RESIDENCY HANDBOOK

DEPARTMENT OF RADIATION ONCOLOGY

CITY OF HOPE MEDICAL CENTER
DUARTE, CA

RESIDENCY HANDBOOK - DEPARTMENT OF RADIATION ONCOLOGY
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General Information

This handbook provides a general description of this residency program. Specific details such as lectures, call schedules, goals and objectives are subject to change based on the needs of the program.

1.1 Welcome

The City of Hope Department of Radiation Oncology welcomes you as a new member of the Department. A residency is not, and should not be considered as a continuation of the traditional form of University instruction. It does, with your internship (PGY 1) training, reflect a continuum of an education process begun in early life which must continue throughout one's service both to our professional colleagues and to the lay community. City of Hope also offers various categories of trainees, including Fellows, Residents, Medical Students and Psychology Students (collectively, "Trainees") The Medical Staff's Graduate Medical Education (GME) Committee oversees the activities of all training programs at City of Hope.

The Medical Staff Bylaws, Section 4.14 [*Trainee Staff (Fellows, Residents and other Trainees, including some ACGME-Program Enrollees*] and the Medical Staff Rules and Regulations, Section 30.0 [*Professional Graduate Medical Education*] provide an overview of the general requirements associated with Trainees and their training, including criteria to be satisfied prior to rotation, prerogatives, duties, required supervision, record-keeping and documented supervision and corrective action (grievances).

1.2 Background

A world-class biomedical research, treatment and education institution, City of Hope was founded almost 100 years ago.

In 1913, a group of visionaries determined to cure diseases, end human suffering and heal those in need pitched two tents to care for the seriously ill in what is now Duarte, California. They came to call the place The City of Hope. Hope was the soul of its existence then – and so it remains.

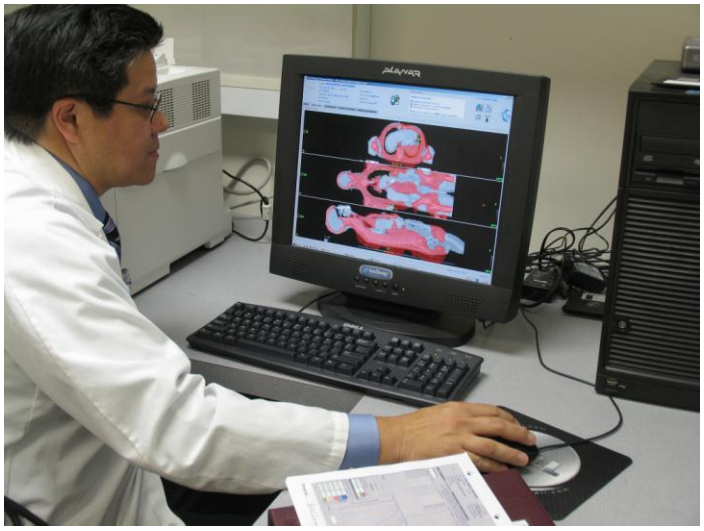
Over the years, City of Hope's physicians and scientists have been responsible for some of the most significant advances in modern medicine. They have offered insights that have reshaped the world's understanding of diseases. They have developed therapies that have improved millions of lives. They achieved scientific breakthroughs, set national standards, put their most creative thinking to the test, and succeeded.

Through it all – the discoveries, the expansions, the accomplishments and collaborations – City of Hope has cared for its patients and their loved ones with a compassion that is as exceptional as it is renowned.

Hope drove City of Hope's founders to dream big in the beginning – and it is what inspires City of Hope to dream even bigger today and into the future.

City of Hope is one of just a handful of Comprehensive Cancer Centers in the United State as designated by the National Cancer Institute (NCI), and a founding member of the National Comprehensive Cancer Network (NCCN). It is here at City of Hope that more than 300 physicians and scientists and over 2500 employees work to find the causes of and cures for cancer and other life-threatening diseases, including diabetes and HIV/AIDS.

City of Hope located on over 100 beautifully landscaped acres, has 165 licensed beds, 39 of which are devoted to bone marrow transplantation patients. With the opening of the Helford Clinical Research Hospital at City of Hope, City of Hope embarked on an exciting new era in research and patient care. The $200 million Helford Hospital enables City of Hope to deliver among the safest, most advanced patient care, while forging new breakthroughs in biomedical research. Comprising 347,000 square feet and seven floors, Helford Hospital is one of the most advanced cancer hospitals in the world.



City of Hope Department of Radiation Oncology includes a highly experienced treatment team who is dedicated to providing state-of-the-art therapy in a setting that is supportive and compassionate. Treatment is provided in a caring and professional environment by staff who are dedicated to making each patient visit as informative and stress-free as possible.

Using leading edge technology, we offer specialized services in external beam radiation therapy, radioactive seed implantation for prostate cancer, stereotactic radiosurgery and image guided intensity modulated radiation therapy. We also offer several approaches to cancer therapy, such as radioimmunotherapy and total body irradiation and total marrow irradiation using helical tomotherapy. Through innovative laboratory and clinical research programs, we continue to investigate ways to further advance the efficacy and safety of radiation therapy. In addition to our Residency Program, we also offer an Educational Program in Radiation Therapy Technology.

City of Hope Department of Radiation Oncology completed an expansive renovation

project in the late Fall of 2013. This project included two additional treatment vaults to house two Varian True Beam units, dedicated 3T MRI and PET/CT suites, along with improvements to the patient and staff environment. City of Hope is also very excited to announce the addition of MR guided focus ultrasound, as part of this program expansion project. City of Hope patients will continue to benefit from truly the most innovated radiation technology available.

1.3 Faculty - Department of Radiation Oncology

Each Faculty member of the department has the responsibility of supervising and teaching residents at various points during their residency training.

Clinical Staff

Jeffrey Wong, M.D. Professor and Chair
Residency Program Director
Department of Radiation Oncology

Eric Radany, M.D. Associate Professor, Department of Radiation Oncology

Nayana Vora, M.D. Clinical Director and Clinical Professor, Department of Radiation Oncology

Yi-Jen Chen, M.D. Professor, Department of Radiation Oncology

Sagus Sampath, M.D. Assistant Professor, Department of Radiation Oncology

Savita Dandapani, M.D. Assistant Professor, Department of Radiation Oncology

Medical Physics

Timothy Schultheiss, Ph.D. Professor and Director of Radiation Physics

An Liu, Ph.D. - Associate Professor, Senior Physicist

Cecil Staud, Ph.D. - Senior Physicist

Chunhui Han, Ph. D. - Physicist

Sean Sun - Physicist

Sean Zhang, Ph.D. – Associate Professor, Senior Physicist

Radiobiology Staff

Binghui Shen, Ph.D. – Professor and Director, Department of Radiation Biology
Jeremy Stark, Ph. D. – Assistant Professor, Department of Radiation Biology

1.4 Other Staff Members

Program Coordinator

The program coordinator provides the program director and the residents with administrative support, as well as providing organizational support for the residency Program.

Administrative Director

The Administrative Director is responsible for the management of daily administrative operations, staff recruitment, space planning, business aspects of the department, and oversight of the administrative support staff and therapist staff.

Nursing

The department is staffed by Oncology Certified Nurses, Licensed Vocational Nurses and Ambulatory Assistants. They educate patients and their families regarding radiation and the management of side effects during their treatment. Nurses assist physicians and provide direct patient care during special procedures, radiosurgery and high dose radiation. They manage patient flow in the clinical area, (new patient and follow-up clinics, on-treatment visits).

Technical

The radiation oncology technical staff consists of radiation therapists, radiology technicians, dosimetrists and medical physicists. Collectively, they are responsible for the planning and delivery of prescribed treatments, performing quality assurance testing, simulations and providing resources necessary to treat patients with external beam radiation therapy, brachytherapy, stereotactic radiosurgery, and emergency treatments.

Administrative Support

The Administrative support staff provides academic and clerical support for the staff physicians. They are also responsible for scheduling and maintaining calendars, appointments and meetings for administrator/staff, and keeping accurate record of department activities. They also coordinate and organize conferences, in-services and meetings, and if necessary the handling of travel arrangements for faculty and for guest speakers.

Scheduling and Front Desk Reception

It is the responsibility of the front desk staff to schedule all consultation, follow-up, treatment planning, daily treatment appointments and diagnostic tests ordered by the physician.

1.5 Equipment

City of Hope Department of Radiation Oncology is equipped with two TomoTherapy units, two linear accelerators, a remote HDR unit and multiple radiation therapy planning (RTP) workstations. Additionally there are a number of HDR -based afterloading devices for intracavitary and interstitial placement of Iridium 192 sources.

A summary of specific equipment is given below:

- 2 Helical TomoTherapy units
- 2 Varian TrueBeam Linear Accelerators (Calypso stereotactic package & Rapid Arc)
- 1 Varian Linear Accelerator Clinac 2100EX
- Picker AcQ-Sim Big Bore CT
- Varian Eclipse Treatment Planning System
- Varisource Remote Afterloading High Dose-Rate (HDR)
- Mosaiq – Radiation Oncology Management System
- GE – 3T MRI Unit
- GE – PET/CT Unit
- Insightec – MR Guided Focused Ultrasound

2.0 Program Description

City of Hope Department of Radiation Oncology maintains an American College of Graduate Medical Education (ACGME) accredited four-year program in radiation oncology. Residents start radiation oncology training after completion of a transitional PGY-1 year or internship in internal medicine, pediatrics, surgery or surgical specialties, obstetrics & gynecology, or family medicine. This PGY-1 year must include at least nine months of direct patient care in medical and/or surgical specialties other than radiation oncology.

2.1 Goals and Objectives of Residency Program

2.1.1 Overall Goals

The primary objective of the residency training program at City of Hope is to produce highly skilled and compassionate radiation oncologists. We expect that physicians who complete their training here will be able to practice radiation oncology in any setting and will be respectful and caring of their patients.

A second, but important goal is for graduating physicians to be competent to participate fully in the advancement of the science of radiation oncology and will be capable of assuming positions of leadership in the field.

6 – Core Competencies:

Patient Care

The resident is expected to and responsible for being able to provide compassionate, appropriate and effective patient care for the treatment of health problems and promotion of health. The resident should understand how to prioritize patient problems and develop an appropriate diagnostic plan, prescribe medications, and show a proper balance between attention to the details of patient care and the overall context of treating the patient's illness. As with internship, the resident performs consultations, follow-ups, on-treatment patient care and is able to perform technical procedures appropriate for his/her level of training. Residents are expected to and will be responsible for having adequate numbers and variety of patients to gain in-depth knowledge of clinical radiation oncology, including the indications for irradiation and special therapeutic considerations unique to each site and stage of disease. Residents will learn about the problems of recurrent and disseminated tumors and of late effects and complications of radiation therapy.

The Patient Care objectives by year are:

a. Year 1 (PGY-2)

- Perform and document a complete history and physical examination
- Review pertinent pathology, laboratory and diagnostic studies including imaging
- Stage a patient's cancer with reference to staging manual

- Summarize and present the patient's case to attending physician or in multi-disciplinary conferences
- Begin to formulate a management plan in conjunction with other disciplines
- Begin to discuss with patients and their families various treatment options, radiotherapy rationale, and possible side effects and complications
- Learn the simulation process including patient position, benefits of treatment aids (markers, contrast)
- Delineate normal organs as well as gross tumor on cross-sectional imaging
- Have a basic understanding of dose, fractionation, overall treatment time
- Learn to fill out radiation prescription in chart according to treatment plan
- Learn to review portal images in comparison with simulation images i.e. DRRs
- Evaluate patient weekly while under treatment and manage acute toxicities
- Follow patients after treatment is completed and assess for long term toxicities
- Understand the role of palliative radiation therapy and manage patients with brain metastasis, bone metastasis, spinal cord compression and other oncological emergencies
- Begin to manage patients undergoing brachytherapy
- Observe and participate in administration of unsealed sources
- Begin to accept responsibility for the care and treatment of patients assigned to a service

b. Year 2(PGY-3)

- Interpret pathology, laboratory, and diagnostic studies including imaging
- Begin to recommend further diagnostic testing for complete work up of the patient
- Further refine staging skills, relying less on the staging manual
- Begin to independently formulate a management plan for the patient
- Understand the roles of surgery and chemotherapy in the treatment of cancer
- Learn to counsel patients and families with straightforward problems independently including treatment options, radiotherapy rationale, goal, risks, benefits and side effects
- Be able to simulate straightforward cases independently including the use of treatment aids (markers, contrast); know external anatomical landmarks.
- Be able to properly use image co-registration i.e. fusion in treatment planning and delineation of target volumes
- Understand and delineate treatment margins including CTV and PTV
- Select field arrangement, dose, fractionation, overall treatment time for 2-dimensional treatments including palliative cases
- Be able to calculate monitor units for straightforward cases
- Have a full understanding of the radiation therapy chart and be able to discuss in chart rounds
- Review simple computerized treatment plans independently and begin to understand dose-volume limitations for organs at risk

- Independently manage straightforward patients undergoing treatment at weekly treatment visits including acute toxicities
- Begin to independently assess follow-up patients for long term treatment related toxicities and tumor recurrence
- Further refine brachytherapy skills including gynecologic, prostate, head and neck, and sarcoma patients
- Accept increasing responsibilities for the care and treatment of patients assigned to a service.

c. Year 3 & 4 (PGY-4,5)

- Obtain informed consent
- Independently interpret pathology, laboratory and diagnostic studies including imaging and recommend further work-up and testing appropriately
- Independently stage a patient without reference to staging manual
- Formulate a comprehensive, multidisciplinary treatment plan for the patient
- Understand of the roles of surgery and chemotherapy in the treatment of cancer including treatment related side effects and complications
- Counsel patients and families with complex problems independently including treatment options, radiotherapy rationale, goal, risks, benefits and side effects
- Simulate all cases independently including use of treatment aids vii.
- Delineate all target volumes independently (GTV, CTV, PTV)
- Select beam arrangement, beam energy and modifiers, total dose, fractionation, overall treatment time for all cases including 2-D, 3-D, and IMRT cases
- Review conformal computerized treatment plans independently and understand and implement dose-volume limitations for organs at risk. Be able to modify treatment plan to achieve goals.
- Independently discuss and defend treatment plan for patient at chart rounds
- Independently manage more complex patients (including those undergoing chemoradiation) at weekly treatment visits and decide when patients require a treatment break or adjustment in treatment
- Independently assess follow-up patients for long-term treatment-related toxicities and tumor recurrence. Order appropriate testing for follow-up patients
- Nearly independently manage the clinical service
- Perform brachytherapy procedures nearly independently including gynecologic, prostate, head and neck and sarcoma patients
- Learn patient safety in studies involving research subjects
- Learn the role of a data safety monitoring board
- Conduct a research study using human subjects according to ethical standards
- Submit an ethical proposal

The above bullet points are related to and will be evaluated with respect to one or more Patient Care Milestones listed in section 2.4.1.

Medical Knowledge

The resident is expected to demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social/behavioral sciences as well as the application of this knowledge to patient care. The resident is expected to be able to assess diagnostic information critically and constructively, and to recognize the psychosocial aspects of illness. The resident should be able to critically evaluate the medical literature and apply new knowledge to the delivery of safe and effective patient care. Residents will gain a foundation in the clinical and basic sciences from regularly scheduled lectures, case presentations, conferences, and discussions relevant to the practice of radiation oncology. Regularly scheduled lectures will include biology, medical physics, and medical statistics. Special lectures and conferences will be given and may include topics such as oncologic pathology, with special emphasis on neoplasia and radiation effects, and diagnostic imaging.

The Medical Knowledge objectives by year are:

a. Year 1 (PGY-2)

- Understand the anatomy, epidemiology/etiologic agents, natural history, pathology, routes of spread and initial clinical evaluation of the major disease sites
- Begin to understand basic principles of treatment for common cancers
- Begin to understand the principles of radiation physics and radiation biology
- Begin to understand acute and chronic effects of radiation therapy
- Begin to understand normal tissue tolerance
- Begin to understand basic principles of dose specification, dose prescription, field design, and field geometry
- Begin to understand SSD and isocentric technique, single field, AP/PA field and basics of stereotactic radiation therapy and brachytherapy

b. Year 2 (PGY-3)

- Understand rationale behind selection of a treatment modality
- Begin to understand clinical evidence to support treatment modality including results from landmark clinical trials
- Further refine understanding of principles of treatment for all cancers of major disease sites
- Study principles of radiation physics and radiation biology
- Further refine understanding of acute and chronic effects of and normal tissue tolerance to radiation therapy
- Understand follow-up evaluation of cancer patients
- Further refine knowledge of principles of dose specification, dose prescription, field design, and field geometry including dose homogeneity
- Further refine knowledge of radiation therapy techniques including 3 field, 4 field, oblique field, stereotactic therapy, 3-D conformal radiation therapy, IMRT, IG-IMRT

c. Year 3 & 4 (PGY-4, 5)

- Understand treatment results and outcomes of therapy (radiation therapy, surgery, or chemotherapy) with respect to the major disease sites
- Understand patterns of failure with respect to the major disease sites
- Understand advanced radiation therapy techniques
- Understand in detail the principles of clinical oncology with respect to the major disease sites in preparation for the ABR clinical radiation oncology exam
- Understand in detail the principles of radiation physics and radiation biology in preparation for the ABR physics and radiobiology exam
- Learn to design an experimental plan to test the hypotheses
- Understand the role and application of evidence based medicine in clinical practice
- Learn about the background of the specific topic and research question
- Learn how to critically appraise prior research as it pertains to your research question
- Learn how to critically appraise your own research methods
- Understand the process of translating basic science findings to clinical practice

The above bullet points are related to and will be evaluated with respect to one or more Medical Knowledge Milestones listed in section 2.4.1.

