

Ministry of Health of Ukraine  
Poltava State Medical University

Department of Surgery №2

## **SYLLABUS**

### **Urology**

(name of the discipline)

### **Discipline on choice**

(normative/on choice)

educational level	the second (master's) level of higher education
field of knowledge	22 “Health care”
specialty of	222 “Medicine”
educational qualification	master of medicine
professional qualification	doctor
form of education	daily
course and semester of study of the discipline	4th year, 7-8 semesters

**Poltava - 2022**

## INFORMATION ABOUT TEACHERS WHO TEACH THE COURSE

Name , degree	<ol style="list-style-type: none"> <li>1. Sarychev Leonid Petrovich, Doctor of Medicine , Professor .</li> <li>2. Sukhomlyn Serhiy Adolfovyh , PhD, Associate Professor.</li> <li>3. Sarychev Yaroslav Volodymyrovych , PhD, Associate Professor.</li> <li>4. Suprunenko Serhiy Mykolayovych, PhD, Associate Professor</li> <li>5. Savchenko Roman Borysovych, the Assistant</li> </ol>
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## MAIN CHARACTERISTICS OF THE COURSE

### **The scope of the discipline**

Number of credits / hours - 3 credits / 90 hours, of which:

Lectures - 6 hours.

Practical - 34 hours.

Independent work - 50 hours.

Type of control: final modular control

### **Course policy**

When organizing the educational process in PSMU, teachers and applicants for higher education act in accordance with the following regulations:

"Regulations on the organization of the educational process in the Poltava State Medical University";

"Regulations on the academic integrity of higher education seekers and employees of the Poltava State Medical University "

"Rules of procedure for higher education applicants of the Poltava State Medical University ";

"Regulations on the organization and methodology of assessment of educational activities of applicants for higher education at the Poltava State Medical University ";

"Regulations on the organization of independent work of higher education applicants at the Poltava State Medical University ";

"Regulations on working off missed classes and unsatisfactory grades by applicants for higher education of the Poltava State Medical University ";

"Regulations on the procedure for forming individual educational trajectories by PSMU higher education applicants";

"Regulations on the procedure for re-enrollment of academic disciplines and determination of academic difference";

"Regulations on the appeal of the results of the final control of knowledge of applicants for higher education";

"Regulations on the rating of applicants for higher education of the Poltava State Medical University ";

"Regulations on financial incentives for academic success of higher education applicants of the Poltava State Medical University"

The policy of the discipline is determined by the system of requirements of the teacher to the higher education applicant in the study of the discipline and is based on the principles of academic integrity.

Observance of academic integrity by higher education applicants of education in the discipline involves:

independent performance of educational tasks, tasks of current and final control of learning outcomes;

links to sources of information in the case of the use of ideas, developments, statements, information;

compliance with the legislation on copyright and related rights;

providing reliable information about the results of their own educational or scientific activities, used research methods and sources of information.

Violation of academic integrity is: academic plagiarism, self-plagiarism, fabrication, falsification, writing off, deception.

For violation of academic integrity, higher education applicants may be prosecuted in accordance with regulations.

Applicants studying the discipline M1. "Urology" are required to:

- follow the schedule of the educational process and prevent non-fulfillment of the curriculum and individual curriculum without good reason, come to class on time, in accordance with the schedule;
- comply with the requirements for labor protection, safety, industrial sanitation, fire safety, provided by the relevant rules and instructions;
- comply with the requirements for the appearance (dress code) of persons, approved by the decision of the Rector's Office from 29.08.2014;
- to maintain order in the classrooms, to treat the property of the department carefully and neatly;
- not to take out things and various equipment from classrooms and departments without the permission of scientific and pedagogical workers, and in case of intentional damage - to compensate their cost in the order determined by the current legislation;
- observance of moral and ethical principles of stay on the territory of clinical bases.

Applicants studying the discipline M1. "Urology" are prohibited:

- to leave the classroom during the lesson without the permission of the teacher;
- use a mobile phone and other means of communication and information without the teacher's permission;
- engage in extraneous activities, distract other higher education applicants and interfere with the teacher;
- use drugs, psychotropic substances and their analogues, alcoholic beverages at the department, smoke on the territory of the department and be in the department in a state of alcohol, drugs or other intoxication;
- commit illegal and immoral acts that may create dangerous conditions for the health and / or life of others, which degrade human dignity, use profanity.

Details of the above provisions can be found at:

<https://www.pdmu.edu.ua/fakultets/nnipo/akademichna-dobrochesnist-ft-nnipo-elpy>.

### **Description of the discipline (abstract)**

Urology is an educational clinical discipline (elective course) that contains systematized scientific data on diseases of the urinary and male genital systems, studies and develops issues of their diagnosis, treatment and prevention. Assimilation of theoretical material by higher education applicants is accompanied by the acquisition of appropriate integrated, general and professional competencies.

**The subject of** study of the discipline is a system of special medical knowledge, skills and abilities designed to solve specific problems in clinical practice concerning the treatment of diseases of the urinary and male genital systems.

### **Prerequisites and postrequisites of the discipline (interdisciplinary links)**

Urology as a discipline *is based on the study of*: medical and biological physics, human anatomy, microbiology, virology and immunology, histology, cytology and embryology, physiology, internal medicine, surgery, pathomorphology, pathophysiology, radiology, neurology, ophthalmology, phytology.

