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

October 2023 – 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; territorial development and support for Member States and regions.

For the October 2023 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 19 fields as listed below. More detailed information, project descriptions, as well as relevant candidate profiles are available in Annex II.

If the candidate's profile fits in more than one field, the applicant is encouraged to choose the one for which more specialised.

The scheme focuses on candidates with strong scientific background. However, some fields also give the opportunity for candidates with a 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 2023 call are as follows

Field number	Title	Laboratory experience
1	Knowledge management, visual communication and data visualisation (including knowledge management for nuclear safety, security, safeguards and decommissioning).	No
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). Participatory and deliberative democracy; science and technology studies; humanities and arts; future of democracy; indigenous and traditional knowledge; standardisation; innovation.	No
3	Modelling, data and quantitative data for spatial analysis (statistics, GIS, spatial modelling, new data).	No
4	Data science: Population trends, Demographic analysis and Migration.	No
5	Resilience, Innovation, Economics, Macro- and Micro-Economic modelling, Composite Indicators and Scoreboards, Macro- and Micro-econometrics, Applied statistics, Fiscal policy analysis, Financial markets and corporate finance, Sustainable finance.	No
6	Analysis of the Digital Transformation and its impacts on society, economy and the environment. Education and skills for the digital and green transitions.	No
7	Data science, data processing and analysis (including big data and support to policy).	No
8	Artificial Intelligence.	No
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.	No
10	Public Health.	Yes
11	Regulatory Science.	Yes
12	Nuclear Science and Technology.	Yes (specific projects)
13	Ecosystem services and Natural Resources.	No
14	Climate Change (Adaptation and Mitigation), sustainable transport (including technologies), climate neutral cities and air pollution.	Yes (specific projects)
15	A. Sustainability characterisation and assessment of products, facilities, economic activities, and consumption patterns. B. Sustainable Development Goals (SDGs), Territorial Engagement and Sustainable Urban and Rural Development, Sustainable and Resilient Tourism.	No
16	Global security and Hybrid Threats.	No
17	Energy: hydrogen; natural gas; biogas and biomethane; e-fuels; batteries; digitalisation; interoperability; energy efficiency; renewables; industrial decarbonisation; heating and cooling; innovation and competitiveness; clean energy supply chains; energy security and markets; social aspects; renovation of buildings.	Yes (specific projects)
18	Digital forensic; wireless communication; drones; counter drone systems & Global navigation satellite systems.	Yes (specific projects)
19	Radiochemistry and radioprotection.	Yes

Requirements of the Call

Specific eligibility requirements for this call:

- **Nationality**: open to nationals of Member States of the European Union and of countries associated to the Research Framework Programmes

- **Degree:** the call is open to recent university graduates who have completed at least a standard 3-year higher education degree (180 ECTS credits), corresponding to a complete Bachelor's cycle (or equivalent) at the closing date of the present call.

  The last degree must have been awarded no longer than five years before the closing date of the present call. Without excluding candidates who are currently enrolled in a Master's degree or Ph.D. (or its equivalent) and are preparing a thesis.

- **Languages:** candidates from Member States must have a thorough knowledge of at least two Community languages, one of which should be English (minimum C1 level, according to the CEFR). Candidates from non-Member States must have a thorough knowledge of at least English (minimum C1 level, according to the CEFR).

- **Previous experiences:** candidates **are not eligible** if for more than **six weeks:**

– have 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.

More information on general eligibility requirements on Annex I.

Selection criteria

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

- Level of education: minimum bachelors' degree;
- Level of knowledge of English;
- Level of knowledge of any other official/working language of the EU, as well as other non-EU languages, if any;
- 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 field(s).

Not all candidates in the database will be contacted. Candidates might be contacted for informal interviews directly by the team interested. Being in the database means that you might receive an offer, but does not constitute an offer in itself. An offer is not final until the contract is signed.

Supporting documents will be verified in the recruitment phase. Originals may be requested at any time for verification.

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 2023 and will run for a fixed period of 5 months. Under exceptional circumstances, a postponement of the start date may be possible. The duration of the traineeship may not be for 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.

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 2023, adjusted by the applicable correction coefficient of the site, is set in between € 1.233.23 and € 1.471,83.
A trainee whose place of recruitment is less than 50km from the JRC site where the traineeship will take place is awarded half of the basic grant. Trainees who receive a scholarship, salary, lump sum or any other form of payment can benefit from a monthly allowance that brings their total income up to the standard JRC level.
No tax or social security contributions will be withheld or paid by the European Commission with respect to the above stated allowances.

