

Special Radiation Treatment Procedures (GS02 1022)

Summer 2019 (May 20 – Aug. 12)

Course Coordinator: Catherine Wang (713 563 2567, hewang@mdanderson.org)

Lecture Location FCT8.6091 every **Friday**. Room booked from 1:00pm – 2:30pm

General guidelines:

- (1) The main goal of this course is to introduce students about special radiation therapy or imaging procedures that are considered “non-routine” in the current clinical practice and require special considerations in preparation and execution. Special procedures are important clinical services which are usually provided by clinical medical physicists.
- (2) The course will start with a physicist instructor giving an introduction lecture for the rationale of the procedure and references. Then a date and time will be scheduled for students to attend the clinical observation section or the practicum section.
- (3) A pass/fail system will be used based on the feedback from all instructors. There is no exam at the end of the course, however, attendance at lectures and clinical observations and written reports are required (2 weeks after each session, overall deadline Aug. 19). **I am unable to give a pass grade to anyone with unexcused, incomplete, or inadequate reports.**
- (4) Because of the “non-routine” events for some of these procedures, the actual time and day for the clinical procedure can vary and are subject to cancellations or rescheduling. Please be aware of this. It is recommended that students exchange cell phone numbers to be better informed. The instructor will try his/her best to make the clinical observation happen during the course period.
- (5) Due to multiple locations, individual instructor can arrange the lecture room at their convenience. Please contact students directly.

Prerequisites: Radiation Therapy I, II, III.

Objectives: As a result of this course, you will be able to understand and describe the special procedures for most of the clinical external beam radiation treatments.

Schedule

May 24:	Total body irradiation	Tze Lim
	Reading: TG29	
A.	Rationale and Technique (Lecture)	
B.	Clinical observation	
June 3:	Irradiator	R. Tailor (404-6512)
	Reading: TG61 (kV calibrations)	
A.	Overview irradiator technology and applications (Lecture)	
B.	Lab (Observation of irradiator operation and QA)	

- June 7: DICOM and other standards** **Peter Balter**
 Reading: (<http://medical.nema.org/standard.html>)
- A. DICOM standard and RT extension (Lecture)
 B. Lab (DICOM)
- June 14: Motion Management** **J Pollard**
- A. Rationale and Technique (Lecture)
 B. Clinical observation
- June 21: MR Linac** **Jinzhong Yang**
- A. Rationale and Technique (Lecture)
 B. Clinical observation
- June 28: Photon Beam Modeling in Pinnacle** **Xin Wang**
- A. Rationale and Technique (Lecture)
 B. Lab (in class)
- July 5 Stereotactic body radiosurgery/radiotherapy of para-spinal lesions** **James Yang (606-0901)**
 Reading: TG101
- A. Rationale and techniques (Extra-cranial and fractionated SBRT)
 B. Clinical observation
- July12: Fetal dose and pacemaker** **J Pollard**
 Reading:
1. Marbach *et al.* AAPM Task Group 34, Report No. 45: Management of radiation oncology patients with implanted cardiac pacemakers, *Med Phys*, 1994.
 2. Venselaar J *et al.* Radiation damage to pacemakers from radiotherapy, *PACE*, 10, 1987.
 3. Hurkmans *et al.* Influence of radiotherapy on the latest generation of pacemakers, *Radiotherapy and Oncology*, 2005.
 4. Hurkmans *et al.* Influence of radiotherapy on the latest generation of implantable cardioverter-defibrillators, *IJROBP*, 2005.
 5. Gossman M *et al.* Establishing radiation therapy treatment planning effects involving implantable pacemakers and implantable cardioverter-defibrillators, *JACMP*, 11, 2010
- July 19 no class (AAPM)**
- July 26 Craniospinal technique and Proton Therapy** **Sahoo**
 Reading : TG30, and TG70