Urology as an academic discipline *lays the foundations for* higher education applicants to *study*: infectious diseases, epidemiology, occupational diseases, oncology, which involves the integration of teaching with these disciplines and the formation of skills to apply knowledge of urology in further study and professional activities.

### **The purpose and objectives of the discipline :**

- **aim of the** study of the discipline is to master the methods of diagnosis, treatment and prevention of diseases of urinary and male reproductive systems, especially those of them that are the most widespread.

- **main purposes of** the study are laying the theoretical foundations of urology as a science (terminology, methods, common clinical symptoms of major diseases of the urinary and male

reproductive systems, principles of diagnosis and treatment, prevention of disease) and practical skills of research on methods of providing emergency assistance.

**Competences and learning outcomes, the formation of which is facilitated by the discipline (integral, general, special, matrix of competencies)**

The discipline provides higher education applicants with the acquisition of competencies:

- **integrated:** the ability to solve typical and complex specialized problems and practical problems in professional activities in the field of health care or in the learning process, which involves research and/or innovation and is characterized by complexity and uncertainty of conditions and requirements;

- **general:**

- 1 ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge;
2. ability to apply knowledge in practical situations;
3. knowledge and understanding of the subject area and understanding of professional activity;
4. skills of using information and communication technologies;
5. ability to adapt and act in a new situation;
6. ability to make informed decisions;
7. ability to work in a team.

- **special (professional, subject):**

1. 1. the ability to establish a preliminary and clinical diagnosis of the disease;
2. the ability to determine the principles and nature of treatment of diseases;
3. ability to determine the tactics of emergency medical care;
4. skills of providing emergency medical care.

**Learning outcomes for the discipline:**

upon completion of the study, higher education applicants must

**know:**

- general issues of organization of urological care;
- reasons for the development of pathological processes;
- features of clinical symptoms of the main diseases of the urinary and male genital systems;
- treatment tactics.

**be able to:**

- make a preliminary diagnosis of common urological diseases and injuries;
- provide first aid;
- decide on the next medical care;
- to highlight the connection of the pathological process in the body with the disease of the urinary and male genital systems, to identify and provide medical proposals;
- based on knowledge of epidemiology, the role of environmental factors, genetic and social factors, modern advances in urology to be able to take preventive measures to prevent damage to the genitourinary system and the development of severe disability - renal failure.

**Thematic plan of lectures (module 1) indicating the main issues discussed at lectures**

№	Name of topics	Number of hours
	<b>Module 1. Urology</b>	6
1	<p><b>Acute pyelonephritis . Chronic pyelonephritis. Paranepritis. Pyonephrosis. Cystitis, prostatitis, urethritis, cavernitis , epididymitis, orchitis. Urolithiasis</b></p> <p>1. Classification of acute pyelonephritis. Etiology, pathogenesis, ways of infection spread. The value of pelvic-renal reflux, the general condition of the organism, its immunobiological reactivity in the occurrence of pyelonephritis. Local factors that contribute to the development of pyelonephritis. Different pathomorphological forms of acute pyelonephritis: serous, apostematous, renal carbuncle, renal abscess, necrotic papillitis , emphysematous and xanthogranulomatous pyelonephritis. Clinic, diagnosis. Treatment: conservative and operative. The most common antibacterial drugs. The value of determining the sensitivity of the urinary microflora to antibiotics. Urgent methods of restoring the passage of urine from the kidney: catheterization, endoureteral stenting; puncture percutaneous nephrostomy . Sepsis and systemic inflammatory response syndrome.</p> <p>2. Chronic pyelonephritis. Etiology. Phases of the clinical course. Clinic, diagnosis, treatment. Acute and chronic paranepritis. Paranepritis: definition, ways of infection</p>	2

