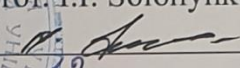
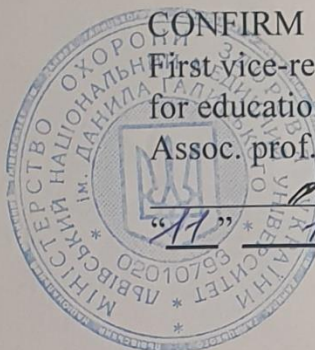
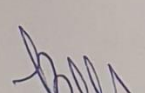


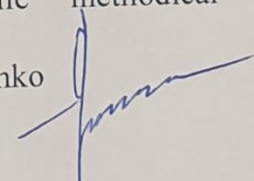
MINISTRY OF HEALTH CARE OF UKRAINE  
DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY  
Department of Oncology and Radiology

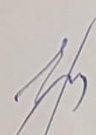
CONFIRM  
First vice-rector  
for educational and scientific work  
Assoc. prof. I.I. Solonyenko  
  
"11" / "12" 2023  


EDUCATIONAL PROGRAM OF DISCIPLINE  
"ONCOLOGY" (OK 31)

for preparation of specialists of the second (master's) degree of higher  
education  
educational sector 22 "Health care"  
specialty 222 «Medicine»  
(V course)

Discussed and approved  
at the Methodical meeting of the  
Department of oncology and radiology  
Protocol № 4  
from "19" APRIL 2023  
Acting head of  
Department  
Prof. N.A. Volod'ko 

Confirmed  
profile Methodical Committee  
in surgical disciplines  
Protocol № 20  
From "24" APRIL 2023  
Chief of the profile methodical  
commission  
Prof. V.P. Andryushchenko 

Lviv – 2023  


Educational program of discipline of oncology for students of the **V course** of the Internal medicine department of English-speaking students, who study in speciality 222 **Medicine**

The program "Oncology" (OK31) was compiled by the staff of the Department of Oncology and Medical Radiology of Danylo Halytsky Lviv National Medical University: prof. Sternuk Yu.M., prof. Volod'ko N.A., assoc. prof. Lukavetsky N.O., assist Slipetsky R.R.

based on the approximate Oncology program of discipline and curriculum approved by the profile methodical committee (protocol №75 from 31.08.21)

#### **Changes and additions to the educational program for 2023-2024**

<b>№</b>	<b>Contents of the changes made (additions)</b>	<b>Date and No. of the session of the department</b>	<b>Notes</b>
1	Updated References	№__ from _____, 2023	

Head of the Department  
of Oncology and radiology

\_\_\_\_\_ prof. N.A.Volod'ko

## INTRODUCTION

### The study program of the discipline "ONCOLOGY"

according to the Standard of higher education of the *second (master's) level*

areas of knowledge 22 "Health"

specialty 222 "Medicine"

educational program of master of medicine

**Description of the discipline (abstract)** The program "Oncology" (OK31) is designed to train specialists of the second (master's) level of higher education in the field of knowledge 22 "Health", specialty 222 "Medicine". The program offers a review of basic information on general and clinical oncology. In general oncology, the basic principles of diagnosis of malignant tumors and the basic principles of their treatment are considered. Among the issues of clinical oncology are tumors of the digestive tract, tumors of the respiratory system, breast and thyroid gland, skin tumors, tumors of the genitals and urinary organs. The program is designed for 90 teaching hours / 3 credits.

The structure of the discipline	Number of credits, hours, of them				Year of study semester	type of control
	Total	Classroom		Self work		
		Lectures (hours)	Practical classes (hours)			
Course title: Oncology Content modules 4	3 credit and 90 h	10	40	40	5th year 9 semester	credit
<b>for semesters</b>						
<i>Content module 1</i>	0,86 credit / 26 h	10	-	16	9 semester	
<i>Content module 2</i>	0,8 credit / 24 h		15	9	9 semester	
<i>Content module 3</i>	0,8 credit / 24 h		15	9	9 semester	
<i>Content module 4</i>	0,53 credit / 16 h		10	6	9 semester	

The subject of study of the discipline is the basics of theoretical and clinical oncology

**Interdisciplinary connections:** anatomy, histology, pathological anatomy, otolaryngology, dentistry, surgery, dermatology, therapy, radiation therapy, endocrinology, gynecology, urology.

## 1. The purpose and objectives of the discipline

1.1. The purpose of teaching the discipline " **ONCOLOGY** " (the ultimate goal) is to prepare a master's degree in the specialty. The description of goals is formulated through skills in the form of target tasks (actions). Based on the ultimate goals of the module, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.

1.2 .The main tasks of studying the discipline " **ONCOLOGY** " are :

- ✓•To determine the tactics of examination of the patient in case of suspicion of a malignant tumor;
- ✓•interpret the results of special research methods;
- ✓•determine the general tactics of treatment for the most common cancers;
- ✓•demonstrate the ability to keep medical records;
- ✓•demonstrate mastery of the principles of oncological deontology.

1.3 **Competences and learning outcomes**, the formation of which is facilitated by the discipline (relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard of Higher Education).

In accordance with the requirements of the Standard of Higher Education, the discipline provides students with the acquisition of *competencies* :

- *general* :

- ✓•ability to act socially responsible and civic conscious;
- ✓•ability to apply knowledge in practical situations;
- ✓•ability to abstract thinking, analysis and synthesis. ;
- ✓•ability to communicate in the native language orally and in writing;
- ✓•ability to communicate with representatives of other professions.

- *special (professional, subject)*:

- ✓•determine the tactics of monitoring and management of the patient in case of suspicion of malignancy;
- ✓•interpret the results of special research methods;
- ✓•formulate a preliminary clinical diagnosis of major cancers;
- ✓•formulate general treatment tactics;
- ✓•demonstrate the ability to keep medical records in the oncology clinic;
- ✓•demonstrate mastery of the principles of oncological deontology.

Detailing of competencies according to descriptors in the form of " Competence Matrix " .

