboratory experience
- Possible projects under this field (but not limited to):
  - o Hydrogen value chain. Techno-environmental assessments of part of the chain, to understand and maximise its contribution to the decarbonisation of the energy system. These activities may imply the use of LCA methodology or experimental activities in the field of hydrogen production and transport.
  - o Battery value chain - study of advanced batteries behaviour under real working conditions, to understand the safety and performance behaviour.
  - o Bioenergy and alternative fuels assessment: analysis of different alternative fuel options for transport (road, aviation, waterborne), bioenergy systems providing flexible solutions and intermediate bioenergy carriers (pyrolysis oils, bio-crude, microbial oils, algae oils, etc.). Type: Desk top research; data analysis, spatial analysis integrating statistical and geospatial data; Life Cycle Analysis (LCA), and modelling.
  - o Data collection and analysis of decarbonised gases and natural gas

17) Business and Resources Trainees: Harmonisation, Simplification and Business Analytics sector, e-procurement, document digitalisation

18) Digital Forensic, Wireless communication, Drones, counter drone systems & Global navigation satellite systems

- Digital forensics
- Relevant for candidates with background in image and video analytics techniques (enhancement, restoration and filtering, segmentation, features and descriptors, etc.) and Machine learning and deep learning techniques.
- Possible projects under this field (but not limited to):

o Contribution to the development of multimedia large dataset and the study of multimedia forensic techniques related to image and video analytics, computer vision and signal analysis.

Requirements of the Call

For general eligibility requirements, please read Annex I.

Please note that for this specific call:
- **Trainees are selected from nationals of the Member States of the European Union (EU) or of the countries associated to the Research Framework Programmes**
- **The call is open to recent university graduates who have completed at least a standard 3-year higher education degree, as explained below**
- **The language requirements are at C1 level, as explained below.**

Essential requirements of the call:

The call is open to recent **university graduates** (no more than five years after the last degree awarded) who have completed at least a standard 3-year higher education degree (180 credits), corresponding to a complete Bachelor's cycle, or equivalent, at the closing date of the present call.

The required level of the **English language** is **C1** according to the CEFR (Common European Framework of Reference for Languages). Candidates from Member States must be independent users of at least two Community languages, one of which should be English. The required level of this second language is C1 according to the CEFR. Candidates from non-Member States must be independent users of at least English. The required level of English is C1 according to the CEFR.

In addition to meeting the criteria above, candidates who have:

For more than **six weeks**:
- benefited from any kind of traineeship (formal or informal, paid or unpaid) within a European institution or body;
- have had or have any kind of employment within a European institution or body, including anyone who is or has been an assistant to a Member of the European Parliament
- have been or are a consultant or researcher for/within an European Institution or body
- have been or are a temporary staff member within an European Institution or body
- have been or are a contract staff member, an auxiliary contract staff member, an auxiliary agent or an interim staff member of any EU institution or body.

are **not** eligible.

The eligibility of the applications will be assessed by a dedicated team of evaluators.

Selection criteria

Candidates are evaluated anonymously by evaluators on the basis of the following criteria:

- Level of education (minimum – 'bachelor' or equivalent);
- Level of knowledge of English, as one of the three European Commission working/procedural languages;
- Level of knowledge of any other of the official/working languages of the EU as well as in any other European or non-EU languages, if any (for non-EU nationals only English language is compulsory).

All candidates must declare one mother tongue; no points are awarded for the mother tongue and therefore no proof is required.

- Relevant, field related work experience, if any;
- Field related methodologies, field related technologies, IT skills, if any;
- International profile (education/work/volunteering abroad, mobility, aptitude to work in an international atmosphere), if any;
- Papers, publications, participation in conferences/summer schools, if any;
- Motivation and quality of reasoning, including suitability for the relevant field.

Not all candidates in the database will be contacted. Being in the database means that you might receive an offer, but does not constitute an offer in itself. An offer is only final when the contract has been signed. A candidate might get an invitation for a short online interview with the team interested.

Supporting documents will be verified in the recruitment phase.

Conditions of Traineeship

The conditions of the Traineeship Programme are governed by the [Rules Governing the Traineeship Scheme of the Joint Research Centre](#).

The place of traineeship can be one of the following JRC sites: Ispra (Italy), Geel (Belgium), Petten (the Netherlands) or Karlsruhe (Germany).

