

RADIOTHERAPY PROGRAM 2022-2023 COURSE CONTENTS

SEMESTER I

MAT101 BASIC MATHEMATICS

Numbers, Exponents, Radical Numbers, Absolute Value, Factoring, Proportion, Equations, 1st Degree Equations with 1 Unknown, 1st Degree Equations with 2 Unknowns, Inequalities, Functions, Numerical Logic.

MYO101 BASIC ANATOMY AND PHYSIOLOGY

Introduction to Anatomy and Physiology, Cell theory, Cell organelles, Substance exchange, Cell metabolism, Locomotor System Anatomy and Bone, Joint and Muscle Physiology, Respiratory System Anatomy and Physiology, Circulatory System Anatomy and Physiology, Digestive System, Urinary System, Genital System, Endocrine System, Nervous System, Sense Organs Anatomy and Physiology.

ATA101 PRINCIPLES OF ATATURK AND HISTORY OF REVOLUTION I

It includes recognizing the characteristics and similar concepts of the Turkish Revolution, Reforms made by the Ottoman State before the Turkish Revolution, the importance of Atatürk's Revolutions, the emergence of the Kemalist thought system and its impact on the reforms to be made by the new Turkish Republic, the Turkish War of Independence and the elements threatening the Republic and Atatürk's Revolutions.

INGU101 ENGLISH I

This course is designed for new learners of English and aims to develop basic language skills. It helps learners acquire listening, reading and writing skills through different teaching techniques and practice studies. Learners learn basic grammar patterns and vocabulary using dialogues and texts used in real-life situations. At the end of this course, learners are prepared to progress from English beginner to intermediate-beginner level.

TURK101 TURKISH LANGUAGE I

Language awareness, reading skills and habits, correct use of basic spelling and punctuation rules, a wider vocabulary.

RTR103 RADIATION PHYSICS

To understand the definition of matter and atom, To understand the definition of radioactivity and its role in treatment, To learn the definition of radiation and radiation types, To learn the definition of X-rays and their place in treatment, To learn radiation dose units.

RTR111 INTRODUCTION TO RADIOTHERAPY

What is Cancer and What are its Causes, What are the Ways of Cancer Spread, What are the Treatment Methods Used in Radiation Oncology, What are the Radiation Types Used in Radiotherapy, X-Ray Formation and Its Properties, What are the Treatment Methods Applied in Radiotherapy, Information About the Devices Used in Radiotherapy, Block Casting and Application, Simulation Application, immobilization

RPSI209 POSITIVE PSYCHOLOGY AND COMMUNICATION SKILLS

Definition of positive psychology, basic concepts, theoretical foundations and applications, examining brain behavioral systems of emotional experience and behavior, knowing oneself and others, psychosocial life skills and problem solving skills, motivation and planning, anger, aggression, violence, anger, aggression, violence, relationship management, sound decision making, perseverance and compromise.

RKUL101 UNIVERSITY CULTURE I

Each semester includes seminars, conferences, panels, workshops and talks to be held for 14 weeks within the framework of a program consisting of suggestions from the academic units, student council and student clubs at the university.

SEMESTER II

ATA102 ATATÜRK HISTORY OF PRINCIPLES AND REVOLUTIONS II

Events, ideas and principles in the birth and development process of modern Turkey; Ataturk Era Turkish Foreign Policy, Ataturk's Revolutions, Ataturk's Principles.

INGU102 ENGLISH II

This course is designed for new learners of English and aims to develop basic language skills. It helps learners acquire listening, reading and writing skills through different teaching techniques and practice studies. Learners learn basic grammar patterns and vocabulary using dialogues and texts used in real-life situations. At the end of this course, learners are prepared to progress from English beginner to intermediate-beginner level.

TURK102 TURKISH LANGUAGE II

Language awareness, reading skills and habits, correct use of basic spelling and punctuation rules, a wider vocabulary.