## Competence matrix

<b>№</b>	<b>Competence</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Communication</b>	<b>Autonomy and responsibility</b>
1	Ability to abstract thinking and analysis; ability to teach and master modern information and communication technologies	Know the current trends in the industry and the indicators that characterize them.	Be able to analyze professional information, make informed decisions, acquire modern knowledge.	Establish appropriate links to achieve goals.	Be responsible for the timely acquisition of knowledge.
2	Ability and understanding of the subject area and profession.	Know the features of the professional activity of a doctor ..	Be able to carry out professional activities that require updating and integration of knowledge.	To form a communication strategy in professional activity.	Be responsible for the continuous development of a high level of autonomy.
3	Ability to apply knowledge in practical situations.	Know the methods of implementing knowledge in solving practical problems.	Be able to use professional knowledge to solve practical problems	Establish links with the subjects of practical activities.	Be responsible for the validity of decisions.
4	Ability to communicate in the state language and the second (foreign) language.	Know the state language, including professional orientation. Know a foreign language at a level sufficient for professional communication.	Be able to use the state and foreign languages for professional activities and care .	To form a communication strategy in professional activity.	Be responsible for continuous professional development with a high level of autonomy.
5	Ability to search, process and analyze information from various sources in Ukrainian and foreign languages.	Have the necessary knowledge in the field of information technology used in professional activities in Ukrainian and foreign languages.	Be able to use information technology in the professional field to search, process and analyze new information from different sources and in different languages	Use information technology in professional activities.	To be responsible for the continuous development of professional knowledge and skills in Ukrainian and foreign languages.
6	Ability to adapt and act in a new situation	Know the methods of implementing knowledge in solving practical problems.	Be able to use professional knowledge to adapt and act to a new situation.	Establish links with the subjects of practical activities.	To be responsible for the quality of professional tasks in the new situation.
7	Ability to work autonomously, show skills and pose and solve problems.	Know the methods of implementing knowledge in identifying, setting and solving problems of professional activity.	Be able to use professional knowledge to identify, formulate and solve problems of professional activity.	Establish links with the subjects of practical activities in order to identify, formulate and solve problems of professional activity.	To be responsible for the validity of the decisions made to solve problems of professional activity.
8	Ability to choose a communication strategy.	Know the methods of implementing knowledge in choosing a strategy for communicating with patients and colleagues.	Be able to use knowledge to choose a strategy for communicating with patients and colleagues.	To form a communication strategy in professional activity.	Be responsible for continuous professional development with a high level of autonomy.
9	Ability to work in a team	Know the ways of collective interaction while working in a team.	Be able to use knowledge to choose a communication strategy during collective interaction.	To form a communication strategy in professional activity.	Be responsible for continuous professional development.

10	Skills of cooperation with colleagues and patients.	Know the ways of interpersonal interaction when communicating with colleagues and patients.	Be able to use knowledge to choose a communication strategy during collective interaction .	To form a communication strategy in professional activity	Be responsible for continuous professional development with a high level of autonomy.
11	Ability to act on ethical considerations.	Know the moral and ethical principles of a medical specialist and the rules of professional subordination.	Use in practice the moral and ethical principles of the medical specialist and the rules of professional subordination.	Adhere to the moral and ethical principles of a medical specialist and the rules of professional subordination during professional activity.	Be responsible for observance of moral and ethical principles of the medical specialist and rules of professional subordination.
12	Safe activities skills	Ability to assess the level of danger when performing professional tasks.	Be able to carry out professional activities in compliance with safety rules.	Ensure quality performance of professional work in compliance with safety rules.	Be personally responsible for compliance with safety rules when performing professional tasks.
13	Ability to evaluate and ensure the quality of work performed.	Ability to evaluate and ensure quality in performing professional tasks.	Know the methods of evaluating performance indicators.	Be able to ensure the quality of professional work.	Make connections.
Special (professional competencies).					
1	Recognize the moral, ethical and professional rules of the doctor.	Know the basic provisions of the Doctor's Code of Ethics.	Use in practice the Code of Ethics of the doctor.	Adhere to the provisions of the Doctor's Code of Ethics when communicating with patients and colleagues.	To bear personal responsibility for observance in practice of provisions of the Code of Ethics of the doctor.
2	Understand the moral and deontological principles of a medical specialist and the rules of professional subordination in an oncology clinic.	Know the moral and deontological principles of a medical specialist and the rules of professional subordination in an oncology clinic.	To use in practice the moral and deontological principles of a medical specialist and the rules of professional subordination in an oncology clinic.	Adhere to the moral and deontological principles of the medical specialist and the rules of professional subordination in the oncology clinic during professional activity.	To bear personal responsibility for observance of moral and deontological principles of the medical specialist and rules of professional subordination in oncology clinic.
3	Learn to promote a healthy psychological microclimate in the team, learn the basics of the legal relationship of a doctor with cancer patients.	Know the current legal norms of the doctor-patient relationship with cancer.	Use in practice the legal norms of the doctor- patient relationship with cancer. Be able to form a healthy psychological microclimate in the team.	Adhere to the current legal norms of the doctor-patient relationship with oncological disease during professional activity . Maintain a healthy psychological microclimate in the team	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.
4	Know the tactics of examination of a patient with suspected tumor of the maxillofacial area.	Know the clinic of tumors of the maxillofacial area	Use the acquired knowledge to make a diagnosis.	Adhere to the current legal norms of the doctor-patient relationship with tumors of the maxillofacial area during professional activity	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.

5	Know the tactics of examination of a patient with suspected tumor of the skin.	Know the clinic of skin tumors.	Use the acquired knowledge to make a diagnosis.	Adhere to the current legal norms of the doctor-patient relationship with skin tumors during professional activity	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.
6	Know the tactics of examination of a patient with suspected tumor of the digestive system	Know the clinic of tumors of the digestive system	Use the acquired knowledge to make a diagnosis.	Adhere to the current legal norms of the doctor-patient relationship with tumors of the digestive system during professional activity	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.
7	Know the tactics of examination of a patient with suspected tumor disease of the respiratory system.	Know the clinic of tumors of the respiratory system.	Use the acquired knowledge to make a diagnosis.	Adhere to the current legal norms of the doctor-patient relationship with tumors of the respiratory system during professional activity	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.
8	Know the tactics of examination of a patient with suspected tumor disease of the excretory and reproductive systems.	Know the clinic of tumors of the excretory and reproductive systems.	Use the acquired knowledge to make a diagnosis	Adhere to the current legal norms of the doctor-patient relationship with tumors of the digestive system during professional activity	To bear personal responsibility for observance of the current legal norms of the doctor-patient relationship with oncological disease.

#### Learning outcomes:

- ✓ carry out professional activity in social interaction. Based on humanistic and ethical principles;
- ✓ apply knowledge of general and professional disciplines in professional activities;
- ✓ demonstrate the ability to independently search, analyze and synthesize information from various sources;
- ✓ argue information for decision-making, to be responsible for them in standard and non-standard professional situations, to adhere to the principles of deontology and ethics in professional activity;
- ✓ carry out professional communication in modern Ukrainian literary language;
- ✓ adhere to the norms of communication in professional interaction with colleagues, management to work effectively in a team.

