



RADIATION THERAPY CURRICULUM ANALYSIS

I. General Information	
Program Name	
JRCERT Program Number	
Date	

DIRECTIONS: Determine the course(s) in which each of the following content areas is covered and enter the course number(s) and/or title(s). For guidance in what should be covered for each content area, please refer to the Radiation Therapy Professional Curriculum (2019) published by the American Society of Radiologic Technologists.

II. Clinical Practice	
Professional Curriculum	Program Course(s)
Essentials of Clinical Practice	
Patient Assessment, Care and Education	
Simulation – CT, MRI, PET	
Treatment Planning	
Treatment Delivery	
Quality Assurance and Quality Management	

Clinical Competency	
---------------------	--

III. Ethics in Radiation Therapy Practice	
Professional Curriculum	Program Course(s)
Ethical Theories and Principles	
Provider/Patient Relationship	
Ethical Decision-making in Health Care Dilemmas	

IV. Imaging and Processing in Radiation Oncology	
Professional Curriculum	Program Course(s)
Basic Principles of Digital Imaging	
Image Characteristics	
Fundamental Principles of Exposure	
Computed Tomography Equipment in Radiation Oncology	
Radiation Oncology Digital Imaging Applications	
Imaging Modalities	
Healthcare Informatics Applications	

V. Introductory Law in Radiation Therapy

Professional Curriculum	Program Course(s)
Sources of Law	
Intentional Torts	
Negligence	
The Lawsuit	
Components of Informed Consent, Patient Rights and Standard of Care	
Quality and Safety	
Documentation and Record Maintenance	
Risk Management	
Role of the Code of Ethics, Scope of Practice and Practice Standards	

VI. Medical Terminology

Professional Curriculum	Program Course(s)
Introduction to the Origin of Medical Terminology	
The Word-building Process	
Medical Abbreviations and Symbols	

VII. Orientation to Radiation Therapy

Professional Curriculum	Program Course(s)
Policies and Procedures of the Educational Program	
The Health Science Professions	
Hospital and Health Care Organizations	
Introduction to Radiation Therapy Practice	
Insurance and Billing	
Human Resources	
Departmental Budgeting	
Professional Organizations	
Professional and Community Commitment	
Professional Development	

VIII. Pathophysiology

Professional Curriculum	Program Course(s)
General Pathology	
Introduction to Human Disease	
Theories of Disease Causation	

Basic Principles and Mechanisms of Disease			
Common Diagnostic Tests and Procedures			
Disorders of Nutrition			
Body Systems and Disorders, Including:			
Auditory	Genetic	Musculoskeletal	
Cardiovascular	Hematopoietic	Ocular	
Central Nervous	Immune	Reproductive	
Digestive	Integumentary	Respiratory	
Endocrine	Mental Health	Urinary	
Neoplasia			
Introduction			
Nomenclature			
Carcinogenesis			
Diagnosis			
Grading and Staging			
Prognostic Factors			
Malignancies, Including:			

Breast	Head and neck	Musculoskeletal	
Central Nervous	Hematopoietic	Reproductive	
Digestive	Integumentary	Respiratory	
Endocrine	Lymphatic	Urinary	

IX. Principles and Practice of Radiation Therapy I	
Professional Curriculum	Program Course(s)
Cancer Perspectives	
Treatment Determination for Overall Cancer Management	
Radiation Therapy Treatment	
Radiation Therapy Equipment	
Treatment Delivery Accessories	
Tumor Localization	
Pretreatment Verification Protocol	
Treatment Delivery Protocol	

X. Principles and Practice of Radiation Therapy II

Professional Curriculum			Program Course(s)
Radiation Therapy Treatment of Neoplastic Disease Originating in the following sites:			
Breast	Genitourinary	Lymphoreticular	
Central Nervous	Head and Neck	Musculoskeletal	
Endocrine	Hematopoietic	Reproductive	
Gastrointestinal	Integumentary	Respiratory	
Pediatric neoplasms	HIV-related neoplasms	Benign neoplasms	
Metastatic and Palliative Treatment Applications			
Emergency Treatment Applications			

XI. Radiation Therapy Quality Management, Quality Assurance, Safety and Operations

Professional Curriculum		Program Course(s)
Introduction		
General Principles		
Clinical Aspects QC Checks		
QA for Treatment, Simulation/Localization and Verification		
Particle Accelerators		

Brachytherapy	
Medical Dosimetry and Treatment Planning	

XII. Radiation Biology	
Professional Curriculum	Program Course(s)
Introduction	
Biophysical Events	
Radiation Effects	
Radiosensitivity and Response	
Biologic Principles of Radiation Therapy	

XIII. Radiation Physics	
Professional Curriculum	Program Course(s)
Units of Measurement	
General Principles	
Structure of the Atom	
Structure of Matter	
Nature of Radiation	

Electromagnetic Radiation	
Electrostatics	
Magnetism	
Electrodynamics	
Production and Characteristics of Radiation	

XIV. Radiation Protection	
Professional Curriculum	Program Course(s)
Introduction	
Units, Detection and Measurement	
Surveys, Regulatory Agencies and Regulations	
Personnel Monitoring	
Practical Radiation Protection	
Brachytherapy	

XV. Radiation Therapy Patient Care

Professional Curriculum	Program Course(s)
Introduction	
Communication in Patient Care	
Healthcare Informatics Applications	
Patient-family Interactions	
Assessment of Side Effects	
Assessment of Other Physical Needs	
Patient Examination	
Health Safety	
Medications and Their Administration	
Medical Emergencies	
Care of Patients with Tubes	
Brachytherapy Procedures	
Assessment of Nutritional Status	
Physical Activity Considerations	
Patient Transfer	

Patient Education	
Integrative Medicine	

XVI. Radiation Therapy Physics	
Professional Curriculum	Program Course(s)
Structure of Matter and Properties of Radiation	
Nuclear Transformations	
Review of Production of X-rays	
Radiation Therapy Treatment Units (External Teletherapy)	
Interaction of Ionizing Radiation	
Measurement of Ionizing Radiation	
Quality of X-ray Beams	
Measurement of Absorbed Dose	
Dose Distribution and Scatter Analysis Overview	

XVII. Research Methods, Evidence-Based Practice, and Information Literacy

Professional Curriculum	Program Course(s)
Analysis of Research Articles	
Information Literacy Concepts	
Types of Research Projects	
Preparing a Research Project	

XVIII. Sectional Anatomy

Professional Curriculum	Program Course(s)	
Anatomic Planes of the Body		
Image Formation and Orientation		
Other Sectional Imaging Modalities		
Topographic and Sectional Anatomy to Include:		
Abdomen	Extremities	Pelvis
Chest	Head and Neck	Spine

XIX. Treatment Planning

Professional Curriculum	Program Course(s)
Isodose Descriptions and General Influencing Factors	
Patient Contours	
Radiobiologic Dosimetric Considerations	
Methods of Dosimetric Calculations	
Prevention of Overdose and Underdose	
Wedge Filters (2D Compensation)	
Tissue Compensators (2D and 3D Compensation)	
Clinical Applications of Treatment Beams and Accessories	
Optimal Treatment Planning Considerations, Evaluation and Implementation	
3D Conformal Therapy	
Intensity Modulated Radiation Therapy (IMRT)	
Particle Beams and General Dose Distributions	
Stereotactic Radiation Therapy	
Brachytherapy	
Emerging Treatment Methods and Planning	