



RADIATION THERAPY CURRICULUM ANALYSIS GRID

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 (2024) published by the American Society of Radiologic Technologists.

II. Clinical Practice	
Professional Curriculum	Program Course(s)
Essentials of Clinical Practice	
Diversity, Equity and Inclusion	
Patient Assessment, Care and Education	
Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) Simulation	
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 and 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	
Magnetic Resonance Imaging (MRI)	
Positron Emission Therapy (PET)	
Radiation Oncology Digital Imaging Applications	

Imaging Modalities	
Health Care Informatics Applications	

V. Introductory Law in Radiation Therapy	
Professional Curriculum	Program Course(s)
Sources of Law	
Intentional Torts	
Negligence	
Discrimination	
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. 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	
Professional Organizations	
Professional and Community Commitment	
Professional Development	

VII. Pathophysiology

Professional Curriculum	Program Course(s)
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			
Malignancies, Including:			
Breast	Head and neck	Musculoskeletal	
Central Nervous	Hematopoietic	Reproductive	
Digestive	Integumentary	Respiratory	
Endocrine	Lymphatic	Urinary	

VIII. 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	

IX. 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			

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

Professional Curriculum	Program Course(s)
Introduction	
General Principles	
Clinical Aspects Quality Control (QC) Checks	
Quality Assurance (QA) for Treatment, Simulation and Localization, and Verification	
Particle Accelerators	
Brachytherapy	
Medical Dosimetry and Treatment Planning	

XI. Radiation Biology

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

XII. Radiation Physics

Professional Curriculum	Program Course(s)
Units of Measurement	
Structure of the Atom	
Structure of Matter	
Nature of Radiation	
Electromagnetic Radiation	
Electrostatics	
Magnetism	
Electrodynamics	
Production and Characteristics of Radiation	

XIII. 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	
Emerging Treatment Methods and Trends	

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. Magnetic Resonance Imaging

Professional Curriculum	Program Course(s)
MRI Screening and Safety	
Pulse Sequence Configurations	
Postprocessing	
Functional Imaging	
Sequence Parameters and Options	
Tissue Characteristics	
Magnetic Resonance Curriculum	

XVI. Radiation Therapy Patient Care

Professional Curriculum	Program Course(s)
Introduction	
Medical Terminology	
Communication in Patient Care	
Health Care Informatics Applications	
Patient-Family Interactions	
Assessment of Side Effects	

Assessment of Other Physical Needs	
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	

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 Radiation Therapy	
Intensity-modulated Radiation Therapy (IMRT)	
Electron Beam	
Stereotactic Radiation Therapy	
Brachytherapy	

OPTIONAL CONTENT

XX. Artificial Intelligence	
Professional Curriculum	Program Course(s)
Terminology and concepts	
Data and Data Sets	
Applications in Health Care	
AI in Medical Imaging	
Ethics, Legality and Liability	
Regulation and Workflow Integration	
Precision Medicine	