RTR112 IMAGING METHODS IN RADIOTHERAPY

Learns medical radiation and its usage areas. Learns the basic principles of imaging and imaging methods accompanying Radiotherapy. Learns X-ray physics, CT, MR, PET, USG and Quality Concept in Radiology, QA-QC.

RTR118 DEVICES USED IN RADIOTHERAPY

Overview of the devices used, the technical features of the CT Simulator device and its use, the technical features of the CT device and its use in radiotherapy, the technical features of the MRI device and its use in radiotherapy, the technical features of the PET device and its use in radiotherapy, the technical features of the linear accelerator device and its use in radiotherapy-I, the linear accelerator technical features of the device and its use in radiotherapy- II, Technical features of the intraoperative radiotherapy device and its use, Technical features of the brachytherapy device and its use in radiotherapy, Technical features of the Gamma Knife device and its use in radiotherapy, Technical features of the Cyber Knife device and its use in radiotherapy, Technical features of the tomotherapy device and its use in radiotherapy .

BIOLOGICAL EFFECTS OF RTR114 RADIATION

Structure and Organelles of Cell, Structure of DNA and Replication, Effects of Radiation at Cellular Level, Effects of Radiation at Molecular Level, Concept of Dose, Concept of Radiation Dose, Doses of Radiation Workers and Society, Biological Half-Life, Effective Half-Life Calculations, Radiation Hypersensitivity Cells and Event Chain, Radiation Sensitivity of Tissues and Organs, Early Effects of Radiation, Late Effects of Radiation, Epidemiological Studies, Radiation Accidents and Biological Effects Depending on the Degree of Dose; Changes in Blood Values, Vomiting, Nausea, Mortality, Genetic Risks, Chromosome Abnormalities, Radiation Damages and Repair Events.

RKUL102 UNIVERSITY CULTURE II

Each semester includes seminars, conferences, panels, workshops and talks to be held for 14 weeks within the framework of a program consisting of suggestions from the academic units, student council and student clubs at the university.

TLT107 GENERAL PATHOLOGY

Tissues, Follow-up of Tissues, Staining Methods, Cell Injury and Adaptation, Cell Death, Inflammation and Wound Healing, Acute and chronic inflammation, general pathological features of infectious diseases, tissue regeneration, naming of tumors and Neoplasms constitute the general content of the course.

SEMESTER III

ILK101 FIRST AID

General First Aid Information, Human Body, Patient/Injured and Crime Scene Evaluation, Basic Life Support, Respiratory Tract Obstructions, Hemorrhages and Shock, Injuries, Burns, Frostbite, Heat Stroke, Conscious Disorders (Losses of Consciousness, Convulsions, Low Blood Sugar, Chest Pain), Poisoning, Animal Bites, Eye-Ear-Nose Ingestion, Choking, Fractures, Dislocations, Sprains, Transport Techniques.

MYO015 SOCIAL RESPONSIBILITY PROJECT (ELECTIVE COURSE)

Basic concepts related to community and community service practices and social responsibility projects, Importance of community service practices and social responsibility projects, Identifying the target audience problem, Producing solution suggestions for the identified problems, Community service practices today: Community service practices and social responsibility projects of public institutions and non-governmental organizations Responsibility projects, Researching community service practices and social responsibility projects in our city, Organizing Panels, Conferences, information seminars, Volunteering in Various Projects within the Framework of Social Responsibility

TGT217 RADIOLOGICAL ANATOMY

Introduction to Sectional Anatomy, Axes, planes. General anatomical terms describing location and direction. General terminological terms, Upper extremity anatomical structures. Radiography, CT, MR (axial-sagittal-coronal images), Anatomical structures of lower extremity. X-ray, Ct, MR (axial, sagittal-coronal images), Columna vertebralis anatomical structures, Head-neck anatomical structures, Cerebral Hemispheres and their anatomical structures, Cerebral Hemispheres, Cerebral Hemispheres and their anatomical structures, Brain stem and medulla spinalis, anatomical structures , Thorax, Abdomen, Pelvis-Female genitalia, Pelvis-Male genitalia.