Further opportunities

Candidates interested in further opportunities at the European Commission can find information here: https://epso.europa.eu

At the time of publication of this call, access to the talent management programme "JPP" (Junior Professionals Programme), is open also to JRC scientific trainees. The admission is subject to specific eligibility requirements and further boundary conditions.

Data Protection

For further information on how the JRC processes your personal data, please consult our page for "Data protection in the selection and/or recruitment process".

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

For questions related to this call, please contact:

HR-JRC-ISPRA-TRAINEES@ec.europa.eu

ANNEX I

1. ELIGIBILITY CRITERIA

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

1.1 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.

1.2 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).

1.3 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 perform adequately:

- Candidates from Member States must have a thorough knowledge of at least two Community

[1] For further information 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

languages, one of which should be English. The required level is minimum C1 according to the CEFR (Common European Framework of Reference for Languages: Learning, Teaching Assessment).

- Candidates from non-Member States must have a thorough knowledge of at least English. The required level of English is minimum 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.

1.4 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.

1.5 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 prior professional experience or nationality.

ANNEX II

FIELD	PROJECTS DESCRIPTION
FIELD 1 - Knowledge management, visual communication and data visualisation (including knowledge management for nuclear safety, security, safeguards and decommissioning).	Examples of relevant projects include (but are not limited to): 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. Relevant for applicants with humanities and/or communications background, digitalisation and knowledge of management of scientific publications.
FIELD 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). Participatory and deliberative democracy; science and technology studies; humanities and arts; future of democracy; indigenous and traditional knowledge; standardisation; innovation.	Examples of relevant projects include (but are not limited to): • Contribute to the work of the Knowledge Centre on Migration and Demography (KCMD) by carrying out data and statistical and analyses of existing knowledge, literature reviews and synthesis, contributing and producing knowledge on migration and demography, tailored to the needs of the Commission Directorates-General. This knowledge may include also narratives and forward-looking scenarios based on current trends and developments. • Elaborate reports describing nuclear science results and their societal relevance in non-scientific language. • Provide support for and participate in activities related to: citizen engagement in different policy fields; future of democracy; deliberative democracy; ethics of science and technology; indigenous knowledge, in particular in the Arctic, to inform policymaking. Relevant for applications with sociology, communications, political science, anthropology, social sciences, humanities, innovation, science and technology studies backgrounds.
FIELD 3 - Modelling, data and quantitative data for spatial analysis (statistics, GIS, spatial modelling, new data).	Examples of relevant projects include (but are not limited to): The 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, tourism etc.) or a combination of themes for integrated assessment. Smart Infrastructures Analysis, Modelling and Integration. Relevant for various profiles and thematic areas, all candidates with modelling knowledge, various modelling tools and techniques welcome. GIS and/or statistical skills would be positive assets.

FIELD	PROJECTS DESCRIPTION
FIELD 4 - Data science: Population trends, Demographic analysis and Migration.	Examples of relevant projects include (but are not limited to) building the taxonomy for Disaster Risk Management. The main tasks are the following : • Participation to the definition and fine-tuning of the DRMKC taxonomy with UNDRR/HOME/ECHO. • Annotation of content from "Project Explorer", "DRMKC News", "Documents" and "Scientific outputs". • 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. Contribute to the work of the Knowledge Centre on Migration and Demography (KCMD) by carrying out data and statistical and analyses of existing knowledge, literature reviews and synthesis, contributing and producing knowledge on migration and demography, tailored to the needs of the Commission Directorates-General. This knowledge may include also narratives and forward-looking scenarios based on current trends and developments. 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.
FIELD 5 - Resilience, Innovation, Economics, Macro- and Micro-Economic modelling, Composite Indicators and Scoreboards, Macro- and Micro-econometrics, Applied statistics, Fiscal policy analysis, Financial markets and corporate finance, Sustainable finance.	Examples of relevant projects include (but are not limited to): • Macro-modelling and macro-econometric nowcast models for scientific support to the broad area of macroeconomic and fiscal surveillance, with emphasis on the European Semester and Recover and Resilience Facility implementation. • Development of empirical analyses in the field of sustainable finance, including financial risks from climate change. • Perform empirical analysis in the field of foreign investments in Europe and contribute to the mapping of industrial ecosystems. • Perform empirical analyses in the field of inequality (income, consumption, wealth) and contribute to research activities related to the middle class. • Provide support for and participate in activities related to the Commission's work on resilience and sustainable and inclusive wellbeing frameworks ("beyond GDP"). • Scientific support to European Commission policy process and decision-making in relation to macroeconomic and fiscal surveillance, with particular emphasis on the European Semester and Recovery and Resilience Facility (RRF) implementation. Also, support to the EC agenda to ensure fair twin transitions and fostering a resilient and innovative society. This is achieved by developing and using a wide range of macro-and micro-

