

**MEDICAL UNIVERSITY of PLOVDIV**  
**FACULTY of MEDICINE**

# **SYLLABUS**

in

## **Clinical Oncology**

**Approved by the Section Council on 03.06.2020/ Proceedings № 6**

**Confirmed by the Faculty Council on 08.07.2020/ Proceedings № 5**

## CLINICAL ONCOLOGY

### Syllabus

Discipline	Exam in Semester	Hours				Hours by years and semesters
		Total	Lectures	Practices	Credit	V
Clinical oncology	X					X sem.
		30	20	10	2.0	20/10

**Course name:**

"Clinical Oncology "

**Type of course according to the uniform state requirements:**

Mandatory

**Level of education:**

Master / M /

**Forms of training:**

Lectures, seminars with consideration of clinical cases

**Year of training:**

Fifth semester

**Duration of training:**

One semester

**Academic hours:**

30 teaching hours (20 hours of lectures, 10 hours of practices)

**Technical equipment applied in the training:**

Multimedia presentations, clinical discussions, clinical cases

**Forms of evaluation:**

Tests, seminars

**Evaluation criteria:**

An assessment for the semester is formed on the basis of the written examination

**Score assessment:**

Participation in discussion, solving test tasks

**Annual exam:**

Exam - final test

**State Exam:** No

**Lecturers:**

Habilitated lecturers from the Department of Clinical Oncology

**Section:**

"Clinical Oncology"

## ANNOTATION

The course "Clinical Oncology" summarizes modern multimodal knowledge in the field of socially significant oncological diseases. The course builds on and summarizes conceptually existing knowledge on the topic in various medical fields. Structurally, clinical oncology combines radiotherapy (radiation oncology) and medical oncology (drug therapy = chemotherapy, targeted, immunotherapy, gene, etc.) as part of the complex treatment of patients with solid tumors. The multimodal approach also includes surgical treatment, psychotherapy, various methods of palliative care and others. Students should be familiar with modern oncology doctrine in all major groups of malignant diseases. The aim of the training is for the future colleagues to acquire the modern and complex "oncological view" for early diagnosis and timely referral of patients along the correct therapeutic corridor.

## COURSE OBJECTIVES

Students should be familiar with the biology of malignant neoplasms, incl. molecular markers of the disease, the interpretation of clinical and the full range of diagnostic tests, the principles of radiation and chemotherapy and consensus the accepted therapeutic algorithm. The treatment of malignant diseases requires the expert participation of many different medical subspecialties. The approach is determined by a multidisciplinary team including an oncologist, radiotherapist (radiation oncologist), chemotherapist, pathologist, specialist in imaging and nuclear medicine diagnostics, molecular geneticist and others. Patients with malignant diseases are treated after a consensus decision of the Common Clinical Oncology Committee (CCC), in which these specialists participate.

The final diagnosis of malignancies requires precise histological and immunohistochemical verification of the tumor; study of the molecular genetic profile of the tumor in order to prove "driver" mutations and establish predictive markers - information needed for future physicians. The training in the discipline also updates the knowledge of modern imaging diagnostic methods with a view to timely and adequate staging, restoration, monitoring and evaluation of therapeutic response. The therapeutic spectrum in the field of oncology is constantly expanding its capabilities - new methods and machines in the field of radiation oncology (radiation therapy), a rapidly growing range of new molecules in the field of targeted and immunotherapy.

## RESULTS EXPECTED

Upon completion of the training, students must have the following knowledge and skills:

1. To know the basic principles of treatment of oncological diseases;
2. To know the epidemiology, etiology, pathogenesis and histomorphology of the most common groups of oncological diseases;
3. To be acquainted with the indications for conducting clinical-laboratory, histological, molecular-genetic, imaging methods (X-ray, computed tomography, nuclear magnetic and PET-CT procedures) in the diagnosis, staging, treatment of patients with solid tumors and restoration intervals;
4. To discuss the variety of approaches in determining the stage of the disease and the role of chemotherapy and radiotherapy in patients with advanced disease;
5. To know the principles of radiation biology and the indications for radiation therapy in its varieties as a radical or palliative agent;
6. To know the different methods of radiotherapy according to the distribution of the dose over time - types of fractionation, brachytherapy, percutaneous radiotherapy, metabolic radiotherapy (advantages and disadvantages);
7. Students are trained according to modern standards for the place of radiotherapy in terms of surgical treatment and/or chemotherapy. They get acquainted with the immediate and late consequences of radiotherapy;
8. To be acquainted with the therapeutic possibilities of radiosurgery;
9. To know the indications and goals of effective treatment with cytostatics in primary, locally advanced, metastatic or recurrent disease;
10. To know the mechanism of action of antitumor drugs, incl. and their role as a radiosensitizer;
11. To have an accurate idea of the duration of treatment with specific antitumor drugs, the side effects of this treatment and the principles of their management;
12. To be familiar with the indications for the use of maintenance therapy, incl. contraindications and potential side effects;
13. To know the specifics of different groups of oncological diseases - etiopathogenesis, clinical symptoms, modern diagnostics, modern therapeutic options and prognosis;
14. To have the ability to inform and discuss "painful" topics in an appropriate way with patients and their families;
15. To acquire basic knowledge in the field of analgesia, palliative care, psychooncology, psychorehabilitation;



