**MINISTRY OF EDUCATION OF THE AZERBAIJAN REPUBLIC**

**AZERBAIJAN MEDICAL UNIVERSITY**

**SILLABUS ITEMS**

**I approve \_\_\_\_\_\_\_ Malakhat Sultanova Jahangir**

**(head of department)**

**Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: “\_\_” \_\_\_\_\_\_\_\_\_2021\_\_\_ year**

**The department:** \_\_\_Radiology and radiation therapy\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Faculty: \_\_\_ Medical and preventive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I. Information about the subject**

Name of the subject:\_\_Radiation therapy\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training load (hours) in total: **10**\_ lecture\_\_**35**\_workshops \_\_\_\_\_\_

Academic year \_\_\_2021\_\_\_\_\_ Semester \_\_\_VII\_\_\_ Sector: Azerbaijani, Russian, English \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The number of loans (1 loan for 30 hours) \_\_\_\_\_\_3\_\_\_\_\_\_\_\_\_

1. **Informationabouttheteacher:\_\_\_ \_\_\_\_\_\_\_\_**

(surname, name, patronymic, scientific degree, rank)

Days and hours of consultation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Work phone:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**III.** **Necessary textbooks and manuals:**

***The main ones:***

1 .\_\_\_\_\_ Basic Radiation Therapy Curriculum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 .\_\_\_\_\_ Radiation therapy: documentation, terms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.\_\_\_\_\_C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərinşüamüalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Addendum:***

1. Baxşiyev B.Ə. Radiodiaqnostikavəradioterapiya. Bakı-2004, 1042 səh\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Киселева Е.С., Голдобенко Г.В., Канаев С.В. Лучевая терапия злокачественных опухолей. Руководство для врачей – М.: Медицина, 1996. – 464 с.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Ярмоненко С.П., Вайнсон А.А. Радиобиология человека и животных: Учебное пособие – М.: Высший школе 2004 – 549 с
4. Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с.
5. Приходько А.Г. Лучевая диагностика и Лучевая терапия в стоматологии: лекции для студентов, Феникс, 2008.

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***V. Purpose and content of the subject:***

(short information about the subject, related disciplines and repeating information about the subject, the educational purpose of the subject. What knowledge and skills does the student acquire as a result of studying this subject)

***Course Outline:***

This subject reflects the principles of radiation therapy for malignant tumors and non-tumor diseases using various types of ionizing radiation. Here, the possibilities of modern medicine are assessed during radiation therapy in cancer patients, the main treatment methods are considered, and the role and significance of radiation therapy are specified. The subject area contains information on natural and artificial elements, reveals the physical properties of ionizing types of radiation used in medicine for therapeutic purposes. The program reveals the basics of radiobiological changes in a living cell and tissues of the human body as a result of radiation exposure; talks about the rules and remedies used at the workplace, also reflects the principle of the device for radiation therapy.

The study of the physical, technological and biological foundations of radiation therapy allows you to control the effect of radiation energy on radiosensitive and radioresistant tumors. The training course includes such topics as: preparing patients for radiation therapy, features of organizing a radiation therapy department, methods of radiation therapy (external, internal radiation), types of radiation therapy, goals of radiation therapy, radiation therapy of common localizations of malignant neoplasms (lung, larynx , breast, esophagus, stomach, uterus, cervix, skin, etc.), as well as non-tumor diseases (pyoderma, osteomyelitis, postoperative fistulas, etc.)

The course also teaches methods for the prevention and treatment of radiation reactions and complications.

***Course Objectives:***

The main goal of radiation therapy is the correct choice of the type of radiation for treatment.

At present, future specialists are studying the methods of radiation treatment more deeply, which has a great prospect of development in the future.