Practice-Based Learning and Improvement

Residents will demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and continuously to improve patient care based on constant self-evaluation and life-long learning. Toward this end residents will learn to: (1) identify strengths, deficiencies, and limits in their knowledge and expertise; (2) set learning and improvement goals; (3) identify and perform appropriate learning activities; (4) analyze their practice using quality improvement methods, and implement changes with the goal of practice improvement; (5) incorporate formative evaluation feedback into daily practice; (6) locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems; (7) use information technology to optimize learning; and, (8) participate in the education of patients, families, students, residents and other health professionals.

The Practice-Based Learning and Improvement objectives by year are:

a. Year 1 (PGY-2)

- Begin to identify sources for information including textbooks, journals, online resources
- Using above sources, begin to locate, appraise and assimilate evidence from scientific studies to improve patient care. Learn to effectively present patient cases in morning conference along with supporting evidence in treatment

- Critically read and analyze relevant literature for participation in morning conferences and journal clubs
- Incorporate formative evaluation feedback (including direct observations) into daily practice
- Learn basic principles of statistics and evidence-based medicine
- Start and maintain ACGME web-based patient log Learn to access, appraise, and assimilate the current medical literature pertaining to the research topic
- Gain an understanding of the scientific method by designing and writing a research protocol

b. Year 2 (PGY-3)

- Critically evaluate clinical studies with regards to methods, design, statistics and validity of conclusion and use to improve patient care
- Continue to read and analyze relevant literature for participation in morning conferences and journal clubs
- Develop the ability to present patient history and management plan and justify the plan based on evidence in the literature
- Be able to review a particular topic and present the relevant literature
- Continue to learn principles of statistics

c. Year 3 & 4 (PGY-4, 5)

- Develop and execute an investigative project suitable for publication under faculty supervision as a means of developing practice improvements
- Participate in the education of other residents, medical students, nurses, therapists or other staff
- Learn to access, appraise, and assimilate the current medical literature pertaining to the research topic
- Gain an understanding of the scientific method by designing and writing a research protocol
- Be able to develop and implement management and treatment plans for each of the major disease sites and each stage of disease and be able to justify the management plan based on evidence in the literature

The above bullet points are related to and will be evaluated with respect to one or more Practice-Based Learning and Improvement Milestones listed in section 2.4.1.

<u>Interpersonal and Communication Skills</u>

Residents are expected to demonstrate interpersonal and communication skills that result in the effective and professional exchange of information and collaboration with patients, their families, and health professionals within and outside the Department of Radiation Oncology. Residents will: (1) communicate effectively and professionally with patients, families and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds; (2) communicate effectively with physicians, other health professionals, and health related agencies; (3) work effectively and constructively as a member or leader of a health care team or other

professional group; (4) act in a consultative role to other physicians and health professionals; and, (5) maintain comprehensive, timely, and accurate medical records.

The Interpersonal and Communication Skills objectives by year are:

a. Year 1 (PGY-2)

- Write a radiation therapy prescription to communicate effectively the details of treatment delivery to the therapy staff
- Use the EMR to communicate effectively details of the patient visit, patient assessment and treatment plan
- Comply with medical documentation requirements including consultation notes, follow-up notes, end-of-treatment summaries
- Understand the importance of informed consent and be able to obtain informed consent from patient
- Use personal and electronic communication to communicate with other staff i.e. nurses, therapists, dosimetrists, and physicists with regards to patient care
- Understand that a radiation oncologist works as an integral part of a team to care for patients effectively alongside physician colleagues, residents, nurses, therapists, dosimetrists, physicists, administrative and secretarial staff, social workers, dieticians, etc and that effective communication is necessary for effective patient care
- Involve the patient and patient's family in decisions regarding care using clear communication and empathetic behavior with respect to emotional needs, intellectual capacity, and ethnic/racial backgrounds
- Develop a relationship with the patient as a health care provider that begins at consultation and continues through simulation, treatment and follow-up

b. Year 2 (PGY-3)

- Demonstrate the ability to communicate and coordinate care between disciplines i.e. medical oncology, surgery, general medicine.
- Understand the importance of a complete electronic radiation oncology record and be able to defend in chart rounds

c. Year 3 & 4 (PGY-4, 5)

- Learn to communicate directly and personally with referring physicians/disciplines
- Demonstrate communications skills by presenting research results to Program faculty
- Demonstrate communication skills by participating in the annual City of Hope poster session
- Learn to work with a multidisciplinary team in the research group (technicians, study coordinator, statisticians, ethicist)
- Prepare a research proposal
- Prepare a manuscript for publication
- Prepare an abstract

The above bullet points are related to and will be evaluated with respect to one or more Interpersonal and Communication Skills Milestones listed in section 2.4.1.

Professionalism

Residents are expected demonstrate a commitment to professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate: (1) compassion, integrity, and respect for others; (2) responsiveness to patient needs that supersedes self-interest; (3) respect for patient privacy and autonomy; (4) accountability to patients, society and the profession; and, (5) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, socio-economic background and sexual orientation.

The Professionalism objectives by year are:

a. Year 1-4 (PGY-2-5)

- Demonstrate compassion, integrity, and respect for patients, families, medical colleagues, and staff
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, national origin, disabilities, and sexual orientation
- Respect patient confidentiality and autonomy
- Demonstrate the ability to comply with medical records and charting requirements specific to rotations.
- Demonstrate a commitment to learning the fundamentals of radiation oncology by attending lectures and clinic on time and keeping up with assigned readings
- Demonstrate accountability to patients, society and the profession
- Learn about research ethics, informed consent, and the regulatory approvals process

The above bullet points are related to and will be evaluated with respect to one or more Professionalism Milestones listed in section 2.4.1.

6. Systems-Based Practice

Residents must 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. Residents will: (1) work effectively in various health care delivery settings and systems relevant to radiation oncology, including regulatory systems; (2) coordinate patient care within the health care system relevant to radiation oncology; (3) incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population based care as appropriate; (4) advocate for quality patient care and optimal patient care systems;

(5) work in interprofessional teams to enhance patient safety and improve patient care quality; and, (6) participate in identifying system errors and implementing potential systems solutions.

The Systems-Based Practice objectives by year are:

a. Year 1-4 (PGY-2-5)

- Practice cost-effective health care that does not compromise the quality of care
- Advocate for quality patient care and assist patients in dealing with system complexities
- Understand that the practice of radiation oncology is an interdependent part of the health care system and society at large
- Consider how your practice affects other healthcare professionals and the hospital system
- Know what resources are available for patient care, within or outside the institution and make referrals as appropriate
- Consider how your research affects other healthcare professionals.
- Know what research related resources are available and manage project appropriately

The above bullet points are related to and will be evaluated with respect to one or more Systems-Based Practice Milestones listed in section 2.4.1.

2.2 Core Curriculum

The core curriculum is composed of the **clinical** curriculum as well as the **didactic** curriculum. It is competency based (see competency based curriculum table on following page). The clinical curriculum is composed of 36 months of clinical rotations with the remaining devoted to research and other clinical elective rotations. The didactic curriculum is composed of mandatory conferences, lectures, and tumor boards. Multiple evaluation tools will be used to assess competency.

2.3 Clinical Curriculum

The clinical curriculum includes clinical experience with lymphomas, leukemias, gastrointestinal, gynecologic, genitourinary, breast, soft tissue and bone, skin, head and neck, lung, pediatric, central nervous system tumors. The residents will learn indications for irradiation and special therapeutic considerations unique to each site and stage of disease including the use of combined modality therapy, altered fractionation, including stereotactic radiotherapy, brachytherapy, pain management and palliative care. The faculty will ensure that the resident participates in performing technical procedures, including treatment setups as well as intracavitary and interstitial brachytherapy according to level of training. Follow-up of the irradiated patients by the resident, including pediatric patients, on an inpatient or outpatient basis is a required part of resident training to ensure that residents have the

opportunity to learn about the problems of recurrent and disseminated tumors and of late effects and complications of radiation therapy.

Outline of “Competency Based Core Curriculum” can be found on the following page.

Competency Based Core Curriculum

Competency	Curriculum Specific Activities	Practice Performance Tools/Evaluation
PATIENT CARE	• Clinical Rotations • Morning Conferences • Grand Rounds • Chart Rounds • Multidisciplinary Conferences and Clinics	• Rotation Evaluation(s) • Case log • Peer Evaluation of Morning Conference • ACR In-Service Exam • Global Assessment • Semi-Annual Evaluation
MEDICAL KNOWLEDGE	• Clinical Rotations • Morning Conference • Chart Rounds • Grand Rounds • ASTRO Symposium • Multidisciplinary Conferences and Clinics • Research Rotation • Journal Club • Radiobiology Course • Physics Course • Statistics Course	• Rotation Evaluation(s) • Direct Observation of CT Simulation and Radiation Therapy Planning • Peer Evaluation of Morning Conference • Evaluation of Grand Rounds • ACR In-Service Exam • RAPHEX Exam • RABEX Exam • Semi-Annual Evaluation
PRACTICE-BASED LEARNING & IMPROVEMENT	• Clinical Rotations • Morning Conference • Chart Rounds • Peer Evaluation of Morning Conference • M & M Conference • Journal Club • Research Rotation • Clinical Investigation Training Program (CIPT) • Resident meetings • ASTRO Annual Conference	• Rotation Evaluation(s) • Mid Rotation Evaluation • Peer Evaluation of Morning Conference • Direct Observation of CT Simulation and • Radiation Therapy Planning • Direct Observation of Brachytherapy Procedures • Direct Observation of Informed Consent • Improvement Initiative on Evaluations • Semi Annual Evaluations
INTERPERSONAL & COMMUNICATION SKILLS	• Clinical Rotations • Morning Conference • Chart Rounds • Multidisciplinary Conferences and Clinics • Intra/Interdepartmental Communication	• Rotation Evaluation(s) • Direct Observation of Informed Consent • Peer Evaluation of Morning Conference • Global Assessment • Semi-Annual Evaluations
PROFESSIONALISM	• Clinical Rotations • Elective Rotations • Intra/Interdepartmental Communication • Chief resident • Fatigue awareness	• Rotation Evaluation(s) • Global Assessment • Direct Observation of Informed Consent • Semi-Annual Evaluations
SYSTEMS-BASED PRACTICE	• Clinical Rotations • Morning Conference • Multidisciplinary Conferences and Clinics • M & M Conference • Billing and Coding Lectures • Annual Radiation Safety Training • HIPAA and Patient Safety Training	• Rotation Evaluation(s) • Semi-Annual Evaluations

2.4 Clinical Rotations

Each resident will participate in four 3-month clinical rotations during program years 1, 2 and 4. The resident will be assigned to a specific attending physician(s) for each rotation, with specific disease site milestones. The resident will maintain a one-to-one teaching relationship with his/her attending on that service. The ACGME required electives including medical oncology, oncologic pathology, and diagnostic imaging are fulfilled by documented participation in multidisciplinary conferences where medical oncology management, imaging, and pathology are shown and discussed. Throughout these rotations and in accordance with ACGME requirements residents are expected to participate in the case of approximately 150-200 patients per year (determined by the number of patients simulated) with a minimum of 450 over the four years of residency. A resident must not treat more than 250 patients with external beam radiation therapy yearly.

Clinical Course for 2014-2015

YEAR 1 (PGY-2)	
Clinical Rotations	**Courses**
Rad Onc: July - September Chen (GI, GYN)	• Radiation Physics Lectures • Biostatistics Lectures • Clinical Radiation Oncology Lectures • Cancer and Radiation Biology Lecture Series (alternate years)
Rad Onc: October December Dandapani (CNS, GU, Prostate)	
Rad Onc: January - March Sampath (Head & Neck, Lung, Sarcoma, Prostate)	
Rad Onc: April - June Vora (Head & Neck, Breast, Lymphoma)	

YEAR 2 (PGY-3)	
Clinical Rotations	**Courses**
Rad Onc: July - September Vora (Head & Neck, Breast, Lymphoma)	• Radiation Physics Lectures • Biostatistics Lectures • Clinical Radiation Oncology Lectures • Cancer and Radiation Biology Lecture Series (alternate years)
Rad Onc: October - December Radany (CNS, Peds, Breast)	
Submit Request for Research & Clinical Elective	
Rad Onc: January - March Chen (GI, GYN)	
Rad Onc: April - June Dandapani (CNS, GU, Prostate)	

YEAR 3 (PGY-4)	
Research Elective (8-12 months)	• CIPT • Clinical Ethics Modules
Clinical Elective (0-4 months)	

YEAR 4 (PGY-5)	
Clinical Rotations	**Courses**
Rad Onc: July - September Radany (CNS, Peds, Breast)	• Radiation Physics Lectures • Biostatistics Lectures • Clinical Radiation Oncology Lectures • Cancer and Radiation Biology Lecture Series (alternate years)
Rad Onc: October - December Chen (GI, GYN)	
Rad Onc: January - March Dandapani (CNS, GU, Prostate)	
Rad Onc: April - June Sampath (Head & Neck, Lung, Sarcoma, Prostate)	

TOTAL 48 months

** Pediatric cases, potential brachytherapy and SRS cases and rare or unusual disease or clinical cases may be assigned outside standard clinical rotations – based on each resident's clinical experience requirements.

2.4.1 Milestones

Radiation Oncology Milestones

Lymphoma

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed and directed history and physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in lymphoma patients treated with radiotherapy	• Explains the main treatment options • Designs blocks, contours target(s), and contours normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in lymphoma patients treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Designs blocks, contours target(s), and contours normal tissues accurately; critically evaluates treatment plan options • Independently manages toxicities/symptoms seen in lymphoma patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Medical Physics – Medical Knowledge				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of medical physics in radiation oncology	• Understands basic concepts of medical physics	• Applies concepts of medical physics to clinical situations	• Thoroughly understands medical physics concepts for safe delivery of radiation therapy	• Conducts medical physics research
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Radiation/Cancer Biology – Medical Knowledge				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of radiation/cancer biology in radiation oncology	• Understands basic concepts of radiation/cancer biology	• Applies concepts of radiation/cancer biology to clinical situations	• Thoroughly understands radiation/cancer biology concepts for safe delivery of radiation therapy	• Performs radiation/cancer biology research
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Work and coordinate patient care effectively in various health care delivery settings and systems — Systems-based Practice				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes various health care delivery settings and systems	• Works and coordinates patient care in various health care delivery settings and systems for common clinical situations	• Works and coordinates patient care in various health care delivery settings and systems for most clinical situations	• Works and coordinates patient care in various health care delivery settings and systems for all clinical situations	• Publishes research on coordinating patient care in various health care delivery settings and systems
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet achieved Level 1 ☐

Incorporate considerations of cost awareness and risk-benefit analysis in patient- and/or population-based care, as appropriate — Systems-based Practice				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of cost awareness and risk-benefit analysis for patient- and/or population-based care	• Incorporates considerations of cost awareness and risk-benefit analysis for patient- and/or population-based care for common clinical situations	• Incorporates considerations of cost awareness and risk-benefit analysis in patient- and/or population-based care for most clinical situations	• Incorporates considerations of cost awareness and risk-benefit analysis for patient- and/or population-based care for all clinical situations	• Publishes research on cost awareness and risk- benefit analysis for patient- and/or population-based care
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments:				Not yet achieved Level 1 ☐

Work in interprofessional teams to enhance patient safety and improve patient care quality; advocate for quality patient care and optimal patient care systems; participate in identifying system errors and implementing potential system solutions — Systems-based Practice				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of working in inter-professional teams to enhance patient safety and improve patient care quality • Recognizes the importance of advocating for quality care and optimal patient care systems • Recognizes the importance of participating in identifying system errors and implementing potential system solutions	• Works in inter-professional teams to enhance patient safety and improve patient care quality in common clinical situations • Advocates for quality care and optimal patient care systems in common clinical situations • Participates in identifying system errors and implementing potential system solutions in common clinical situations	• Works in inter-professional teams to enhance patient safety and improve patient care quality in most clinical situations • Advocates for quality care and optimal patient care systems in most clinical situations • Participates in identifying system errors and implementing potential system solutions in most clinical situations	• Works in inter-professional teams to enhance patient safety and improve patient care quality in all clinical situations • Advocates for quality care and optimal patient care systems in all clinical situations • Participates in identifying system errors and implementing potential system solutions in all clinical situations	• Publishes research on quality patient care or patient safety
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: Not yet achieved Level 1 ☐				

Identify strengths, deficiencies, and limits in one's knowledge and expertise; set learning and improvement goals and identify and perform appropriate learning activities utilizing information technology, evidence from scientific studies, and evaluation feedback; systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement — Practice-based Learning and Improvement				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback • Understands the importance of setting learning and improvement goals • Can identify problems in health care delivery and see the quality gap in care	• Begins to assess performance by evaluating feedback and assessments • Begins to develop learning and improvement goals, based on feedback, with some external assistance • Uses information technology to locate scientific studies related to patient health problems • Understands the essentials of quality improvement	• Frequently assesses performance by evaluating feedback and assessments • Develops learning and improvement goals based on feedback, with minimal external assistance • Critically appraises scientific studies related to patient health problems • Is able to define and construct process and outcome measures of quality	• Always assesses performance by evaluating feedback and assessments • Performs self-directed learning independently • Assimilates evidence from scientific studies into practice • Designs and completes a quality improvement project	• Publishes research on practice quality improvement
☐	☐	☐	☐	☐
Comments: Not yet achieved Level 1 ☐				

Participate in the education of patients, families, students, residents, and other health professionals — Practice-based Learning and Improvement				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Understands the importance of the education of patients, families, students, residents, and other health professionals	• Participates in the education of patients and their families in common situations	• Participates in the education of patients and their families, students, residents, and other health professionals in common situations	• Participates in the education of patients and their families, students, residents, and other health professionals in all situations	• Publishes research on patient education • Develops a protocol for educating patients
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet achieved Level 1 ☐				

