BPMT 3rd year

Paper - I Advanced radiation physics

Sr. No	Topic	Name of Teacher
1	Simulator : simulator including technology, machine parameters, mechanism, image receptor, lasers.	Dr. Diwan Sir
2	Different Types of Treatment Techniques : Treatment Techniques for different types of cancers by single, two fields and multiple field techniques (e.g. ca breast , urinary bladder, cervix, esophagus, vocalcord,Maxillary Antrum,Lung, Parotid, Retinoblastoma, Prostate, Whole body Irradiation, Rotation therapy etc., including special accessories with MLB, wedge filter , shielding blocks etc.	Dr. Vijay Sir
3	Brachytherapy : Different types of Brachytherapy treatments, mould intracavitary and interstitial applications, manual after loading system, remote after loading system.	Dr.Sushil Sir
4	Treatment Planning System : Hardware - computer principles, algorithms – input data- peripherals – digitizer – printer – plotter – CT based – PC based system – Beam planning – Brachytherapy planning	Mr. Atul
5	Radiation Protection : Maximum permissible levels external internal ICRP recommendations – shielding calculations – time, distance, shielding principles – materials and properties. Personnel Monitoring, Planning of Radiotherapy department.	Mr. Atul
6	Biological Effects of Radiation : Somatic – general effects, effects on cellular levels, effects on organs, Genetic effects.	Dr. Diwan Sir
7	Time Dose Fractionation : NSD, TDF, CRE	Dr. Vijay Sir
8	Quality Assurance in Radiation Therapy Units : Equipment mechanical & radiological aspects of quality assurance. Treatment quality assurance aspects – Dosimetry and other aspects	Mr. Atul
9	Record Keeping : Treatment chart – notes – computerization.	Dr.Sushil Sir
10	Modern Radiotherapy Techniques: 3 DCRT, IMRT, IGRT, SRT, SRS.	Dr. Vijay Sir
11	Electron Beam therapy	Dr. Diwan Sir
12	Heavy ion therapy & Particle therapy	Dr. Diwan Sir

BPMT 3rd year

Paper II Advanced clinical radiation oncology

Sr. No	Topic	Name of Teacher
1	Radiotherapy in the treatment of cancers of respiratory tract	Dr. Diwan Sir
2	Radiotherapy in the treatment of cancers of alimentary tract.	Dr. Vijay Sir
3	Radiotherapy in the treatment of cancers of CNS.	Dr. Subeera
4	Radiotherapy in the treatment of cancers of male genital organs.	Dr. Sushi Sir
5	Radiotherapy in the treatment of cancers of female genital organs.	Dr. Diwan Sir
6	Radiotherapy in the treatment of cancers of urinary tract.	Dr. Diwan Sir
7	Radiotherapy in the treatment of cancers of skeletal system.	Dr. Vijay Sir
8	Radiotherapy in the treatment of cancers of other organs.	Dr. Diwan Sir
9	Radiotherapy in the treatment Lymphomas & Leukemia's.	Dr. Vijay Sir
10	Radiotherapy in the treatment Pediatric tumors.	Dr. Sushil Sir
11	Irradiation side effects – early & late complication.	Dr. Diwan Sir
12	Metastatic Lesions –Lung, Brain, Bone, Liver etc.	Dr. Diwan Sir
13	Importance of beam directed X-ray therapy	Mr. Atul
14	Information technology, Networking in Radiotherapy.	Mr. Atul
15	Immunotherapy.	Dr. Vijay Sir
16	basic knowledge about Gene therapy / Hyperthermia	Dr. Subeera

BPMT 3rd year

Paper III Recent Advances in Radiotherapy

Sr. No	Topic	Name of Teacher
1	Helical Tomotherapy.	Dr. Vijay Sir
2	SRS (Sterotactic radio surgery),SRT, SBRT (stero tactic body radio therapy)	Dr.Diwan Sir
3	Cyber knife, Gamma Knife, X knife	Dr. Sushil Sir
4	Particle beam therapy	Dr. Diwan Sir
5	Radio immunotherapy	Dr. Sushil Sir
6	SPECT	Dr. Diwan Sir
7	SMART Radio Therapy.	Dr. Vijay Sir