	econometric models and microsimulation models (GAP, GM, QUEST EUROMOD, EUROLAB, CORTAX, EDGE-M3) as well as nowcasting models. Relevant for candidates with scientific background, expertise in economics/econometrics, DSGE and financial modelling disaggregated analysis, microsimulation techniques and/or data science. Research and policy interests in: development of macro- and micro-econometric models and relevant quantitative methodologies (DSGE models in particular) to be used for economic financial and social policy analysis and support, as well as for macro-economic policy analysis and for supporting macro-economic projections and forecasting; development and use of micro-economic models to be used for analyses microeconomic impacts of policies, in particular fiscal policies; developments of links between macro and micro models for richer analyses of policy impacts. Strong analytical skills and data handling are essential.
FIELD	**PROJECTS DESCRIPTION**
FIELD 6 - Analysis of the Digital Transformation and its impacts on society, economy and the environment. Education and skills for the digital and green transitions.	Examples of relevant projects include (but are 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 the School level. Research combining technology and social and economic aspects to understand the impacts and strategic role of digital technologies, data and digital platforms for the economy and society, and to support the modernisation of public sector. 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. Analysis and visualisation of publications, metadata, and metrics in Tableau and R. Integration with other datasets e.g. policy events.

FIELD	PROJECTS DESCRIPTION
FIELD 7 - Data science, data processing and analysis (including big data and support to policy).	Examples of relevant projects include (but are not 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. • 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. Skills in data science and experience in R, Python, Stata sought. • 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 could policies 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. • Digital transformation and the future of European social protection systems: studying how the digital transformation is affecting European social protection systems, and how can European policies respond. Social Sciences background and knowledge/skills on digital technologies could assist in the analysis of qualitative data and literature review. • 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. • Implementation of Encrypted computing for ML model for pathogens detection. Data breaches have remained relentless, and the data sets leaked have steadily grown. The core reason is that attackers break into servers where confidential data is available. The notion of secure computation promises to keep data always encrypted and protected on servers, even during data processing, so that it is not available to attackers who break in. JRC will be working on pre-existing models of processed genomic data of bacteria (Pathogens detection) for the implementation an end-to-end homomorphic encryption model. • Tracking virus genomic sequences in wastewater would improve community prevalence estimates and detect emerging variants. Recently several advances helped to make this detection easier and with fewer errors. There is a further need to analyze and benchmark the proposed detection methods and

	validate results. • Genomic fingerprinting for pathogen identification. Microorganisms are the most pervasive life form on the planet. Some of them are beneficial for humans and some are harmful, and it is very important to correctly identify them once encountered in the wild. The current classification methods are based on the analysis of several well-conserved genes. However, sometimes those few genes are unable to provide a clear differentiation signal, and this can cause dangerous misclassifications with associated poisoning and outbreaks. It is needed to provide estimation on how reliable genetic databases are and suggest possible ways to complete them, using a variety of bioinformatics tools, worldwide genomic databases and machine learning methods. • Text and Data Mining. Focus on Web Text Mining and unconventional data sources like on-line media and social media. Information retrieval and extraction, multilingual models, framing and persuasion techniques, sources discovery. Media monitoring and analysis in support to policy. Trend analysis and weak signals from news. Relevant to all candidates specialised in data analytics, data science and natural language processing, in various thematic areas, as described (but not limited to) in the projects above.
FIELD	**PROJECTS DESCRIPTION**
FIELD 8 - Artificial Intelligence.	Examples of relevant projects include (but are not limited to): • Human-AI interaction and social impact of AI • Evaluation of AI systems, including recommender systems • Trustworthy AI, including transparency, fairness and accountability of machine learning and recommender systems • Algorithm-supported decision making • Data-driven policy making • Diversity in AI • 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. • Malicious Learning [Backdoors attacks in the wild] Trustworthy Artificial Intelligence and transparency of algorithms, applied Artificial Intelligence.
FIELD 9 - Technology monitoring & assessment (evolution, trends, emerging and disrupting technologies); technology foresight;	Examples of relevant projects include (but are not limited to): • Check of alignment with Green Deal principles of all CEN (environmental) standards. • Support to the Observatory of Critical Technologies for defence, space and related civil industries, which implements Action 4 of

