UNESCO/ Poland Co-sponsored Fellowship Programme in Engineering, edition 2025A
List of projects and list of research fields. (Annex 03).
Submission date: 2025.01.19

Project No.	FIELD OF RESEARCH/PROJECT TITLE (Number of Fellowships)	LIMIT OF AGE	ACADEMIC REQUIREMENT Be proficient in reading and writing in English.
	Biomedical Engineering (2 projects)		
01	Innovative methods for distant measurement of vital signs. (1)	not more than 32 years of age	B.Sc. degree in biomedical engineering, electrical engineering, or computer science (1) Candidates should have a general knowledge in computer usage and programming (C++, Java, Python etc.), electronic equipment, sensors (video camera, thermal imaging, radar), signal and image processing, human physiology, and physiological measurements. Scientific and technical reading and writing in English and experience with Matlab will also be welcome.
02	Video-based recognition of human emotional response to a visual stimulus. (1)	not more than 32 years of age	M.Sc. degree in biomedical engineering, electrical or mechanical engineering or computer science (2) General knowledge in computer usage and programming (C++, Java etc.), electronic equipment, signal and image processing, human physiology, and measurements. Scientific and technical reading and writing in English and experience with Matlab will also be welcome.
	Computer and Information Sciences (1 project)		
	Intelligent artificial autonomous decision systems (AADS). (3)	not more than 32 years of age	B.Sc. or M.Sc. degree in computer science, mathematics, automatic control, robotics or computational physics/astrophysics/neurobiology (3) Excellent programming skills and experience in Matlab - a good working knowledge and Python/ Additional knowledge of PHP/MySQL; Java/C++/C#, no-SQL database programming are welcome. Analytic thinking ability is a necessary prerequisite to be fulfilled by the candidates. Interests and preliminary knowledge in one or more of the following fields: multicriteria optimization, forecasting, statistics, autonomous systems, including autonomous mobile robots and multi-robot teams, vision systems (such as moving objects tracking) autonomous webcrawlers. Pre-existing knowledge in neurosciences will be required from candidates wishing to undertake research theme 4 in p. 8 below. Social communication skills and good teamwork record will be important assets.
	Earth and Related Environmental Sciences/ Environmental Engineering, Mining and Energy (1 project)		
04	Application of functionalized mineral materials for sorption of inorganic and organic pollutants from aqueous solutions. (2)	not more than 32 years of age	B.Sc. degree in in chemistry, materials science, environmental engineering, environmental sciences or related scientific disciplines (4) General knowledge of chemistry, material science, environmental engineering and laboratory work. Additional knowledge of materials engineering, geochemistry and mineralogy will be a great asset. Scientific and technical reading and writing in English and experience with basic laboratory equipment will be required.

