

CURRICULUM DEVELOPMENT PLAN: Prof. Punita Verma

B.Sc. (H) Physical Sciences Vth Semester (Odd Semester, 2024-2025)

Paper: RADIATION PHYSICS AND APPLICATIONS; UPC: 32227504;

Credit: 04 (Lecture-02, Practical-02)

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<p>radiation, Interaction of ionising and non-ionising radiation at the cellular level.</p> <p>b) Basic idea of different units of activity, KERMA, exposure, absorbed dose, equivalent dose, effective dose, collective equivalent dose, quality factor, radiation and tissue weighting factors, annual limit of intake (ALI) and derived air concentration (DAC).</p> <p>c) Radiation safety management: Operational limits and basics of radiation hazards, its evaluation and control: radiation protection standards. Concept of ALARA Principle using Distance, time and shielding.</p>	<p>b) 3 lectures</p> <p>c) 3 lectures</p>	<p>a) Sept</p> <p>c) Sept</p>	<p>Year's Question Papers</p> <ul style="list-style-type: none"> • Discussion on Student's difficulties
<p>Unit - III (8 Hours)</p> <p>a) Radiation detection and monitoring devices: Basic concepts and working principle of gas detectors, Scintillation Detectors, Solid State Detectors and Neutron Detectors,</p> <p>b) Types of Radiation Dosimeters: thermoluminescence, radiographic films, calorimetry, semiconductor diodes;</p> <p>c) Relation between detection and dosimetry, Interaction of ionising and non-ionising radiation at the cellular level.</p>	<p>a) 4 lectures</p> <p>b) 4 lectures</p> <p>c) 2 lectures</p>	<p>a) Sept</p> <p>b) Oct</p> <p>c) Oct</p>	<ul style="list-style-type: none"> • Possible Problems of this units will be discussed. • Revision session prior to internal assessment examination.
<p>Unit IV 6 hours</p> <p>a) Application of radiation as a technique: Application in medical science (e.g., basic principles of X- rays, MRI,</p> <p>b) PET, CT scan, Projection Imaging Gamma Camera, Radiation therapy),</p> <p>Archaeology, Art, Crime detection, Mining and oil. Industrial Uses: Tracing, Gauging, Material Modification, Sterilization, Food preservation.</p>	<p>a) 2 lectures</p> <p>b) 4 lectures</p>	<p>a) Oct</p> <p>b) Nov</p>	<ul style="list-style-type: none"> • Test 2 • Discussion on previous Year's Question Papers • Revision session prior to final exam.