V course, Tenth semester

№	THEME	Hour	
		Lectures	Practices
1.	Malignant diseases - what does the physician have to know? <i>Clinical cases</i> – “Pro”/ “Con” various interdisciplinary approaches	2h	1h
2.	Principles of radiotherapy of malignant tumors - indications, side effects, complications. Principles of radiosurgery <i>Clinical cases</i> - application of radiosurgery in brain tumors	2h	1h
3.	Nuclear medicine. Metabolic imaging (SPECT-CT; PET-CT, PET-MRI) <i>Clinical cases</i> - role of different methods for diagnosis and evaluation of therapeutic response	2h	1h
4.	Role of metabolic radionuclide therapy in oncology <i>Clinical cases</i> - examples of application in thyroid cancer, bone metastases	2h	1h
5.	Principles of drug treatment of solid tumors. Conventional chemotherapy. Targeted therapy - groups of drugs, mechanism of action, indications, side effects, representatives <i>Clinical cases</i> - application of targeted therapy in different indications / localizations	2h	1h
6.	Lung cancer- staging, complex treatment Gynecological cancers- staging, complex treatment <i>Clinical cases</i> - small cell cancer of the lung and cancer of the cervix	2h	1h
7.	Breast cancer - genetic features, diagnosis, staging, principles of therapy <i>Clinical cases</i> - therapeutic approach associated with modern staging, IHC and molecular genetic characteristics	2h	1h
8.	Malignant tumors of the gastrointestinal tract - genetic features, staging, principles of treatment <i>Clinical cases</i> - metastatic CRC, therapeutic approach after molecular genetic evaluation	2h	1h

9	Malignant tumors of the genitourinary system in men - staging, principles of treatment. <i>Clinical cases</i> - patient with Ca testis; hormone-refractory prostate Ca, metastatic renal Ca.	2h	1h
10.	Soft tissue sarcomas. Bone tumors. Clinical trials in medical oncology - basic knowledge, principles of good clinical practice. <i>Clinical cases</i> - Emergencies in oncology	2h	1h

## TEST

## LECTURES- TOPICS

### *LECTURE № 1 – 2 Hours*

#### **Malignant diseases - what should a modern doctor know?**

1. Biology of malignant diseases
2. Epidemiological data on malignancies - global trends, data for Europe and data from the National Cancer Registry
3. Modern staging systems
4. Modern diagnostic methods
5. Principles of treatment and multimodal approach

### *LECTURE № 2 – 2 Hours*

#### **Principles of radiotherapy of malignant tumors-** indications, side effects, complications.

#### Principles of radiosurgery.

1. Contemporary trends
2. Biological effect of ionizing radiation
3. Radiation sensitivity
4. Sources of ionizing radiation
5. Local and general radiation reactions
6. Radical and palliative radiotherapy
7. Preoperative and postoperative radiotherapy

### *LECTURE № 3 – 2 Hours*

#### **Nuclear medicine. Metabolic Imaging (SPECT-CT; PET-CT, PET-MRT)**

1. Principles of nuclear medical imaging
2. Specific characteristics and informative value compared to other image methods
3. Indications for use - nosological units
4. Contraindications for use
5. Possibilities of NM diagnostics at national level

### ***LECTURE № 4 – 2 Hours***

#### **Role of Metabolic Radionuclide Therapy in Oncology**

1. Indications for the use of metabolic radionuclide therapy
2. Principles of therapy and follow-up
3. Regulatory requirements for clinics conducting this therapy
4. Specific requirements for patients treated with metabolic radionuclide therapy

### ***LECTURE № 5 – 2 Hours***

#### **Principles of drug treatment of solid tumors. Conventional CT. Targeted therapy - groups of drugs, mechanism of action, representatives**