The next traineeship session will start on 1 October 2022 and will run for a fixed period of 5 months. Under exceptional circumstances, a delay of this start date may be possible. The duration of the traineeship may not be less than three months. Candidates should be aware that any postponement of the start date might have an impact upon candidates' eligibility for other career opportunities at the European Commission, such as the Junior Professional Programme (JPP).

The trainee is awarded a monthly allowance in the amount of 25% of the basic remuneration for an official at grade 5/1 (Commission decision C/2007/1221), adjusted by the correction coefficient applied to the JRC site where the traineeship takes place, per month of in-service training actually carried out. The amount of the basic monthly allowance in 2022, adjusted by the applicable correction coefficient of the site, is set in between € 1.142,44 and € 1.395,49. No tax or social security contributions will be withheld or paid by the European Commission with respect to the above stated allowances.

The JRC traineeship may give access to career opportunities at the Commission such as the [Junior Professional Programme (JPP)](#). The JPP is a talent management programme, relevant for all candidates with **a maximum of three years** of professional experience. The three years of experience count as from the first three-year university diploma obtained.

Other further career opportunities at the Commission are presented on the [EPSO website](#).

Data Protection

For further information on how the JRC processes your personal data, please click on the link below:

Data protection in the selection and/or recruitment process
https://joint-research-centre.ec.europa.eu/working-us/jobs-jrc/temporary-positions/data-protection-selection-andor-recruitment-process_en

The Commission ensures that candidates' personal data are protected as required by Regulation (EU) 2018/1725 on the processing of personal data by EU institutions and bodies. This safeguards the confidentiality and security of such data.

JRC contact details

For any technical problems with your application, please contact: HR-JRC-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu

ANNEX I

2. ELIGIBILITY CRITERIA

The JRC reserves the right to amend the eligibility criteria as and when necessary.

2.1 Nationality

Trainees are selected from nationals of the Member States of the European Union (EU) or of the countries associated to the Research Framework Programmes. A derogation based on nationality from the Director-General is required for every non-EU national.

2.2 Diplomas

Candidates must provide copies of diplomas with the relevant Europass Diploma Supplement[1] (or if missing - the relevant university transcripts, certificates), of all university or post-university studies declared in the web application ESRA[2]. If the degree course has been completed, but an official degree certificate has not yet been received/awarded, an official statement from the university confirming the degree result has to be provided. For declared on-going studies an official declaration from the relevant university must be provided. If recruited for a traineeship, originals/certified copies of all diplomas declared and, if applicable, official certified translations will be required.

Candidates whose university or post-graduate diplomas are not issued in one of the official EU languages must provide a translation of these documents in any of the official languages of the EU but preferably in one of the three working ones (English, French, German).

2.3 Knowledge of Languages

Knowledge of languages other than the mother tongue declared via the web application ESRA must be supported by appropriate documentation (e.g. diplomas, certificates, proof of having studied in the language in question, etc.). The candidate must be in possession of the appropriate document by the closing date of the call.

In order for the trainee to fully profit from the traineeship and to be able to follow meetings and

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[1] For further info about the Europass Diploma Supplement - https://europa.eu/europass/en/diploma-supplement
[2] ESRA is the JRC's database-driven web application that manages part of the recruitment process for trainees. http://recruitment.jrc.ec.europa.eu

perform adequately:

- Candidates from Member States must be independent users of at least two Community languages, one of which should be English. The required level of this second language is C1 according to the CEFR (Common European Framework of Reference for Languages: Learning, Teaching Assessment).

- Candidates from non-Member States must be independent users of at least English. The required level of English is C1 according to the CEFR (Common European Framework of Reference for Languages: Learning, Teaching Assessment).

- Additional language skills might be required in accordance with the requirements of the profile.

2.4 Prior Employment/Traineeship

The JRC wishes to offer the opportunity of a traineeship to as many people as possible. Therefore, applications are not considered eligible from those candidates who for more than six weeks:

- have already benefited or benefit from any kind of traineeship (formal or informal, paid or unpaid) within a European institution or body;

or

- who have had or have any kind of employment within a European institution or body, including anyone who is or has been an assistant to a Member of the European Parliament, a consultant or researcher, a temporary staff member, a contract staff member, an auxiliary contract staff member, an auxiliary agent or an interim staff member of any EU institution or body.

2.5 Other

Candidates shall inform the Human Resources of any change in their situation that might occur at any stage during the selection and recruitment phases.

Trainees may not be assigned to any service where a conflict of interest might occur, irrespective of his/her prior professional experience or nationality.