Integrative final program learning outcomes, the formation of which is facilitated by the discipline:

- ✓ Integrate knowledge and solve complex issues;
- ✓ Formulate judgments on insufficient or limited information;
- ✓ Clearly and unambiguously communicate their conclusions and knowledge, reasonably substantiating them, to the professional and non-professional audience.

## **2. Information volume of the discipline**

The study of the discipline is given 3 credits and ECTS, 90 hours.

### **Content of the program Module I. Oncology.**

**Content module 1** . General and theoretical oncology.

**Content module 2**. Tumors of the digestive tract.

**Content module 3** . Tumors of the respiratory organs, breast, skin

**Content module 4** . Tumors of the genitals and urinary organs.

The educational process is organized according to the credit-module system in accordance with the requirements of the Bologna Declaration.

According to the experimental curriculum program for the 5th year, volume 90 hours (3 credits), consisting of 10 hours of lectures, 40 hours practical classes and 40 hours of independent work of students on the study of the major issues of Clinical Oncology, organizations oncological services, clinics and diagnostics, principles of treatment of the most common tumors (lung, mediastinum, breast, digestive tract, urinary tract, skin and genitals).

The discipline program consists of one module, which is divided into 4 content modules. The amount of student workload is described in ECTS credits - credit credits, which are credited to students upon successful completion of the relevant module.

The teaching of oncology is carried out at the departments and courses of oncology, where there are qualified scientific and pedagogical staff of oncologists. The bases for teaching clinical oncology should be medical and diagnostic institutions of oncological profile, which have the necessary bed stock, cancer patients, equipment and scope of work.

### **Module " Oncology "**

**Content module 1** . General and theoretical oncology.

**Content module 2**. Tumors of the digestive tract.

**Content module 3** . Tumors of the respiratory organs, breast, skin

**Content module 4** . Tumors of the genitals and urinary organs.

Types of classes according to the curriculum are:

- a) lectures;
- b) practical classes;
- c) independent work of students.

Thematic plans of practical classes and independent work ensure the implementation in the educational process of all topics that are part of the content modules.

In the lecture course various didactic means are used as much as possible - multimedia presentations, educational films, slides, demonstration of thematic patients.

Practical classes in clinical disciplines are conducted by rotating and combining modules of clinical disciplines. Practical exercises provide students study basic questions of theoretical oncology, oncological service organization, prevention, clinic,



diagnosis, treatment of the most common tumors of bronchopulmonary system, digestive tract, mediastinum, breast, urinary tract and genital skin.

Practical classes lasting 5 academic hours are held in the oncology clinic and consist of four structural parts: mastering the theoretical part of the topic; demonstration of the thematic patient; work of students to practice practical skills under the supervision of a teacher; solving situational tasks and test-control of mastering the material. Particular attention is paid to the peculiarities of communication with the patient, the detection of early signs of malignancy and factors that contribute to its occurrence.

Independent work of students occupies an important place in the study of oncology. In addition to extracurricular training on theoretical issues of oncology, it includes the work of students in the departments of the hospital, operating room and clinic under the supervision of a teacher. Independent work includes the study of certain sections of general oncology, supervision of patients with writing a medical history.

The current educational activity of the student is controlled at practical classes according to the concrete purposes, the intermediate control of mastering of semantic modules is carried out at the last employment of each module. It is recommended to use the following tools to diagnose the level of preparation of students: solving situational problems, solving tests, monitoring the implementation of practical skills in methods of examining the patient with subsequent interpretation of the data, analysis and evaluation of instrumental and laboratory tests.

The final control of mastering the module is carried out after its completion at the final control lesson. Assessment of student achievement in the discipline is a rating and is set on a multi-point scale and is determined by the ECTS system and the traditional scale adopted in Ukraine.

For those students who want to improve the performance of the discipline on the ECTS scale, the final control of the module is carried out in accordance with the regulations in addition to the schedule approved by the institution.

### **3. Contents of the program**

**Content module 1. General and theoretical oncology. (Lecture course + independent study).**

#### **Specific goals:**

- to create in the student a modern idea of tumor growth
- give information about the etiology of tumor growth
- the concept of carcinogens
- present current information on carcinogenesis
- to state the basic principles of diagnostics of tumor processes
- to state the basic principles of treatment of tumor processes.

**Lecture 1. General definition of the concept of "tumor". Epidemiology of cancer. Etiology of tumors. Chemical carcinogens. Physical carcinogens, biological carcinogens.**

Definition of "tumor". Apoptosis. Benign and malignant tumors. Epidemiology of cancer. Morphological types of malignant tumors.

Etiology of tumors. Cancer initiators and promoters. Chemical and physical factors of cancer. Biological factors of cancer. The role of viruses in cancer. Experiments of P. Raus. Differences between viruses that cause infectious processes and oncogenic viruses. Transforming genes. The concept of oncogene, protooncogene. Protooncogenes as important regulators of cell proliferation and differentiation. Structure sarcoma virus genome Raus. Mitogens. The role of "mute" genes. Cancer modifiers.

## **Lecture 2. Carcinogenesis. Carcinogenesis at the cell level. Carcinogenesis at the organ level. Carcinogenesis at the level of the organism.**

Definition of "carcinogenesis". Pathogenic and sanogenic mechanisms in carcinogenesis. Carcinogenesis at the cell level. Chemical and physical carcinogenesis. Viral carcinogenesis. Functions of oncoproteins. Growth factors. The role of autocrine secretion in the activity of tumor cells. Proteins that act as guardians of the genome. Tumor suppressor genes. Mutations in tumor suppressor genes. The role of apoptosis in maintaining genetic homeostasis.

Carcinogenesis at the level of the organ, its phase. Intraepithelial cancer (cancer in situ).

Carcinogenesis at the level of the organism. Cancer genetics. Protooncogene and antioncogene. The role of gene mutations in the occurrence of tumors. Hormones and cancer. Immunology of cancer. Cancer embryonic tumor-associated antigens. Humoral and cellular responses of the immune system. B-lymphocytes and products of their vital activity. T-lymphocytes (killers, helpers and suppressors). Cytokines. Natural killers. Macrophages in antitumor protection. Angiogenesis in tumors.

## **Lecture 3. Clinical stages and morphology of cancer.**

The role of a standardized approach of the same type in describing the extent of the tumor in the body, its histological structure for treatment planning, evaluation of its results, preparation of treatment protocols and information exchange. Principles of classification of tumors by stages and its main components - the size of the tumor, its length and nature of the capture of adjacent tissues within the body, the transition to neighboring anatomical structures, the absence or presence of affected regional lymph nodes, other organs and tissues. General rules for the staging of malignant tumors by the TNM system.

Elements of clinical morphology. Clinical groups.