1. Principles of conventional chemotherapy. Groups of drugs
2. Non-specific and specific side effects
3. Concept of targeted therapy as a component of modern antitumor treatment
4. Molecular mechanisms of action of targeted drugs
5. Classification of targeted drugs
6. Basic indications for their application
7. Specific side effects

### ***LECTURE № 6 – 2 Hours***

#### **Malignant tumors of the lung - the role of staging, complex treatment.**

#### **Malignant tumors of the female genitalia - staging, complex treatment**

##### **A. Lung cancer**

1. Clinical picture, basic diagnostic tests - interventional, imaging, pathomorphological, genetic (prognostic and predictive markers)
2. TNM staging
3. Basic principles of treatment by stage
4. Role of target therapy
5. Algorithm of follow-up and palliative care

##### **B. Malignant tumors of the female genitalia**

1. Clinical picture, basic diagnostic tests - interventional, imaging, pathomorphological, genetic (prognostic and predictive markers)
2. TNM staging
3. Basic principles of treatment according to stage - surgical, radiotherapy, systemic drug therapy, combined therapeutic approaches
4. Role of target therapy
5. Follow-up and Palliative Care Algorithm

### ***LECTURE № 7 – 2 Hours***

#### **Breast cancer - genetic features, staging, principles of therapy**

1. Clinical picture and basic diagnostic tests - imaging, morphology, incl. testing for hormone receptors, genetic (prognostic and predictive markers)
2. TNM staging



3. Basic principles of treatment by stage - surgery, radiotherapy, hormone therapy, systemic drug therapy, combined therapeutic approaches
4. Role of target therapy
5. Follow-up algorithm

### ***LECTURE № 8 – 2 Hours***

#### **Malignant tumors of the Gastrointestinal Tract**

##### **A. Colorectal cancer**

1. Clinical picture, basic diagnostic methods - interventional, serum tumor markers, imaging, morphological, genetic (pharmacogenomic predictive markers)
2. TNM staging
3. Basic principles of treatment by stage - surgical, systemic drug therapy, combined therapeutic approaches
4. Role of target therapy
5. Follow-up and Palliative Care Algorithm

##### ***B. Cancer of the stomach, pancreas***

### ***LECTURE № 9 – 2 Hours***

#### **Malignant tumors of the genitourinary system in men - staging, principles of treatment**

##### **A. Prostate cancer**

1. Clinical picture, basic diagnostic methods - interventional, serum tumor markers, morphological, imaging
2. Staging
3. Basic principles of treatment by stage - surgery, radiotherapy, hormone therapy, systemic drug therapy, combined therapeutic approaches
4. Follow-up algorithm
5. Palliative care

##### **B. Testicular cancer - principles of diagnosis and treatment**

### ***LECTURE № 10 – 2 Hours***

#### ***A. Soft tissue sarcomas. Bone tumors***

1. Clinical approach - anamnesis, physical examination, imaging
2. Staging
3. Treatment of osteogenic sarcoma
4. Soft tissue sarcomas
5. Bone metastasis - clinic, diagnostic methods, therapy according to the main localization of the oncological process

#### ***B. Clinical trials in oncology***

1. Basic principles of good clinical practice (GCP)
2. Basic normative documents
3. Basic terminology - Sponsor, Monitor, Independent Ethics Committee, Researcher, Clinical Trial Protocol, Researcher's Brochure, Informed Consent, etc.



## PRACTICES- TOPICS

### *SEMINAR № 1- 1 Hour*

#### **Malignant diseases - what should a modern doctor know?**

- Goals and objectives of the General Clinical Oncology Committee - GCOC
- Medical standards and evidence-based medicine
- TNM staging
- RECIST-system for evaluation of therapeutic response
- For "/" Against "different interdisciplinary approaches

### *SEMINAR № 2- 1 Hour*

#### **Clinical application of radiosurgery**

- Location of RT as a local method
- RT as an alternative to local surgical treatment
- RT as an alternative to systemic treatment
- Combining RT with other therapeutic methods - preoperative, postoperative, intraoperative, radiation chemotherapy
- Stereotactic radiosurgery with Cyber Knife

### *SEMINAR № 3- 1 Hour*

#### **Clinical examples of the place of modern nuclear medical imaging in clinical practice (SPECT-CT; PET-CT, PET-MRT)**