Compassion, integrity, and respect for others, as well as sensitivity and responsiveness to diverse patient populations, including diversity in gender, age, culture, race, religion, disabilities, and sexual orientation; knowledge about, respect for, and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice — Professionalism				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Seeks out, learns from, and models the attitudes and behaviors of physicians who exemplify appropriate professional attitudes, values and behaviors, including caring, honest, genuine interest in patients and families, and tolerance and acceptance of diverse individuals and groups • Is aware of basic bioethical principles; is able to identify ethical issues in clinical situations	• Exhibits appropriate attitudes, values, and behaviors in straightforward situations, including caring, honest, genuine interest in patients and families, and tolerance and acceptance of diverse individuals and groups • Consistently recognizes ethical issues in practice; is able to discuss, analyze, and manage in common clinical situations	• Exhibits appropriate attitudes, values, and behaviors in most situations, including caring, honest, genuine interest in patients and families, and tolerance and acceptance of diverse individuals and groups • Effectively analyzes and manages ethical issues in most clinical situations	• Exhibits appropriate attitudes, values, and behaviors in all situations, including caring, honest, genuine interest in patients and families, and tolerance and acceptance of diverse individuals and groups • Consistently and effectively analyzes and manages ethical issues in all clinical situations	• Develops organizational policies and education to support the application of these principles in the practice of medicine • Publishes or presents research on professionalism
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: Not yet achieved Level 1 ☐				

Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health — Professionalism				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes when in need of assistance and is able and willing to ask for help • Understands the importance of physician accountability to patients, society, and the profession • Is aware of the basic principles and aspects of the general maintenance of emotional, physical, and mental health, including issues of fatigue	• Consistently recognizes limits of knowledge in common clinical situations and asks for assistance • Demonstrates physician accountability to patients, society, and profession in common clinical situations • Identifies and manages common situations in which maintaining personal emotional, physical, and mental health, including issues of fatigue, are challenged	• Consistently recognizes limits of knowledge in most clinical situations • Demonstrates physician accountability to patients, society, and profession in most clinical situations • Identifies and manages most situations in which maintaining personal emotional, physical, and mental health, including issues of fatigue, are challenged	• Consistently demonstrates the ability to identify limits of own knowledge in all clinical situations • Demonstrates physician accountability to patients, society, and profession in all clinical situations • Identifies and manages all situations in which maintaining personal emotional, physical, and mental health, including issues of fatigue, are challenged	• Develops a protocol to support the application of physician accountability or personal responsibility • Publishes or presents research on physician accountability or personal responsibility
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: Not yet achieved Level 1 ☐				

Effective communication with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds; effective communication with physicians, other health care professionals, and health-related agencies — Interpersonal and Communication Skills				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of effective communication with patients, families, and the public • Recognizes the importance of effective communication with the health care team	• Demonstrates effective communication with patients, families, and the public in common situations • Demonstrates effective communication with the health care team in common situations	• Demonstrates effective communication with patients, families, and the public in most situations • Demonstrates effective communication with the health care team in most situations	• Demonstrates effective communication with patients, families, and the public in all situations • Demonstrates effective communication with the health care team in all situations	• Publishes or presents research on interpersonal communication • Develops a protocol for physician interpersonal communication
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet achieved Level 1 ☐				

Effective member or leader of a health care team or other professional group; maintenance of comprehensive, timely, and legible medical records — Interpersonal and Communication Skills				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Recognizes the importance of working effectively as a member of a health care team • Recognizes the importance of maintaining timely and legible records, including EHR	• Demonstrates the ability to effectively work as a member of a health care team, including the consultative role, in common clinical situations • Maintains accurate, timely, and legible records, including EHR, for some cases	• Demonstrates the ability to effectively work as a member of a health care team, including the consultative role, in most clinical situations • Maintains accurate, timely and legible records, including EHR, for most cases	• Demonstrates the ability to effectively work as a member of a health care team, including the consultative role, in all clinical situations • Maintains accurate, timely, and legible records, including EHR, in all cases	• Publishes or presents research on teamwork or record maintenance • Develops a protocol for teamwork or record maintenance
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: Not yet achieved Level 1 ☐				

Two milestones for each of the following core competencies are also included with each disease site to follow.

- Medical Knowledge
- Systems-based Practice
- Systems-based Learning and Improvement
- Professionalism
- Interpersonal and Communication Skills

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Appropriately identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed history and physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Identifies treatment options • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in head and neck cancer patients treated with radiotherapy	• Explains the main treatment options • Outlines an appropriate comprehensive treatment plan regarding radiotherapy and other treatment modalities • Contours target(s) and normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in head and neck cancer patients treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports a comprehensive treatment plan • Contours normal tissue and target(s) accurately; critically evaluates treatment plan options • Independently manages patients with toxicities/symptoms seen in head and neck cancer patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				
				Not yet rotated ☐

Radiation Oncology Milestones

Genitourinary (GU)

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed and directed history and physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in GU patients treated with radiotherapy	• Explains the main treatment options • Designs blocks, contours target(s), and contours normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in GU patients treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Designs blocks, contours target(s), and contours normal tissues accurately; critically evaluates treatment plan options • Independently manages toxicities/symptoms seen in GU patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Brachytherapy —Prostate Seed Implant - Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Observes patients undergoing brachytherapy	• Selects appropriate patients and understands relevant radiation safety protocols and procedures	• Plans and performs brachytherapy with minimal faculty member assistance	• Is able to independently plan and perform brachytherapy appropriately	• Exceptional technical performance of brachytherapy
☐	☐	☐	☐	☐
Comments: Not yet rotated				☐

Radiation Oncology Milestones

Palliation

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires an accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed physical examination; performs accurate pain assessment; integrates pathology and imaging reports; accurately stages a patient and designate prognostic factors • Recognizes toxicities/symptoms seen in the practice of palliative radiation oncology; is aware of options for pain management and end-of-life issues	• Explains the main treatment options • With supervision, manages patients with toxicities/symptoms seen in patients treated with palliative radiotherapy, including pain issues	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Independently manages toxicities/symptoms seen in patients treated with palliative radiotherapy • Develops appropriate and effective pain management strategy that requires no modification by attending	• Conducts clinical research • Demonstrates special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/ symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Radiation Oncology Milestones

Breast

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life threatening conditions	• Performs a detailed directed physical examination; integrates pathology and imaging reports; accurately stages a patient and designate prognostic factors • List organs at risk; understands proper patient positioning and immobilization	• Explains the main treatment options • Contours target(s) and normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s)	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Contours normal tissue and target(s) accurately; critically evaluates treatment plan options	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Brachytherapy —Breast IORT - Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Observes patients undergoing brachytherapy	• Selects appropriate patients and understands relevant radiation safety protocols and procedures	• Plans and performs brachytherapy with minimal faculty member assistance	• Is able to independently plan and perform brachytherapy appropriately	• Exceptional technical performance of brachytherapy
☐	☐	☐	☐	☐
Comments: Not yet rotated				☐

Radiation Oncology Milestones

Gastrointestinal (GI)

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in GI cancer patients treated with radiotherapy	• Explains the main treatment options • Contours target(s)/normal tissues and delineates field borders with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in GI cancer patients treated with radiotherapy while	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Contours target(s)/normal tissues and delineates field borders accurately; critically evaluates treatment plan options • Independently manages patients with toxicities/symptoms seen in GI cancer patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/ symptoms *or* has an exceptional understanding of management of toxicities/symptom
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Appropriately identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in GYN cancer patients treated with radiotherapy	• Explains the main treatment options which may include observation or radiation • Contours target(s) and normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in GYN cancer patients treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Describes details of radiation therapy; cites evidence-based practice guidelines or institutional standards • Contours normal tissue and target(s) accurately; critically evaluates treatment plan options • Independently manages patients with toxicities/symptoms seen in GYN cancer patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Brachytherapy —GYN - Patient Care

Level 1	Level 2	Level 3	Level 4	Level 5
• Observes patients undergoing brachytherapy	• Selects appropriate patients and understands relevant radiation safety protocols and procedures	• Plans and performs brachytherapy with minimal faculty member assistance	• Is able to independently plan and perform brachytherapy appropriately	• Exceptional technical performance of brachytherapy
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Radiation Oncology Milestones

Lung

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed physical examination; integrates pathology and imaging reports; accurately stages a patient and designate prognostic factors • Lists organs at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in lung cancer patients treated with radiotherapy	• Explains the main treatment options • Contours target(s) and normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages patients with toxicities/symptoms seen in lung cancer patients treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Contours normal tissue and target(s) accurately; critically evaluates treatment plan options • Independently manages patients with toxicities/symptoms seen in lung cancer patients treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Lung - Stereotactic Body Radiotherapy (SBRT) — Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Observes patients undergoing SBRT	• Selects appropriate patients and understands relevant radiation safety protocols and procedures	• Plans and performs SBRT with minimal faculty member assistance	• Is able to independently plan and perform SBRT appropriately	• Conducts clinical research
☐	☐	☐	☐	☐
Comments:				
				Not yet rotated ☐

Radiation Oncology Milestones

Adult Brain Tumor

Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Acquires accurate and relevant history and performs a general physical examination • Identifies relevant anatomy • Recognizes situations with a need for urgent or emergent medical care, including life-threatening conditions	• Performs a detailed directed physical examination; integrates pathology and imaging reports; accurately stages a patient and designates prognostic factors • Lists normal tissue at risk; understands proper patient positioning and immobilization • Recognizes toxicities/symptoms seen in patients with brain tumors treated with radiotherapy	• Explains the main treatment options • Contours target(s) and normal tissue with minimal inaccuracies; states appropriate dose planning objectives for normal tissues and target(s) • With supervision, manages toxicities/symptoms seen in patients with brain tumors treated with radiotherapy	• Makes a comprehensive treatment recommendation that is appropriate; describes evidence that supports the treatment plan • Contours normal tissue and target(s) accurately; critically evaluates treatment plan options • Independently manages patients with toxicities/symptoms seen in patients with brain tumors treated with radiotherapy	• Conducts clinical research • Develops special expertise to treat and manage the most complex cases • Develops protocols to minimize toxicities/symptoms *or* has an exceptional understanding of management of toxicities/symptoms
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Adult Brain – Stereotactic Radiosurgery (SRS) — Patient Care				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Observes patients undergoing SRS	• Selects appropriate patients and understands relevant radiation safety protocols and procedures	• Plans and performs SRS with minimal faculty member assistance	• Is able to independently plan and perform SRS appropriately	• Conducts clinical research
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments:				
Not yet rotated ☐				

2.4.2 Research Elective

The ACGME requires that an investigative project be completed under faculty supervision. To facilitate this, residents will have an 8- 12-month elective dedicated to research, scheduled in the PGY-4 year. The project(s) must be formalized and a one-page proposal must be presented to the program director mid PGY-3 – in preparation for the following year elective. This proposal should identify the faculty mentor, the objective of the project, proposed methods i.e. retrospective review versus prospective data collection, and statistical methods, which will be used to analyze data. If patient charts are to be reviewed, the project must be reviewed and approved by the IRB. Once the project is approved and begun, the resident will be required to meet with the Mentor on a weekly basis. The mentor will be responsible for formally evaluating the resident at 4 month intervals – in alignment with standard clinical rotation evaluation cycle. The mentor shall meet with the Resident and Program Director to discuss study progress and identify any opportunities for future improvement. Should there be no or minimal progress, the resident may be required to defer the remainder of the research elective and begin a clinical rotation. The elective will conclude with a 30-minute presentation to the faculty/residents. Ideally the resident will present his/her research at a regional/national meeting and will write a corresponding manuscript. The resident must remain on campus during daytime hours unless prior arrangements are made with the program director or supervising faculty. Failure to do so will result in usage of vacation time or cancellation of elective. The required request form and goals and objectives of this elective rotation follow.

CITY OF HOPE RADIATION ONCOLOGY RESIDENCY PROGRAM

Research Elective Proposal

Submission Date: _____

Resident: _____ Faculty Mentor: _____

Each resident that wishes to participate in the Research Elective Rotation in Year 3 (PGY-4) is required to submit this request to the Research Mentor and then the Program Director for approval.

Project Objective Hypothesis:

_____

_____

_____

Proposed Research Plan:

_____

_____

_____

Resident Signature: _____

Mentor Approval: _____ date: _____

Program Director Approval: _____ date: _____

Attach an additional page if needed.

Radiation Oncology Residency Training Program

Year 3 (PGY-4) Research Elective Rotation Goals & Objectives

Core Competency	Year 3 (PGY-4)
Patient Care	• Learn about patient safety in studies involving research subjects • Learn about the role of a data safety monitoring board • Lean how to conduct a research study using human subjects according to ethical standards • Learn how to submit an ethical proposal
Medical Knowledge	• Learn how to formulate a hypothesis • How to design an experimental plan to validate the hypothesis • Understand the role and application of evidence based medicine in clinical practice • Learn about the background of the specific topic and research question • Demonstrate that you have prepared a thorough background research and summary of current state knowledge • Learn how to critically appraise prior research as it pertains to your research question • Learn how to critically appraise your own research methods • Understand the process of translating basic science findings to clinical practice
Practice-based Learning and Improvement	• Learn to access, appraise, and assimilate the current medical literature pertaining to the research topic • Gain an understanding of the scientific method by designing and writing a research protocol
Interpersonal and Communication Skills	• Demonstrate communications skills by presenting research results to Program faculty • Demonstrate communication skills by participating in the annual City of Hope poster session • Learn to work with a multidisciplinary team in the research group (technicians, study coordinator, statisticians, ethicist) • Prepare a research proposal • Prepare a formal manuscript • Prepare an abstract
Professionalism	• Learn about research ethics, informed consent, and the regulatory approvals process • Demonstrate the ability to complete tasks
System-Based Learning	• Consider how your research affect other healthcare professionals. • Know what research related resources are available and manage project appropriately

2.4.3 Elective Rotation

Residents will have the option of up to 4 – one month elective rotations, in addition to their research rotation. The resident will be required to work with Program Director and Program Coordinator on the scheduling of these elective rotations. All elective rotations need to be identified in Year 2 (PGY-3) during the research/elective rotation submission period. Below is a list of optional elective rotations. If the resident would like to pursue an elective rotation outside of this list, it must be discussed the Program Director and/or Department Chairman. Required request form and Elective Rotation Goals and Objectives are found on the following pages.

- Diagnostic Radiology – MRI scans for breast, brain and prostate tumors; CT scans for pulmonary and GI tumors; PET scans for lung, colorectal and other tumor sites – Mentor Contact:William Boswell, M.D.

- Pathology – Hematopathology; Surgical Pathology; Immunohistochemistry – Mentor Contact: Karl Gaal, M.D.

- Pediatric Oncology – Sarcomas and other solid tumors; Late toxicities – Mentor Contact: Joseph Rosenthal, M.D.

- Hematology / Stem Cell Transplantation – – Mentor Contact: Amrita Krishnan, M.D.

- Medical Oncology – – Mentor Contact: Lucille Leong, M.D.

CITY OF HOPE RADIATION ONCOLOGY RESIDENCY PROGRAM
Elective Rotation Request Form

Submission Date: _____ Resident: _____

Each resident that wishes to participate in Internal or External Elective Clinical Rotations in Year 3 (PGY-4) is required to submit this request to the Program Director for approval. Established Goals and Objectives for approved internal clinical rotations are outlined on the following pages. The Program Director will review with the resident these goals and objectives and will be tailored as needed to the individual experience level of the resident.

Box 1 & 2 to be completed by the Resident – boxes 3-5 by Program Faculty

Selection	(2) Elective Rotation	(3) Mentor	(4) Approval Granted	(5) Arrangements Confimed with Other Department
1				
(1) Planned Date:				
2				
(1) Planned Date:				
3				
(1) Planned Date:				
4				
(1) Planned Date:				

Options for Internal Elective Rotations:

1. Diagnostic Radiology – MRI scans for breast, brain and prostate tumors; CT scans for pulmonary and GI tumors; PET scans for lung, colorectal and other tumor sites - **Mentor Contact:William Boswel006C, M.D**
2. Pathology – Hematopathology; Surgical Pathology; Immunohistochemistry - **Mentor Contact: Karl Gaal, M.D.**
3. Pediatric Oncology – Sarcomas and other solid tumrs; Late toxicities - **Mentor Contact: Joseph Rosenthal, M.D.**
4. Hematology/Stem Cell Transplantation – Leukemia, Lymphoma, Multiple Myeloma, Bone Marrow Transplantation -- **Mentor Contact: Amrita Krishnan, M.D.**
5. Medical Oncology – chemotherapy for solid tumors - **Mentor Contact: Lucille Leong, M.D.**

**External Elective Rotations need to be discussed with Program Director and Department Chairman.

Resident Signature: _____ date: _____

Program Director Approval: _____ date: _____

City of Hope	Radiation Oncology Residency Training Program Year 3 (PGY-4) Elective Rotation Goals & Objectives Diagnostic Radiology
Core Competency	**Year 3 (PGY-4)**
Patient Care	• Provides compassionate; patient centered care • Understands the development of a diagnostic plan based upon the clinical questions and relevant clinical, radiologic and pathologic information • Counsel patients concerning preparation for diagnostic testing or procedure • Gather essential and accurate information about patients
Medical Knowledge	• Demonstrate sufficient knowledge of medicine and apply this knowledge to radiological studies in the appropriate clinical context of CT and MRI • Demonstrate progressive acquisition of radiological knowledge • Generate a clinically appropriate diagnostic treatment plan • Demonstrate the ability to use all relevant information resources to acquire evidence-based data • Understand how radiologic equipment can be used to generate appropriate and diagnostic images used for diagnosis, radiation therapy treatment planning and assessment of response.
Practice-Based Learning and Improvement	• Set learning and improvement goals • Recognize the limits of one's knowledge and expertise • Evaluate radiologic clinical experience and perform practice-based improvement in cognitive knowledge, observational skills, and procedural skills • Demonstrate knowledge of and apply the principles of evidence-based radiology procedures • Use multiple sources, including information technology to optimize life-long learning and support patient care decisions
Interpersonal and Communication Skills	• Discuss diagnostic plan with patient/family • Discuss proposed radiologic procedures with physician faculty • Develop ability to communicate procedure specifics with technical staff • Develop ability to understand and work as a team member of radiology
Professionalism	• Provide direct communication to the referring physician or appropriate clinical personnel when interpretation reveals an urgent or unexpected finding and document this communication in the radiologic report • Demonstrate effective skills of face-to-face listening and speaking with physicians, patients, patients' families and support personnel • Demonstrate appropriate telephone communication skills • Demonstrate skills in obtaining informed consent, including effective communication to patients of the procedure, alternatives and possible complications
System Based Learning	• Understand the design of cost-effective care plans based on knowledge of best Practices • Demonstrate knowledge of basic health care reimbursement methods • Demonstrate knowledge of the regulatory environment including state licensing authority, state and local public health rules and regulations, and regulatory agencies such as Centers for Medicaid and Medicare Services (CMS) and Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) as they pertain to Diagnostic Radiology