## **Lecture 4. Principles of diagnosis of malignant tumors.**

Features of examination of patients with suspected cancer. Levels of cancer diagnosis. Extremely early, early, timely and late diagnosis. The concept of oncology. Components of the diagnosis: localization of the tumor, anatomical type of growth, features of morphological structure, stage of the disease.

Endoscopy (esophagogastroscope, endoscopic ultrasound, RRS, colonoscopy, bronchoscopy, mediastinoscopy, laparoscopy, cystoscopy, colposcopy).

Research methods with image creation. Classical radiological methods (scopic and graphic). X-ray semiotics (tissue compaction syndrome, tissue destruction syndrome, deformity syndrome of tubular and hollow organs, organ dysfunction syndrome). Computed tomography. Magnet-resonance tomography, PET examination. Ultrasound.

Radionuclide studies. Thermography. Laboratory methods morphological studies (needle, excisional, incisional biopsy trepanobiopsy). Immunodiagnostics. Tumor markers. MCAB in the diagnosis of tumors. Principles of diagnosis of clinical cancer.

### **Lecture 5. Principles of treatment of malignant tumors**

Radical treatment. Palliative treatment. Symptomatic treatment. Methods of local exposure to the tumor. Methods of systemic effect on the tumor. Combination treatment. Comprehensive treatment.

Surgical treatment. Principles of surgical treatment. The concept of anatomical zone. Area. Antiblastic. Radical surgery. Combined surgery. Advanced surgery. Organ-saving operations. Exploratory surgery. Operability, resectability. Cryosurgery.

Radiation therapy. Historical aspects. Types and sources of ionizing radiation X-rays. Gamma rays. Corpuscular ionizing radiation. Biological action of ionizing radiation. Radiosensitivity of normal and tumor tissues. Methods of radiation treatment (radical, palliative; combined radiation). Separation of methods of radiation therapy depending on the distance of the patient to the radiation source. Remote (distant, short-distance), contact (application, intracavitary, intratumorous, radiosurgery, brachytherapy) methods irradiation). Dose fractionation. Indications and contraindications to radiation therapy. Radiation treatment planning. Reactions and complications of radiation therapy.

Radionuclide therapy.

Chemotherapy. Pharmacological groups of cytostatic drugs. General biological and medical aspects of antitumor chemotherapy. Individual sensitivity of the tumor to drug treatment. Monochemotherapy, polychemotherapy. Cyclic, intermittent and course methods of combined chemotherapy. Adjuvant and neoadjuvant chemotherapy. Systemic and local (regional) chemotherapy. Complications and side effects of chemotherapy. Bone marrow transplantation in the treatment of complications of chemotherapy. The role and place of cytoreductive treatment.

Hormone therapy. Hormone-induced tumors. Hormone-active tumors. Hormone-dependent tumors. The main means of hormone therapy.

Biotherapy. Active immunotherapy. Passive immunotherapy. Targeted therapy.

### **Content module 2. Tumors of the digestive tract.**

#### **Specific objectives:**

- conduct surveys and physical examinations of patients with tumors of the digestive tract and analyze their results in the oncology clinic

- to determine the tactics of examination and management of the patient in case of suspicion of a malignant tumor of the digestive tract
- interpret the results of special research methods (esophagogastroscopy, rectoromanoscopy, colonoscopy, irigoscopy)
- to formulate a preliminary clinical diagnosis in the case of cancer of the digestive tract (cancer of the lips, tongue, esophagus, stomach, pancreas, liver, colon and rectum)
- to determine the tactics of management of patients with cancer of the digestive tract
- demonstrate the ability to keep medical records in an oncology clinic
- demonstrate mastery of the principles of oncological deontology.

### **Topic 1. Cancer of the lips, mucous membranes of the mouth, tongue.**

Malignant diseases of the lips, mucous membranes of the mouth, tongue: morbidity, main causes, epidemiology, precancerous diseases; clinic, methods of diagnosis and early diagnosis, methods of morphological diagnosis (puncture and incisional biopsy); classification by stages and TNM. Methods of treatment: surgical treatment, regional chemotherapy; principles of combined and complex treatment Immediate and long-term results of treatment . Primary and secondary prevention of tumors of the lips, mucous membranes of the mouth, tongue.

### **Topic 2. Cancer of the esophagus and stomach.**

Esophageal cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, diagnosis of Barrett's esophagus , classification by stages and TNM. Methods of treatment: surgical treatment (radical, palliative and symptomatic operations); general principles of combined and complex treatment; immediate and long-term results of treatment, methods of medical rehabilitation; prevention of esophageal cancer.

Gastric cancer: morbidity, causes, epidemiology, precancerous diseases of the stomach; clinic, diagnosis, early diagnosis, differential diagnosis, methods of instrumental diagnosis, methods of screening for gastric cancer; classification by stages and TNM. Treatment: surgical treatment (history, the role of domestic scientists, general principles), radical operations, the role of lymphadenectomy; palliative and symptomatic operations; combined and complex treatment; immediate and long-term results of treatment; methods of medical rehabilitation; primary and secondary prevention of gastric cancer.

### **Topic 3. Cancer of the colon and rectum. Pancreatic and liver cancer.**

Colon cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification. Treatment: surgical treatment (general principles, the role of domestic scientists, radical, palliative and symptomatic operations), combined and complex treatment; immediate and long-term results of treatment.

Cancer of the rectum and anal canal: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification. Treatment: surgical treatment, the role of domestic scientists, radical,

palliative and symptomatic operations, combined and complex treatment; immediate and long-term results of treatment. Methods of screening for colon cancer. Methods of medical rehabilitation; primary and secondary prevention of colon tumors.

Pancreatic cancer: morbidity, causes, epidemiology, clinic, diagnosis, differential diagnosis, classification. General principles and methods of treatment; combined and complex treatment; immediate and long-term results of treatment; prevention of pancreatic cancer.

Liver cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, differential diagnosis, classification. Methods of treatment, combined and complex treatment; prevention of liver cancer.

### **Content module 3. Tumors of the respiratory system, breast, skin.**

#### **Specific objectives :**

- to conduct a survey and physical examination of patients with tumors of the respiratory and breast, skin and analyze their results in the oncology clinic
- to determine the tactics of examination and management of the patient in case of suspicion of a malignant tumor of the respiratory organs, breast, skin
- interpret the results of special research methods (bronchoscopy, puncture biopsy of the breast, skin tumors and lymph nodes)
- to formulate a preliminary clinical diagnosis of cancer of the respiratory system, breast, skin
- to determine the tactics of management of patients with cancer of the respiratory system, breast, skin
- demonstrate the ability to keep medical records in an oncology clinic
- demonstrate mastery of the principles of oncological deontology.