	Earth and Related Environmental Sciences (9 projects)		
05	Geology and mineralogy of the Cu-Ag indices as a potential for the red bed type deposit in S-America. (1)	not more than 32 years of age	B.Sc. degree in geology (5) Candidates should have a general knowledge in sample collection and preparation. Scientific and technical reading and writing in English and experience with general knowledge in geology, mineralogy, geochemistry, mineral deposit, and computer sciences. A candidate with the selected samples is welcome.
06	Geology of the stratabound Cu-Ag depositas in S-America. (1)	not more than 32 years of age	B.Sc. degree in geology (6) Candidates should have a general knowledge in sample collection and preparation. Scientific and technical reading and writing in English and experience with general knowledge in geology, mineralogy, geochemistry, mineral deposit, and computer sciences. The samples from the selected deposit are strongly recommended.
07	Mineral characterization and evaluation of selected Cu, Sn-W (-Mo) deposit in SE Asia. (1)	not more than 30 years of age	B.Sc. degree in geology (7) Candidates should have a general knowledge in sample collection and preparation. Scientific and technical reading and writing in English and experience with general knowledge in geology, mineralogy, geochemistry, mineral deposit, and computer sciences. The samples from the selected deposit are strongly recommended.
08	Potential areas/deposits of one of African countries in some Cu, REE, critical resources deposit as a key for the country development. (1)	not more than 30 years of age	B.Sc. degree (8) Candidates should have a general knowledge in sample collection and preparation. Scientific and technical reading and writing in English and experience with general knowledge in geology, mineralogy, geochemistry, mineral deposit, and computer sciences. The samples from the selected deposit are strongly recommended.
09	Carbonatites in Eastern African rift: Mineralogical and geochemical study. (1)	not more than 32 years of age	B.Sc. degree in geology (9) Candidates should have a general knowledge in ore deposits – especially REE bearing systems and alkaline magmatic systems, microscopy in reflected light, mineralogy of ore minerals, general knowledge on Africa geology and metallogeny, be familiar with EMPA and EDX analyses, own samples for study are REQUIRED.
10	Copper mineralization in the Central Asia metallogenic belt: Mineralogical and geochemical study. (1)	not more than 32 years of age	B.Sc. degree in geology (10) Candidates should have a general knowledge in ore deposits – especially porphyry and epithermal systems, microscopy in reflected light, mineralogy of ore minerals, general knowledge on Central Asia geology and metallogeny, be familiar with EMPA and EDX analyses, own samples for study are REQUIRED.
11	Mineralogical characteristics of the epithermal systems in South America. (1)	not more than 32 years of age	B.Sc. degree in geology (11) Candidates should have a general knowledge in ore deposits – especially porphyry and epithermal systems, microscopy in reflected light, mineralogy of ore minerals, general knowledge on South America geology and metallogeny, be familiar with EMPA and EDX analyses, own samples for study are REQUIRED.

12	Assessment of geotourism potential of geological resources of selected regions in the developing countries. (1)	not more than 30 years of age	B.Sc. degree in geology (12) Candidates should have a general knowledge in geology, geography, tourism, geotourism, environment protection. Scientific and technical reading and writing in English and experience with geology, geography, tourism, geotourism, environment protection. Own research data and science materials concerning geology and geotourism development of selected regions of the developing country are highly recommended.
13	Biostratigraphy of deep-sea foraminiferal assemblages. (1)	not more than 32 years of age	B.Sc. degree in geology (13) Candidates should have a general knowledge in geology, paleontology and experience with works with foraminifera, laboratory and microscopic work. Scientific and technical reading and writing in English and experience with geology and paleontology, ability to work with a steeroscope microscope.
	Environmental Engineering, Mining and Energy (5 projects)		
14	Energy efficiency management of buildings. (Project title).	not more than 32 years of age	MSc. / PhD degree in mining or civil engineering related fields (14) Candidates' scientific and technical reading and writing in English, combined with experience with civil engineering and environmental engineering, should be enabled to effectively analyze complex materials and produce precise, high-quality documentation.
15	Ventilation and safety systems in tunnels and subways. (1)	not more than 32 years of age	MSc. / PhD degree in mining or civil engineering related fields (15) Candidates' scientific and technical reading and writing in English, combined with experience with civil engineering and environmental engineering, should be enabled to effectively analyze complex materials and produce precise, high-quality documentation.
16	Scalable distributed energy systems using hydrogen as an energy storage and carrier acronym (H2-off-grid-ES). (2)	not more than 32 years of age	B.Sc. degree in technical science, engineering (power engineering, electrical engineering) (16) Applicants should have a general knowledge of the power energy sector, renewable energy and numerical modelling and be familiar with the software used for these applications. Scientific and technical reading and writing in English and experience of editing and preparing technical descriptions of reports of numerological modelling or experimental work. Practical skills in the use of Microsoft programmes for data acquisition and conversion and the creation of scientific diagrams. Practical basic knowledge of programming Python and other programmes used for modelling in the energy sector. Knowledge of the Matlab Simulink environment.
17	Drilling Related Geomechanics. (1)	not more than 32 years of age	B.Sc. degree in preferably in petroleum, earth engineering, physics, IT or mathematics (17) Candidates should have a general knowledge in mathematics to be able to solve problems using mathematical methods. Scientific and technical reading and writing in English and experience with scientific articles publishing.