City of Hope				Radiation Oncology Residency Training Program Year 3 (PGY-4) Elective Rotation Goals & Objectives Pathology
Core Competency	**Year 3 (PGY-4)**			
Patient Care	• always makes medical decisions using sound judgment, considering patient implications and available evidence			
Medical Knowledge	• knowledge of basic and clinical sciences • comprehensive understanding of diagnostic criteria and of relevant patterns and mechanisms of disease • highly resourceful in development of knowledge			
Practice-Based Learning and Improvement	• Set learning and improvement goals • Recognize the limits of one's knowledge and expertise • Evaluates own performance, incorporates feedback into improvement activities • Use multiple sources, including information technology to optimize life-long learning and support patient care decisions			
Interpersonal and Communication Skills	• Establishes highly effective medical relationships with co-workers and clinical colleagues • Demonstrates excellent relationship building through listening, narrative, and nonverbal skills • Demonstrate skills in education and counseling of co-workers and clinical colleagues, always "interpersonally" engaged			
Professionalism	• Always demonstrates respect, compassion, integrity, honesty; teaches/role models responsible behavior • Committed to self-assessment; willingly acknowledges errors • Considers needs of patients, families, co-workers, and clinical colleagues			
System Based Learning	• Effectively accesses/utilizes outside resources • Effectively uses systematic approaches to reduce errors and improve patient care;			

City of Hope	Radiation Oncology Residency Training Program Year 3 (PGY-4) Elective Rotation Goals & Objectives Pediatric Oncology
Core Competency	**Year 3 (PGY-4)**
Patient Care	• Gathering essential and accurate information about the patient using the following clinical skills – medical interview, physical examination, diagnostic studies & diagnostic studies • Making informed diagnostic and therapeutic decisions based on patient information, current scientific evidence, and clinical judgment • Counseling patients and families • Provide effective health care services and anticipatory guidance • Identify the common complaints of patients with common pediatric malignancies
Medical Knowledge	• Gather essential and accurate information about patients • Develop a diagnostic plan based upon the clinical questions and relevant clinical, radiologic and pathologic information • Demonstrate a basic understanding of electronic patient information systems • Demonstrate the ability to use the Internet as an educational instrument to expand medical knowledge • Develop diagnostic and therapeutic plan • Demonstrate knowledge ,of the basic principles of pediatric oncology , multidisciplinary care and late effects
Practice-Based Learning and Improvement	• Set learning and improvement goals • Recognize the limits of one's knowledge and expertise • Evaluates own performance, incorporates feedback into improvement activities • Use multiple sources, including information technology to optimize life-long learning and support patient care decisions • Locating, appraising, and assimilating evidence from scientific studies related to health problems of patients
Interpersonal and Communication Skills	• Communicate effectively in a developmentally appropriate manner with patients and families to create and sustain a professional and therapeutic relationship across a broad range of socioeconomic and cultural backgrounds. • Demonstrate the ability to avoid being judgmental and to respect the beliefs and values of patients' families when those beliefs and values differ from their own. • Communicate effectively with physicians, other health professionals, and health related agencies • Work effectively as a member or leader of a health care team or organization. • Maintains comprehensive, timely and legible medical records.
Professionalism	• Accept responsibility for patient care including continuity of care • Demonstrate integrity, honesty, compassion, and empathy in one's role as a physician • Demonstrate respect of the patient's privacy and autonomy • Demonstrate accountability and commitment • Demonstrate high standards of ethical behavior
System Based Learning	• Practice cost-effective health care and resource allocation that does not compromise quality of care • Develop and demonstrate basic understanding of the various health care delivery models, payment structures and insurance issues. • Advocate for quality patient care and assisting patients in dealing with system complexities.

City of Hope	Radiation Oncology Residency Training Program Year 3 (PGY-4) Elective Rotation Goals & Objectives Hematology / Stem Cell Transplantation

Core Competency	Year 3 (PGY-4)
Patient Care	• Gathering essential and accurate information about the patient using the following clinical skills – medical interview, physical examination, diagnostic studies & diagnostic studies • Making informed diagnostic and therapeutic decisions based on patient information, current scientific evidence, and clinical judgment • Counseling patients and families • Provide effective health care services and anticipatory guidance • Develop experience with hematopoietic and solid malignancies, bone marrow failure syndromes, immunodeficiency disorders, inherited metabolic disorders, and complications of stem cell transplantation, including graft failure, infectious complications, and graft-versus-host disease. • Observe bone marrow aspiration and administration of intrathecal chemotherapy.
Medical Knowledge	• Gather essential and accurate information about patients • Demonstrate a basic understanding of electronic patient information systems • Demonstrate the ability to use the Internet as an educational instrument to expand medical knowledge • Understand important prognostic factors in ALL and AML and describe how those factors are used in risk classification of ALL and AML • Understand general treatment approaches used in ALL and AML. • Discuss the acute and long-term effects of various modalities used in the treatment of leukemia and lymphoma. • Describe the common toxicities in patients undergoing autologous / allogenic hematopoietic stem cell transplantation • Describe the management of patients with fever and neutropenia and infectious complications in patients undergoing autologous and allogeneic hematopoietic stem cell transplantation • Describe the process of hematopoietic stem cell infusion and the differences between fresh and cryopreserved products. • Describe basic procedures and medications to prevent graft-versus-host disease
Practice-Based Learning and Improvement	• Set learning and improvement goals • Recognize the limits of one's knowledge and expertise • Evaluates own performance, incorporates feedback into improvement activities • Use multiple sources, including information technology to optimize life-long learning and support patient care decisions • Compare clinical practice, patient safety, and quality of care with evidence based medicine
Interpersonal and Communication Skills	• Provide education and counseling to patients, and families using non-technical and clear language. (Use non-verbal and verbal communication skills • Demonstrate the ability to avoid being judgmental and to respect the beliefs and values of patients' families when those beliefs and values differ from their own. • Communicate effectively with physicians, other health professionals, and health related agencies • Demonstrate skill in handling all difficult patient care situations • Work effectively as a member or leader of a health care team or organization. • Maintains comprehensive, timely and legible medical records.
Professionalism	• Accept responsibility for patient care including continuity of care • Demonstrate integrity, honesty, compassion, and empathy in one's role as a physician • Demonstrate respect of the patient's privacy and autonomy • Demonstrate accountability and commitment • Demonstrate high standards of ethical behavior
System Based Learning	• Practice cost-effective health care and resource allocation that does not compromise quality of care • Develop and demonstrate basic understanding of the various health care delivery models, payment structures and insurance issues. • Advocate for quality patient care and assisting patients in dealing with system complexities.

City of Hope	Radiation Oncology Residency Training Program Year 3 (PGY-4) Elective Rotation Goals & Objectives Medical Oncology - Chemotherapy

Core Competency	Year 3 (PGY-4)
Patient Care	• Gathering essential and accurate information about the patient using the following clinical skills – medical interview, physical examination, diagnostic studies & diagnostic studies • Making informed diagnostic and therapeutic decisions based on patient information, current scientific evidence, and clinical judgment • Counseling patients and families • Provide effective health care services and anticipatory guidance • Manage complications of therapy, including infectious complications in the immunocompromised host and complications of chemotherapy • Describe the components of a palliative care plan for patients at the terminal phase of their disease
Medical Knowledge	• Gather essential and accurate information about patients • Demonstrate a basic understanding of electronic patient information systems • Demonstrate the ability to use the Internet as an educational instrument to expand medical knowledge • Discuss the basic principles and mechanisms of action of chemotherapeutic agents. • Describe the major side effects of common chemotherapeutic agents. • Summarize the long term complications of therapy. • Discuss the goals and study design components of a Phase I and a Phase II clinical trial. • Summarize the long term complications of therapy.
Practice-Based Learning and Improvement	• Set learning and improvement goals • Recognize the limits of one's knowledge and expertise • Evaluates own performance, incorporates feedback into improvement activities • Use multiple sources, including information technology to optimize life-long learning and support patient care decisions • Compare clinical practice, patient safety, and quality of care with evidence based medicine
Interpersonal and Communication Skills	• Provide education and counseling to patients, and families using non-technical and clear language. (Use non-verbal and verbal communication skills • Demonstrate the ability to avoid being judgmental and to respect the beliefs and values of patients' families when those beliefs and values differ from their own. • Communicate effectively with physicians, other health professionals, and health related agencies • Demonstrate skill in handling all difficult patient care situations • Work effectively as a member or leader of a health care team or organization. • Maintains comprehensive, timely and legible medical records.
Professionalism	• Accept responsibility for patient care including continuity of care • Demonstrate integrity, honesty, compassion, and empathy in one's role as a physician • Demonstrate respect of the patient's privacy and autonomy • Demonstrate accountability and commitment • Demonstrate high standards of ethical behavior
System Based Learning	• Practice cost-effective health care and resource allocation that does not compromise quality of care • Develop and demonstrate basic understanding of the various health care delivery models, payment structures and insurance issues. • Advocate for quality patient care and assisting patients in dealing with system complexities.

2.5 Didactic Curriculum

There are a number of conferences, multi-disciplinary tumor boards, lectures and courses scheduled on a regular basis, which together comprise an integral component of the residency program. Each resident will be required to attend all related conferences to that of their clinical rotation and must document attendance by a sign-in sheet. Attendance supersedes clinical responsibilities except in certain circumstances i.e. evaluation of an emergency patient. A schedule of the current conferences will be provided to you on an annual basis by the Department secretary. All multidisciplinary tumor boards present images and pathology results and thus fulfill ACGME requirements for medical oncology, oncologic pathology, and radiology.

2.6 Conferences and Tumor Boards

2.6.1 Morning New Patient Conference

This conference takes place four times per week (M, Tu, Wed. & Th) in the department conference room from 8:45AM – 9:30AM. Every other Tuesday is reserved for resident educational activities (i.e. case discussion, article review, etc…) which take the place of the morning conference for that day. Each resident must be prepared to discuss and review in detail, select patients chosen ahead of time by the resident and his/her rotating physician. The resident must be prepared to present a focused history and physical examination, articulate a treatment plan or recommendation, and cite pertinent data from the medical literature to support the recommendations. Faculty members are encouraged to complement the case discussion by providing additional insights and thorough focused questions.

2.6.2 Active Patient Conference (Chart Rounds)

Departmental Chart Rounds are held each Friday at 2:30pm. Residents are required to review all of their assigned patients currently under treatment. The resident must be prepared to review all current dose information, as well as a review of current labs and general patient progress.

2.6.3 Mortality and Morbidity Conference (M & M)

This conference is held generally once per quarter on a Friday at 12:00pm. Under the supervision of the attending physician, the resident will assist in the presentation covering a treatment complication from radiation therapy on a particular patient. The staff radiation oncologist and the resident should have at least one meeting to review all of the materials to be presented and the important points to be emphasized. Each case presented should last no longer than 10 minutes. The handout and presentation (1-2 pages) for M&M will include the following:

1. Summary of clinical history
2. Detailed description of radiation therapy, including portal descriptions, dose, and dosimetric analysis; localization films and isodose curves must be available for detailed analysis at the conference; *the physics staff should be consulted* for the dosimetry and technical review
3. Detailed description of time of appearance, nature, and severity of the complication
4. Correlation analysis of techniques of irradiation or other factors that may have contributed to the complication; the resident and staff must identify specific points that they wish to emphasize about the possible explanation for the complication and whether a review of the treatment technique is in order
5. Suggestions to avoid this problem in the future
6. Detailed pathological description of the radiation effects (gross and microscopic)
7. Short review of the literature on the subject, particularly with regard to incidence of complication and specific dose levels, fractionation schedules, volume, and any other factors that may affect the appearance of the problem
8. List of selected references in the format of the Index Medicus or the AMA manual of Style. A copy of the handout and one set of slides should be submitted to the Program coordinator for placement in a file available to anyone wishing to study the complication.

2.6.4 Tumor Board Schedule

Monday thru Thursday – New Patient Conference / 8:45am - Radiation Oncology Conf Rm
Friday – Active Patient Conference / 2:30pm – Radiation Oncology Conf Rm

Tumor Board Meeting Schedule

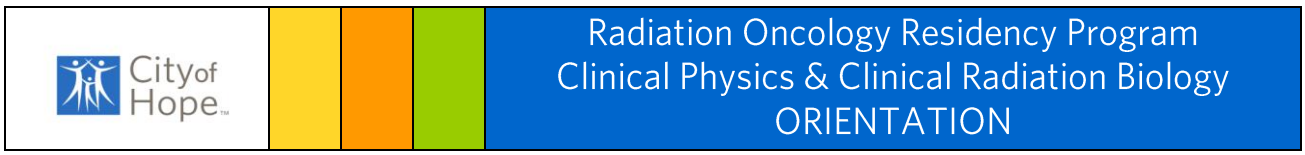
Date/Time/Location	MD	Title	Chair	Contact
MONDAY – Every / 12 noon Helford Radiology Conf Rm	**Chen**	**Colorectal Cancer**	Multidisciplinary Lily Lai /Gagandeep Singh	Yolanda Tamayo x63110
TUESDAY – 4th / 12 noon Helford Radiology Conf Rm	**Radany**	**Pediatric**	Multidisciplinary Judith Sato	Lea Bancroft x65414
TUESDAY – Every / 5:00pm Helford Radiology Conf Rm	**Wong / Dandapani**	**GU / Prostate**	Multidisciplinary Przemyslaw Twardowski	Kelli Olsen x63876
WEDNESDAY – Every / 12 noon Rad Onc Conf Rm	**Chen / Vora**	**Gynecologic**	Multidisciplinary Mark Wakabayashi	Kelli Olsen x63876
WEDNESDAY – Every / 12 noon Helford Radiology Conf Rm	**Vora / Radany**	**Breast**	Multidisciplinary Laura Kruper	Kelli Olsen x63876
WEDNESDAY – Every / 4:00pm Helford Radiology Conf Rm	**Sampath**	**Endocrine**	Multidisciplinary Ken Chiu	Karen Ramos x62266
THURSDAY – Every / 8:00am Pathology Conf Rm	**Sampath/Radany**	**Musculoskeletal/ Sarcoma**	Multidisciplinary Judith Sato	Katie DuBois x65430
THURSDAY – Every / 12 noon Helford Radiology Conf Rm	**Chen / Wong**	**Upper GI / Liver**	Multidisciplinary Fakih / Singh	Yolanda Tamayo x63110
THURSDAY – Every / 5:00pm Helford Radiology Conf Rm	**Sampath/Dandapani**	**Chest Conference**	Multidisciplinary David Horack	Sylvia Rivera x62774
FRIDAY – Every / 8:15 – 9:30am Helford Radiology Conf Rm	**Radany / Dandapani**	**Neuro Oncology**	Multidisciplinary Behnam Badie	Vanae Sainz x67285
FRIDAY – Every / 9:30am Helford Radiology Conf Rm	**Vora / Sampath**	**Head / Neck**	Multidisciplinary Ellie Maghami	Siniabell Rodriguez x65546
FRIDAY – Alt w/ Leukemia / 1:30pm Helford Radiology Conf Rm	**Vora / Radany**	**Lymphoma**	Hematology Pathology	Evelyn Flores x63974
FRIDAY – Alt w/ Lymphoma/1:30pm Helford Radiology Conf Rm	**Vora**	**Leukemia**	Pathology Radiology	Jennifer Carvajal x60329

2.6.5 Current Concepts in Radiation Oncology (Journal Club)

Current Concepts in Radiation Oncology (Journal Club) is held twice per month on Friday afternoons. Both residents and faculty will present current journal articles of significance. Residents will be mentored by appropriate faculty member.

2.7 Lectures and Courses

2.7.1 Clinical Radiation Physics and Clinical Radiation Biology Orientation



Description

During the first week of the residency, a one-day orientation to the principles of clinical radiation physics and clinical radiation biology will be given. This orientation is primarily designed to make sure that the resident understands the fundamental process of radiation oncology and the science behind it. The schedule may be reduced to only those parts which are specific to City of Hope if the resident has a sufficient background in radiation oncology by virtue of previous rotations.

Goals and Objectives

The resident will become familiar with the operations of the department and the requirements of the City of Hope radiation safety program. The resident will understand the principles of fractionation in radiation therapy.

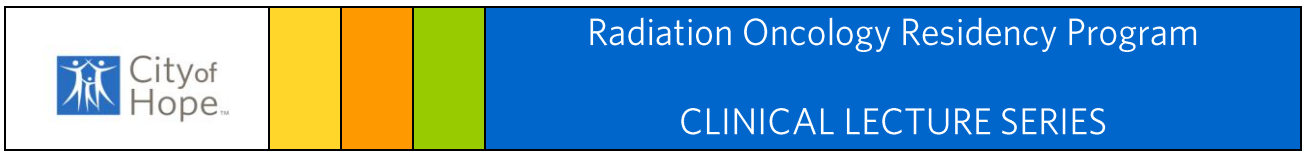
Radiation Physics orientation

Planning process from simulation to treatment	1 hour	An Liu, PhD
Operation of simulation devices	30 minutes	Robert Beatty, BSRT
Linear accelerator operations	30 minutes	Sean Sun, MS
Immobilization, localization, and verification	30 minutes	Daniel Azizi, BS
Basic monitor unit calculations for emergency patients	45 minutes	Cecil Staud, PhD
Radiation safety	60 minutes (part of COH orientation)	Radiation Safety personnel

Radiation Biology orientation

Basic cellular response to radiation	Eric Radany, PhD, MD
Dose schedules, fractionation	Resident
Acute and late responses to radiation	Jeffrey Wong, MD
Overview of tumor responses	Eric Radany, MD

2.7.2 Clinical Radiation Oncology Lecture Series



Description:

The clinical lecture series will review malignancies and other diseases treated with radiation therapy. Reviews will include epidemiology, symptoms, signs, evaluation, work-up, staging, treatment options, multidisciplinary management, toxicities and results. Use of various radiation therapy modalities will also be discussed. One-hour lectures will be presented by radiation oncologists and invited guest speakers.. The entire series covers a two-year time span and will repeat in years 3 and 4.