#### **Topic 4. Lung cancer.**

Lung cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis of lung cancer, differential diagnosis, classification. Treatment: surgical treatment (general principles, methods); combined and complex treatment; immediate and long-term results of treatment; lung cancer prevention. Metastatic lung tumors: diagnosis, differential diagnosis, treatment methods.

#### **Topic 5. Breast cancer.**

Breast cancer: incidence, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, screening methods for breast cancer, classification of TNM and by stages. Treatment: surgical treatment, combined and complex treatment; immediate and long-term results of treatment; methods of medical rehabilitation; primary and secondary prevention.

#### **Topic 6. Skin cancer, melanoma.**

Skin cancer, melanoma: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis,

classification. Treatment: surgical treatment; combined and complex treatment; immediate and long-term results of treatment; primary and secondary prevention.

#### **Content module 4. Tumors of the genitals and urinary organs.**

##### **Specific objectives :**

- conduct surveys and physical examinations of patients with tumors of the genitals and urinary organs and analyze their results in the oncology clinic
- to determine the tactics of examination and management of the patient in case of suspicion of malignant tumors of the genitals and urinary organs
- interpret the results of special research methods ( bimanual examination, cystoscopy)
- conduct surveys and physical examinations of patients
- to determine the tactics of examination and management of the patient in case of suspicion of a malignant tumor of the genitals and urinary organs
- interpret the results of special research methods
- formulate a preliminary clinical diagnosis
- to determine the tactics of management of patients with oncological diseases of the genitals and urinary organs
- demonstrate the ability to keep medical records in an oncology clinic
- demonstrate mastery of the principles of oncological deontology.
- 

#### **Topic 7. Cancer of the body and cervix, ovarian cancer.**

Body and cervical cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, classification, screening methods for cervical cancer; differential diagnosis Treatment: surgical treatment, combined and complex treatment; immediate and long-term results of treatment; prevention of cervical cancer.

Ovarian cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, differential diagnosis, classification. Treatment: surgical treatment; combined and complex treatment; immediate and long-term results of treatment.

#### **Topic 8. Cancer of the kidney, ureter, bladder, prostate**

Cancer of the kidney, bladder, ureter, prostate: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, classification

- to formulate a preliminary clinical diagnosis in the case of oncological diseases of the genitals and urinary organs
- to determine the tactics of management of patients with oncological diseases of the urinary organs , direct and long-term results of treatment.
- demonstrate the ability to keep medical records in an oncology clinic
- demonstrate mastery of the principles of oncological deontology.

### Approximate structure of credit

Topic	Lectures	Practical classes	Independent work of students	
<b>Module I.</b>				
<b>Content module 1. General and theoretical oncology</b>				
1. General definition of the term "tumor". Epidemiology of cancer. Etiology of tumors. Chemical carcinogens. Physical carcinogens, biological carcinogens.	2		2	Cancer statistics.
2. Carcinogenesis. Carcinogenesis at the cellular level. Carcinogenesis at the organ level. Carcinogenesis at the level of the organism.	2		2	Systemic effects of tumors on the body. Syndrome of endogenous intoxication of cancer patients.
3. Clinical stages and morphology of cancer.	2		2	Clinical stages. Principles of tumor classification by TNM. Clinical staging. Pathohistological staging.
4. Principles of diagnosis of malignant tumors.	2		2	Elements of clinical morphology
5. Principles of treatment of malignant tumors	2		2	Groups of elevated cancer risk
			2	Deontology in oncology.
			2	Rehabilitation treatment of cancer patients.
			2	Principles of organization of anti-cancer care.
Total on the content module	10		16	
<b>Content module 2. Tumors of the digestive tract</b>				
Topic 1. Cancer of the lips, oral mucosa, cancer of the tongue.		5	3	Examination of patients in the departments of the hospital and
		5	3	

Topic 2. Cancer of the esophagus and stomach. Topic 3. Cancer of the colon and rectum. Pancreatic and liver cancer.		5	3	clinic; work in the operating room; participation in conducting instrumental research; curation of patients with writing a medical history.
Total on the content module		15	9	

### Content module 3. Tumors of the respiratory organs, breast, skin

Topic 4. Lung cancer. Topic 5. Breast cancer. Topic 6. Skin cancer, melanoma.		5 5 5	3 3 3	Examination of patients in the departments of the hospital and clinic; work in the operating room; participation in the holding instrumental research; curation of patients with writing a medical history.
Total on the content module		15	9	

### Content module 4. Tumors of the genitals and urinary organs

Topic 7. Cancer of the body and cervix, ovarian cancer. Topic 8. Cancer of the kidney, ureter, bladder, prostate		5 5	3 3	Examination of patients in the departments of the hospital and clinic; work in the operating room; participation in the holding instrumental research; curation of patients with writing a medical history
Total on the content module		10	6	
<b>Total hours: 90</b>	<b>10</b>	<b>40</b>	<b>40</b>	
<b>ECTS credits - 3, classroom work - 55.5%, independent work - 44.5%</b>				



### Thematic plan of lectures

	Lecture topic	Number of hours
1	Lecture 1. General definition of the term "tumor". Epidemiology of cancer. Etiology of tumors. Chemical carcinogens. Physical carcinogens, biological carcinogens	2
2	Lecture 2. Carcinogenesis. Carcinogenesis at the cell level. Carcinogenesis at the organ level. Carcinogenesis at the level of the organism.	2
3	Lecture 3. Clinical stages and morphology of cancer.	2
4	Lecture 4. Principles of diagnosis of malignant tumors.	2
5	Lecture 5. Principles of treatment of malignant tumors	2
Total		10

### 4. Thematic plan of practical classes on Oncology

	Topic	Number of hours
<b>Thematic plan for the content module 2</b>		
1	Topic 1. Cancer of the lips, oral mucosa.	5
2	Topic 2. Cancer of the esophagus and stomach.	5
3	Topic 3. Cancer of the colon and rectum. Liver and pancreatic cancer.	5
<b>Thematic plan for the content module 3</b>		
4	Topic 4. Lung cancer.	5
5	Topic 5. Breast cancer	5
6	Topic 6. Skin cancer, melanoma.	5
<b>Thematic plan for the content module 4</b>		
7	Topic 7. Cancer of the body, cervix, ovaries.	5
8	Topic 8. Cancer of the kidney, ureter, bladder. Prostate cancer.	5
Total		40

## Types of independent work of students and its control

Independent extracurricular work of students precedes their independent work in practical classes and involves their preparation for practical classes, guided by guidelines, and includes the supervision of patients with a medical history and preparation for the final control of the module.

