



Course Title	Course on Nuclear Technology (CNT)
Duration	Face-to-Face: 10 days (120 hours) Online: 120 hours, typically spread over four weeks
Target Participant	For holders of a bachelor's degree in engineering/physical sciences. Preference will be given to applicants teaching engineering subjects, chemistry, and/or physics or those engaged in research whose participation shall be endorsed by their respective offices. At least ten (10) participants are required to push through with the course. A maximum of thirty (30) participants will be accepted.
Pre-requisite	A background in algebra, trigonometry, introductory calculus, general biology, chemistry, and physics subjects.
Goal	To provide prospective nuclear science instructors and/or University researchers with sufficient background on the fundamentals of nuclear science and selected techniques of using radioactive materials and nuclear instruments, which could serve as preparation for more advanced/ specialized courses in this field.
Objectives	At the end of this course, participants are expected to: <ol style="list-style-type: none">1. Describe the structure of the atomic nucleus and explain the nature of radioactivity.2. Differentiate the types of ionizing radiation and how they interact with matter.3. Have an overview of the application of nuclear science and technology, agriculture, medicine, industry, and research studies.4. Explain the role of nuclear energy in power generation.5. Be familiar with the basic principles of radiation protection.6. Be acquainted with different nuclear techniques and the concepts behind them.7. Investigate, analyze, and/or propose an activity involving nuclear science and technology applications.
Nature and Scope	This course will consist of lectures, exercises, a workshop, and examinations. The staff of the Nuclear Training Center (NTC), PNRI lecturers guest lecturers will conduct the course. The participant's performance in the course will be evaluated through the following: <ol style="list-style-type: none">1. Quizzes (35%)2. A pre-and post-test to be given before and after the lectures (Post-Test – 10%)3. Practical exercises (30%)4. Development and presentation of a case study incorporating nuclear technology topics (20%)5. Attendance (5%) A certificate of satisfactory completion will be issued to each participant who demonstrates satisfactory knowledge and skills of the subject matter presented.



Requirements	(1) NTC Online Application; (2) Recommendation Letter to attend the course from Supervisor/ Endorsement from University/College President (3) Transcript of Records
Course Content	<p>Lectures:</p> <ol style="list-style-type: none">1. Overview of Nuclear Science and Technology Application2. Nuclear Energy for Power Generation3. Concept of Case Study4. Basic Nuclear Physics5. Nuclear Reactions6. Radioactivity and Radiation I and II7. Quantities and Units in Radiation Protection8. NTC Laboratory Rules9. Interaction of Radiation with Matter10. Radiation Detection and Measuring Instruments11. Statistics of Counting12. Biological Effects of Ionizing Radiation13. Basic Principles of Radiation Protection14. Radiation Control and Handling Practices (15. Gamma Spectrometry16. Nuclear Instrumentation for Gamma Spectrometry17. Neutron Sources18. Neutron Interactions19. Radioisotope for Environmental Applications20. Radiation Processing of Natural Polymers21. Radioisotope Production22. Radioisotopes in Industry23. Nuclear Analytical Techniques <p>Experiments:</p> <ol style="list-style-type: none">1. Nuclide Chart and Nuclear Data2. Characteristics of GM Detector and Statistics of Counting3. Radiological Survey of a Radiation Facility4. Gamma Spectrometry5. Neutron Interactions6. Nuclear Analytical Techniques <p>Other Activities:</p> <ol style="list-style-type: none">1. Pre and Post Tests2. Case Study3. Tour of PNRI facilities