Goals and Objectives:

The resident will learn how to evaluate, work-up, stage, recommend appropriate treatment, design and plan radiation treatment, and follow patients with specific malignancies.

Examinations:

There will be no specific quizzes or exams. Staff radiation oncologists will evaluate residents' progress through evaluation of resident performance in patient consultations, presentations at New Patient Conference, and treatment planning. Monthly didactic resident presentations will also be judged for resident knowledge and comprehension. The ACR in-service exam will also be used.

Recommended or Required Text Books and Other Reading:

Residents will be required to purchase one of these three major textbooks:

Clinical Radiation Oncology (eds. Gunderson & Tepper) Elsevier Publishers
Textbook of Radiation Oncology (eds. Leibel & Phillips) Saunders Publishers
Principles and Practice of Radiation Oncology (eds. Perez & Brady) J.B. Lippincott Publ.

Recommended text books:

Handbook of Evidence-Based Radiation Oncology (eds. Hansen & Roach) Springer Publ.
Clinical Fundamentals for Radiation Oncology Residents (H. Mushed) Medical Physics Publ.
AJCC Cancer Staging Handbook, Springer Publishers

Radiation Oncology Residency Program
Clinical Lecture Series
Year 1 & Year 3 (PGY-2 & PGY-4)

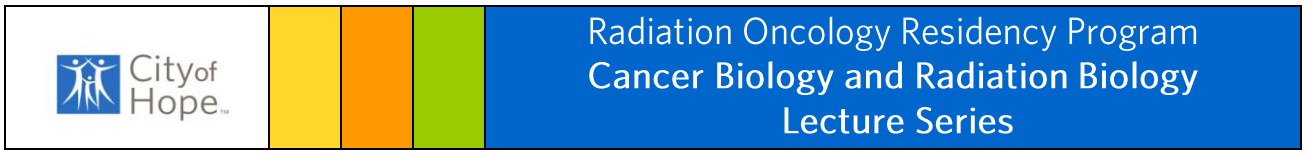
	Lecture	Faculty
1	Prostate Cancer – Intact	Wong
2	Prostate Cancer – Post-prostatectomy	Wong
3	Radiation Therapy Emergencies	D. Kim
4	Small Cell Lung Cancer	D. Kim
5	Bone Metastases	D. Kim
6	Breast – APBI, IORT	Vora
7	Breast - PMRT	Vora
8	Pediatric CNS Tumors 1	Radany
9	Pediatric CNS Tumors 2	Radany
10	Colorectal Cancer	Chen
11	Gastric/Esophageal Cancer	Chen
12	Mesothelioma	Sampath
13	Head and Neck (Oral Cavity, Oropharynx)	Sampath
14	Low Grade Glioma	Dandapani
15	Testicular Cancer	Dandapani
16	High Grade Glioma	Dandapani
17	Thoracic Imaging	Hogan
18	Abdomen Imaging	Hogan
19	Musculoskeletal Imaging	Hogan
20	Radio-Immunology with Emphasis on RIT	Wong
21	Hysterectomy for GYN Cancers	E. Han
22	Nuclear Medicine	Yamauchi
23	Brain/Spine Imaging	B. Chen

City of Hope	Radiation Oncology Residency Program Clinical Lecture Series Year 2 & Year 4 (PGY-3 & PGY-5)

Week	Lecture	Faculty
1	Prostate Brachytherapy	Wong
2	Bladder Cancer	Wong
3	Radiation Therapy Emergencies	Kim
4	Hodgkin's Disease	Kim
5	Breast – Early Stage	Vora
6	Endometrial/Vaginal Cancer	Vora
7	Non-CNS Pediatric (Wilm's, NB, RB)	Radany
8	Non-CNS Pediatric (Rhabdo, Ewing's, Osteosarcoma)	Radany
9	Brain Metastases	Radany
10	Cervical Cancer	Chen
11	Anal Cancer	Chen
12	Pancreatic Cancer	Chen
13	NSCLC – Stage I-II and SBRT	Sampath
14	Head and Neck (Nasopharynx, Larynx)	Sampath
15	Soft Tissue Sarcoma	Sampath
16	NSCLC – Locally Advanced	Dandapani
17	Non-Hodgkin Lymphoma	Dandapani
18	Head and Neck Imaging	Hogan
19	Pelvic Imaging	Hogan
20	Radioactive Iodine Therapy for Thyroid Cancer	Kandeel
21	Breast Imaging with Emphasis on Mammography	Lalit Vora
22	Surgical Management of Bone Metastases and STS	Calvert
23	Hysterectomy for GYN Cancers	E. Han

2.7.3 Cancer Biology and Clinical Radiation Biology Course

Cancer Biology and Clinical Radiation Biology didactic courses are held on alternating years starting in October.



Description:

A thorough grounding in the molecular and cellular mechanisms of malignant transformation is essential to the practice of Radiation Oncology, as is detailed knowledge of the biological responses of human cells, tissues, and organs to radiation exposures. Our resident physicians must acquire the ability to read and understand the current literature in this field, which is becoming increasing based in modern medical biology. The curriculum in Radiation and Cancer Biology will expand upon, and update, the background in these topics that the students bring from their preclinical medical school coursework. In odd calendar years, a series of didactic lectures and laboratory exercises will be given, presented by experts in the respective topics who are drawn from the faculties of the City of Hope and the Beckman Research Institute (BRI). This is part of the core curriculum at the BRI. In even calendar years, a lecture series will be given in Radiation Biology by radiation scientists in the department and in the BRI.

Goals and Objectives:

The objective of this course is to provide the residents with knowledge of the principles of cancer and radiation biology underlying the practice of radiation oncology. The syllabus will follow the guidelines set by the American Board of Radiology for the following topic areas:

- basic cancer biology and the molecular biology of cancer
- the response to radiation at the molecular and cellular levels
- the radiation responses of normal and malignant tissues
- hereditary effects and radiation carcinogenesis
- radiation protection standards

Examinations:

The lectures will be small and informal, with questioning of the students by the faculty (as well as the reverse). A 30 minute test will be given monthly, in order to assess class progress and promptly identify any needs for supplemental presentations or/and readings. On an annual basis, each resident is required to complete the ACR In-Training Exam.

Radiation Oncology Residency Program
Cancer Biology Lecture Series
Fall Year 1 & Year 3 (PGY-2 – PGY 4)

Kaplan Conference Room, 5:00pm Coordinator: Dr. Shiuan Chen x63454

Week	Description	Speaker
1	DNA repair and cancer *"Discussion of important DNA repair processes; defects of DNA repair enzymes in cancer"*	Tim O'Connor
2	Oncogenes *"Molecular action of oncogenes"*	Jiiang Kuan Yee
3	Cancer cells and cancer stem cells *"Molecular features of cancer cells and cancer stem cells; current research directions on cancer stem cells"*	Emily Wang
4	Animal models in cancer research *"Design and development of animal models"*	Richard Ermel
5	Hormone and cancer *"Roles of hormones in cancer; properties of nuclear receptors and enzymes for hormone biosynthesis in cancer cells/tissues"*	Shiuan Chen
6	Cancer epigenetics *"Roles of chromatin and DNA modifications in cancer development"*	Gerd Pfeifer
7	Tumor microenvironment *"Effects of tumor microenvironment, or stroma, on the growth of the tumor and its ability to progress and metastasize"*	Jack Shively
8	Targeted cancer therapy *"Discussion of drug targets; molecular action of chemotherapeutic drugs"*	Tim Synold
9	Chemoprevention *"Molecular targets for chemoprevention; critical issues in the design of chemoprevention studies"*	
10	Molecular basis of radiation therapy *"Theoretical basis of radiation therapy; current development of radiation therapy"*	Eric Radany
11	Breast Cancer *"Biology of breast cancer subtypes; risk factors for breast cancer; molecular mechanism of breast cancer development"*	Sharon Wilczynski

12	GI cancer *"Biology of colon/liver cancer subtypes; risk factors; molecular mechanism of colon/liver cancer development"*	Yun Yen
13	Prostate cancer *"Biology of prostate cancer subtypes; risk factors for prostate cancer; molecular mechanism of prostate cancer development"*	Huiqing Wu
14	Ovarian cancer *"Biology of ovarian cancer subtypes; risk factors for ovarian cancer; molecular mechanism of ovarian cancer development"*	Robert Morgan
15	Acute and chronic leukemias *"Classification, epidemiology, molecular mechanisms, clinical manifestations and principals of treatment"*	Ravi Bhatia

Recommended or Required Text Books and Other Reading:

1) "Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics" by Lauren Pecorino. Published by Oxford University Press.
2) "Radiobiology for the Radiologist" Sixth edition, by Eric J. Hall and Amato J. Giaccia. Published by Lippincott, Williams & Wilkins.
3) ASTRO study Guide

Sample Year 2– (PGY-3) Radiation Biology Lecture Series

City of Hope

Radiation Oncology Residency Program
Radiation Biology Lecture Series
Fall Year 2 & Year 4 (PGY-3 & PGY-5)

4:00pm Rad Onc Conf Rm Coordinator: Eric Radany x60044

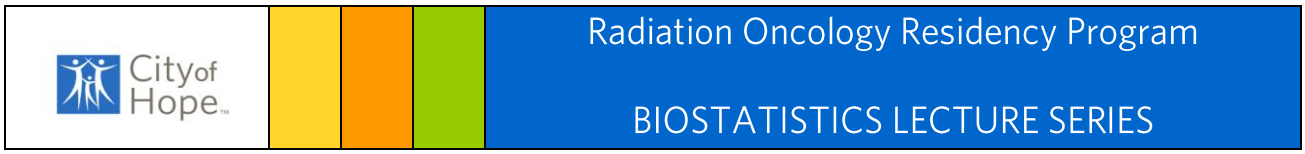
Week	Topic	Reading Assignment	Speaker
1	Physics and Chemistry of Radiation Absorption	Chap 1-3	ER
2	DNA Strand Breaks and Chromosomal Aberrations; Cell Survival Curves	Chap 4	ER
3	Radiosensitivity and Cell Age in the Mitotic Cycle; Repair of Radiation Damage and the Dose-Rate Effect; Oxygen Effect and Reoxygenation	Chap 5-6	ER/JS
4	Linear Energy Transfer and Relative Biologic Effectiveness; Dose-Response Relationships for Model Normal Tissues	Chap 7,18	TS
5	Clinical Response of Normal Tissues; Time, Dose, and Fractionation in Radiotherapy	Chap 19, 22	TS
6	Acute Effects of Total-body Irradiation; Radioprotectors	Chap 8-10	ER
7	Hereditary Effects of Radiation; Effects of Radiation on the Embryo and Fetus;	Chap 11-13	JS
8	Radiation Carcinogenesis; Radiation Cataractogenesis	Chap 14-15	ER
9	Molecular Techniques in Radiobiology; Cancer Biology; Model Tumor Systems	Chap 16, 17, 20	ER
10	Cell, Tissue, and Tumor Kinetics; Predictive Assays; Alternative Radiation Modalities	Chap 21, 23, 24	ER
11	Radiosensitizers and Bioreductive Drugs; Chemotherapeutic Agents from the Perspective of the Radiation Biologist	Chap 25-27	ER

J= Jeremy Stark PhD; T= Tim Schultheiss, PhD; BS=Bing Chen, PhD; ER=Eric Radany, PhD, MD; XC=Xufeng Chen

2.7.4 Biostatistics

This short series of six lectures will cover basic biostatistics and some higher level topics necessary to understand and evaluate biomedical literature.

Course Goals and Objectives: The resident will be able to determine which tests of significance apply to an experimental design and perform these tests. In the medical literature, the resident will be able to assess whether an experimental design was adequate to address the hypothesis, whether the statistical analysis was appropriate, and whether the conclusions were supported by the data.



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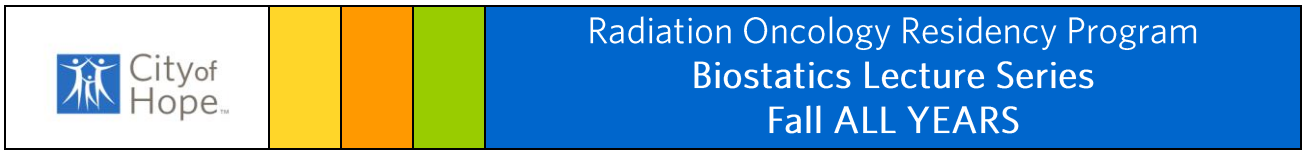
Goals and Objectives:

The resident will be able to determine which tests of significance apply to an experimental design and perform these tests. In the medical literature, the resident will be able to assess whether an experimental design was adequate to address the hypothesis, whether the statistical analysis was appropriate, and whether the conclusions were supported by the data.

Examinations: none

Recommended or Required Text Books and Other Reading: Readings will be provided from the SPSS User's Manual

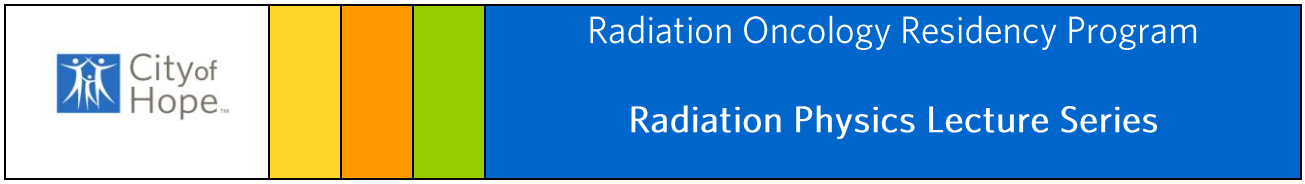


Week	Description	Speaker
1	Distributions and tests of means and proportions	Schultheiss
2	Linear regression, other methods of curve fitting	Schultheiss
3	Goodness-of-fit statistics	Schultheiss
4	Logistic regression, dose response	Schultheiss
5	Design of clinical trials, power, survival analysis	Schultheiss
6	Experimental design, analysis of cell survival data	Schultheiss

2.7.5 Clinical Physics Course

Prior to beginning any clinical activity, a consolidated course of Radiation Physics and Radiobiology will be presented to all residents each year. This information will be given during an 8 hour – one day orientation, intended to provide the resident with a basic foundation of both subject. Following these introductory courses the physics lecture series consisting of a one-year repeated sequence of lectures/laboratories directed by the Director of Radiation Physics will commence. Lectures are generally held on Wednesday afternoons in the Radiation Oncology conference room. The course will begin with highlights of the fundamentals of radiation physics, progressing into hands-on experiences, and a variety of special topics. The American Society Radiation Oncology (ASTRO) Radiation Physics Committee formed a Committee on Physics Teaching to Medical Residents developed a core curriculum for teaching institutions to follow. The ultimate goal for teaching is to prepare the resident for a successful career that must include a strong physics background. The updated curriculum was completed and approved by the ASTRO Board of Directors in late 2006. Changes were made to update the curriculum according to technology needs and strengthen the flow of each teaching program.

The curriculum is designed to meet NRC requirements for authorized-user on a radioactive material license including therapeutic radiopharmaceuticals



Description:

The American Society Radiation Oncology (ASTRO) Radiation Physics Committee formed a Committee on Physics Teaching to Medical Residents developed a core curriculum for teaching institutions to follow. The ultimate goal for teaching is to prepare the resident for a successful career that must include a strong physics background. The updated curriculum was completed and approved by the ASTRO Board of Directors in late 2006. Changes were made to update the curriculum according to technology needs and strengthen the flow of each teaching program.

The curriculum is designed to meet NRC requirements for authorized-user on a radioactive material license including therapeutic radiopharmaceuticals.

Goals and Objectives:

Learning objectives have been developed for each section. The entire list comprises 5 pages and is not reproduced here. The entire 2010 curriculum is given in the appendix

Examinations:

On an annual basis, each resident is required to complete the ACR In-Training Exam.

Recommended or Required Text Books and Other Reading:

The following books, papers, and reports will either be required to purchase or will be available in the Director's library.