BPMT 2 nd year

Paper I : Radiation physics

Sr. No	Topic	Name of Teacher
1	Teletherapy Units & Accessoires: Superficial & deep X-ray machines. Different types of Tele isotope units. Beam directing devices (e.g. iscenter,pin & Arc Back pointers etc.)	Dr. Diwan Sir
2	Beam modifying devices (e.g wdge filters,penumbra timers, Breast cones compensators etc) & their practical applications Immobilising devices	Dr. Vijay Sir
3	Interaction of X-rays with matter: Photoelectric, Compton effects & pair production Processes & their clinical importance. Attenuation & absorption coefficients, exponential	Dr. Diwan Sir.
4	Law, half value layer & simple calculations	Mr. Atul
5	Principles of Radiation Detection & Dosimetry Basic principles, of radiation detection	Mr. Atul
6	Inoization chambers and G M Counters, photographic film dosimetery, the thermoluminisence Dosimetry, semiconductors clinical dosimeter.	Mr. Atul
7	Principles of Radiotherapy for Dosimetry: Basic concept % depth doses.Tissue air ratio (TAR)	Mr. Atul
8	Peak scatter factor (PSF/BSF) & tissue maximum ratios and their use in treatment.	Mr. Atul
9	Time calculation, calibration of tele therapy equipment & isodose curves.	Mr. Atul
10	Concept of Electron beam therapy	Dr. Diwan Sir
11	Treatment planning concepts	Dr. Diwan Sir
12	Radio isotopes clinically used in Radiation therapy	Dr. Vijay Sir
13	Historical development of Radio Therapy	Dr. Sushil Sir

BPMT 2 nd year

Paper II: Clinical Radiation Oncology

Sr. No	Topic	Name of Teacher
1	What is Oncology? General introduction to Radiotherapy	Dr. Sushil Sir
2	Biological effects of Radiation therapy	Dr. Vijiay Sir
3	General aspects of Radiotherapy	Dr. Diwan Sir.
4	Human body with typical medical descriptive terminology Discussion.	Dr. Vijay Sir
5	Major organs of human body with major functions & general physiology	Dr. Diwan Sir
6	Osteology, growing bones & bone marrow	Dr. Vijay Sir
7	General pathology of tumors, staging & confirmation of diagnosis Discussion	Dr. Diwan Sir
8	Lymphatic system	Dr. Vijay Sir
9	Effects of radiation on normal tissue	Dr. Diwan Sir
10	Radiation Modifiers	Mr. Atul
11	Radiotherapy treatment planning general introduction, Ext RT Brachytherapy Discussion.	Dr. Vijay Sir
12	Surface anatomy – head & neck	Dr.Diwan Sir
13	Radiological anatomy --- head & neck	Dr. Vijay Sir
14	Care of patients-before, during & after radiation therapy	Dr. Sushil Sir
15	Or pharynx cancers	Dr. Diwan Sir
16	Hypo pharynx, Nasophaynx	Dr. Sushil Sir
17	Tumors of Larynx & paranasal sinuses	Dr. Diwan Sir
18	Irradiation side effects – early & late complications	Dr. Vijay Sir
19	Central nervous system	Dr. Diwan Sir
20	Eye tumors & spinal cord tumors	Dr. Vijay Sir
21	Basic knowledge of chemotherapy used concurrently with radiation	Dr. Sushil Sir
22	Basic knowledge of Palliative Radio Therapy fractionation	Dr. Diwan Sir
23	Role of Radio therapy in oncologic emergency (Spinal cord compression bleeding)	Dr. Vijay Sir

BPMT 2 nd year

Paper III: Radiation Hazards and Safety.

Sr. No	Topic	Name of Teacher
1	Effect of radiation on human tissue	Dr. Vijiay Sir
2	Different types of radiation hazards	Dr. Diwan Sir
3	Protective devices	Mr. Atul
4	Legal aspects in radiotherapy	Dr. Vijay Sir
5	Legal aspects in designing of the radiotherapy department	Dr. Diwan Sir
6	Technical aspects in design of radiotherapy department	Mr. Atul
7	Sources of radioactive material	Dr. Sushil Sir
8	General precautions in handling of radioactive material	Mr. Atul
9	Disposal of radioactive material	Dr. Vijay Sir
10	Protective devices	Dr. Diwan Sir
11	Physics related to radiation protection	Mr. Atul
12	Dosimetry in radiology	Mr. Atul
13	Instruments used in radiation dosimetry their handling use and care	Dr. Diwan
14	Radiation Protection: Maximum permissible levels external internal ICRP recommendations – shielding calculations – time, distance, shielding principles – materials and properties, Personnel Monitoring.	Mr. Atul
15	Radiation syndromes	Dr. Vijay Sir
16	Emergencies in radiotherapy	Dr. Diwan Sir
17	AERB safety codes used in Radio Therapy	Mr. Atul
18	Knowledge about different ICRUs used in different radio therapy techniques	Mr. Atul
19	Quality assurance in Radio therapy	Dr. Diwan Sir