

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
PHY-425	MEDICAL PHYSICS-III	3	VIII
Year	Discipline		
4	Physics		

Course Outlines:

Radiation Dosimetry: History of Absorbed Dose, Stochastic and Non-stochastic quantities, Units for Absorbed Dose, Absorbed Dose Calorimeters, Exposure and its measurements, The free-air chamber, Exposure measurement with calibrated cavity chamber. The concept of Kerma, absorbed Dose in air, Absorbed dose in other Materials, Factors converting Exposure to Absorbed Dose to wake, High energy calibrations, The Bragg-Gray Cavity theory.

Methods of Dosimetry: Calorimeters, Ionisation Chambers, chemical Dosimetry, Thermoluminescence Dosimetry (TLD), Photographic Dosimeter, Scintillation Detectors, Other Dosimetric Systems.

Health Physics : Cardinal principles of radiation protection, Minimize time, Maximize distance, Maximize shielding, Time, Distance and shielding, Maximum permissible dose, whole-body occupational exposure, whole-body non-occupational exposure, partial body occupational exposure, X-ray and pregnancy , Basic radiation safety criteria, effective dose-equivalent, allowable limit on intake (ALI) , inhaled radioactivity, derived air concentration, Gastrointestinal tract, Basis of radiation safety regulations.

Books Recommended:

1. *Introduction to Health Physics* by Herman Cember. 3rd Ed. McGraw Hill, New York, 1996.
2. *Thwait's, Radiotherapy Physics* by J.R. Williams, D.I., Oxford University Press, New York, 1993.
3. *Diagnostic Imaging*, by Peter Armstrong and Martin L. 4th Ed., Blackwell Science Ltd. Oxford, 1998.
4. *Radiologic Science of Technologists* by Stewart C. Bushong , 5th Ed. Mosby, 1993.
5. *Fundamentals of Radiation Dosimetry*, by J. R. Greening, 2nd Ed. Adam Hilger Ltd., Bristol 1985.
6. *Radiation Detection and Measurement*, by Knol G.F., 2nd Ed. Willey, New York, 1980.
7. *Health Physics* by Dathren, Pergamon Press.
8. *Physics of Medical Imaging*, by Edwin G.A. Aird, Heinemann, 1988.