№ s / n	Topic	Number of hours
1	Cancer statistics. Intensive and extensive indicators. Descriptive (descriptive) and analytical epidemiology.	2
2	Systemic effects of tumors on the body. Syndrome of endogenous intoxication of cancer patients. Paraneoplastic syndrome. Multiple organ failure.	2
3	Clinical stages. Principles of classification of tumors by stages in terms of tumor size, length and nature of capture of adjacent tissues within the organ where it originated, the transition to neighboring anatomical structures, the absence or presence of affected regional lymph nodes, other organs and tissues. Stage classification, TNM-classification. Clinical staging. Pathohistological staging. Categories TX, NX, MX. Category T0. Category cT, cN . Degree of morphological differentiation G. Clinical groups.	2
4	Elements of clinical morphology. Tumor growth from microscopic rudiment - intraepithelial and microinvasive cancers - to manifest tumor in time categories. Exophytic, endophytic and mesophytic forms of cancer growth. Features of their distribution in tissues. Category R (RX, R0, R1, R2).	2
5	Groups of increased cancer risk. Induction period, invasion phase, dissemination phase. The role of unconditional and conditional factors in the formation of the risk group. Occupational, socio-domestic, constitutional and climatic-geographical risk factors. Questionnaire method of forming risk groups. The role of forming risk groups for effective control of tumors	2
6	Deontology in oncology. Specifics of deontology in oncology. Features of contact with the patient and his relatives. The role of personal example of a doctor in the prevention and treatment of cancer	2
7	Rehabilitation treatment of cancer patients. The concept of "rehabilitation". Components of rehabilitation - medical, social, professional (labor). Palliative care. The role of the hospice in providing care to cancer patients.	2
8	Principles of organization of anti-cancer control. International Anti-Cancer Union. The structure of the oncology service. National	2

	Cancer Institute of Ukraine. Regional oncology centers. Regional oncology dispensaries. Oncology schools.	
9	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic "Lip cancer, oral mucosa": collection of complaints, anamnesis; general examination of the patient, palpation of peripheral lymph nodes.	3
10	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic "Cancer of the esophagus and stomach": collection of complaints, anamnesis; general examination of the patient, palpation of peripheral lymph nodes, superficial and deep palpation of the abdominal organs, detection of the presence of free fluid in the abdominal cavity, esophagogastroscopy , probe into the stomach.	3
11	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic "Cancer of the colon and rectum": collection of complaints, anamnesis; general examination of the patient, superficial and deep methodical palpation of the intestinal tract, digital rectal examination, methods of rectoromanoscopy and colonoscopy. "Liver and pancreatic cancer": collection of complaints, medical history; general examination of the patient, deep methodical palpation of the liver and pancreas, detection of the presence of free fluid in the abdominal cavity.	3
12	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic: "Lung cancer": collection of complaints, anamnesis; general examination of the patient, palpation of the chest and regional lymph nodes, auscultation and percussion of the lungs to detect disorders of bronchial patency and the presence of free fluid in the pleural cavity; methods of bronchoscopy and pleural puncture.	3
13	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic: "Breast cancer": collection of complaints, anamnesis; general examination of the patient, palpation of the breast and regional lymph nodes; punction biopsy tumors milk her cancer.	3
14	Preparation for practical classes - theoretical preparation and elaboration of methods of physical and instrumental examination of the patient on the topic: "Skin cancer, melanoma": collection of complaints, history; general examination of the patient, palpation of regional lymph nodes, scraping of the tumor .	3

15	Preparation for practical classes - theoretical training and development of methods of physical and instrumental examination of the patient on the topic: " Cancer of the body, cervix, ovaries": collection of complaints, history; general examination of the patient, palpation of regional lymph nodes .	3
16	Preparation for practical classes - theoretical training and development of methods of physical and instrumental examination of the patient on the topic: "Cancer of the kidney, ureter, bladder, prostate": collection of complaints, history; general examination of the patient, bimanual examination, receiving a wash sample from the genitals, cystoscopy, rectal examination.	3
Total:		40

**8. Teaching methods.** In the process of studying the discipline "Oncology" the following teaching methods are used:

- *by type of cognitive activity*: explanatory-illustrative, analytical, synthetic, inductive, deductive;
- *according to the main stages of the process*: formation of knowledge, application of knowledge, generalization, formation of abilities and skills, consolidation, verification;
- *according to the system approach*: stimulation and motivation, control and self-control;
- *by sources of knowledge*: verbal - story, conversation, visual - demonstration, illustration.

## 9. Control methods

The assessment of the discipline includes the assessment of theoretical knowledge and practical skills of the student, as well as taking into account the result of writing a pre-examination test control and the average certification score.

**10. Current control** is carried out during practical classes, which assess the knowledge of theoretical and practical material in the form of:

- individual oral questioning on theoretical issues that are included in the methodological developments on relevant topics;
- test tasks;
- solving situational problems;
- ability to recognize specific nosological forms of cancer ;
- registration of disease history protocols.

**Evaluation of current educational activities.** During the assessment of mastering each topic for the current educational activity of the student, grades are set on a 4-point (traditional) scale, taking into account the approved assessment criteria for the relevant discipline. This takes into account all types of work provided by the curriculum. The student must receive a grade on each topic. Forms of assessment of

current educational activities should be standardized and include control of theoretical and practical training. The scores given on the traditional scale are converted into points.

The list of control questions is in the methodical instructions to students for practical classes. The final control classes also include questions from the lecture course and topics that are submitted for independent work.

Students who have fully attended classroom classes (practical classes and lectures) in the discipline provided by the curriculum are allowed to take the final classes and pass the commission exam.

### **Criteria for assessing knowledge and skills**

The assessment of the discipline includes the assessment of theoretical knowledge and practical skills of the student, as well as taking into account the result of writing a pre-examination test control and the average certification score.

Grade "**excellent**" is given when the student has deeply and thoroughly mastered the theoretical material, can determine the etiology, pathogenesis, clinical features and variants of the disease in specific patients, substantiates the diagnosis, makes a differential diagnosis, makes a detailed plan for treatment and rehabilitation of a particular patient. , comorbidities), is able to provide emergency care, has in-depth knowledge of the principles of diagnosis and treatment, independently, competently and consistently, with complete completeness, using data from additional literature, answered all questions with the ability to diagnose specific nosological forms, solved situational tasks.

A grade of "**good**" is given when a student who has mastered the theoretical material from all sections of the program, is mature in the material, has good practical training, has sufficient knowledge of the principles of diagnosis and treatment, but admits some inaccurate inaccuracies in answers and clinical situational task.

