

The visiting professional programme may focus on the following:

- **Artificial Intelligence to improve the efficiency, safety, and performance of nuclear facilities:** nuclear power plant monitoring and control, nuclear waste management, predictive maintenance, radiation monitoring, and nuclear security;
- **Decommissioning:** dismantling and decontaminating nuclear power plants or other nuclear facilities; processes of removals and decontamination;
- **Environmental Sciences, Isotope Techniques:** the use of ionizing radiation to sterilize insects and other pests; the preservation of food; agriculture; environmental pollution mitigation; animal studies; environmental studies and similar;
- **Fusion Technology:** magnetic confinement fusion, inertial confinement fusion, and laser-based fusion; fission-fusion technology interfaces;
- **Medical Radiation Physics, Nuclear Medicine:** the use of ionizing radiation in the diagnosis and treatment of disease including radiation therapy for cancer treatment and diagnostic imaging techniques such as X-rays, CT scans, and nuclear medicine imaging; the use of radioactive materials (radiopharmaceuticals) to diagnose including PET and SPECT, and treat disease;
- **Modelling and Simulations:** development and use of tools for understanding the behaviour of complex nuclear systems, and for making informed decisions about the development and use of nuclear energy (reactor physics, nuclear safety, nuclear waste management, nuclear proliferation);
- **Nuclear Engineering:** design, construction, and operation of nuclear power plants, development of new and innovative nuclear technologies, nuclear renewable hybrid energy systems;
- **Nuclear Fuel Cycle:** production of nuclear fuel, including mining and milling of uranium, conversion of uranium into fuel, and disposal of used fuel;
- **Nuclear Law:** regulation of nuclear energy and nuclear technologies and legal issues, including nuclear safety, nuclear security, nuclear liability, and nuclear non-proliferation;
- **Nuclear Physics:** study of atomic nuclei, their structure, properties, and interactions; nuclear data;
- **Nuclear Safeguards:** measures taken by governments and international organizations to ensure the peaceful use of nuclear energy and prevent the proliferation of nuclear weapons;
- **Nuclear Safety:** design features, procedures, regulations, and other practices that aim to prevent or mitigate the consequences of accidents or incidents that may occur during the operation of nuclear facilities, including nuclear power plants, research reactors, and nuclear fuel cycle facilities;
- **Nuclear Security:** protection of nuclear facilities and materials from theft, sabotage, or other malicious acts;
- **Radiation Protection:** management of radiation exposure, including policies and design and implementation of measures to protect workers, the public, and environment from ionizing radiation;
- **Radiochemistry, Nuclear Chemistry:** behaviour and properties of radioactive materials including nuclear decay, fission, and fusion, as well as the production and use of radioactive isotopes in medicine, industry, and research; study of nuclear reactions, radioactivity, and nuclear energy, as well as the production and use of radioactive materials, and applications in nuclear power generation, radiation therapy for cancer treatment, and the production of isotopes for medical and industrial uses;
- **Regulatory Affairs:** development and enforcement of regulations for the safe and secure operation of nuclear power plants, and disposal of used fuel and radioactive waste;

- **Research Reactors:** design, operation, applications such as but not limited to neutron activation analysis, isotope production, nuclear physics, materials, radiation testing and education and training;
- **Waste management:** safe and secure storage, transport, and disposal of radioactive waste, including development of new technologies for the treatment and disposal of used nuclear fuel;