RTR225 RADIOTHERAPY APPLICATIONS

Working principle of Linear Accelerators, Devices used in radiotherapy, IGRT application methods, Linac-based treatment applications: 3BKRT-VMAT-SRS and SBRT, Robotic Radiosurgery applications, Tomotherapy Applications, Brachytherapy Applications, Mobile tumor treatment, Plan quality assurance test applications.

RTR227 CLINICAL RADIATION ONCOLOGY I

Students can distinguish between health and illness. Knows the functions of body organs and systems. Knows the concept of cancer. Recognizes the methods used in cancer diagnosis. Gains knowledge about all types of cancer. Recognizes the methods used in cancer treatment. Knows the concept of radiotherapy. Introduction to Clinical Radiation Oncology Head-neck, brain tumor, oncological approaches, GIS tum. Oncological approaches, Lung cancers Oncological approaches, Skin cancers Oncological approaches, Metastatic tumors, Soft tissue tumors, Breast tumors, Urological tumors, Gynecological tumors, Childhood tumors, Lymphoma

RTR223 TREATMENT PROCESSES IN RADIOTHERAPY

Introduction to radiotherapy, Radiotherapy preparation process, patient preparation and information, Immobilization in radiotherapy, Imaging and simulation for radiotherapy: Computed Tomography, Respiratory organ movements and ITV concept, Target and critical structure contouring, Treatment planning: 3BKRT-IMRT-Vmat-SRS and SBRT , Treatment plan examples, Patient-based quality control and delivery of treatment

SEMESTER IV

RTR210 CLINICAL RADIATION ONCOLOGY II

Students can distinguish between health and illness. Knows the functions of body organs and systems. Knows the concept of cancer. Recognizes the methods used in cancer diagnosis. Gains knowledge about all types of cancer. "Recognizes the methods used in cancer treatment. Knows the concept of radiotherapy". Childhood Cancers (Wilms Tumor and Neuroblastoma, Rhabdomyosarcoma), Bladder, Rectum, Prostate, Cervical Cancer, Brain Tumors, Bone Metastasis, Lymphoma, Leukemia and Plasma Cell Tumors, Thyroid Cancer, Palliative Radiotherapy

RTR214 PATIENT CARE METHODS

Human and basic needs, Concepts and definitions of health and disease, Safe hospital environment, Vital signs and practices, Hospital infections and individual hygiene-care, Isolation-asepsis-antisepsis-sterilization-disinfection, Decubitus formation and treatment, Nutritional needs Excretory system and excretory system and its problems, Drug preparation and drug administration methods, Care of patients with chronic disease and terminal period

RTR200 QUALITY ASSURANCE AND QUALITY CONTROL IN RADIOTHERAPY

What is Quality Control (QA)? Why should we do Quality Control? Output concept and its importance, Simulator QA, Things to consider in Linac QC, Setup positions and IGRT applications, Intrafraction-Interfraction error sources, Comparative Set-up Methods, Brain- Head & Neck- Craniospinal Set-up errors, Set-up in Thorax & Breast Irradiation errors, Set_up errors in Upper-Lower Abdomen and Pelvis Irradiation, setup errors in SRS and SBRT treatments

SAH101 HEALTH LAW

Basic Concepts of Health Law, Patient Rights, Physician's Rights, Privacy in Medical Intervention, Medical Intervention, Unlawful Medical Intervention, Legal Dimensions of Patient and Hospital Relationship, Medical Error Concept and Legal Dimension.

TGT114 RADIATION SAFETY AND PROTECTION

Historical development in radiation protection, Structures and working system of the cell, Units used in radiation measurement, Risk calculation in radiation exposure, Measurement devices used in radiation protection, Radiation accidents and biological dosimeter, Dosimeter, cvCollection of radioactive sources and rendering them harmless, Shielding in radiology and nuclear medicine devices , Armoring calculations in radiology devices, Armoring calculations in radiology devices, sample problems, Fetal doses in radiology, nuclear medicine and radiotherapy, legal situation in radiation protection in Turkey.