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**V. The schedule of the subject:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Weeks | Name and summary of the topic | Lectures | Workshops | Hours | Date |
|  | Theme №1  Familiarization with the subject: The concept of radiation therapy, the history of the development of the subject. Natural and artificial radioactivity, properties of isotopes, the use of isotopes in medicine.  Summary:  Radiation therapy is based on the use of ionizing radiation for therapeutic purposes. The energy of ionizing radiation is fundamentally different from other types of energy. In nature, there are no structures that remain unchanged after radiation exposure, the radiation energy weakens and destroys intramolecular bonds, resulting in the formation of charged ion particles. This feature is used in the treatment of various processes.  Literature (title of the book, authors of the book, indicating pages):  1. Basic radiation therapy curriculum  2. Radiation therapy: documentation, terms  3.Baxşiyev B.Ə. Radiodiaqnostika və radioterapiya. Bakı-2004, 1042 səh |  |  |  |  |
|  | Theme number 2  Rules for protection against the damaging effects of ionizing radiation. Fundamentals of radiation safety protection of the population and personnel. Features of the organization of the department of radiation therapy.  Summary:  Since ionizing radiation has a mandatory harmful effect, safety rules must be observed. Protection rules are divided into 3 groups:  Protection by distance, time and film adaptation.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəli şişlərin şüa müalicəsi: nəzəri, əsasları,tətbiqi, nəticələri” Baki-2012,1227 2.Ярмоненко С.П., Вайнсон А.А. Радиoбиология человека и животных:Учебное пособие – М.: Высший школе 2004 – 549 с |  |  |  |  |
|  | Theme number 3  The physical basis of radiation therapy, types of radiation, the nature of radioactive rays, the concept of the quantity and power of radiation. Dosimetry methods, dosage units.  Summary:  An integral part of radiation therapy is clinical dosimetry. The main focus of clinical dosimetry is the correct choice and justification of radiation. Digital indicators of radiation sources should optimally reflect the distribution of energy in the body of the irradiated patient. Clinical dosimetry is based on the summation of experimental data and methods of mathematical calculations. Calculations of the distribution of radiation energy in tissues obey the laws of physics.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlşişlərin şüa müalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh  2.Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с.  3.Ярмоненко С.П., Вайнсон А.А. Радиобиология человека и животных: Учебное пособие – М.: Высший школе 2004 – 549 с |  |  |  |  |
|  | Theme number 4  Biological basis of radiation therapy. Studying the mechanisms of the effect of radiation on various processes. Radiotherapy interval, exposure factors.  Summary:  The difference in the radiosensitivity of healthy surrounding tissues and tissue of a malignant tumor is called the radiotherapy interval. This difference may be 15-20%. The difference can be artificially expanded and the radiotherapy interval extended. In this case, a small dose of exposure can damage the tumor tissue, protecting the surrounding healthy tissue as much as possible.  Literature (title of the book, authors of the book, indicating pages):  1. Radiation therapy: documentation, terms  2.Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с.  3.Ярмоненко С.П., Вайнсон А.А. Радиобиология человека и животных: Учебное пособие – М.: Высший школе 2004 – 549 с |  |  |  |  |
|  | Theme number 5  Types, goals and periods of radiation therapy.  Summary:  According to the position of the radiation source in relation to the human body, radiation therapy is divided into external and internal method. With the external method, the source is located inside the human body.  Literature (title of the book, authors of the book, indicating pages):  1.Baxşiyev B.Ə. Radiodiaqnostika və radioterapiya. Bakı-2004, 1042 səh. 2.Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с. |  |  |  |  |
|  | Theme №6  The technical basis of radiation therapy. Devices for remote and contact radiation therapy.  Summary:  If the radiation source is located at a certain distance from the surface of the body, the method is called remote. In this case, quantum radiation, electrons, protons, neutrons are used. With contact radiation therapy.  There is either no or minimal distance between the radiation source and the pathological focus (> 5 cm)  Literature (title of the book, authors of the book, indicating pages):  1.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 s. 2.C.Ə.Əliyev, İ.H.İsayev “Bədxassəli şişlərin şüa müalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh |  |  |  |  |
|  | Theme №7  The period of preparation for radiation therapy, the choice of the type of radiation, a single focal dose (ROD), total focal dose (SOD). Summing up the necessary dose of exposure to the pathological focus, taking into account its location, depth, size and relationship to nearby organs.  Summary:  In preparation for radiation therapy, comprehensive measures are being taken where clinical topometry and dosimetric planning are most important. During the examination, the affected organ of the patient is determined, the nature of the process, its histological structure, size and relationship to closely located organs, depth, the general condition of the patient, as well as the presence of concomitant diseases are clarified.  Literature (title of the book, authors of the book, indicating pages):  1. C.Ə.Əliyev, İ.H.İsayev “Bədxassəli şişlərin şüa müalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh  2. Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с. |  |  |  |  |
