1

**DIPLOMA IN MEDICAL RADIOGRAPHY (DMRT)**

# SYLLABUS THEORY

1. **Radiation Physics**
	* Structure of matter and atoms
	* Particle and electromagnetic radiation
	* Radioactivity and nuclear Raeations
	* Production of Xrays
	* Clinical Radiation generators.
	* Measurement of Ionizing radioation
	* Quality of X ray beams
	* Measurement of absorbed dose
	* Dose distribution and scatter analysis
	* System of dosimetric clculatins
	* Treatment planning and isodose curves
	* Brachyterpay

# Pathology

* + Molecular biology of cancer
	+ Etiology of cancer
	+ Epidemiology of cancer
	+ Cancer Genetica and Tumour immunology
	+ Grading and staging of Tumours
	+ Laboraatory Diagnosis of cancer
	+ Pathological features of individual cancers

# Radiotherapy

* + Cancer Statistics- world wide & India
	+ Cancer Registries & National Cancer Control Programme
	+ Analysis of data in cancer registries
	+ Regional Cancer Centers
	+ Cancer Screening & Prevention
	+ Patient Care
	+ Assessment & referral systems for radiotherapy
	+ Care & evaluation during & after treatment
	+ Emergencies in Oncology
	+ Radiotherapeutic Management of different malignancies
	+ Radiotherapy for non malignant conditions
	+ Treatment Response & Result
	+ Guidelines for treatment response assessment.
	+ Complete Response, Partial Response, No response, Stable disease.

2

* + Treatment related morbidity assessment
	+ Radiation morbidity (early & late)
	+ Morbidities of combined treatment
	+ Grading of morbidity

# Cancer Chemotherapy

* + Basic Principles of chemotherapy.
	+ Chemotherapy drugs.
	+ Newer chemotherapeutic agents.
	+ Basic for designing different chemotherapy schedules. Standard chemotherapy schedules.
	+ Chemotherapy practice in various malignancies.
	+ Chemotherapy practice & results/toxicities in sequential & concomitant chemoradiotherapy.
	+ Supportive care for chemotherapy.
	+ The basic principles underlying the use of chemotherapeutic agents.
	+ Classification and mode of action of cytotoxic drugs. The principles of cell kill by chemotherapeutic agents, drug resistance, phase specific and cycle specific action.
	+ Drug administration. The general principles of pharmacokinetics; factors affecting drug concentration ‘in vivo’ including route and timing of administration, drug activation, plasma concentration, metabolism and clearance.
	+ Principles of combinations of therapy, dose response curves, adjuvant and neo-adjuvant chemotherapy, sanctuary sites, high dose chemotherapy, and regional chemotherapy.
	+ Toxicity of drugs. Early, intermediate and late genetic and somatic effects of common classes of anticancer drugs. Precautions in the safe handling of cytotoxic drugs.
	+ Endocrine manipulation and biological response modifiers. An understanding of the mode of action and side effects of common hormonal preparations used in cancer therapy (including corticosteroids).

# Diagnostic Radiology and Nuclear Medicine

* + Radiographic diagnosis of malignant and non malignant conditions.
	+ Radiological Procedures with reference to Radiotherapy practices.
	+ Study of Ultrasound, CT Scans, MRI Scans, PET scans, as applicable for management of cancer.
	+ Other nuclear imaging and therapeutic modalities as applicable to management of cancer.