	<p>penetration. Clinic. Ways of breaking through manure. Diagnosis. Treatment. Pyonephrosis: clinic, diagnosis, treatment.</p> <p>3. Cystitis: classification, ways of infection penetration. Factors that contribute to cystitis: local, general. Symptoms. Diagnosis. Treatment. Prostatitis: definition, classification, etiology, clinic. Diagnosis. Ways of breakthrough of a prostate abscess. Treatment of prostatitis. Urethritis: etiology and pathogenesis, classification. Types of pathogens. Clinical course, diagnosis. Treatment of urethritis and their complications. Epididymitis and orchitis: definition, etiology, pathogenesis. Clinical course, diagnosis and treatment. Cavernitis : definition, etiology, clinical course, diagnosis, treatment.</p> <p>4. Epidemiology of urolithiasis. Etiology and pathogenesis. Classification of stones by size, location and chemical composition and X-ray contrast. Kidney and ureter stones: clinical picture, diagnosis, treatment. Coral nephrolithiasis, classification, clinic, diagnosis, treatment. Complications of kidney stones and ureters. Modern methods of treatment of urolithiasis. Indications for surgical treatment. Bladder stones: etiology, clinical picture, diagnosis, treatment. Urethral stones: clinic, diagnosis, treatment. Prostate stones: clinic, diagnosis, treatment.</p>	
2	<p><b>Traumatic injuries of the urinary and male genital systems.</b></p> <p>1. Kidney damage: open and closed. Kidney damage in combination with injury to other organs. Classification, clinical manifestations, diagnosis, conservative and surgical treatment.</p> <p>2. Iatrogenic damage to the kidneys and ureters: clinic, diagnosis, treatment.</p> <p>3. Bladder injuries: open and closed. Classification, clinical manifestations, features of diagnosis. Diagnostic value of the Zeldovich test and cystography (technique and interpretation). Conservative and operative treatment.</p> <p>4. Damage to the urethra. Causes of injury and mechanism of injury. Clinic, diagnosis, treatment. Ascending urethrocystography and its diagnostic value. Epicystostomy and urogenital drainage . Possibility of primary urethral plastic surgery.</p> <p>5. Scrotum injuries: types of injuries, symptoms, diagnosis, treatment.</p>	2
3	<p><b>Neoplasms of the urinary and male reproductive systems.</b></p> <p>1. Kidney parenchymal cancer: etiology, pathological anatomy, symptoms, diagnosis, ways of metastasis, treatment.</p> <p>2. Wilms' tumor - adenomyosarcoma: etiology, pathogenesis, symptoms, diagnosis, treatment.</p> <p>3. Cancer of the renal pelvis and ureters: etiology, pathogenesis, symptoms, diagnosis, treatment.</p> <p>4. Bladder cancer: etiology, pathogenesis, symptoms, diagnosis, treatment. The place of endoscopic surgery in the treatment of bladder cancer.</p> <p>5. Prostate hyperplasia. Etiology and pathogenesis. Clinical manifestations. Diagnosis. Treatment: conservative and operative. Modern minimally invasive methods of treatment of hyperplasia, indications for their implementation.</p> <p>6. Prostate cancer. Etiology. Stages of the disease. Clinical picture, diagnosis, treatment. The value of prostate-specific antigen in the diagnosis of prostate cancer. Hormone therapy for prostate cancer.</p> <p>7. Testicular tumors. Pathogenetic significance of testicular injury and cryptorchidism in the development of testicular tumors. Ways of metastasising. Clinical signs, diagnosis, treatment.</p> <p>8. Penile cancer. Etiology. The role of phimosis and balanoposthitis in the development of penile cancer. Clinical signs, diagnosis. Principles of treatment.</p>	2

**Thematic plan of seminars in modules and semantic modules indicating the main issues discussed at seminary lesson**

Seminars are not included in the curriculum

**Thematic plan of practical training in modules and semantic modules indicating the main issues discussed at practical lesson**

№	Name of topics	Number of hours
	<b>Module 1. Urology</b>	
	<b>Content module 1. Clinical anatomy and physiology of the urinary and male reproductive systems. Symptoms of urological diseases. Methods of research of urological patients. Anomalies in the development of the urinary and male reproductive systems.</b>	<b>8</b>
1	<p><b>Clinical anatomy and physiology of the urinary and male reproductive system</b></p> <p>1. Anatomical structure of the kidneys (topography, external and internal structure, features of blood supply and innervation).</p>	2

	<ol style="list-style-type: none"> <li>2. Anatomical structure of ureters (topography, departments, structure, physiological narrowing, blood supply and innervation).</li> <li>3. Anatomical structure of the bladder (topography of the bladder in women and men, departments, structure, blood supply and innervation).</li> <li>4. Anatomical structure of male and female urethra (topography of male and female urethra, male urethral departments, structure, blood supply and innervation of male and female urethra).</li> <li>5. Physiology of the kidneys, ureters, bladder, male and female urethra.</li> <li>6. Anatomical structure of the prostate (topography, structure, blood supply and innervation).</li> <li>7. Anatomical structure of the scrotum (topography, scrotum membranes, blood supply and innervation).</li> <li>8. Anatomical structure of the seminal duct, spermatic cord, seminal vesicle (topography, structure, blood supply and innervation).</li> <li>9. Anatomical structure of the testis and appendix (topography, external and internal structure, blood supply and innervation).</li> <li>10. Anatomical structure of the penis (topography, structure, blood supply and innervation).</li> <li>11. Physiology of the male genitalia.</li> </ol>	
2	<p><b>Semiotics of urological diseases</b></p> <ol style="list-style-type: none"> <li>1. Lumbar pain. General characteristics, etiology, localization, irradiation. Renal colic. Etiology and pathogenesis of pain in diseases of the bladder, prostate and external genitalia.</li> <li>2. Disorders of urination. Definition, etiology, pathogenesis. Stranguria , pollakiuria , oligaciuria , nocturia . Urinary incontinence, its types. Incontinence . Acute and chronic urinary retention. Residual urine and methods for its determination. Paradoxical ischuria. Symptoms of lower urinary tract.</li> <li>3. Quantitative changes in urine: physiological and pathological polyuria. Nocturia. Oliguria . Anury. Types of anuria: renal , renal, postrenal , their causes.</li> <li>4. Qualitative changes in urine: hematuria, its types, causes. Pyuria , its types. Proteinuria , its types. Bacteriuria , its types. Pneumaturia . Hiluria . Changes in specific gravity. Hemoglobinuria . Myoglobinuria. Crystaluria . Glucosuria. Hydatiduria . Spermaturia . Pathological changes in sperm and urethral discharge.</li> </ol>	2
3	<p><b>Methods of examination of urological patients</b></p> <ol style="list-style-type: none"> <li>1. Features of history taking in urological diseases.</li> <li>2. Kidneys. Examination of the kidneys. Palpation of the kidneys. Differential-diagnostic value of changes in the contours of the lumbar region. The main pathological processes that palpate simulate kidney disease. Diagnostic value of the symptom of "knocking" on the lumbar region.</li> <li>3. Bladder. The main pathological processes that lead to enlargement of the bladder. Diagnostic value of examination, palpation and percussion of the bladder.</li> <li>4. Prostate, seminal vesicles. Methods of finger rectal examination. Changes in the prostate gland in various diseases. Diagnostic value of prostate secretion analysis.</li> <li>5. Urethra. Methods of examination and palpation and their diagnostic value.</li> <li>6. Penis. Diagnostic value of examination and palpation data.</li> <li>7. Testicle. Methods of examination and palpation and their diagnostic value. Differential-diagnostic value of diaphanoscopy.</li> <li>8. Laboratory methods of urine and blood testing. Diagnostic value of the general analysis of urine and blood. Methods and interpretation of a three-glass sample, urine analysis by Nechiporenko. Detection of atypical cells in urine and their diagnostic value. Diagnostic value of detection of prostate-specific antigen in blood. Changes in biochemical parameters of blood in urological diseases</li> <li>9. Overview. Interpretation of the image: shadows of the musculoskeletal system, skeletotopy of the kidneys, images of the shadows of the kidneys and pathological formations.</li> <li>10. Excretory urography, its types. Types of contrast agents. Method of execution. Interpretation of excretory urograms . Contraindications to excretory urography. Possible complications and their prevention.</li> <li>11. Retrograde ureteropyelography. Types of contrast agents for retrograde ureteropyelography , the amount of drug that must be injected into the bowl. Interpretation of ureteropyelograms . Advantages and disadvantages of retrograde ureteropyelography .</li> <li>12. Cystography, its types: descending, ascending, micturition . The essence of the method, indications and methods of implementation.</li> <li>13. Urethrography, its types: ascending and micturition descending , method of execution, diagnostic value. Complications of urethrography and their prevention.</li> <li>14. Renal angiography, its types. Phases of the angiogram. The value of renal angiography as</li> </ol>	2