|  | Theme number 8  Radiation therapy for lung cancer.  Summary:  The incidence of lung cancer on a global scale is increasing and occupies 1-2 place in the structure of cancer. In this case, radical radiation therapy is carried out only in the I-II stage of the disease. Palliative radiation therapy is carried out in the presence of metastases in the mediastinal lymph nodes, subclavian lymph nodes, as well as in a common process confirmed by thoracotomy.  Literature (title of the book, authors of the book, indicating pages):  1.Baxşiyev B.Ə. Radiodiaqnostika və radioterapiya. Bakı-2004, 1042 səh.  2.C.Ə.Əliyev, İ.H.İsayev “Bədxassəli şişlərin şüa müalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh |  |  |  |  |
|  | Theme №9    Radiation therapy of oropharyngeal cancer and laryngeal cancer.  Summary:  Among malignant neoplasms, laryngeal cancer is 4-6%. With the treatment method, surgical treatment is chosen in combination with radiation therapy or radiation therapy alone. In 70% of patients, radiation therapy is used as an independent method of treatment.  Literature (title of the book, authors of the book, indicating pages):  1. Труфанов Г.Е. Лучевая терапия. Москва, 2013, 206 с.  2. C.Ə.Əliyev, İ.H.İsayev “Bədxassəli şişlərin şüa müalicəsi: nəzəri, əsasları, tətbiqi, nəticələri” Baki-2012, 1227 səh  3.Приходько А.Г. Лучевая диагностика и Лучевая терапия в стоматологии: лекции для студентов, Феникс, 2008. |  |  |  |  |
|  | Theme number 10  Radiation therapy for esophageal cancer.  Summary:  Esophageal cancer in the structure of oncological diseases takes 7-8 place and makes up 80-90%. Most often found in men from 40-60 years. Radiation therapy, surgical and combined methods are the main choice in the treatment of cancer of the esophagus.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/ Москва, 2013, 206 с. |  |  |  |  |
|  | Theme number 11  Radiation therapy for breast and thyroid cancer.  Summary:  In the structure of oncological diseases, breast cancer ranks 1st among women. When choosing a treatment for breast cancer, the following methods are chosen: surgical treatment, chemotherapy, hormone therapy and immunotherapy.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/Москва, 2013, 206 с. |  |  |  |  |
|  | Theme №12  Radiation therapy for skin cancer.  Summary:  Skin cancer ranks III in a number of oncological diseases. There are basal cell, squamous cell carcinoma of the skin, melanoma, etc. 90% of tumors of epithelial origin. 75-80% is basal cell carcinoma. The leading method of treatment is the method of radiation therapy, because skin tumors are radiosensitive. There is an increase in the incidence of skin cancer.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/ Москва, 2013, 206 с. |  |  |  |  |
|  | Theme №13  Radiation therapy for colorectal cancer and bladder cancer.  Summary:  Colorectal cancer is the most common localization in lesions of the colon. Colorectal cancer is more common among men from 40 to 60 years old. Bladder cancer is 50% among oncological diseases. In men, it is observed 4-5 times more often than in women. The choice of treatment method is surgical treatment and radiotherapy.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika və radioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/Москва, 2013, 206 с |  |  |  |  |
|  | Theme №14  Radiation therapy for cervical cancer and Hodgkin's lymphoma.  Summary:  Malignant tumors of the female genital organs are found in 25-27% of cases. Cervical cancer is 85%, uterine cancer is 15%. With this localization, radiation and surgical treatment are chosen as a combined method. Lymphogranulomatosis is a malignant disease of the lymphatic system. For many years, the disease was fatal. The modern methods of radiation therapy make it possible to achieve high positive results.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/Москва, 2013, 206 с. |  |  |  |  |
|  | Theme №15  Radiation therapy for bone and brain cancer.  Summary:  Brain cancer among 100,000 people occurs in 9-10 people. The primary tumor most often occurs in people under 20 years of age and further among people aged 75-84 years. In the treatment of a brain tumor, the classical method of radiation therapy is chosen as part of a combination treatment, mainly after surgery, and in the treatment of relapse of the tumor.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsaslarıtətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Труфанов Г.Е. Лучевая терапия/Москва, 2013, 206 с. |  |  |  |  |
|  | Theme №16  Radiation therapy of non-tumor diseases.  Summary:  In contrast to radiation therapy for malignant neoplasms in non-cancerous diseases, the dose of exposure is significantly reduced. If in the treatment of malignant neoplasms we use ROD = 1.8-2.0-10-12 Gy, SOD = 40-90-100 Gy, then for non-cancerous diseases the dose is ROD = 0, -0.7 Gy, SOD = 0 5-1.0 Gy, SOD = 3.0-10.0 Gy  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsasları tətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh |  |  |  |  |
|  | Theme number 17  Radiation reactions, radiation complications.  Summary:  According to the time of manifestation, radiation injuries are divided into early and late. According to other criteria, damage is assessed as local and general. Radiation therapy is based on a local mechanism of exposure. In this case, disturbances can be observed both from the side of irradiated and non-irradiated systems. The reason for this is the relationship between the systems. A general radiation reaction occurs in the early periods and from non-irradiated systems. Symptoms: general weakness, loss of appetite, depression, leukopenia, thrombocytopenia, etc. Local radiation reaction occurs at the level of irradiated tissues.  Literature (title of the book, authors of the book, indicating pages):  1.C.Ə.Əliyev, İ.H.İsayev “Bədxassəlişişlərin şüa müalicəsi: nəzəri, əsasları tətbiqi, nəticələri” Baki-2012, 1227s.  2.Baxşiyev B.Ə. Radiodiaqnostika vəradioterapiya. Bakı-2004, 1042 səh  3.Ярмоненко С.П., Вайнсон А.А. Радиобиология человека и животных: Учебное пособие – М.: Высший школе 2004 – 549 с |  |  |  |  |