A grade of "**satisfactory**" is given to a student when he knows the actual material in the full course program, but finds it difficult to independently and systematically present the answers, forcing the teacher to offer him leading questions.

The grade "**unsatisfactory**" is given in those cases when the student shows complete ignorance of the questions and is poorly oriented in the main material of the course of histology, which is revealed by offering him additional questions.

**11. Final control.** The semester credit is set based on the results of the current control.

### **12. Scheme of accrual and distribution of points received by students**

**The maximum number of points** that a student can score for the current academic activity in the study of the discipline is 200 points.

**The minimum number of points** that a student must score for the current academic activity to enroll in the discipline is 120 points.

**The calculation of the number of points** is based on the grades obtained by the student on the traditional scale during the study of the discipline during the semester, by calculating the arithmetic mean (AM), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows:

For convenience, the table of recalculation on a 200-point scale is given:

Table 1.

**Recalculation of the average grade for current activities in a multi-point scale  
for disciplines that end with a credit**

4- point scale	200- point scale	4- point scale	200- point scale	4- point scale	200- point scale	4- point scale	200- point scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121
4.65	186	4.09	164	3.55	142	3	120
4.62	185	4.07	163	3.52	141	Less	not
4.6	184	4.04	162	3.5	140	3	enough
4.57	183	4.02	161	3.47	139		
4.52	181	3.99	160	3.45	138		
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

Points from the discipline are independently converted into both the ECTS scale and the 4-point (national) scale. ECTS scale scores are not converted to a 4-point scale and vice versa.

The scores of students studying in one specialty, taking into account the number of points earned in the discipline are ranked on the ECTS scale as follows:

ECTS assessment	Statistical indicator
A	The best 10% of students
B	The next 25% of students
C	The next 30% of students
D	The next 25% of students
E	The last 10% of students

Ranking with assignments of grades "A", "B", "C", "D", "E" is carried out for students of this course who study in one specialty and have successfully completed the study of the discipline. Students who receive grades FX , F ("2") are not included in the list of ranked students . Students with a grade of FX automatically receive an "E" score after retaking.

Discipline scores for students who have successfully completed the program are converted into a traditional 4-point scale according to the absolute criteria, which are given in the table below:

Points in the discipline	Score on a 4-point scale
From 170 to 200 points	5
From 140 to 169 points	4
From 139 points to the minimum number of points that a student must score	3
Below the minimum number of points that a student must score	2

The ECTS score is not converted to the traditional scale, as the ECTS scale and the four-point scale are independent.

The objectivity of the assessment of students' learning activities is checked by statistical methods (correlation coefficient between ECTS assessment and assessment on a national scale).

**13. Methodical support.** Methodological Support provides lecture notes, plans workshops, methodical workshops and independent work tasks for practical work tasks of the current and final control of knowledge and student's skills acquired knowledge and skills in oncology.

#### **14. Recommended literature**

1. Bilynskyy B. Oncology (selected lectures for students and phisicians) – Lviv: Danylo Halytsky Lviv National Medical University, 2021. – 170 p.
2. Bilinsky BT Medical errors in oncology. Lviv: Afisha, 2013. - 324 p.
3. Selected lectures on clinical oncology: textbook / Bondar GV, Dumansky Yu. V., Antipova SV, Popovych O. Yu. - Lugansk: "Lugansk Regional Printing House", 2009. - 560 p.
4. Oncology: Textbook. - 3rd edition, revised. and ext. / BT Bilinsky, NA Volodko, AI Hnatyshak. – Kyiv, Zdorovia, 2007. - 532 p.
5. Oncology. Selected lectures for students and doctors / Ed. V.F. Chehun . - Kyiv: Health of Ukraine, 2010. - 768 p.
6. Oncology: Textbook / GV Cooper, Yu. Dumansky, O. Yu. Popovych and others. – Kyiv, «Medicine», 2013. - 544 p.
7. Savran VR Breast cancer.- Lviv. - 2019 - 219 c.

8. Vincent T. Devita , Jn . Samuel Hellman, Steven A. Rosenberg. CANCER. Principles and practice of Oncology. 6th Edition.
9. TNM-classification, 7th edition. - 2014. - 169 p.

#### **List of additional literature**

1. Radiology (Radiation diagnostics and radiation therapy.) / Ed. M. M. Tkachenko. K .: Kniga Plus, 2011. - 719 p.
2. Savran VR, Kens AA, Mryglotsky MM, Savran VV Breast cancer: a textbook. Lviv, 2012. - 236 p.

#### **Information resources**

1. Ministry of Healthcare - <http://www.moz.gov.ua/>
2. Wikipaedia - <http://wikipedia.org>
3. UpToDate – <http://www.uptodate.com/home>
4. Access Medicine - <http://accessmedicine.mhmedical.com>
5. PubMed - <https://www.ncbi.nlm.nih.gov/pmc/>

#### **The student must know:**

- general issues of organization of oncological care for adults and children;
- epidemiology of oncological diseases;
- etiology of tumors, morphological manifestations of precancerous processes, morphological classification of tumors, mechanisms of carcinogenesis at the level of cell, organ, organism;
- general and special research methods in oncology, indications and contraindications to the use of endoscopic, radiological, radioisotope and other methods, the role and importance of biopsy in oncology;
- clinical symptoms, macro- and microscopic characteristics of benign and malignant tumors of the main localizations , their diagnosis and principles of treatment;
- indications and contraindications to surgical treatment;
- indications and contraindications to drug treatment;
- indications and contraindications to radiation therapy;
- issues of incapacity examination;
- organization of rehabilitation of cancer patients;
- organization of dispensary supervision of patients; mass screening methods for cancer detection; forms and methods of sanitary and educational work among the population.

#### **Must be able to:**

- to obtain information about the disease, to identify general and specific signs of damage, to assess the severity of the patient's condition;
- interpret the data of special research methods (laboratory, radiological, ultrasound, radioisotope, dermatoscopy);
- to carry out differential diagnosis of tumors of the main localizations, to substantiate the clinical diagnosis;



- substantiate the scheme, plan and tactics of treatment of patients, indications and contraindications to surgery, radiation and drug treatment;
- carry out the necessary rehabilitation measures;
- to carry out sanitary and educational work among the population.