	<p>a functional-morphological method. Indications and contraindications to renal angiography. Complications and their prevention. Angiographic signs of various pathological processes in the kidneys.</p> <p>15. Computed tomography and magnetic resonance imaging, indications for their use, diagnostic capabilities.</p> <p>16. Positron emission tomography, indications and diagnostic capabilities.</p> <p>17. Dynamic and static radioisotope renography , methods of execution. Diagnostic value. Osteoscintigraphy , indications for use in urology.</p> <p>18. Ultrasound examination: definition, types: transabdominal , transrectal and transvaginal examination, indications for them. Modern varieties ultrasound, ultrasound imaging, harmonic sonography, elastohrafiya, three-dimensional ultrasound, virtual cystoscopy, endoluminalna ultrasonography , miktsiyna ultrasound tsystouretroskopiya , ehodplerohrafiya , three-dimensional ehodplerohrafiya; indications and diagnostic capabilities.</p> <p>19. Puncture examination of the kidney, renal pelvis and prostate under ultrasound control.</p> <p>20. Methods of studying urodynamics: uroflowmetry, cystomanometry, research "pressure-flow".</p> <p>21. Types of catheters. Elastic catheters of Nelaton , Timan , Foley , Petzer , indications for their use. Charrier scale to determine the diameter of the catheter. Catheterization of the bladder of men and women. Complications of bladder catheterization, their prevention and treatment are possible. Method of holding a metal catheter in men. Buzzing of the urethra.</p> <p>22. Endoscopy in urology. Tools for endoscopic examination. Urethroscopy. Cysto- and chromocystoscopy. Technique of urethroscopy, cystoscopy, chromocystoscopy. Complications of cystoscopy, their prevention and treatment. Technique of ureteral catheterization. Ureteroscopy, pyeloscopy. Percutaneous pyeloscopy, necroscopy. Indications and methods of ureteral catheterization and installation of ureteral stent catheters.</p>	
4	<p><b>Anomalies in the development of the urinary and male reproductive systems</b></p> <p>1. Frequency of anomalies in the development of the urinary and male reproductive systems. Modern classification of congenital anomalies.</p> <p>2. Anomalies of the renal vessels, kidneys, ureters, urachus , bladder, urethra, male genitals.</p> <p>3. Clinical significance of developmental anomalies, methods of their diagnosis.</p> <p>4. Complications of abnormalities of the urinary and male reproductive systems.</p> <p>5. Principles of treatment. Indications for surgical treatment, the optimal age for surgery.</p>	2
	<b>Content module 2. Infectious and inflammatory diseases of the urinary and male reproductive systems. Urolithiasis.</b>	<b>14</b>
5	<p><b>Acute pyelonephritis</b></p> <p>1. Classification. Etiology, pathogenesis, ways of infection spread. The value of pelvic-renal reflux, the general condition of the organism, its immunobiological reactivity in the occurrence of pyelonephritis. Local factors that contribute to the development of pyelonephritis.</p> <p>2. Different pathomorphological forms of acute pyelonephritis: serous, apostematous, renal carbuncle, renal abscess, necrotic papillitis , emphysematous and xanthogranulomatous pyelonephritis.</p> <p>3. Clinic, diagnosis.</p> <p>4. Treatment: conservative and operative. The most common antibacterial drugs. The value of determining the sensitivity of the urinary microflora to antibiotics.</p>	4
6	<p><b>Acute pyelonephritis</b></p> <p>1. Urgent methods of restoring the passage of urine from the kidney: catheterization, endopyelovesical stenting, puncture percutaneous ( percutaneous ) nephrostomy</p> <p>2. Sepsis and systemic inflammatory response syndrome.</p>	
7	<p><b>Chronic pyelonephritis . Pyonephrosis . Paranephritis</b></p> <p>1. Chronic pyelonephritis. Etiology. Phases of the clinical course. Clinic, diagnosis, treatment.</p> <p>2. Pyonephrosis: clinic, diagnosis, treatment.</p> <p>3. Acute and chronic paranephritis. Paranephritis: definition, ways of infection penetration. Clinic. Ways of breaking through manure. Diagnosis. Treatment.</p>	2
8	<p><b>Cystitis, prostatitis, urethritis, cavernitis , epididymitis</b></p> <p>1. Cystitis: classification, ways of infection penetration. Factors that contribute to cystitis: local, general. Symptoms. Diagnosis. Treatment.</p> <p>2. Prostatitis: definition, classification, etiology, clinic. Diagnosis. Ways of breakthrough of a prostate abscess. Treatment of prostatitis.</p> <p>3. Urethritis: etiology and pathogenesis, classification. Types of pathogens. Clinical course, diagnosis. Treatment of urethritis and their complications.</p> <p>4. Epididymitis and orchitis: definition, etiology, pathogenesis. Clinical course, diagnosis and treatment.</p>	2

