

No	Information of Radiation Detection and Measurement	
1	Unit name:	Radiation Detection and Measurement
2	Code:	NE - 4032
3	Classification:	Major subject
4	Credit value:	2.5
5	Semester/ Year Offered:	2/4
6	Pre-requisite:	NA
7	Mode of delivery:	Lecture, Presentation
8	Assessment system and breakdown of marks:	Tutorial, Assignment and Exam
	Tutorial	20 %
	Assignment	10 %
	Exam	70 %
9	Academic staff teaching unit:	Department of Nuclear Technology
10	<p>Course outcome of unit:</p> <p>After completion of this course, students will be able to</p> <ol style="list-style-type: none"> <li>1. To describe the principles, functions and components of a radiation detection system and interaction of radiation with matters.</li> <li>2. To solve the problems concerning interaction of radiation with matters.</li> <li>3. To explain the principles and operations of radiation detectors (gas-filled detectors, scintillation detectors and semiconductor detectors).</li> </ol>	
11	<p>Synopsis of unit:</p> <p>The first chapter defines the energy range of the different types of radiation for which instruments and methods of measurement are considered; it gives a brief discussion of errors that emphasizes their importance; and, finally, it presents a very general description of the components of a counting system.</p> <p>Chapters 4 constitute a quick review of material. Students need this review of atomic and nuclear physics and of penetration of radiation through matter. In this chapter, relative to the stopping power of charged particles, there is a more detailed discussion and presentation of the latest formulas of gamma-ray build-up factors.</p> <p>Chapters 5 through 7 describe the different types of radiation detectors. Full chapters have been devoted to gas-filled counters, scintillation detectors, and semiconductor detectors.</p>	

12	Topic: <ol style="list-style-type: none"><li>1. Introduction to Radiation Measurements</li><li>2. Energy Loss and Penetration of Radiation through Matter</li><li>3. Gas-filled Detectors</li><li>4. Scintillation Detectors</li><li>5. Semiconductor Detectors</li></ol>
13	Main references: Measurement and Detection of Radiation, 2 <sup>nd</sup> Edition, Nicholas Tsoulfanidis.
14	Additional references: Radiation Detection and Measurement, 3 <sup>rd</sup> Edition, Glenn F. Knoll, 1999