• Bentel GC. Patient positioning and immobilization oncology. New York: McGraw-Hill; 1999.
• Cherry SR, Sorenson J, Phelps M. Physics in nuclear medicine. 3rd Ed. Philadelphia: Saunders; 2003.
• Curran BH, Balter JM, Chetty IJ. Integrating new technologies into the clinic: Monte Carlo and image-guided radiation therapy. (Monograph no. 32). Madison, WI: Medical Physics Publishing; 2006.
• Curry TS, Dowdey JE, Murry RC. Christensen's physics of diagnostic radiology. 4th Ed. Philadelphia: Lippincott Williams & Wilkins; 1990.
• Ezzell GA, Galvin JM, Low D, *et al*. Guidance document on delivery, treatment planning, and clinical implementation of IMRT: Report of the IMRT Subcommittee of the AAPM Radiation Therapy Committee. *Med Phys* 2003;30:2089–2115.
• Hall EJ, Giaccia AJ. Radiobiology for the radiologist. Philadelphia: Lippincott Williams & Wilkins; 2005.
• Khan FM, Doppke KP, Hogstrom KR, *et al*. Clinical electron-beam dosimetry: Report of AAPM Radiation Therapy Committee Task Group No. 25. *Med Phys* 1991;18:73–109.
• Khan FM, Potish RA. Treatment planning in radiation oncology. Philadelphia: Lippincott Williams & Wilkins; 2006.
• Khan FM, The Physics of Radiation Therapy, 4th ed, Philadelphia: Lippincott Williams & Wilkins; 2008.
• McGinley PH. Shielding techniques for radiation oncology facilities. 2nd Ed. Madison, WI: Medical Physics Pub.; 2006.
• Metcalfe P, Kron T, Hoban P. The physics of radiotherapy X-rays from linear accelerators. Madison, WI: Medical Physics Pub.; 1997.
• Mundt AJ, Roeske JB. Intensity modulated radiation therapy: A clinical perspective. Decker; 2005.
• NCRP National Council on Radiation Protection and Measurements Report No. 151. Structural shielding design and evaluation for megavoltage X- and gamma-ray radiotherapy facilities. Washington, DC: Institute of Physics Pub. 2005.
• Palta J, Mackie TRI. Intensity-modulated radiation therapy: The state of the art (Medical Physics Monograph #29). Madison, WI: Medical Physics Pub. 2003.
• Sprawls P. Magnetic resonance imaging: Principles, methods, and techniques. Madison, WI: Medical Physics Publishing Corp.; 2007.
• Thomadsen B, editor. Categorical course in brachytherapy physics. Oak Brook, IL: RSNA Publications; 1997.
• Thomadsen B, Rivard M, Butler W. Brachytherapy physics. 2nd Ed. Madison, WI: Medical Physics Pub.; 2005.
• Van Dyk J. The modern technology of radiation oncology. Madison, WI: Medical Physics Publishing; 2005.

City of Hope

Radiation Oncology Residency Program
Radiation Physics Lecture Series
ALL YEARS

Week	Subject matter	Teaching hours	Text	Physicist
1	Atomic and nuclear structure (including decay and radioactivity)	*2*	Khan, Ch. 1; Cherry, Ch. 2	C Han
2				C Han
3	Production of X-rays, photons, and electrons	2	Khan, Ch. 3	C Han
4				C Han
5	Treatment machines and generators; simulators (including CT)	3	Khan, Ch. 4 & 7; Metcalfe, Ch. 1; Van Dyk, Ch. 4–7	C Staud
5				C Staud
6				C Staud
7	Radiation interactions	2	Khan, Ch. 5; Metcalfe, Ch. 2; Cherry, Ch. 6; Hendee, Ch. 3	S Zhang
8				S Zhang
9	Radiation beam quality and dose	2	Khan, Ch. 7	S Zhang
10				S Zhang
11	Radiation measurement and calibration	3	Khan, Ch. 8	S Zhang
12				S Zhang
13				S Zhang
14	Photons and X-rays (including concepts, isodoses, MU, heterogeneities, field shaping, compensation, field matching, etc.)	6	Khan, Ch. 11–13; Metcalfe, Ch. 6	S Zhang
15				S Zhang
16				S Zhang
17				S Zhang
18				S Zhang
19				S Zhang

Week	Subject matter	Teaching hours	Text	Physicist
20	Electrons (including concepts, isodoses, MU, heterogeneities, field shaping, field matching, etc.)	*2*	Khan, Ch. 14; AAPM TG-25/70	C Staud
21				C Staud
22	External beam quality assurance	2	Khan, Ch. 17; AAPM TG-40	S Sun
23				S Sun
24	Informatics (DICOM, networking, PACS, data management)	1	astro.org/pdf/Research/IHE-RO.pdf; DICOM Standard Protocols	C Han
25	Radiation protection and shielding	2	Khan, Ch. 16; NCRP 151; Thomadsen, Ch. 10; McGinley (entire book)	S Sun
26				S Sun
27	Imaging for radiation oncology	3	Van Dyk, Ch. 2; Curry, Ch. 10–16, 19, 20, 22–24; Sprawls (entire book)	S Sun
28				S Sun
29				S Sun
30	3D-CRT, including ICRU concepts and beam-related biology	3	Khan & Potish, Ch. 4, 10, 18–28; ICRU-62	A Liu
31				A Liu
32				A Liu
33	Assessment of patient setup and treatment (including EPID, immobilization, etc.)	2	Van Dyk, Ch. 7; Bentel (entire book)	A Liu
34				A Liu
35	IMRT	3	Khan, Ch. 20; Palta/Mackie (entire book); Roeske/Mundt(entire book)	C Han
36				C Han
37				C Han

Week	Subject matter	Teaching hours	Text	Physicist
38	Special procedures (including radiosurgery, TBI, etc.)	3	Khan, Ch. 21, 18; Metcalfe, Ch. 5	C Staud
39				C Staud
40				C Staud
41	Brachytherapy (including intracavitary, interstitial, HDR, etc.)	*4*	Khan, Ch. 22–24; Thomadsen, Ch. 28–33, 41–49	T Schultheiss
42				T Schultheiss
43				T Schultheiss
44				T Schultheiss
45	Radiopharmaceutical physics and dosimetry	1	Khan, Ch. 15; Cherry, Ch. 5; Thomadsen, Ch. 11	A Liu
46	Particle therapy	1	Van Dyk, Ch. 20, 21	S Sun

2.7.6 Clinical Investigation Training Program Years 3 & 4- PGY-4 & PGY-5)

City of Hope

Clinical Investigation Training Program

	FALL	WINTER	SPRING	SUMMER
Core Curriculum	Methods in Observational Studies	Methods in Therapeutic Studies	Responsible Conduct of Study Design & Development	Scientific Writing & Evaluation

All courses are taught on Tuesdays from 5 to 6:30 p.m. in Platt 3 unless otherwise specified

CORE CURRICULUM:

The City of Hope Clinical Investigation Training Program (CITP) is a yearlong (4 quarter) curriculum designed to present the principles and practices used in the planning and execution of patient-oriented research including principles and methods in biostatistics, clinical epidemiology, clinical trial development, ethics, and good clinical practices of research. Each course can be taken in any order throughout the year. A certificate in Clinical Research is awarded to scholars successfully completing the Program.

Methodology in Observational Studies CI310 (FALL) - Design & Analysis of Observational Research - provides an overview of epidemiologic methods and their application to observational studies of disease and clinical outcomes. Scholars will enhance their ability to critically evaluate reported observational studies, including the adequacy of study design and the validity of stated conclusions. Scholars will also acquire the necessary conceptual framework to plan an observational study in collaboration with a statistical co-investigator.

Course Coordinators: Lennie Wong Ph.D. & Jonathan Espenschied, M.D.

Methodology in Therapeutic Studies CI320 (WINTER) - Design & Analysis of Intervention Research – provides an introduction to the concepts, theory, and application of interventional clinical trials and the statistics commonly used to analyze these studies. This is a Biostatistics/Clinical Investigation course that builds on a basic background of biostatistics, and introductory clinical trials. This course will explore the fundamentals of clinical investigation including: the definition of study goals, application and theory, objectives and outcomes, trial design and outcome monitoring, and result reporting, as well as a brief review of the underlying statistical methods.

Course Coordinators: Suzette Blanchard, Ph.D. & Jonathan Espenschied, M.D.

Responsible Conduct of Study Design & Development CI330 (SPRING) - Methodology in Clinical Investigation - provides a review of the clinical study process as well as continued instruction in trial development. Scholars will experience the "Nuts and Bolts" of a clinical study, from submission, to committee review, activation, and monitoring. Each scholar will actively participate in the submission of a "mock" clinical protocol. The proper design, conduct, and analysis of a clinical study are imperative to the well being of each participant as well as the integrity of the study results. Responsible conduct of research and good clinical practice will be emphasized throughout the course as they are cornerstones to an effective and efficient clinical study.

Course Coordinator: Jonathan Espenschied, M.D.

Scientific Writing & Evaluation CI350/1 (SUMMER) - This course will alternate yearly, and address topics in protocol writing and development (CI350) and career development awards (CI351). The emphasis of CI350 will be on developing a complete and feasible protocol leading to an efficient, effective clinical study. The classes will combine didactic instruction with small group discussions and "hands-on" learning. The emphasis of CI351 will be on early career advancement, competitive grant writing, and literature evaluation. This course will focus on developing a fundable, career development award suitable for peer review. Evaluations will be through oral presentations and a completed career development application.

Course Coordinators: Jonathan Espenschied, M.D., Karen Reckamp, M.D. & Keely Walker, Ph.D.

2009-2010 CURRICULUM SCHEDULE
Fall: Sept 15th – Dec 1st
Winter: Jan 5th – March 23rd
Spring: April 13th – June 22nd
Summer: June 29th – Aug. 31st

2010-2011 CURRICULUM SCHEDULE
Fall: Sept 14th – Nov 30th
Winter: Jan 4th – March 22nd
Spring: April 5th – June 14th
Summer: June 28th – Aug 30th

Methodology in Observational Studies – CI310
Course Syllabus

Methodology in Observational Studies — *Design & Analysis* —This course will provide an overview of epidemiologic methods and their application to observational studies. Scholars will develop/enhance their ability to evaluate observational studies, including the adequacy of study design and the validity of stated conclusions. Scholars will also acquire the necessary conceptual framework to plan an observational study in collaboration with a statistical co-investigator.

Lectures: Tuesdays, 5:00 – 6:30 PM
Classes will be held in Platt 3.

Course Coordinators: Lennie Wong, Ph.D., Jonathan Espenschied, M.D.

Course Objectives:
Upon completion of this course, scholars should be able to:
- Understand and report on observational study results;
- Critically evaluate protocols for and publications of observational studies;
- Design/Plan an observational study collaboratively.

Course Text & Readings:
- ***Epidemiology**, (4th Edition)*. Leon Gordis. Philadelphia: Saunders. Elsevier Inc. (2009).
- Required and optional readings may also be posted on the course intranet site.

Scholar Responsibilities:
- **Course lectures are mandatory and an 80% attendance record is <u>required to pass</u> (attend at least 10 of 12 lectures).** When it is inevitable to miss a class, such as clinical responsibilities, illness, or vacation, it is important to let the CITP Coordinator or Director know.
- **Exams:** There will be two "Take-Home" exams, a Midterm Exam which will cover material presented in weeks 1-6, and a Final Exam which will cover material presented in weeks 7-12. You will have two weeks to complete (<u>on your own</u>) and turn in each exam.
- **Article Critique:** Each scholar will receive the journal article to critique on the first day of class. Directions, as well as the article will also be posted on the Course intranet site. Your **<u>original</u>** article critique will be due at the same time as your take home final exam.

Due	Assignment
Week 6	Take Home Midterm Exam
Week 12	Take Home Final Exam
Week 12	Article Critique

Course Assessment:
A passing score of 80% or better in attendance, cumulative exam scores, and the journal article critique are all needed to pass and receive completion credit for the course.

CI310 — Methodology in Observational Studies (Design & Analysis)

Week	Lecturer & Topics*
1	Joycelynne Palmer, Ph.D.
	Introduction to Epidemiology, Morbidity Chapters 1-3, & 6 **Scientific article for student critique: Due with Final Exam**
2	Lennie Wong, Ph.D.
	Cohort Studies Chapter 9
3	Katherine Henderson, Ph.D.
	Designing Case-Control and Other Studies Chapter 10
4	Lennie Wong, Ph.D.
	Mortality; Estimating Risk: Is there an association? Chapters 4 & 11
5	Saro Armenian, D.O., M.P.H.
	Attributable Risk and Disease Prevention; Review: Cohort & Case-Control Studies Chapters 12 & 13
6	Saro Armenian, D.O., M.P.H.
	Methods in Assessment of Diagnostic and Screening Tests Chapter 5 **Midterm Take Home Exam: Due by 5:00PM**
7	Guest Speaker - Leslie Bernstein, Ph.D.
	Practical Aspects of Conducting Epidemiologic Studies – PI Leslie Bernstein, Ph.D.
8	Can-Lan Sun, M.D., Ph.D.
Midterm Due	From Association to Causation Chapter 14
9	Joycelynne Palmer, Ph.D.
	Cautions in Causal Inference: Bias, Confounding, and Interaction Chapter 15
10	Susan Neuhausen, Ph.D.
	Introduction to Genetic Epidemiology Chapter 16 (Optional)
11	Sophia Wang, Ph.D.
	Molecular Epidemiology & Use of Biomarkers In Population Studies
12	Can-Lan Sun, M.D., Ph.D.
	Evaluation of Health Services and Screening Programs using Epidemiology Chapters 17 & 18 **Final Take Home Exam: Due with Article Critique in 2 weeks by 5:00PM**

*** Lectures are Tuesdays from 5:00–6:30PM in Platt 3.**

Methodology in Therapeutic Studies – CI320
Course Syllabus

Methodology in Therapeutic Studies – *Design and Reporting of Clinical Intervention Research*

This 12 week course explores the fundamentals of clinical investigation including: the definition of study goals, objectives and outcomes, trial design and outcome monitoring, and result reporting, as well as a brief review of the underlying statistical methods.

Lectures: Tuesdays, 5:00 – 6:30 PM

Classes will be held in Platt 3 which will include some supervised computer lab time

Course Coordinators: Suzette Blanchard, Ph.D. and Jonathan Espenschied, M.D.

Course Objectives: Upon completion of this course, scholars should be able to:

- Demonstrate an understanding of the goals, the underlying statistical concepts, and the role of pharmacokinetics in clinical trial design.
- Define the objectives and outcomes of a clinical trial.
- Identify appropriate study monitoring for a clinical trial.
- Read and report on clinical trial results in the literature

Course Text & Readings:

- *Clinical Trials in Oncology (2nd Edition).* Green, Benedetti, & Crowley. Chapman & Hall/CRC. (2003).
- *How to Report Statistics in Medicine: annotated guidelines for Authors, Editors and Reviewers.* Lang & Secic. American College of Physicians. (2006).
- Other Required Readings listed in the syllabus will be posted on HopeBoard

Pedagogical Responsibilities: To receive completion credit for the course scholars will be required to attend 10 of 12 lectures and complete all 5 homework assignments to a satisfactory level. Homework must be turned in on time otherwise an email stating the reason the homework is late and when it will come in must be sent to Dr. Blanchard (sblanchard@coh.org) on or before the day the homework is due.

Date Due	Homework
Week 3	Hypothesis Testing and Classical Design
Week 6	Design a Dose Finding Trial (one page)
Week 8	Design an Activity Trial (one page)
Week 10	Reporting Results
Week 12	Suzette's Clinical Trials Cheat Sheet – Power Standards

CI320 - Methodology in Therapeutic Studies (Design and Reporting)	
Week	**Lecturer & Topic***
1	Joanne Mortimer M.D.
	Importance of Clinical Investigation – An FDA insider's view (GB&C Ch 1)
2	Suzette Blanchard, Ph.D.
	Hypothesis Testing & Classical Design (lecture & lab) (Chang, 2008 Ch 2.1-2.3; GB&C Ch 2 ; L&S Ch. 2, 3, 4, 5, & 9)
3	Suzette Blanchard, Ph.D.
	Adaptive Design, Early Stopping for Futility/Efficacy (lecture & lab) (Chang, 2008 Ch 2.4)
4	Jeff Longmate Ph.D.
	Randomization vs Observation (Freedman 2005)
5	Suzette Blanchard Ph.D.
	Phase 0 & Phase I Oncology Designs (lecture & lab) (Kummer et al. 2008 ; Kummar, et al. 2009 ; Tourneau , Lee & Siu, 2009; BG&C Ch 3.3)
6	Suzette Blanchard Ph.D.
	Phase II & Phase III Oncology Designs (lecture & lab) (GB&C Ch 3.4, 3.5, 4 ; Weiand, 2005; Dark et al, 2005; Stanley, 2007)
7	Dajun Qian Ph.D.
	Treatment Allocation (GB&C, Ch 3.5.1)
8	Paul Frankel Ph.D.
	Treatment Monitoring (GB&C Ch 5 & 6)
9	Suzette Blanchard Ph.D.
	Reporting of Results (Revised Consort Statement 2001; Cannistra, 2009 ; GB&C Ch 7 ; L&S Ch 13 ; O'Brien et 2003)
10	Tim Synold Pharm. D.
	Pharmacokinetics
11	David Smith, Ph.D.
	Correlative Studies/Biomarkers (GB&C Ch 9)
12	Susan Groshen Ph.D., Department of Preventive Medicine, Keck School of Medicine, USC
	Designs for Targeted Therapies (Rubinstein et al. 2009; Hoering, LeBlanc & Crowley, 2008)

*** Lectures are Tuesdays from 5:00–6:30PM in Platt 3.**

Responsible Conduct of Study Design & Development – CI330
Course Syllabus

Responsible Conduct of Study Design & Development - Methodology in Clinical Investigation - This course provides a review of the clinical study process as well as continued instruction in trial development. Scholars will experience the "Nuts and Bolts" of a clinical study, from submission, to committee review, activation, and monitoring, as well as the responsible conduct of human subject research. Each scholar will actively participate in the submission of a "mock" clinical protocol. Responsible conduct, ethics, and good clinical practice are emphasized throughout the course as they are cornerstones to an effective and efficient clinical study and human subject research.

Lectures: Tuesdays, 5:00 – 6:30 PM
Classes will be held in the Platt 3 Conference Room unless otherwise specified in the schedule.

Course Coordinator:
Jonathan Espenschied, M.D.

Course Objectives:
Upon completion of this course, scholars should be able to:

- Emphasize the importance of sound clinical studies;
- Understand the submission, review, activation, monitoring and regulatory process of a clinical study;
- Recognize the roles and responsibilities of the Protocol Management Team;
- Understand the importance of Good Clinical Practice and Ethics in clinical research.

Assessment:
This course will mirror the protocol submission, review, activation, and closure process. Each scholar will be listed as an Investigator during this process, and he/she will be acting as the Principle Investigator (PI) for a "mock" clinical protocol submission. Scholars are **required to submit, monitor, and oversee all protocol communication via iRIS**. Comments and responses will be reviewed and discussed in class.