18	Analysis of chemical composition of atmospheric aerosols in Krakow agglomeration. (1)	not more than 32 years of age	B.Sc. degree in chemistry or environmental engineering or biochemistry, environmental chemistry (18) Candidates should have a general knowledge in chemistry or environmental engineering or biochemistry or environmental chemistry or physics or similar scientific areas. Scientific and technical reading and writing in English and experience with chemistry or environmental engineering or biochemistry or environmental chemistry or similar scientific areas.
	Materials Engineering/ Biomedical Engineering. (1 projects)		
19	Hybrid hydrogels based on natural biomaterials loaded with natural plant extract for treatment of chronic wounds. (1)	not more than 32 years of age	B.Sc. degree in material science, biomaterials engineering, biomedical engineering, and organic chemistry (19) Candidates should have a general knowledge in material science, biomaterials engineering, biomedical engineering, and organic chemistry; Scientific and technical reading and writing in English and experience with laboratory works on biomaterials manufacturing/testing.
	Materials Engineering (3 projects)		
20	Electrochemical synthesis of high entropy alloy coatings with enhanced catalytic activity and corrosion resistance. (1)	not more than 32 years of age	B.Sc. degree in materials science, or materials engineering, or metallurgy, or chemistry (20) Candidates should have a general knowledge in mathematics, physics, chemistry, and materials science. Scientific and technical reading and writing in English and experience with preparing technical reports and presentations in English and collaborating in international and interdisciplinary research teams, demonstrating practical communication skills.
21	Additive manufacturing of complex shape ceramic parts. (3)	not more than 32 years of age	B B.Sc. degree in materials science, chemical engineering, chemistry or mechanical engineering (21) Candidates should have a general knowledge in materials science and chemical engineering or chemistry. Scientific and technical reading and writing in English and experience with basic operations of ceramics technology and fundamentals in 3D manufacturing techniques.
22	Functional materials for Solid Oxide Cells in energy storage and conversion. (2)	not more than 32 years of age	B.Sc. degree in materials science or chemical engineering or chemistry (22) Candidates should have a general knowledge in materials science and chemistry. Scientific and technical reading and writing in English and experience with laboratory work on materials synthesizing/testing will be required.
	Mechanical Engineering (5 projects)		
23	Automated transportation technology systems and devices. (2)	not more than 32 years of age	B.Sc. degree in engineering (23) Candidates should have a general knowledge in computer programs, have a general knowledge related to transportation problems, including automation, availability, safety and reliability problems, automated transport technology systems and devices; telematics and autonomous devices; digital twin systems; cooperating devices; teleporting. Scientific and technical reading and writing in English and experience with transportation technology systems and devices, automation and robotics, digital twin systems, availability, safety and reliability.

24	Cyber-physical systems. (2)	not more than 32 years of age	B.Sc. degree in engineering (24) Candidates should have a general knowledge in computer programs, have a general knowledge related to cyber-physical systems, twin systems, transportation problems, including safety and reliability problems. Scientific and technical reading and writing in English and experience with cyber-physical systems, twin systems, safety and reliability.
25	Decision-making processes in engineering. (2)	not more than 32 years of age	B.Sc. degree in engineering (25) Candidates should have a general knowledge in computer programs, have a general knowledge in decision problem in engineering, including safety and reliability problems, sustainability in general; others. Scientific and technical reading and writing in English and experience with problem base engineering systems and devices, decision problem in engineering, safety and reliability; others.
26	Maintenance technology. (2)	not more than 32 years of age	B.Sc degree in engineering (26) Candidates should have a general knowledge in computer programs, have a general knowledge maintenance technology, including safety and reliability problems; others. Scientific and technical reading and writing in English and experience with maintenance technology systems and devices, safety and reliability; others.
27	Soundscape planning as a method of environmental noise management in a selected national park. (1)	not more than 32 years of age	B.Sc. degree in Mechanical Engineering (27) Candidates should have a general knowledge in in acoustics, signal processing, statistics, Scientific and technical reading and writing in English and experience with acoustic measurements.
	Sociology (1 project)		
28	Interrelations between new technologies and social and economic life in globalizing world. (1)	not more than 32 years of age	B.Sc. or M.Sc. degree, MA degree in humanities or social sciences or economics (28) General knowledge in world economics.
39 positions into 28 proposed projects			