	5. Cavernitis : definition, etiology, clinical course, diagnosis, treatment.	
9	<b>Tuberculosis of the urinary system</b> 1. Renal tuberculosis: etiology, pathogenesis. Ways of penetration of the pathogen. Stages of disease development. Pathological picture. Clinical picture. Diagnostic methods. Modern methods of treatment. Dispensary supervision. Types of surgical treatment.	4
10	<b>Tuberculosis of the male reproductive systems</b> 1. Tuberculosis of the male genital organs: etiology, pathogenesis, clinical course. Diagnosis and treatment methods.	
11	<b>Urolithiasis</b> 1. Epidemiology of urolithiasis. Etiology and pathogenesis. Classification of stones by size, location and chemical composition and X-ray contrast. 2. Kidney and ureter stones: clinical picture, diagnosis, treatment. Coral nephrolithiasis, classification, clinic, diagnosis, treatment. Complications of kidney stones and ureters. Modern methods of treatment of urolithiasis. Indications for surgical treatment. 3. Bladder stones: etiology, clinical picture, diagnosis, treatment. 4. Urethral stones: clinic, diagnosis, treatment. 5. Prostate stones: clinic, diagnosis, treatment.	2
	<b>Content module 3. Traumatic injuries of the urinary and male genital systems. Neoplasms of the urinary and male reproductive systems. Acute and chronic renal failure</b>	<b>8</b>
12	<b>Traumatic injuries of the urinary and male genital systems</b> 1. Kidney injuries: open and blunt. Kidney injuries in combination with injury to other organs. Classification, clinical manifestations, diagnosis, conservative and surgical treatment. 2. Iatrogenic damage to the kidneys and ureters: clinic, diagnosis, treatment. 3. Bladder injuries: open and blunt. Classification, clinical manifestations, features of diagnosis. Diagnostic value of the Zeldovich test and cystography (technique and interpretation). Conservative and operative treatment. 4. Injuries of the urethra. Causes of injury and mechanism of injury. Clinic, diagnosis, treatment. Ascending urethrocystography and its diagnostic value. Epicystostomy and urogenital drainage . Possibility of primary urethral plastic surgery. 5. Scrotum injuries: types of injuries, symptoms, diagnosis, treatment.	2
13	<b>Neoplasms of the urinary system</b> 1. Kidney parenchymal cancer: etiology, pathological anatomy, symptoms, diagnosis, ways of metastasis, treatment. 2. Wilms' tumor - adenomyosarcoma: etiology, pathogenesis, symptoms, diagnosis, treatment. 3. Cancer of the renal pelvis and ureters: etiology, pathogenesis, symptoms, diagnosis, treatment. 4. Bladder cancer: etiology, pathogenesis, symptoms, diagnosis, treatment. The place of endoscopic surgery in the treatment of bladder cancer.	4
14	<b>Neoplasms of the male reproductive system</b> 1. Prostate hyperplasia. Etiology and pathogenesis. Clinical manifestations. Diagnosis. Treatment: conservative and operative. Modern minimally invasive methods of treatment of hyperplasia, indications for their implementation. 2. Prostate cancer. Etiology. Stages of the disease. Clinical picture, diagnosis, treatment. The value of prostate-specific antigen in the diagnosis of prostate cancer. Hormone therapy for prostate cancer. 3. Testicular tumors. Pathogenetic significance of testicular injury and cryptorchidism in the development of testicular tumors. Ways of metastasis. Clinical picture, diagnosis, treatment. 4. Penile cancer. Etiology. The role of phimosis and balanoposthitis in the development of penile cancer. Clinic, diagnosis. Principles of treatment.	
15	<b>Acute and chronic renal failure</b> 1. Acute renal failure: etiology, pathogenesis, stages of the disease. Symptoms, diagnosis. Principles of conservative therapy. Intestinal dialysis, peritoneal dialysis and hemodialysis in the treatment of acute renal failure. 2. Etiology and pathogenesis of chronic renal failure. Stages and forms of clinical course. Clinical signs, diagnosis, treatment. Indications for peritoneal dialysis and hemodialysis. 3. Kidney transplantation. Indications for kidney transplantation. Preparation of the recipient. Donor selection. Management of the postoperative period.	2
	<b>Content module 4. Emergency care for urological diseases</b>	<b>2</b>
16	<b>Emergent care for urological diseases</b> 1. Renal colic. Causes and pathogenesis. The main clinical manifestations of renal colic. Differential diagnosis with other diseases. Methods of buying renal colic. 2. Hematuria: etiology, classification, diagnosis and methods of conservative and surgical treatment.	2



