

**Parastatal Organizations-** KPA, Kenya Airways, Kengen, KPLC, KPR

**Private Sector-** Banks, Audit Firms ,Engineering Consultants, Hotels, Hospitals

**International Organizations-** UN bodies, Marine Industry,

**Military Forces, Police Force, Technical Institutions**

### Research Groups

The following groups conduct the research activities at the Institute:

1. X-ray fluorescence group
2. Environmental radioactivity group
3. Air pollution measurements group

In addition, the staff uses other analytical techniques such as atomic absorption spectroscopy to complement their research.

**Instrumentation Maintenance and Repair Section**  
Proper design and installation of instruments provides a reliable and functional system. With usage and the passage of time, the instrumentation system must be maintained to continue its reliable and useful function. At INST, a section has been set up to deal with repair, maintenance and servicing of scientific/electronic instrumentation including computer systems.

Attention to factory calibration, pre-installation acceptance tests, installation and post-installation acceptance tests should ensure that instrumentation systems operate satisfactorily. To ensure that the systems remain in a satisfactory operating condition during their service life, regular maintenance is necessary; lack of which results in invalid data that can lead to incorrect conclusions.

### Core Activities

Our mandate at INST as repair and maintenance personnel is first and foremost to keep instruments at our Analytical Laboratory and Office Equipment operational. We do this by both preventive and corrective maintenance programmes. These equipment include:

- XRF Detection systems
- X-ray Generator systems
- Electronic modules
- Measuring instruments
- Computer Hardware Systems.

### Consultancy

We offer services in elemental analysis of solid, liquid, and air samples. We also offer services in environmental radioactivity measurements. The Institute has modern facilities such as hyperpure germanium detector with a 30-inch shield to determine and quantify the presence of radioactivity in any sample. In addition, we have facilities for carrying out air pollution measurements. In particular, we are able to determine, sulphur dioxide, carbon monoxide, nitrogen oxide and nitrogen dioxide, total suspended particulate mater (TSP), PM10 and PM2.5

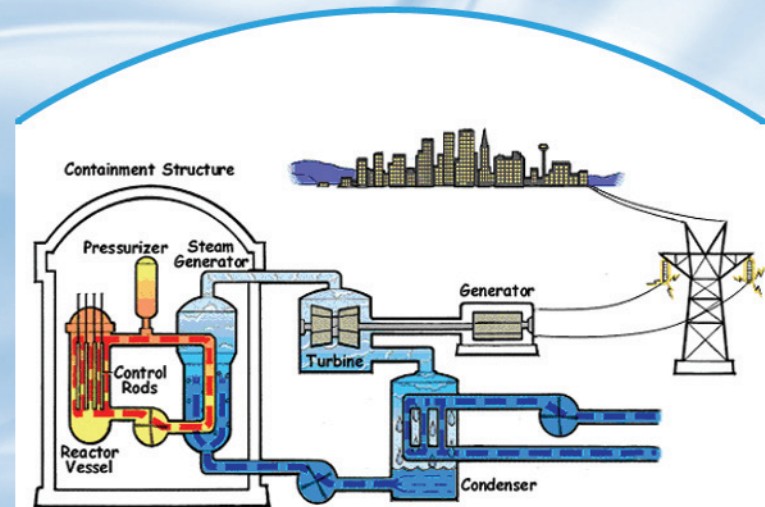
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UNIVERSITY OF NAIROBI

**INSTITUTE OF NUCLEAR SCIENCE  
AND TECHNOLOGY**



## Introduction

The Institute of Nuclear Science and Technology was started in 1979 as the Centre for Nuclear Science Techniques, a unit within the department of Electrical and Electronic Engineering. This was as a result of the combined initiative of the Kenya Government through the national Council of Science and Technology, the International Atomic Energy Agency and the University of Nairobi. With the expanded scope and mandate into areas of Renewable Energy, the Institute came to be known as the Institute of Nuclear Science and Technology.

## Vision

To be a centre for the development of knowledge in nuclear sciences and technology and their application for the enhancement of life in our society.

## Mission

To train local manpower in the applications and peaceful utilization of nuclear science and technology and promote intellectual service to our country through teaching research and outreach.

## Objectives

- i) Train the local manpower in the applications of experimental nuclear techniques.
- ii) Study and utilize peaceful uses of nuclear technology in the country.
- iii) Use nuclear analytical techniques in analysis of a wide variety of materials.
- iv) Provide services to other Departments, Private and Government Institutions.

The degree programmes in Nuclear science encompasses the following core areas of nuclear science:

1. Applications of X-ray Fluorescence Analytical Techniques
2. Applications of Gamma Spectroscopy
3. Medical Physics
4. Air Pollution Studies
5. Non-destructive Testing

## Degree programmes

1. MSc. in Nuclear Science
2. PhD.

## Other Programmes offered

1. PG Certificate in Applied Radiation Protection.

## MSc. in Nuclear Science

The objective of this programme is to train scientists in the application of radiation science.

## Entry Requirements

Common Regulations, for Masters' degrees, of the University of Nairobi shall apply.

1. The common regulations for the Masters' degrees in all faculties shall be applicable.
2. The following shall be eligible for registration for the degree of Master of Science in Nuclear Science:
  - a) A holder of a Bachelor of Science Honors degree in any field of Biological and or Physical Sciences from the University of Nairobi.
  - b) A holder of Bachelor of Science honors degree in any Engineering discipline from the University of Nairobi.
  - c) A holder of any equivalent qualifications from a recognized University.

## Course Duration

The course takes 2 academic years, the first of which is meant for the course work and exams, while the second is for the thesis, research and presentation. Course work comprises lectures, tutorials, practicals and continuous assessment. The first and second semesters of the first year, a student does some compulsory subjects as well as 2 units of optional courses. In the second year, a student chooses a suitable project in which he has to be supervised by a member of staff.

## PG Certificate in Applied Radiation Protection.

This is a 3-month course. It is intended to orient trainees in the use and protection from radiation sources. The course targets personnel in radiography from Medical Training Colleges, Radiation Protection Board, Kenya Revenue Authority, Hospitals, and Polytechnics etc.

## Course Structure

The course includes theory, tutorials and practicals. The course outline include: Basic Mathematics, Radiation Physics and Atomic and Nuclear Studies; Application of Radiation with Matter, Biological effect of Radiation, radiation Protection, Radiation Laws, etc. It also includes Dosimetry, where a week is spent either at the Kenya Bureau of Standards Calibration Laboratory, or at the calibration laboratories at the Tanzania Atomic Energy Commission in Arusha

## Career Opportunities

The following departments and institutions can be looked upon for potential employment of our graduates:

**Industries-** All Manufacturing & Processing  
**Government Institutions-** Ministries of public works, Energy, Water, Transport, Education