- All responses to an iRIS notification regarding this study must be made before the following Tuesday lecture. **Scholars must reply to all iRIS notifications within that time frame to obtain credit for the course.**
- Relevant journal articles will be posted on the HopeBoard course website. Each posted article will be discussed during class after each lecture.
- Scholars must complete the COH **Clinical Research Certification in Therapeutic Studies** to participate in this course. If you are not certified within 2 weeks of the start date, you will not be able to continue as a registered scholar.

Pedagogical Responsibilities:
Course lectures are mandatory and attending a minimum of 8 of the 10 lectures is required to pass. When it is inevitable to miss a class, such as clinical responsibilities, illness, or vacation, it is important to let the CITP Coordinator or Director know.

- **You must complete all aspects of the curriculum including attendance to receive credit for the course.**

CI330 — Responsible Conduct of Study Design & Development	
Week	**Instructor & Topic**
1	Jonathan Espenschied M.D., Director GME & Clinical Training
	- Course Introduction; The Protocol; Roles and Responsibilities of the PMT; Protocol development and activation overview - Clinical Research Certification, Clinical Research Handbook - Caroline Song R.N., M.S.N., MS. - How to use iRIS
2	Jonathan Espenschied M.D.
	- Ethics, Responsible Conduct of Research: **Article Review & Discussion** - Protocol Introduction & Design
3	Jeff Longmate, Ph.D., Director Biostatistics
	- Communicating with the Statistician - Typical Statistical Designs for a Phase 2 Trial - Statistical Design
4	Nancy Moldawer R.N.,M.S.N., Acting Dir. CTO, and Sally Htoy, Pharm. D., IDS
	- The Research Subject (eligibility, inclusion/exclusion criteria) - Investigational Drug Services (IDS) and Standard Research Orders (SROs)
5	Leslie Popplewell M.D., Chair DSMB
	- Data and Safety Monitoring Board (DSMB) Role, Review, Data and Safety Monitoring - The DSM Plan
6	Warren Chow M.D., Chair CPRMC/PRMC
Response Due	- Cancer Protocol Review and Monitoring Committee (CPRMC) Role, Review, & Approval Process - Study Closure Rules
7	Eileen Smith M.D., Chair IRB
Response Due	- Institutional Review Board (IRB) Role, Review, and Approval Processes - Informed Consent and Assent - **Article Review & Discussion**
8	Suenell Broyer, Director OIDRA
Response Due	- Office of IND Development and Regulatory Affairs (OIDRA), the IND and the FDA
9	Arlene Carroll, Director OCRQA
	- Office of Clinical Research Quality Assurance (OCRQA) - Protocol Compliance, Monitoring, Adverse Events and Deviations
10	Jonathan Espenschied M.D.
Response Due	- Study Conclusion, Closure, & Data Presentation - **Article Review & Discussion**

***Lectures will be held Tuesdays at 5:00-6:30 in Platt 3 unless otherwise specified.**

Scientific Writing & Evaluation – CI350

Course Syllabus

Summer

Scientific Writing & Evaluation - Communication and writing are essential skills for individuals interested in a career in clinical investigation. This course will address topics in protocol writing and development. The emphasis is on developing a complete protocol which will lead to an efficient, effective clinical study. The class will combine didactic instruction with small group discussions and "hands-on" learning. Evaluations will be through oral presentations and a completed protocol document.

Pre-requisites: You must have competed at least 2 CITP courses, or similar, prior to enrolling in CI350.

Lectures: Tuesdays, 5:00 – 6:30 PM
Classes will be held in the Platt 3 Conference Room unless otherwise specified in the schedule.

Course Coordinators:
Jonathan Espenschied, M.D., Karen Reckamp, M.D., Keely Walker, Ph.D.

Course Objectives:
The course incorporates lectures, didactics, and small group discussions in order to:

- Emphasize the components and understand the requirements of a clinical protocol.
- Have "hands-on" experience in the writing of a protocol.
- Understand the importance of collaboration, preparation, and organization in protocol development.
- Foster active learning in the classroom and demonstrate knowledge of clinical protocol writing methods by discussing specific design and/or analysis.

Pedagogical Responsibilities:
Course lectures are mandatory and a 90% attendance record is required to pass. Because of the short 10 week course and the small group collaboration, **you are only permitted to miss 1 of 10 classes**. When it is inevitable to miss a class, such as clinical responsibilities, illness, or vacation, it is important to let your work group, and the CITP Coordinator or Director know.

Assessment:
Scholars will be divided into small groups. Throughout the quarter, each group is expected to design, develop, and create a clinical protocol. Each individual group will submit and present their protocol to the Review Committee at the end of the quarter.

In class assessment (40%): class participation and completion of assignments. **Scholars must submit a copy of their assignment via HopeBoard 1 day before it is to be reviewed in class to give the coordinators time for review.** Scholars must also bring a copy to class for development and discussion.

The final presentation and protocol (60%): Groups are required to give a 10-15 minute presentation with a 5 minute question and answer session. A copy of the protocol document is due on the day of the group presentation.

Grading: Pass ≥ 80% No Pass < 80%

- **You must complete all aspects of the curriculum with a passing score of 80% to receive credit.**

CI350 - Scientific Writing and Evaluation

Week	Lecturer & Lecture topic
1	John Zaia, M.D.
	Lecture – The Clinical Protocol; "I have a great idea, now how do I plan the study?" (LOI development and Background; Protocol Template examples) Small Working Groups – assignment and organization of groups, start developing ideas
2	Warren Chow, M.D. and Smita Bhatia, M.D., M.P.H.
	Lecture – Developing a Study Idea and Objectives and Clinical Literature Evaluation in Clinical Trials and Population /Epidemiology studies Small Working Groups – work within groups with supervisor to clarify objectives and start on LOI
3	Keely Walker, Ph.D., Karen Reckamp, M.D., Jonathan Espenschied, M.D.
LOI Due	Small Working Groups – Continue work on LOI; Develop the Design and Schema of your clinical trial, start thinking about statistics, **LOI due to instructors before class**
4	Jeff Longmate, Ph.D., Dajun Qian, Ph.D. and Min Li, Ph.D.
Design & Background Due	"Bring Your Statistician to Work Day" Small Working Groups – **Bring draft of Design and Background section** Work with statisticians to develop the statistical section of your protocol; Each group will have a statistician to assist with writing and developing your statistical approach **Design & Background sections**
5	Keely Walker, Ph.D., Karen Reckamp, M.D., Jonathan Espenschied, M.D.
Bring Design & Background Draft	Small Working Groups – Each group will present their idea and LOI **Bring a draft of your pre-written LOI, Design & Background sections, and Objectives**
6	Nancy Moldawer, R.N., M.S.N.
	Lecture – Protocol Budget Small Working Groups – Develop budget for the protocol (budget template), Final touches on your protocol and presentation
7	Paul Frankel, Ph.D. & Tim Synold, Pharm. D.
	Lecture – Biomarkers & Adaptive Designs; Pharmacology and the Protocol (Correlative studies, PK/PD, Analysis, Drug/Agent Information) Small Working Groups –Develop Pharmacology section of the Protocol
8	John Zaia, M.D.
Abstract, Schema, & Objectives	Lecture – Human Subjects Protection, Consent, Adverse Events, and Unanticipated Problems Small Working Groups – Develop the informed consent; complete final edits
9	Keely Walker, Ph.D., Karen Reckamp, M.D., Jonathan Espenschied, M.D.
	Small Working Groups – Protocol Editing & Preparation for Oral presentation
10	Review Committee
Protocol Due	Final Assessment: **Oral presentations of protocols to the Review Committee** SUBMIT CLINICAL PROTOCOL to Review Committee

Electronic Copy of each assignment Draft is **DUE one day before class - Lectures are Tuesdays at 5:00-6:30PM in Platt 3**

Responsible Conduct of Research – CIO101
Online Course Syllabus

Responsible Conduct of Research - This online course will discuss responsible conduct of research and emphasize the practice of high standards of ethics and accountability in planning, implementation, behavior and information dissemination in human subject research. The course will provide an overview of data management, record keeping, and intellectual property as well as responsible authorship and responsible review of scientific publications. A safe and ethical work environment will foster the values of a shared responsible community.

Lectures: NA
This is an online course and can be taken at any time during the first year curriculum.

Course Coordinator:
Clinical Research Training Office, ext. 60504

Course Objectives:
Upon completion of these training modules the scholar will have a better understanding of:
- Research misconduct
- Data acquisition and management
- Responsible authorship and peer review
- Collaborative research
- Understand the peer reviewer, and what is expected
- Describe conflict of interests

Pedagogical Responsibilities:
- **This online course is required for satisfactory completion of year 1.**
- **At least a 90% average on all quizzes is required to pass.**

CIO101 — Responsible Conduct of Research	
Module	Topic
1	Human Subjects
2	Publication Practices and Responsible Authorship
3	Mentor and Trainee Responsibilities
4	Data Management Case Studies
5	The Grateful Author
6	Research Misconduct
7	In the Field, No One Will Know
8	Peer Review
9	Plagiarism
10	Conflicts of Interest and Commitment
11	Collaborative Research
12	The Case of the Entrepreneurial Clinician
13	The Mary Smith Case - Conflicted Consultant
14	A Possible Co-Author
15	Supporting Documentation
16	Truth or Consequences

Good Clinical Practice – CIO110
Online Course Syllabus

Good Clinical Practice - This online course will discuss ethical and scientific standard for conducting human subject research. The rights, well being, and safety of all participants and the data collected during the study should be credible, accurate, and ethical. The FDA policies, International Good Clinical Practice harmonization, conduct and expectations of the investigator and ethics will be discussed during this training. Clinical and scientific vignettes, and real life scenarios will be presented in each of these online modules discussing ethics, decision making, and human subject requirements as they relate to GCP.

Lectures: N/A

This is an online course and can be taken at any time

Course Coordinator:

Clinical Research Training Office, ext. 60504

Course Objectives:

Upon completion of these training modules the scholar will have a better understanding of:

- The good clinical practices involved with human subject research
- International Conference on Harmonization
- Investigator obligations and conduct
- FDA regulations
- Informed Consent
- Detection and evaluation of adverse events and serious adverse events

Pedagogical Responsibilities:

- **This online course is required for satisfactory completion of year 1.**
- **At least a 90% average on all quizzes is required to pass.**

CIO101 — Good Clinical Practice	
Module	Lecturer & Lecture topic
1	GCP Introduction
2	Overview of New Drug Development
3	International Conference on Harmonization (ICH) - Part 1
4	Investigator Obligations in FDA-Regulated Clinical Research
5	FDA Regulated Research and ICH
6	International Conference on Harmonization - Part 2
7	Conducting Investigator-Initiated Studies According to FDA Regulations and Good Clinical Practices
8	Investigator Obligations in FDA-Regulated Clinical Research
9	Managing Investigational Agents According to GCP Requirements
10	Conducting Clinical Trials of Medical Devices
11	Informed Consent : An Ongoing Process
12	Detection and Evaluation of Adverse Events
13	Reporting Serious Adverse Events
14	Monitoring of Clinical Trials by Industry Sponsors
15	Audits and Inspections in Clinical Trial

3.0 Evaluation & Educational Resource Tools

3.1 Evaluation Education Material

A resident will receive a formal, written evaluation of his or her performance for each 6 month period of participation in the Program. These evaluations will become part of the resident's individual folder as confidentially maintained in the offices of the Department of Radiation Oncology, and the folder is accessible to the resident for review upon written request. In addition, the resident and the Training Program Director will receive photocopies of these performance evaluations. The Training Program Director is expected to meet at least twice a year with each resident to review his or her individual progress toward meeting the goals of the Residency Training Program. A resident may dispute the content of a written evaluation by submitting a written response to the attention of the Residency Training Program Director; this response will be added to the resident's individual folder.. Additionally, the Program and Program Faculty will be anonymously evaluated by the resident, with evaluations submitted directly to the GME office.

Educational resource material is presented to department faculty for instruction on providing instructive feedback.

3.2 Faculty Evaluation of Resident

Each resident will be evaluated at end of each rotation by the attending radiation oncologist. Evaluations will follow criteria outlined by the Accreditation Committee of Graduate Medical Education (ACGME) and will consist of objective assessments of competence in patient care, medical knowledge, practice based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practices. Goals and objectives will be distributed prior to the start of each rotation.

Additionally, the attendings will review the goals and objectives (based on level of training) of the upcoming rotation with the resident who will be starting the rotation.

Below is a sample of this assessment tool:

CLINICAL ROTATION EVALUATION - COMPLETED BY THE ATTENDING PHYSICIAN

[Subject Name]
[Subject Status]
[Evaluation Dates]
[Subject Rotation]

Evaluator
[Evaluator Name]
[Evaluator Status]

Completion of this Global Assessment greatly assists each resident in clearly documenting their overall status and provides them with very useful feedback future improvements.

Please evaluate using the rating criteria below:
'Requires Remediation' indicates that the resident would benefit from more intensive education and/or practice.
'Requires Close/Direct Supervision' is the level at which most residents begin their training.
'Requires Distant/Indirect Supervision'is where most residents practice inside the scope of residency with the attending supervising their work.
'Ready for Unsupervised Practice' is the level at which a resident is able to perform this practice objective independently
'Attending level' Residents at this level should be able to instruct and role model this practice objective.

PATIENT CARE

1) Information gathering. Obtains complete & accurate patient histories; performs thorough & appropriate physical exams; obtains enough information to include or exclude likely, significant problems

Requires Remediation	Requires Close/Direct Supervision	Requires Distant/Indirect Supervision	Ready for Unsupervised Practice	Attending Level
O	O	O	O	O

2) Treatment process. Able to plan and implement both external beam & brachytherapy treatments

Requires Remediation	Requires Close/Direct Supervision	Requires Distant/Indirect Supervision	Ready for Unsupervised Practice	Attending Level
O	O	O	O	O

3) Patient follow-up. Plans and executes appropriate follow –up plan; coordinates care with other health care providers; responds

3.3 Resident Evaluation of Faculty

Residents will have the opportunity to anonymously evaluate all clinical faculty on an annual basis. Each resident will be instructed to send completed evaluations directly to the GME Office for review. The aggregate of these results will be discussed with the Department Chairman and Program Director.

Below is a sample of this evaluation tool:

FACULTY EVALUATION COMPLETED BY THE TRAINEE

[Subject Name]
[Subject Status]
[Evaluation Dates]
[Subject Rotation]

Evaluator
[Evaluator Name]
[Evaluator Status]

This information is held in strict confidence and should be forwarded directly to the GME office. A summation of the information will be transmitted to the Program Director to assist the Program in their effort of perpetual improvement.

GENERAL

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1)	Teaches technical skills pertaining to your specialty or sub-specialty	○	○	○	○	○
2)	Teaches knowledge about and use of current literature	○	○	○	○	○
3)	Displays ability to work, teach and mentor	○	○	○	○	○
4)	Is available for additional teaching when requested by Trainee	○	○	○	○	○
5)	Is available, approachable, and receptive to Trainees questions	○	○	○	○	○
6)	Inspires confidence in Trainee	○	○	○	○	○
7)	Effectively communicates his/her expectations to Trainee	○	○	○	○	○

3.4 Resident and Faculty Evaluation of the Program

Residents and faculty will have an opportunity to anonymously evaluate the residency program annually. All evaluations will be sent directly to the GME office for review. This evaluation will be used as a feedback to continuously improve the quality of the program. Results of these evaluations will be discussed with the Department Chairman and Program Director, with an update at the August, Department Staff.

3.5 360° Evaluation

This type of evaluation is meant to assess the resident competency in professionalism and communication. Residents will be evaluated semiannually by representatives from each of the following; therapist, physicist, dosimetrists, nurses, and Administrative Director.

3.6 Resident Semiannual Evaluation

The program director will meet semiannually (January and June) with each resident to discuss and document the resident's performance and progress and to review the resident-patient log. Prior to this a self-assessment will be completed by each resident. Evaluations and any Direct Observations will be reviewed. Areas for improvement will be identified and a plan of action documented. During the semiannual evaluation test scores from medical physics, radiobiology, and in-service examinations will be reviewed.

3.7 Clinical Competency Committee (CCC) and Program Evaluation Committee (PEC)

Information regarding these committees can be found in the Appendix.

4.0 Standard Departmental Policy and Operating Procedures

This section of the manual details department -specific patient care responsibilities with respect to the residency program. City of Hope policies can be found on the City of Hope intranet.

4.1 General Patient Care

Residents will be assigned to physicians during each 3 month rotation to meet disease specific objectives.

4.1.1 Consultations Visits

Residents will see inpatient and outpatient consults assigned to their designated attending physician. The resident should review all pertinent notes, reports and diagnostic data during the consultation. The resident will obtain the patient's history and present the patient's history and physical and diagnostic work-up thus far to the attending depending on level. Residents will be asked to recommend a treatment plan for the patient if appropriate. The resident will then assume appropriate responsibility for the patient's management after consultation according to expectations according to PGY level as detailed in the goals and objectives. Consultation notes should be entered when appropriate EMR on the day of the consultation. Consultation notes should be concise but informative.

It is important that they include:

1. Encounter date
2. Referring Physician(s)
3. Inpatient or outpatient status
4. Reason for consultation

Inpatient consultation recommendations should be directly communicated with service requesting the consultation. Attending physicians will be responsible for reviewing the note to be sure that it is accurate and for documenting their own note/co-signing in accordance with departmental policy.

4.1.2 Follow Up Visits

Residents will be responsible for dictating of follow-up notes on the patients that they saw and examined. If the attending primarily saw and examined the patient, they are responsible for the documentation. Attending physicians will be responsible for reviewing the resident note to be sure that it is accurate and for documenting their own note/co-signing in accordance with departmental policy.

4.1.3 On Treatment Visits

Each attending physician has been assigned a primary day to see on-treatment patients. This day generally coincides with their Early/Late day assignment –on which day they are responsible for proving physician coverage for the entire treatment day. Residents will be responsible for dictating the progress note on the patients they saw and examined. Acute side effects should be graded according to RTOG criteria. Attending physicians will be responsible for reviewing the note to be sure that it is accurate and for documenting their own note/co-signing in accordance with departmental policy.