	3. Acute urinary retention. Reasons. Diagnosis. First aid. 4. Anuria. Types of anuria. Causes of anuria. Symptoms. Diagnosis. Treatment. 5. Testicular torsion: etiology, symptoms, diagnosis, treatment. 6. Paraphimosis: causes, symptoms, diagnosis. First aid.	
17	<b>Final modular control</b>	<b>2</b>
	<b>In general</b>	<b>34</b>

### Independent work (by modules and content modules)

№ / pp	Working topics not included in the plan of studies (list indicating the main issues that need to be in you studied)	Number hours
	<b>Content module 1. Clinical anatomy and physiology of the urinary and male reproductive systems. Symptoms of urological diseases. Methods of research of urological patients. Anomalies in the development of the urinary and male reproductive systems.</b>	<b>6</b>
1	Nephroptosis, hydronephrosis	3
2	Modern endoscopic methods of treatment of urological diseases.	3
	<b>Content module 2. Infectious and inflammatory diseases of the urinary and male reproductive systems. Urolithiasis.</b>	<b>4</b>
3	Nephrogenic arterial hypertension	2
4	Parasitic diseases of the urinary and male reproductive systems	2
	<b>Content module 3. Traumatic injuries of the urinary and male genital systems. Neoplasms of the urinary and male reproductive systems. Acute and chronic renal failure</b>	<b>2</b>
5	Neurogenic disorders of urination	2
	<b>Content module 4. Emergency care for urological diseases.</b>	<b>2</b>
6	Genitourinary fistulas in women	2
7	Preparing a review of the scientific literature or conducting research (individual work)	1

**Individual tasks .** Minimally invasive methods of treatment of diseases of the urethra, bladder and prostate (according to the clinic).

### The list of theoretical questions for preparation of higher education applicants for the final modular control

***Content module 1. Clinical anatomy and physiology of the urinary and male reproductive systems. Symptoms of urological diseases. Methods of research of urological patients. Anomalies in the development of the urinary and male reproductive systems.***

1. Organs of the urinary and male reproductive systems, their functional significance.
2. Clinical anatomy of the urinary and male reproductive systems.
3. Pain in case of kidney diseases.
4. Pain in in case of the ureters and bladder diseases.
5. Pain in diseases of the urethra and male genitals.
6. Differential diagnosis of renal colic and acute surgical diseases of the abdominal cavity.
7. Nocturia, its diagnostic value.
8. Methods of blockade of the elements of the spermatic cord and the round ligament of the uterus according to Lorin-Epstein .
9. Polyuria and pollakiuria . In what diseases are they observed?
10. Urinary incontinence, its types.
11. Acute urinary retention.
12. Chronic urinary retention.
13. Symptom of residual urine.
14. Anuria, its types.
15. Causes of prerenal form of anuria.
16. Causes of renal form of anuria.
17. Causes of postrenal anuria.
18. What is "hidden leukocyturia" and methods of its detection?
19. Hematuria: types, causes, methods of determination.
20. Bacteriuria , its types.
21. Hiluria , its types.
22. Pyuria .
23. Pneumaturia .

24. Urethrorrhagia.
25. Review urography and its interpretation.
26. Excretory urography, its types, methods of execution.
27. Types of X-ray contrast agents.
28. Contraindications to excretory urography.
29. Retrograde ureteropyelography, method of execution.
30. Renal angiography, its types. Diagnostic value.
31. Cystography types: sedimentary, voiding , mixed; indications to perform; diagnostic value.
32. Urethrography, types, methods of execution.
33. Radioisotope renography, method of execution, diagnostic significance.
34. Kidney scan.
35. Scintigraphy , types, diagnostic significance.
36. Computed tomography, magnetic resonance imaging.
37. Ultrasound sonography .
38. Uroflowmetry, cystomanometry.
39. Anomalies of the renal vessels.
40. Kidney abnormalities.
41. Anomalies of the ureters.
42. Urachus anomalies.
43. Anomalies of the bladder.
44. Anomalies of the urethra.
45. Testicular anomalies.
46. Phimosis.
47. Hydronephrosis: stages, symptoms, diagnosis, treatment.
48. Symptoms, diagnosis and treatment of nephroptosis.

