Course: Virtual Radiation Oncology **Course Number** _____

Academic group: Medical School
Department: Radiation Oncology
Faculty Coordinator: Kiran Kumar, MD MBA
Periods Offered: Blocks 11A, 11B, 12A, 12B, and likely all others
Session: 11, 12
Length: 4 weeks
Credit Hours: 2
Max # of Students: 4
Grading: Pass/Fail
Repeat for Credit: NO
Allow multiple enroll in term: NO
Special consent to enroll: NO
Method of delivery: Remote
First Day Contact: Katherine Ruiz-Lopez (Katherine.Ruiz-Lopez@UTSouthwestern.edu)
First Contact Time: 9 am
First Day Location: REMOTE Elective (Online)
Prerequisites: Successful completion of pre-clerkship coursework, Internal Medicine Clerkship (recommended but not required)

Course Description:

This is a 4-week online elective for medical students contemplating the field of Radiation Oncology and/or wishing to acquire knowledge in the specialty regarding appropriate referrals, consults, etc. relevant to future career plans. The student will learn about the scope of practice, frequently encountered pathology/diagnoses, and specialty-specific clinical assessments, including diagnostic procedures, treatment planning and delivery, on-treatment management, and long-term follow-up for patients treated with radiation therapy for benign and malignant diseases. Students will have the opportunity to virtually attend multidisciplinary tumor boards and weekly department chart rounds, as well as remotely observe radiation treatment planning. Students will be expected to participate in telehealth consults, follow ups, and on treatment visits, with a resident and faculty proctor. A dedicated medical student didactic series consisting of 4 one-hour lectures will be given, and students will also have access to an online reservoir of pre-recorded resident lectures in clinical disease subsites (breast, prostate, gyn, CNS, H&N, pediatrics, lymphoma, GI, thoracic), radiobiology, and physics, should they be interested in pursuing more in-depth knowledge. All students will have the opportunity to present on a topic of their choosing relevant to the field of radiation oncology and their experience on the rotation at the end of the elective.

Educational Program Objectives	***Related Course Objectives***	***Assessment methods***
Patient Care: Students will demonstrate the ability to provide patient-centered care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health as part of the interprofessional team.	1. The student will be able to list appropriate indications to consult Radiation Oncology. 2. The student will be able to perform the appropriate evaluation of a patient and develop a well-constructed consult to this specialty. 3. The student will review medical records and radiographic studies and virtually perform history-taking and limited physical examinations of new and follow-up patients. 4. The student will virtually present the patients to the supervising attending physician, including staging of the patient and learn to make treatment recommendations. 5. The student will virtually interact with providers in other specialties caring co-managing patient care.	*The student will be evaluated based on:* - *Performance during observed telehealth new patient and follow up encounters* - *Remote presentations to faculty and residents on assigned patient cases* - *Sample documentation for assigned telehealth patients*
Knowledge for Practice: Students will demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.	1. The student will be able to discuss the pathology, presentation, evaluation, and management of common diagnoses such as breast cancer, prostate cancer, CNS malignancies, GI malignancies, GYN malignancies, lung cancer, lymphoma, pediatric malignancies, sarcoma, and head and neck cancer. 2. The student will demonstrate an analytic approach to evaluating and treating the cancer patient (e.g., which diagnostic	*The student will be evaluated based on:* - *Attendance and participation in the online dedicated medical student didactics, resident education conferences, and/or multidisciplinary tumor boards at UT Southwestern affiliated hospitals* - *20-30 minute oral presentation to peers, residents, and faculty at the end of the rotation*

	studies to obtain, review biopsy results, disease staging). 3. The student will learn the indications and complications for external beam radiation therapy, including radiosurgery and SBRT, and brachytherapy procedures.	
Interpersonal and communication skills: Students will demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, families and health professionals.	1. Students will communicate effectively via chat, online meetings, written assignments, email. 2. The student will remotely take the medical history of assigned telehealth patients and be able to effectively present a summary to the faculty/team.	*The student will be evaluated based on:* - *Remote oral presentations of assigned telehealth patients to faculty/team* - *Attendance and participation in conferences* - *Sample documentation for assigned telehealth patients*
Personal and professional development: Students will adhere to professional standards and demonstrate the qualities required to sustain lifelong personal and professional growth.	1. Students will adhere to the professional guidelines for online sessions. (separate document) 2. The student will learn to identify their own strengths, deficiencies, and limits of their knowledge 3. The student will set individual learning and improvement goals for their time spent in Radiation Oncology.	*The student will be evaluated based on:* - *The timeliness and quality of required work* - *Through virtual interactions with faculty, residents, and patients, as well as attendance and participation in cart rounds and tumor boards.*
Critical thinking and Discovery: Students will be able to critically appraise literature, apply knowledge and engage in scholarly activity	1. The student will attend conferences as discussed above and will be encouraged to participate in discussion of cases at these conferences. 2. The student will understand basic work up and treatment options for assigned	*The student will be evaluated based on:* - *Attendance and participation in dedicated medical student didactics,* - *Attendance and participation in resident didactics, weekly chart rounds, and multidisciplinary tumor boards*