**Must have the following manipulations:**

- method of palpation of the mammary glands;
- method of palpation of the thyroid gland;
- method of palpation of peripheral lymph nodes;
- method of finger examination of the rectum;
- production of smears-impressions of tumors for cytological examination;

**6. List of questions for the final modular control**

**Module I. Oncology**

**Content module 1. General and theoretical oncology**

1. Determination of malignant tumor.
2. Apoptosis .
3. Epidemiology of cancer.
4. Cancer statistics. Intensive and extensive indicators.
5. Tumor growth initiators, promoters and modifiers.
6. Chemical carcinogens.
7. Physical carcinogens.
8. Biological carcinogens.
9. Transforming genes. Oncogene . Protooncogene . Mitogens . "Dumb" genes.
10. The concept of carcinogenesis. Damage and repair processes.
11. Carcinogenesis at the cellular level. Physical and chemical carcinogenesis.
12. Viral carcinogenesis. Experiments Routh .
13. Reverse transcriptase .
14. Infectious and tumor viruses. Cellular protooncogenes as regulators of proliferation and differentiation.
15. Functions of oncoproteins .
16. Growth factors.
17. The role of autocrine secretion in the activity of tumor cells.
18. Proteins are the guardians of the genome. Tumor suppressor genes.
19. Carcinogenesis at the organ level. Phases of carcinogenesis. Ca insitu .
20. Carcinogenesis at the level of the organism.
21. Cancer genetics. Hormones and cancer.
22. Immunology of cancer. Burnett's theory .
23. "Specificity" of tumor antigens. Tumor-associated antigens (PAA, REA).
24. The role of humoral and cellular components of immunity. Lymphocyte subpopulations .
25. Angiogenesis in tumors
26. Systemic effects of tumors on the body. Paraneoplasia .
27. Syndrome of endogenous intoxication of cancer patients.
28. Principles of classification of tumors by stages.

29. Elements of clinical morphology.
30. Clinical forms of growth.
31. Features of examination of cancer patients. Levels of diagnosis. Oncology.
32. Special methods that create images (radiological, MRI, PET, ultrasound).
33. Radionuclide studies.
34. Endoscopic methods.
35. Morphological studies - cytological and histological.
36. Immunodiagnostics.
37. Treatment of cancer patients - radical, palliative, symptomatic.
38. Combined and complex treatment.
39. Principles of surgical treatment. The concept of anatomical zone. Combined and extended surgical interventions.
40. Cryosurgery.
41. Principles of radiation therapy .
42. Types and sources of ionizing radiation. Biological action of ionizing radiation. Methods of radiation therapy. Radionuclide therapy.
43. Indications and contraindications to radiation therapy.
44. Side effects and complications of radiation therapy.
45. Pharmacological groups of antitumor drugs.
46. Principles of chemotherapy. Monochemotherapy and polychemotherapy . Cyclic intermittent and course methods. Systemic and local chemotherapy. Adjuvant and neoadjuvant chemotherapy.
47. Hormonozumovleni , hormone and hormonoaktyvni tumor.
48. Pharmacological groups of hormonal drugs.
49. Cancer biotherapy .
50. Deontology in oncology .
51. Rehabilitation treatment of cancer patients.
52. Principles of organization of anti-cancer control. Groups of increased cancer risk.

### **Content module 2. Tumors of the digestive tract.**

53. Lip cancer: morbidity, causes, epidemiology, precancerous diseases, principles of classification, clinic, diagnosis, early diagnosis, differential diagnosis, principles of combined and complex treatment.
54. Oral mucosal cancer: morbidity, causes, epidemiology, precancerous diseases, principles of classification, clinic, diagnosis, early diagnosis, differential diagnosis, principles of combined and complex treatment.
55. Tongue cancer: morbidity, causes, epidemiology, principles of classification, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, principles of combined and complex treatment.
56. Esophageal cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification, principles of combined and complex treatment.
57. Barrett's esophagus : causes, clinic, diagnosis, early diagnosis, medical examination of patients, principles of treatment.

58. Gastric cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, differential diagnosis, classification, principles of combined and complex treatment.
59. Early diagnosis, principles and methods of gastric cancer screening , medical examination of patients.
60. Primary and secondary prevention of esophageal and gastric cancer.
61. Pancreatic cancer: morbidity, causes, precancerous diseases, clinic, diagnosis, differential diagnosis, classification, general principles of treatment, prevention.
62. Liver cancer: morbidity, causes, clinic, diagnosis, general principles of treatment.
63. Diagnosis and differential diagnosis of mechanical jaundice, treatment methods, symptomatic operations.
64. Colon cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification, principles of combined and complex treatment, methods of medical rehabilitation.
65. Rectal cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification, combined and comprehensive treatment, methods of medical rehabilitation of patients.
66. Diagnosis and differential diagnosis of intestinal obstruction, methods of surgical treatment, symptomatic operations.
67. Principles and methods of screening for colon and rectal cancer, medical examination of patients.
68. Primary and secondary prevention of colon and rectal cancer.

### **Content module 3 Tumors of the respiratory system, breast, skin.**

69. Lung cancer: morbidity, causes, epidemiology, clinic, diagnosis, early diagnosis, differential diagnosis, classification, combined and complex treatment.
70. Central lung cancer, pathogenesis and phases of development of bronchoobturation syndrome, the main clinical manifestations of lung cancer in the early stages, differential diagnosis of lung cancer.
71. Metastatic lung tumors: diagnosis, differential diagnosis, principles of treatment.
72. Principles and methods of screening for lung cancer, medical examination of patients.
73. Primary and secondary prevention of lung cancer.
74. Tumors of the mediastinum ( thymoma , lymphosarcoma, teratoma): clinic, diagnosis, differential diagnosis, classification, general principles of treatment, combined and complex treatment.
75. Breast cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification.
76. Principles and methods of screening for breast cancer, medical examination of patients, primary and secondary prevention of breast cancer.
77. Skin cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification, combined and complex treatment; primary and secondary prevention.

78. Melanoma: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, differential diagnosis, classification, general principles of treatment; primary and secondary prevention.

**Content module 4. Tumors of the genitals and urinary organs.**

79. Cancer of the uterine body: morbidity, causes, epidemiology, clinic, diagnosis, early diagnosis, differential diagnosis, classification, combined and complex treatment.

80. Cervical cancer: morbidity, causes, epidemiology, precancerous diseases, clinic, diagnosis, early diagnosis, differential diagnosis, classification, combined and complex treatment; primary and secondary prevention.

81. Ovarian cancer: morbidity, clinic, diagnosis, classification, general principles of treatment: combined and complex treatment.

82. Kidney cancer: morbidity, clinic, diagnosis, differential diagnosis, classification, general principles of treatment: surgical treatment; combined treatment.

83. Bladder cancer: morbidity, clinic, diagnosis, differential diagnosis, classification, general principles of treatment: surgical treatment; combined treatment.

84. Prostate cancer: morbidity, clinic, diagnosis, differential diagnosis, classification, general principles of treatment.