**Content module 2. Infectious-inflammatory diseases of the urinary and male reproductive systems. Urolithiasis.**

49. Acute pyelonephritis, definition, classification.
50. Ways of infection in the kidney.
51. Symptoms of acute serous pyelonephritis.
52. Clinic of acute uncomplicated pyelonephritis, diagnosis and treatment.
53. Clinic and diagnosis and treatment of acute purulent pyelonephritis.
54. Pyelonephritis of pregnant women: causes, clinic, diagnosis, treatment.
55. Bacteremic shock: stages, symptoms, diagnosis, treatment.
56. Etiology of chronic pyelonephritis, symptoms, diagnosis, treatment.
57. Pyonephrosis: symptoms, diagnosis, treatment.
58. Methods of detection of latent leukocyturia .
59. Nephrogenic hypertension: types, causes, diagnosis, treatment.
60. Acute paranephritis: definition, ways of infection penetration, symptoms, diagnosis, treatment.
61. Ways of pus breakthrough in paranephritis.
62. Cystitis: classification, symptoms, diagnosis, treatment.
63. Urethritis: classification, symptoms, diagnosis, treatment.
64. Prostatitis: classification, symptoms, diagnosis, treatment.
65. Ways of breakthrough of pus at a prostate abscess.
66. Acute epididymitis: etiology, symptoms, diagnosis, treatment.
67. Cavernitis: symptoms, diagnosis, treatment.
68. Etiology and pathogenesis of renal tuberculosis.
69. Clinical and radiological classification of renal tuberculosis.
70. Symptoms and diagnosis of renal tuberculosis. Diagnostic value of provocative tests with tuberculin.
71. Modern methods of treatment of renal tuberculosis.
72. Symptoms, diagnosis and treatment of tuberculous epididymitis.
73. Etiology and pathogenesis of urolithiasis.
74. Clinical picture of kidney stones.
75. Complications of kidney stones.
76. Methods of diagnosis of kidney stones.
77. Modern methods of treatment of urolithiasis.
78. Coral-like stones, their classification.

79. Urethral stones: symptoms, diagnosis, treatment.
80. Bladder stones: clinic, diagnosis, treatment.
81. Echinococcosis of the urinary system.
82. Filariasis of the genitourinary system.
83. Genitourinary schistosomiasis ( bilgartiosis ): etiology, clinic, diagnosis and treatment.

***Content module 3. Traumatic injuries of the urinary and male genital systems Neoplasms of the urinary and male genital systems. Acute and chronic renal failure.***

84. Classification of closed kidney injuries.
85. Symptoms, diagnosis and treatment of closed kidney injuries.
86. Classification of open kidney damage, symptoms, diagnosis and treatment.
87. Damage to the ureters. Symptoms, diagnosis, treatment.
88. Bladder damage, types, clinical manifestations.
89. Diagnosis and treatment of bladder injuries.
90. Damage to the urethra, symptoms, diagnosis, treatment.
91. Indications for the imposition of the primary urethral suture.
92. Modern minimally invasive methods of treatment of urethral strictures.
93. Testicular damage, types, symptoms, diagnosis, treatment.
94. Classification of kidney tumors.
95. Local and extrarenal signs of a tumor of a parenchyma of a kidney.
96. Diagnosis and treatment of tumors of the renal parenchyma.
97. Kidney cancer, symptoms, diagnosis, treatment.
98. Wilms' tumor - adenomyosarcoma, symptoms, diagnosis, treatment.
99. Tumors of the ureters, clinic, diagnosis, treatment.
100. Etiology of bladder tumors.
101. Classification of bladder tumors.
102. Clinic, diagnosis and treatment of bladder tumors.
103. Modern minimally invasive methods of treatment of bladder tumors.
104. Hyperplasia of the prostate.
105. Symptoms and diagnosis of prostatic hyperplasia.
106. Types of surgical interventions in the treatment of prostate hyperplasia.
107. Conservative treatment of prostate hyperplasia.
108. Stages of prostate cancer.
109. Symptoms and diagnosis of prostate cancer.
110. Surgical treatment of prostate cancer.
111. Modern minimally invasive methods of treating prostate cancer.
112. Drug treatment of prostate cancer.
113. Clinic, diagnosis and treatment of testicular tumors.
114. Clinic, diagnosis and treatment of penile cancer.
115. Neurogenic disorders of urination, causes, symptoms, diagnosis and treatment.
116. Foreign bodies of the kidneys and urinary tract: clinic, diagnosis, treatment.
117. Etiology, pathogenesis and classification of acute renal failure.
118. Symptoms, diagnosis and treatment of acute renal failure.
119. Etiology, pathogenesis of chronic renal failure.
120. Stages and forms of the clinical course of chronic renal failure.
121. Diagnosis and treatment of chronic renal failure.

***Content module 4. Emergency care for urological diseases***

122. Causes and symptoms of renal colic.
123. Methods of buying renal colic.
124. Causes of acute urinary retention.
125. Method of catheterization of the bladder in men and women.
126. Hematuria, its types, causes.
127. Medical care for hematuria.
128. Anuria, its types.
129. Medical care for various types of anuria.
130. Emergency care for kidney injuries.

131. Emergency care for injuries of the bladder, urethra, scrotum.
132. Etiology, clinic, diagnosis and treatment of vesico-vaginal fistulas.
133. Etiology, clinic, diagnosis and treatment of urogenital fistula.

#### **List of practical skills for the final module control**

1. Palpation of the the kidney.
2. Perform percussion and palpation of the bladder.
3. Palpate the urethra and scrotum.
4. Digital rectal examination of the prostate.
5. Evaluate the indicators of the general analysis of urine.
6. Evaluate the indicators of biochemical analysis of blood.
7. Perform bladder catheterization with an elastic and metal catheter.
8. Install and secure a permanent catheter in the bladder.
9. Interpret the results:
  - a) of KUB and excretory urography, CT;
  - b) isotope renography;
  - c) ultrasound sonography.
10. Carry out differential diagnosis of renal colic with acute surgical diseases of the abdominal cavity.
11. To make the scheme of inspection and treatment of patients with urological pathology.
12. Provide urgent aid with paraphimosis.
13. Taking swabs from the urethral cavity.