	telehealth patients, specifically indications for radiation treatment	
Health Care systems and society: Students will demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.	1. The student will develop an awareness of the larger context to and basic understanding of the system of health care including cost awareness and risk-benefit analysis. 2. The student will gain basic knowledge to be able to identify when to call on other resources within the system to provide optimal patient care.	*The student will be evaluated based on:* - *Observation of how well they demonstrate an understanding of the resources available to provide optimal patient care and when to effectively use them.*

III. **Methods of Instruction**: *Remote, describe how content will be delivered, synchronous, asynchronous, group work, in teams, what online resources will be used if any.* Remote; all content will be online/through virtual meetings. Specifically:

A. Didactic: Students will attend 4 one-hour virtual dedicated medical student lectures (live in person or pre-recorded, depending on faculty/resident availability), as well as the resident clinical, radiobiology, and radiation physics virtual educational lectures that are occurring during their rotation. Furthermore, prior recorded resident lectures will be available online for students who are interested in a more in-depth dive into one or more topics. The final medical student oral presentation (20-30 minutes) will be delivered online through a virtual meeting to peers, residents, and faculty.

B. Clinical: Students will work with different radiation oncology attendings, residents, and mid-level providers throughout the course seeing new patient consults, patient management on-treatment visits, and follow-up appointments, all through telehealth. Exact schedule will be given at the start of the rotation and assigned telehealth patients will be determined the day prior by resident, mid-level, and/or faculty that medical student is assigned to. Students will also attend journal clubs and chart rounds in the department of radiation oncology, as well as multidisciplinary tumor board conferences, all online (Conference schedule provided upon arrival).

IV. **Overview of student responsibilities**: (*attendance, participation in online sessions, completion of a project/problem set)*

1. Medical students will be expected to be virtually present at all dedicated medical student didactics, as well as all clinical, radiobiology, and radiation physics education sessions attended by the residents, and weekly departmental chart rounds.

2. Students are expected to participate in telehealth encounters with the service resident/mid-level/attending for each day they are scheduled, as well as virtually attend relevant multidisciplinary conferences.
3. For patients seen independently via telehealth (expected), students will submit documentation in a timely manner to the service resident/mid-level/attending for review and feedback.

V. **Method of evaluation of students and requirements:** Evaluation based on assessment methods listed above, grade is Pass/Fail

VI. **Recommended reading:**

- Berman AT, Plastaras JP, Vapiwala N. "Radiation Oncology: a Primer for Medical Students" J Canc Educ 2013. **Link to PubMed**
- Bernier J, Hall E, Giaccia A. "Radiation Oncology: a Century of Achievements" Nat Rev Cancer. 2004 Sep. **Link to PubMed**
- Terezakis S et al, "What the diagnostic radiologist needs to know about radiation oncology." Radiology. 2011 Oct. **Link to PubMed**
- Osvarek J et al. "Medical Student Knowledge of Oncology and Related Disciplines: a Targeted Needs Assessment" J Canc Educ 2015. **Link to PubMed**

IV. **Curriculum Outline**

Week 1

- Medical Student Didactic #1: Introduction and Overview of Radiation Oncology [Online Lecture]

Week 2

- Medical Student Didactic #2: Radiation Biology and Physics [Online Lecture]

Week 3

- Medical Student Didactic #3: Practical Aspects of Radiation Oncology [Online Lecture]

Week 4

- Medical Student Didactic #4: Hands-on Practical Contouring/Treatment Planning Session [Faculty or Resident-led]

Clinical Disease Sub-sites (~2-3 days each)

- Breast
- GU/Prostate
- Thoracic/Lung
- CNS / Radiosurgery (Gammaknife, Cyberknife)
- Gyn
- H&N
- Pediatrics and Lymphoma
- GI / Brachytherapy

If student has specific disease site interest (i.e. CNS tumors due to particular research interest, or H&N cancer as planning on applying to ENT), we can tailor the schedule to give more days on certain sub-sites and reduce or omit others.