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

# SYLLABUS

**in**

# Clinical Oncology

**Approved by the Section Council on 26.05.2022/ Proceedings № 3**
**Confirmed by the Faculty Council on 13.07.2022/ Proceedings № 7**

**CLINICAL ONCOLOGY**
**Syllabus**

| Discipline | Final exam/ semester | Auditorium classes | | | | ECTS non-auditorium classes | ECTS total | Academic hours in years and semesters | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 5th year | |
| | | Total | Lectures | Practices | ECTS | | | IX | X |
| Clinical oncology | X | 30 | 20 | 10 | 1.0 | 0.3 | 1.3 | - | 30 |

**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 subspecialities. 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;

**CLINICAL ONCOLOGY PROGRAM**
**FOR MEDICAL STUDENTS**
**V course, Second semester**

| № | TOPIC - TWO STUDY HOURS | Lectures / Hour |
|---|---|---|
| **1.** | Malignant diseases - what does the physician have to know? Principles of drug treatment of solid tumors. Conventional chemotherapy. Targeted therapy. | 2h |

| | | |
|---|---|---|
| **2.** | Principles of radiation oncology - indications, side effects, complications.<br>Principles of radiosurgery. | 2h |
| **3.** | Clinical application of radiation oncology in solid tumors - main indications for various malignant neoplasms. | 2h |
| **4.** | Malignant tumors of the lung and pleura - staging, complex treatment. | 2h |
| **5.** | Breast cancer - genetic features, diagnosis, staging, principles of therapy. Malignant tumors of the female reproductive system (uterus, ovaries) – clinical characteristics, staging, treatment principles | 2h |
| **6.** | Malignant tumors of the Gastrointestinal Tract - genetic features, staging, principles of treatment. | 2h |
| **7.** | Malignant tumors of the genitourinary system in men - staging, principles of treatment | 2h |
| **8.** | Nuclear medicine: metabolic imaging (SPECT-CT; PET-CT, PET-MRT). | 2h |
| **9.** | Role of metabolic radionuclide therapy in oncology. | 2h |
| **10.** | Soft tissue sarcomas. Bone tumors. Cancer of unknown primary (CUP). Metastatic disease - a modern concept. | 2h |

**TEST**

**LECTURES - THESIS**

***LECTURE № 1***

**Malignant diseases - what should a modern doctor know? Principles of drug treatment of solid tumors. Conventional CT. Targeted therapy - groups of drugs, mechanism of action, representatives**

**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.** Principles of treatment and multimodal approach

**5.** Principles of conventional chemotherapy. Groups of drugs

**6.** Concept of targeted therapy as a component of modern antitumor treatment – molecular mechanisms of action, classification, indications

**7.** Immunotherapy

*LECTURE № 2*

**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*

**Clinical application of radiation therapy (RT) in solid tumors** - indications, side effects, complications

**1.** Role of RT in CNS tumors - primary and metastatic
**2.** Possibilities for combined RT – chemotherapy / immunotherapy for head and neck tumors)
**3.** Role of RT in lung and pleural tumors
**4.** Multimodal approach with the participation of RT in rectal carcinoma, prostate tumors and others.

*LECTURE № 4*

**Malignant tumors of the lung - the role of 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 № 5*

**A. Breast cancer - genetic features, staging, principles of therapy. Malignant tumors of the female genitalia - staging, complex treatment**

**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

**B. Malignant tumors of the female reproductive system (uterus, ovaries) – clinical characteristics, staging, treatment principles**

***LECTURE № 6***

**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 № 7***

**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 № 8***

**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 № 9***

**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 № 10***

**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.** Cancer of unknown primary (CUP).

**C.** Metastatic disease - a modern concept.

# Exercise program in Clinical oncology
# Summer Semester

## Exercise № 1

1. Primary and metastatic brain tumors
2. Cancer of unknown primary (CUP)
3. Malignant neoplasms of the head and neck
4. Malignant neoplasms of the thyroid gland

*Presentation of clinical cases by localization*

## Exercise № 2

1. Non-small cell lung cancer
2. Small cell lung cancer
3. Malignant mesothelioma
4. Breast cancer

*Presentation of clinical cases by localization*

## Exercise № 3

1. Esophageal cancer
2. Stomach cancer
3. Pancreatic cancer
4. Hepatocellular carcinoma
5. Colorectal cancer

*Presentation of clinical cases by localization*

## Exercise № 4

1. Cervical cancer
2. Carcinoma / sarcomas of the uterine body
3. Ovarian cancer
4. Malignant mesenchymal tumors - sarcomas (GIST)

*Presentation of clinical cases by localization*

## Exercise № 5

1. Malignant tumors of the testicles
2. Prostate cancer
3. Renal cell carcinoma
4. Bladder cancer

*Presentation of clinical cases by localization*

**Textbooks and teaching aids**


**1.** Medical oncology. Edited by K. Timcheva. Sofia 2018. ISBN 978-954-553-145-3
**2.** General and clinical oncology (volumes 1 and 2) edited by P. Kurtev, 2021, Sofia
**3.** Collection of tests in clinical oncology. Edited by J. Grudeva-Popova. Plovdiv 2018ISBN 978-619-7085-97-6
**4.** Anemia in malignant diseases. I. Nenova, J. Grudeva-Popova. Plovdiv 2016. ISBN 978-619-7085-62-4
**5.** Pharmacotherapy and problems of clinical pharmacy (part 2). Edited by M. Karaivanova. Sofia 2014
**6.** Guide to radiotherapy for medical students - Marinova L, Yaneva M., Varna 2008
**7.** CardioOncology or Oncocardiology - modern issues of diagnosis and treatment. J. Grudeva-Popova (ed.). Plovdiv 2012. ISBN 978-954-9549-58-4
**8.** Collection of clinical oncology tests. Zhanet Grudeva-Popova (ed). Plovdiv 2019
**9.** Radiation Oncology Self-assessment Guide, John Suh (Editor), 2012
**10.** The MD Anderson Manual of Medical Oncology. Hagop M. Kantarjian, Robert A. Wolff, Charles A. Koller, McGraw-Hill Medical. 2nd edition, 2011
**11.** Clinical Radiation Oncology: Expert Consult-Online and Print Consult, Leonard L. Gunderson (Author), Joel E. Tepper (Author) Saunders; 3-rd Revised edition, 2011
**12.** Textbook of Radiation Oncology 3 Ed. Richard MD Hoppe (Author),1664 pages, Saunders; 3rd Revised edition, 2010
**13.** Harrison's Hematology and Oncology (Harrison's Specialties), Dan L. Longo (Author), McGraw-Hill Medical; 1st edition, 2010
**14.** Radiation Oncology - management decisions. Chao Cl., Perez C, Brady LW Lippincott Williams & Wilkins, 3 edition, 2009
**15.** Textbook of Medical Oncology. Franco Cavalli (Editor), Stanley B. Kaye, Heine H. Hansen, Heine H Hansen, James O. Armitage, Martine Piccart-Gebhart (Editor). Informa Healthcare; 4th edition, 2009

**COMPENDIUM CLINICAL ONCOLOGY**

**1.** Epidemiology of the malignancies
**2.** Ethiopathogenesis of the malignancies
**3.** Modem diagnostic methods - clinicallaboratory and instrumental methods
**4.** Modem 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 modem 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

**HEAD OF DEPARTMENT**
**PROF. ZHANET GRUDEVA-POPOVA, MD, PhD**