**VI. The form of the exam is written, verbal, in the form of a dialogue, tests.**

**VII. Assessment and distribution of points during the semester.**

The maximum number of points is 100 points.

***A) The maximum ball per semester is 50 (admission points for exam-25)***

|  |  |  |
| --- | --- | --- |
|  | Attendance | 10 point |
|  | Independent work (abstract, presentation, presentation, etc.)  Note: Plagiarism is strictly prohibited! It is necessary to submit all tasks related to independent work with the conditions, time and method of evaluating the completion of work. | 10 point |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | 30 point |
|  | According to the results of seminars or workshops |  |
|  |  |  |

***B) According to the results of the semester exam, a maximum of 50 points***

***Note: the number of points scored in the exam is not less than 17 points.***

***C) Evaluation of the results per semester (based on the examination ball and points scored per semester)***

|  |  |  |  |
| --- | --- | --- | --- |
| **91** | **– 100** | **excellent** | **A** |
|  |  |  |  |
| **81** | **– 90** | **perfect** | **B** |
|  |  |  |  |
| **71** | **– 80** | **fine** | **C** |
|  |  |  |  |
| **61** | **– 70** | **satisfactorily** | **D** |
|  |  |  |  |
| **51** | **– 60** | **mediocre** | **E** |
|  | |  |  |
| **Менее50** | | **unsatisfactory** | **F** |
|  |  |  |  |

**Teacher: \_\_Aghamaliyeva Ayten Jafar\_\_**

**Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (last name, first name, patronymic)**

**Date: \_\_\_2021\_\_\_\_**