- Principles for selection of optimal diagnostic algorithm - specificity, sensitivity, informativeness, non-invasiveness, price, accessibility
- Principles for selection of an optimal algorithm for evaluation and monitoring of the therapeutic response
- Recommended imaging methods according to different localizations
  - ✓ CT, MRI
  - ✓ Nuclear medicine diagnostics - hybrid scanners

### *SEMINAR № 4- 1 Hour*

#### **Role of metabolic radionuclide therapy in oncology - clinical cases with thyroid cancer, bone metastases**

1. Radiopharmaceuticals for therapeutic purposes
2. Metabolic brachytherapy in differentiated thyroid carcinomas
3. Metabolic brachytherapy for pain syndrome of bone metastases
4. Radiopharmaceuticals for diagnostic purposes

### *SEMINAR № 5- 1 Hour*

#### **Principles of drug treatment of solid tumors - clinical cases with the use of targeted therapy in different indications / locations**

- Role of personalized medicine in oncology
- Biological markers. Prognostic and predictive factors
- Immunotherapy

#### ***SEMINAR № 6- 1 Hour***

##### **Malignant tumors of the lung - clinical cases**

- Interdisciplinary therapeutic approach in NSCLC and SCLC by stage
- Metastatic disease - the most common clinical manifestations
- Malignant pleural mesothelioma, pleural effusions – therapeutic behavior

#### ***SEMINAR № 7- 1 Hour***

##### **Breast cancer - clinical examples for evaluating the therapeutic approach associated with modern staging, ICC and molecular genetic characteristics**

- Molecular genetic classification of breast cancer
- Adjuvant therapy depending on the patient's risk profile of relapse
- Neoadjuvant treatment and behavior in inoperable locally advanced breast cancer
- Modern systemic therapy for metastatic breast cancer

#### ***SEMINAR № 8- 1 Hour***

##### **Malignant tumors of the gastrointestinal tract - a clinical approach in metastatic CRC after molecular genetic evaluation**

- The role of the interdisciplinary approach in the assessment of therapeutic behavior
- Modern concept of oligometastatic disease
- Groups of targeted drugs and principles of therapeutic choice

#### ***SEMINAR № 9- 1 Hour***

##### **Malignant tumors of the genitourinary system in men - clinical cases**

- Behavior in seminoma and nonseminoma testicular tumors
- Prostate cancer - a therapeutic approach in hormone-sensitive and castration-resistant cancer
- Target molecules in renal cell carcinoma

#### ***SEMINAR № 10- 1 Hour***

##### **Clinical examples of emergencies in oncology**

- Emergency behavior in transfusion reactions
- Metabolic disorders
- Emergencies due to compression - cauda equina syndrome and vena cava superior syndrome
- Possible side effects of chemotherapy, targeted therapy, immunotherapy, etc.

## COMPENDIUM CLINICAL ONCOLOGY

1. Epidemiology of the malignancies
2. Etiopathogenesis of malignancies
3. Modern diagnostic methods – clinical laboratory and instrumental methods
4. Modern diagnostic methods - imaging, histological, molecular-genetic, others
5. Nuclear Medicine: Metabolic imaging (SPECT-CT; PET-CT, PET-MRT)
6. Principles of radiation therapy for malignant tumors - indications and side effects. Principles of radiosurgery
7. Metabolic radionuclide therapy in oncology
8. Principles of systemic anticancer therapy. Conventional chemotherapy
9. Targeted therapy, hormonal treatment, immunotherapy - drug groups, mechanism of action, examples
10. Malignant tumors of the lung - clinical presentation, classification, staging and complex treatment
11. Breast cancer - clinical presentation, classification, staging and principles of therapy
12. Malignant tumors of GIT (esophagus, stomach, pancreas) - clinical presentation, diagnosis, treatment principles
13. Malignant tumors of GIT (colorectal cancer) - clinical presentation, diagnosis, staging, treatment principles
14. Malignant tumors of the female reproductive system (uterus, ovaries) - clinical characteristics, staging, treatment principles
15. Malignant tumors of the genitourinary system in a man (kidney, bladder) - clinical presentation, staging, principles of treatment
16. Malignant tumors of the genitourinary system in the man (prostate, testicles) - clinical presentation, staging, principles of treatment
17. Soft tissue sarcomas. Osteosarcoma
18. A modern look at clinical trials in oncology - principles, basic characteristics, regulation
19. Emergency conditions in malignancies - clinical characteristics, diagnostics, therapeutic approach
20. Palliative care. Quality of life. Psychological support



## BIBLIOGRAPHY

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