technological sovereignty; strategic autonomy; value/supply chain analysis; dependency risk analysis; gaps analysis; resilient infrastructure.	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.
FIELD	**PROJECTS DESCRIPTION**
FIELD 10 - Public Health.	Examples of relevant projects include (but are not limited to): • Biodiversity and Chemicals: Desk research on evaluation impact of chemical pollution, especially due to pesticides use, on the biodiversity. • 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. • Supporting the Knowledge Centre on Cancer, namely activities on improving cancer prevention and care and measuring the burden of cancer and other non-communicable diseases. • Systematic review of breakthrough technologies for pandemic preparedness. • Applications of AI systems in healthcare and medicine • Characterisation of innovative medical countermeasures, such as nanovaccines, RNA-therapeutics, antibody therapeutics and nanomedicines. Non-communicable diseases; Cross-border health threats; Cancer; Rare diseases; Zero Pollution; One Health; Chemical risk assessments; Non-animal methods; Epidemiology and surveillance; Health risk assessment.
FIELD 11 - Regulatory Science.	Examples of relevant projects include (but are not limited to): • Supporting 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. • Detection methods for agri-food fraud (wine, honey, spices) • FoodOmics • New Psychoactive Substances • E-cigarettes • Laboratory based analysis of food, feed and environmental samples: Analytical science covering analytical chemistry and DNA analysis • Analytical methods for the detection, quantification and identification nanomaterials in food • Analytical methods for the detection, quantification and identification micro(nano)plastics in drinking water • Case study related to the area of safe and sustainable advanced materials and chemicals

	• Knowledge management related to the area of safe and sustainable advanced materials and chemicals • Development of reference materials to monitor chemicals in the environment, food or for human biomonitoring. Chemicals may include, among others, the classic persistent pollutants (e.g. PFAS), other recognized hazardous chemicals (e.g. endocrine disruptors, pharmaceuticals), microplastics, but also emerging chemicals. Media that may be considered for reference material development are mainly water, soil, food and human samples. Food and feed safety; Food quality and authenticity; Human nutrition; Analytical chemistry; Advanced materials incl. nanomaterials; Micro(nano)plastics; Novel nicotine products; Chemoinformatics.
FIELD	**PROJECTS DESCRIPTION**
FIELD 12 - Nuclear Science and Technology.	Examples of relevant projects include (but are not limited to): • Nuclear fuel cycle (including spent fuel and radioactive waste management); • Nuclear reactor safety - including emergency preparedness and response, security and safeguards security and safeguards; • Structural materials; • Nuclear data; • Decommissioning of nuclear installations and site remediation; • Radiation protection and environmental radioactivity monitoring; • Non-energy applications (in particular nuclear medicine, nuclear for space). Research and policy support in nuclear science, technology and engineering for energy production and non-energy applications. Trainees are welcome with background in engineering, physics, chemistry, material science, artificial intelligence, modelling and robotics.
FIELD 13 - Ecosystem services and Natural Resources.	Examples of relevant projects include (but are not limited to): • Biomass use within the planetary boundaries; • Water Management in Developing Countries. Traineeship for land-use/cover classification in West Africa (Burkina Faso) involving using satellite imagery to map different land uses in a specific region of West Africa; • Early agro-meteorological risk detection and forecasting for resilient high-value food production chains. Working with phenology data and a related knowledge base to develop and validate a suitable modelling tool for prediction of key phenology stages and fruit production outcomes. • Knowledge Centre for Biodiversity - Dashboard. Indicators for the European Green Deal. Supporting 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. The work involves research, knowledge management, intense networking and