4.1.4 Physical Examination

When examining a patient of the opposite gender, a nurse or another attending must be present. This applies to initial consultations, weekly examinations during treatment, and follow up examination.

4.1.5 Informed Consent

Informed consent for treatment with external beam radiation therapy or brachytherapy should be obtained by the resident in accordance with their PGY level as documented in the goals and objectives. This should detail the acute and chronic side effects and possible complications. The attending physician is responsible for reviewing and signing the consent form with the patient. All patients MUST have the appropriate informed consent forms signed BEFORE the initiation of and up to 30 days prior to therapy. A new consent is required for each treatment course. In-house or multi-institutional protocols require additional consent forms. The research coordinator should be present and provide the appropriate consent form for all protocol patients.

4.1.6 Simulations

The department specific electronic Simulation Request form found in Mosiaq must be completed in order to initiate the scheduling process and must be electronically signed by the attending physician. Front desk staff will work with the resident and attending on coordination of all planning appointments. Simulation staff will confirm that the signed informed consent, along with any required lab results are available at the time of simulation. Should it be found that these are missing, the respective resident/attending physician will be informed and arrangements will have to be made for consent to be taken at the time of the simulation (this should be avoided, if at all possible to reduce delays). Simulation techniques/setup/treatment planning devices should be discussed with the attending physician prior to simulation. The resident will be responsible for aspects of the simulation according to PGY level. The resident should be available for the simulation, particularly to do special procedures, such as catheterization, rectal marker placement/administration. Patients should be instructed to contact the front desk staff for all questions regarding the scheduling of these appointments.

4.1.7 Treatment Planning

The resident is responsible for discussing with the attending physician in detail the treatment field arrangement and prescribed dose to be planning. The resident is then expected to communicate directly with the physics staff these discussed parameters. The resident should be available for review of the final treatment plan. PGY 3-5 will be paged when treatment plan is ready and they are responsible for an initial review of the plan. Major changes to the plan should not be made without attending physician input.

4.1. 8 End of Treatment Summary

Residents are only responsible for summaries on patients who completed treatment while the resident was on service and with whom they were familiar. If the resident was not familiar with the patient, they should inform the attending who will then be responsible for the completion note. The dictated completion notes should be succinct and should include, 1) diagnosis and stage of the cancer, 2) treatment recommendation including specific

chemotherapy agents, where applicable, 3) radiotherapy treatment delivered including start and end dates, 4) CTC –RTOG based acute toxicity, 5) disposition. If the resident was out (but on the service and familiar with the patients) while the patient completed treatment, they are responsible for the completion of treatment note. Once the dictated report is reviewed by the resident, it is electronically forwarded to the attending physician for review and approval.

4.1.9 Port Film Review

Digital port films should be reviewed daily with attending and signed by resident and attending at the end of each day. Any adjustments should be clearly indicated on the digital file and electronically returned to the therapist for comments. Major changes are to be directly communicated with the therapists on the machine where the patient is being treated. If the respective attending physician is out of town, the resident must review port films of patients on service with the covering physician.

4.1.10 Follow-Up On Ordered Tests

Residents must follow up on any tests that are ordered by themselves or their attending. The resident must check all reports and correspondence in the EMR daily and respond appropriately. If any immediate action is required, the resident should consult with their attending or the radiation oncologist staffing the clinic. This may also include communication with the referring physician or service.

4.1.11 Requests for Medication Refills

Occasionally, the residents are called by patients or pharmacies requesting medication refills. The following procedure should be observed for all telephone prescriptions: Verify that the patient is indeed a radiation oncology patient and that the medication has been prescribed by a radiation oncologist. The electronic record should be reviewed to verify the following:

- Review the indications and contraindications for the medication.
- Obtain the name of the pharmacy and telephone number.
- Document this encounter, recording the medication, dose, and schedule, including the name, address, and telephone number of the pharmacy.

When a controlled drug is prescribed, the following information is required:

- patient's full name and date of birth
- actual date prescription is written
- drug name, strength, and quantity
- instructions for use of the drug
- signature
- Resident DEA/NPI number

4.1.12 Additional Documentation

Residents must always document in the EMR any additional interaction they have with or concerning the patient, such as examinations, discussions, telephone conversations, or new, renewal, or refill of prescriptions.

4.2 Brachytherapy Procedures

Brachytherapy procedures include HDR intracavitary, interstitial or permanent seed implants. During the PGY 2-3 years, it is expected that the resident will assist in the procedure. During the PGY 4-5 years it is expected that the attending physician will allow the residents to become more independent in performing procedures.

4.2.1 GYN Implants

It is expected that all residents will be familiar with the following areas regarding manual afterloading implants:

a. Patient surveys
b. Manual afterloading procedures
c. Completion of treatment documentation and forms

The radiation oncology resident is responsible for assisting with and/or performing the implant under the supervision of the staff. For LDR inpatient implants the resident is also responsible for writing the postoperative note and the postoperative orders in conjunction with gynecology oncology resident note. The postoperative orders must include the time for implant removal, along with the appropriate pager numbers and phone numbers for the resident and staff involved. The resident must round on the patient twice a day, in the morning and in the evening and write a note in the chart. The resident is to dictate an implant procedure note for the electronic record the procedure, operative findings, and applicators used. After the implant films have been taken and the staff has approved the final loadings, the resident should dictate a loading note for the radiation therapy chart. The resident is then responsible for loading the patient and for removing the implant at the appropriate time.

4.2.2 High Dose Rate (HDR) Implant Procedures For Gyn, Breast, Head & Neck, Sarcoma

The radiation oncology resident is responsible for assisting with, or performing, the implant under the guidance of the radiation oncology staff. The radiation oncology resident is responsible for dictating the implant procedure note. The implant note should include the procedure, operative findings, and applicators used. After the brachytherapy catheters are placed and confirmed under fluoroscopy in the operating room, CT scans are taken. The prescription should be determined by collaboration of the resident and the attending radiation oncologist, and the resident is responsible for completing the implant procedure note with the specifics of the prescription and the delivery of treatment. The resident should be fully acquainted with the mechanical aspects of the HDR machine, the dosimetry involved in the treatment calculation, and the treatment checks required before initiating treatment. The resident should also be familiar with the emergency procedures regarding HDR treatment. The resident should be present, along with the attending staff physician, physicist and therapist, at the time of the high dose rate treatment delivery.

4.2.3 I-125 Implants (Prostate Seed Implant)

The radiation oncology resident is responsible for assisting with or performing the implant under the supervision of the attending physician. At the completion of the implant procedure, the resident is required to dictate an Operative Report, detailing the procedure, along with documentation of the discussed radiation safety instructions given to the patient prior other procedure.

4.2.4 Resident Participation in Brachytherapy Procedures

If an attending physician is not assigned a resident to his or her clinical service, the program director and/or chief resident will make all efforts to have a resident participate in the brachytherapy procedure with the respective attending. This is in an effort to maximize case log and resident experience with brachytherapy procedures.

4.3 Resident Supervision

During rotations, resident will be given responsibilities that commensurate with the level of training and his/her proficiency in radiation oncology skills. The rotation-attending physician will primarily be responsible for supervision of the resident on their rotation, however if not available, the attending in the clinic that day will be the supervising attending. The following details reflect levels of supervision required by PGY year. (Please see following page)

RESIDENT SUPERVISION IN RADIATION ONCOLOGY

D= Indicates residents at this level of training may perform service only under **DIRECT** supervision of faculty

O= Indicates residents at this level of training may perform service only if faculty is **ON-SITE** and immediately available

I= Indicates resident at this level of training may perform service under **INDIRECT** supervision of faculty who may be contacted readily at all times

Service / Procedure	PGY2	PGY3	PGY4	PGY5
Basic CPR (BLS) until code team arrives (or ACLC with current ACLS certification)	I	I	I	I
Initial evaluation of patient illnesses, adverse reactions, or falls/injuries	I	I	I	I
Write prescriptions for medications related to radiotherapy management	I	I	I	I
Performing history and physical examination	I	I	I	I
Perform pelvic exam (chaperone required)	I	I	I	I
Perform breast exam (chaperone required)	I	I	I	I
Perform rectal exam (chaperone required)	I	I	I	I
Contouring treatment planning volumes	I	I	I	I
Approving treatment planning volumes	D	D	D	D
Participating in isodose optimization for approved volumes				
Approval of radiotherapy treatment plan	D	D	D	D
After-hours and/or emergency simulation and treatment initiation	D	D	D	D
Supervising after-hours or weekend treatments of established sites/fields	I	I	I	I
Review of port films	I	I	I	I
Injection of iodine contrast for radiographic studies	I	I	I	I
Injection of amifostine or other radioprotector	I	I	I	I
Insertion of IV catheters	I	I	I	I
Insertion of rectal markers, catheters or contrast	I	I	I	I
Insertion of vaginal markers	I	I	I	I
Placement of urinary catheters	I	I	I	I
Performance of retrograde urethrogram	I	I	I	I
Performing flexible fiber-optic nasopharyngolaryngoscopy	D	O	I	I
Placement of brachytherapy applicator in operating room	D	D	D	D
Placement of permanent seed implant	D	D	D	D
Examination under anesthesia	D	D	D	D
Evaluation for intraoperative brachytherapy catheter placement	D	D	D	D
Removal of interstitial needle brachytherapy device	D	O	I	I
Delivering HDR treatment	D	D	D	D
Removal of LDR radioactive sources	D	O	I	I
Removal of tandem and ovoid/ring applicator Removal of Mammosite applicator	D	O	I	I

5.0 City of Hope Employee Provided Programs

5.1 Employee Counseling Services

City of Hope offers to physicians and all other employees access to:

EMPLOYEE ASSISTANCE PROGRAM

With Horizon's EAP, employees can confidentially address and resolve their day-to-day personal and workplace challenges—resulting in a more focused and productive workforce. Your company has provided up to **6 face-to-face sessions per employee and household member per issue per year**.

Counseling services are provided at no charge to employees and their household members. Horizon offers short-term counseling on all aspects of life, including:

- Difficulties in Relationships
- Emotional/Psychological Issues
- Stress & Anxiety Issues with Work or Family
- Alcohol & Drug Abuse
- Personal & Life Improvement
- Legal or Financial Issues
- Depression
- Childcare Issues
- Eldercare Issues
- Grief Issues

Web link: http://www.coh.org/hr/benefits/Pages/eap.aspx

5.2 Service Excellence Program

5.2.1 iCARE Service Excellence Model

As a component of Accelerating Care Excellence (ACE), City of Hope's iCARE service excellence initiative was developed by the Patient Service Excellence Team to improve the outpatient experience and compassionate care delivery at City of Hope.

Everything we do, at the end of the day, is for our patients. Through our compassion and kindness, we can help our patients cope with an extremely difficult time in their lives and overcome the challenges they are facing. We can also improve their outcomes, as compassion can play a critical role in healing.

All City of Hope staff is encouraged to participate in the iCARE training program to help enhance the interactions of staff with patients to ensure that the patient experience at City of Hope is as positive as it can possibly be.

i	make Introductions demonstrate Initiative
C	show Compassion instill Confidence
A	Acknowledge and Anticipate patients' needs
R	Respect others be Responsive to others
E	Explain what is happening Exceed expectations

5.3 Pager

All residents are assigned a pager during the first week of their first year in the program. Pagers are to be carried at all times. Replacement batteries are available from the Department secretary. The first incident of a lost pager will be at the expense of the department. Any other incidents will be at the expense of the resident.

5.4 Film Badge

All residents will be assigned a film badge and be required to participate in radiation safety training upon entry to the Program. Participation in radiation safety training will be required on an annual basis.

5.5 Allocations

The Department will assist the residents in covering certain expenses if they are incurred for the purpose of education. This support is not intended to supplement the salary. The following are recommended or required textbooks:

1. "Perez and Brady's Principles and Practice of Radiation Oncology" by Halperin/Perez/Brady
2. "The Physics of Radiation Therapy" by Faiz Khan
3. AJCC Cancer Staging Manual
4. "A Guide for Delineation of Lymph Nodal Clinical Target Volume in Radiation Therapy" by Cefaro, Genovesi, Perez, Vinciguerra
5. "Radiobiology for the Radiologist" by Eric J Hall and Amato J Giaccia
6. "Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics" by Lauren Pecorino

6.0 Institutional Policies

6.1 Please refer to the Graduate Medical & Clinical Education Training website at http://www.coh.org/gme/Pages/default.aspx , for information regarding all associated institutional policies.

7.0 Resident Associated Policies and Procedures

7.1 Meeting and Conference Approval

Prior to the submission of any publication for presentation at a National meeting, the resident will need to receive approval from the Corresponding/Senior Author and the Program Director.

7.2 Resident After Hours Coverage:

The resident call schedule will be established annually and will be submitted to the City of Hope operator, along with the physician call schedule. Changes to the physician call schedule will be made independent to the resident schedule. (example – physicians trade schedules – resident schedule remains unchanged)

7.3 Presentation and Conference Attendance Approval:

At the time of abstract submission, each resident is required to submit for approval the "Resident Presentation and Conference Approval Form." The Corresponding/Senior Author, Attending Physician and Program Director grants approval to the resident. Each approved resident is expected to complete a draft of the manuscript prior to meeting attendance. Approval for oral presentation or poster presentation will be at the discretion of the Corresponding/Senior Author, Attending Physican and Program Director. Abstract acceptance does not guarantee meeting attendance.

7.4 Meeting Attendance:

The fourth year resident will be allowed to attend ASTRO. Other resident requests for meeting attendance will go through the Presentation and Conference Attendance approval process for use of meeting hours.

7.5 Protected Resident Time:

Each resident is given protected time from all clinical responsibilities during clinical lectures. Mosaiq will document the unavailability of the residents as a reminder to staff of the resident's education time. Each resident will give to the department secretary their pager for monitoring during this time. No staff will be allowed to interrupt this time for any clinical activity.

7.6 Resident Work Hours

Resident work hours in general are from 8:00am to 6:30pm or from the start of treatments until the end of treatments each day.

APPENDIX

Clinical Competency Committees
City of Hope Radiation Oncology Residency Program

The goal of this Clinical Competency Committee (CCC) is to provide broad input to the program director about each resident's performance in the City of Hope Radiation Oncology Residency Program. The CCC functions in an advisory role by meeting regularly to review all completed evaluations and providing a consensus-based recommendation to the program director as to the standing of each trainee in the program. The Committee will provide performance-based assessments that respect the personal privacy of the residents in the program. The Committee will function objectively and in a manner that promotes the highest levels of professionalism and confidentiality. The program director has final responsibility for each trainee's evaluation and promotion decisions.

The CCC will have at least three members of the program faculty and meet quarterly. Faculty members may include physicians and non-physicians from the City of Hope Radiation Oncology Residency Program or required rotations in other specialties who teach and evaluate the residents. Meeting minutes will be taken as a brief summary written in a fair and balanced manner.

The Clinical Competency Committee of City of Hope Radiation Oncology Residency Program is composed of the following members:

1. Yi-Jen Chen, M.D., Ph.D. (Chair)
2. Eric Radany, M.D., Ph.D. (Member)
3. Jeffrey Wong, M.D. (Member)
4. Timothy Schultheiss, Ph.D. (Member)
5. Phyllis Burch (Member)

The committee's responsibilities are to:

- Review all resident or clinical fellow evaluations semi-annually;
- Prepare and assure the reporting of Milestones evaluations of each resident or clinical fellow semi-annually to the ACGME (RRC);
- Advise the program director regarding resident or clinical fellow progress, including promotion, remediation, and dismissal;
- Prepare a report summarizing the Committee's recommendations and rationale for recommending any adverse action from each meeting; and
- Advise the Program Evaluation Committee about any evaluation issues identified during CCC meetings.

Effective: 07/01/2014

Program Evaluation Committee
City of Hope Radiation Oncology Residency Program

The goal of this Program Evaluation Committee (PEC) is to oversee curriculum development and program evaluations for the City of Hope Radiation Oncology Residency Program.

The PEC of City of Hope Radiation Oncology Residency Program will meet semi-annually. The PEC will have at least three members, two program faculty and one trainee from the program, unless there are not enrolled trainees in the program. Faculty members may include physicians and non-physicians from the City of Hope Radiation Oncology Residency Program. The PEC is composed of the following members:

6. Jeffrey Wong, M.D. (Chair)
7. Eric Radany, M.D., Ph.D. (Member)
8. Matthew Hall, M.D. (PGY 5 Resident)
9. Yi-Jen Chen, M.D. (Member)
10. Timothy Schultheiss, Ph.D. (Member)
11. Joseph Kim, MD (Member)
12. Phyllis Burch (Member)

The committee's responsibilities are to:

- Plan, develop, implement, and evaluate educational activities of the program;
- Review and make recommendations for revision of competency-based curriculum goals and objectives;
- Address areas of non-compliance with ACGME standards;
- Review the program annually using evaluations of faculty, residents or clinical fellows, and others;
- Document on behalf of the program, formal, systematic evaluation of the curriculum at least annually and render a written Annual Program Evaluation (APE), which must be submitted to the GMEC annually in the Annual Program Director Update;
- Monitor and track each of the following:
    - Resident performance;
    - Faculty development;
    - Graduate performance including performance on certifying examination;
    - Program quality; and
    - Progress in achieving goals set forth in previous year's action plan.
- Review recommendations from the Clinical Competency Committee.

The PEC will be provided with confidential resident/clinical fellow and faculty evaluation data by the GME Office or the program's administrative staff in order to conduct their business.

The program director is ultimately responsible for the work of the PEC. The program director must assure that the annual action plan is reviewed and approved by the program's teaching faculty. The approval must be documented in meeting minutes. **The program's annual action plan and report on the program's progress on initiatives from the previous year's action plan must be sent to the GME office annually for review by the GMEC.**

Effective: 7/1/14