	support to the mobilisation of the KCBD forum, through the organisation of discussions in thematic ad hoc groups. Relevant for all candidates with scientific background specialised in environmental and agronomic issues, with particular focus on ecosystem services, biodiversity, sustainable resource use as well as food security and agricultural production systems.
FIELD	**PROJECTS DESCRIPTION**
FIELD 14 - Climate Change (Adaptation and Mitigation), sustainable transport (including technologies), climate neutral cities and air pollution.	Examples of relevant projects include (but are not limited to): • Electro-magnetic Compatibility testing in at JRC Vehicle Emissions Laboratory: Laboratory experimental and analytical activities in testing cars and charging infrastructure (wired and inductive charging technology) for Electro-magnetic compatibility. • Support to air pollution assessment by carbonaceous particles, focusing on quality of measurement techniques. • Knowledge Centre on Earth Observation - Deep Dive on Climate Change Adaptation. The trainee will contribute to the work by the EC Knowledge Cetre on Earth Observation (KCEO) to promote and facilitate the use of EO data and information in the policy cycle. The work will concretely contribute to define how the KCEO could support the uptake of EO-derived information in the policy area of Climate Change Adaptation. Climate Change (Adaptation and Mitigation), Sustainable transport (including technologies), climate neutral cities, air pollution, industrial pollution
FIELD 15 **A.** Sustainability characterisation and assessment of products, facilities, economic activities, and consumption patterns. **B.** Sustainable Development Goals (SDGs), Territorial Engagement and Sustainable Urban and Rural Development, Sustainable and Resilient Tourism.	Examples of relevant projects include (but are 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 for sustainable economic activities. • Shaping green transitions within the SDG framework. • Environmental assessment, environmental economics, use of life cycle assessment for supporting impact assessment of policies. • Emissions from industry and economic activities. • Sustainable and Resilient Tourism. • Analysis of sector/product circularity and sustainability in support of European Environmental Product Policies. Relevant for candidates with a background in: engineering; natural sciences; economics; regional and urban planning; qualitative and quantitative analysis of pollution; environment; sustainability; and/or knowledge of related policies, such as the Sustainable Development Goals (SDGs) including their synergies and trade-offs.
FIELD 16 - Global security and Hybrid Threats.	Examples of relevant projects include (but are not limited to): • Support to the creation of a Hybrid Threat related incidents

	database. This may include data collection, incident analysis as well as support to the creation of methodologies for semi-automatic incident classification. • Support the drafting of Hybrid Threat related case studies and analyses. • Support the further conceptualization of Hybrid Threats. Focus is on building resilience against Hybrid Threats and discouraging Hybrid Threat actors from engaging in/escalating Hybrid Threats. • Support the analysis of Hybrid Resilience baselines. • Support the implementation of the (proposed) directive on the Resilience of Critical Entities, which considerably widens the focus of the current directive on the protection of European critical infrastructure. • 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. • Terrorism and extremism database.
FIELD	**PROJECTS DESCRIPTION**
FIELD 17 - Energy: hydrogen; natural gas; biogas and biomethane; e-fuels; batteries; digitalisation; interoperability; energy efficiency; renewables; industrial decarbonisation; heating and cooling; innovation and competitiveness; clean energy supply chains; energy security and markets; social aspects; renovation of buildings.	Examples of relevant projects include (but are not limited to): • Hydrogen value chain, to understand hydrogen contribution to the decarbonisation of the energy system. The activities consist in: assessment of the technologies and of their environmental impact (LCA) and/or in experimental activities in JRC hydrogen electrolysers testing laboratory. • Battery value chain - study of advanced batteries behaviour under real working conditions, to understand the safety and performance behaviour. • 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. • Data collection and analysis of decarbonised gases and natural gas. • Integrated renovation of buildings. • Security of Supply.

	• Clean energy supply chains; EU manufacturing capacities for clean energy value chains.
FIELD	**PROJECTS DESCRIPTION**
FIELD 18 - Digital Forensic, Wireless communication, Drones, counter drone systems & Global navigation satellite systems.	Examples of relevant projects include (but are not limited to): • Analysis, simulation and experimentation activities on satellite communications systems (e.g. Starlink); integration of satellite and mobile communications technologies. • Hands-on laboratory work on wireless and cellular communications technologies (e.g., 5G/6G, WiFi, vehicular communications systems, etc.). • 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. • 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. Relevant for candidates with a background in one or more of the following areas are strongly encouraged to apply: digital signal processing, wireless and mobile communications (WiFi, 5G/6G), satellite communications systems, computer networks, security, radio communications, laboratory work, image and video analytics techniques (enhancement, restoration and filtering, segmentation, features and descriptors, etc.), Machine Learning and Deep Learning techniques.
FIELD 19 - Radiochemistry and radioprotection.	Examples of relevant projects include (but are not limited to): • Determination of Hard-To-Measure Radionuclides; • Implementation of new automatized analytical techniques for the determination of radionuclides, including MonteCarlo code simulations; • Determination of isotopic ratios for radionuclides environmental impact studies; • Implementation of good radioprotection practices; • Implementation of fast analytical methods for radioprotection purposes.