**The form of final control of learning success - final modular control.**

#### **Current and final control system**

Current control - assessment of the higher education applicant's mastery of educational material is carried out at each practical lesson in accordance with the specific objectives of the topic, in practical final classes - in accordance with the specific objectives of the content modules. Theoretical, practical training and VTS as preparation for classroom classes are evaluated.

Objective forms of current control are used:

- theoretical knowledge - test tasks, situational tasks, individual oral examination in practical classes, interview;
- practical skills and abilities - control of practical actions at the patient's bedside, in the dressing room, operating room, urology office of the clinic.

Criteria for assessing higher education applicants' knowledge at the department:

**Table. Standardized generalized criteria for assessing the knowledge of higher education applicants in UMSA**

A four-point traditional scale	Category ECTS	Evaluation criteria
5 (excellent)	A	A higher education applicant shows special creative abilities, is able to acquire knowledge independently, without the help of a teacher finds and processes the necessary information, is able to use the acquired knowledge and skills to make decisions in unusual situations, convincingly argues answers, independently reveals their talents and inclinations. has at least 90% knowledge of the topic both during the survey and all types of control.
4 (good)	B	Higher education applicant is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standardized situations, independently corrects errors, the number of which is insignificant, has at least 85% knowledge of the topic as during the survey, and all types of control.

	C	The higher education applicant is able to compare, summarize, systematize information under the guidance of a research and teaching staff, in general, independently apply it in practice, to control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm opinions, has at least 75% of knowledge on the topic both during the survey and all types of control.
3 (satisfactory)	D	The higher education applicant reproduces a significant part of the theoretical material, shows knowledge and understanding of the basic provisions with the help of research and teaching staff can analyze educational material, correct errors, among which there is a significant number of significant, has at least 65% knowledge of during the survey, and all types of control.
	E	The higher education applicant has the educational material at a level higher than the initial, a significant part of it reproduces at the reproductive level. has at least 60% knowledge of the topic both during the survey and all types of control.
2 (unsatisfactory)	FX	The higher education applicant has the material at the level of individual fragments, which make up a small part of the material, has less than 60% knowledge of the topic both during the survey and all types of control.
	F	The higher education applicant has the material at the level of elementary recognition and reproduction of individual facts, elements, has less than 60% knowledge of the topic as during the survey, and all types of control.

Conversion of the current grade, set on the traditional 4-point scale, to multi-point in each lesson is not carried out.

Conversion of the grade on the traditional 4-point scale into multi-point (maximum 120 points) - conversion of the total grade of current performance per module - is carried out only after the current lesson, which precedes the final module control. The conversion is performed according to the table:

**Unified table of correspondence of scores for current performance, scores for final module control, exam, and traditional four-point score.**

Average score for current performance (A)	Points for current success in the module (A * 24)	Points for final module control from the module (A * 16)	Points for the module and / or exam (A * 24 + A * 16)	Category ECTS	By 4-point scale
1	2	3	4	5	6
2	48	32	80	F FX	2  unsatisfactorily
2,1	50	34	84		
2,15	52	34	86		
2,2	53	35	88		
2,25	54	36	90		
2,3	55	37	92		
2,35	56	38	94		
2,4	58	38	96		
2,45	59	39	98		
2,5	60	40	100		
2,55	61	41	102		

2,6	62	42	104		
2,65	64	42	106		
2,7	65	43	108		
2,75	66	44	110		
2,8	67	45	112		
2,85	68	46	114		
2,9	70	46	116		
2,95	71	47	118		
3	72	50	122	E	3 satisfactorily
3,05	73	50	123		
3,1	74	50	124		
3,15	76	50	126		
3,2	77	51	128		
3,25	78	52	130	D	
3,3	79	53	132		
3,35	80	54	134		
3,4	82	54	136		
3,45	83	55	138		
3,5	84	56	140	C	4 good
3,55	85	57	142		
3,6	86	58	144		
3,65	88	58	146		
3,7	89	59	148		
3,75	90	60	150	C	4 good
3,8	91	61	152		
3,85	92	62	154		
3,9	94	62	156		
3,95	95	63	158		
4	96	64	160	B	
4,05	97	65	162		
4,1	98	66	164		
4,15	100	66	166		
4,2	101	67	168		

4,25	102	68	170		
4,3	103	69	172		
4,35	104	70	174		
4,4	106	70	176		
4,45	107	71	178		
4,5	108	72	180	A	5 perfect
4,55	109	73	182		
4,6	110	74	184		
4,65	112	74	186		
4,7	113	75	188		
4,75	114	76	190		
4,8	115	77	192		
4,85	116	78	194		
4,9	118	78	196		
4,95	119	79	198		
5	120	80	200		

The minimum convertible sum of points of current success for all modules of all disciplines of all departments is uniform and **makes 72 points**. The maximum number of points for the current educational activities of higher education applicants - **120**.

The final module control is carried out upon completion of the study of all topics of the module at the last control lesson from the module. Higher education applicants who have completed all types of work provided for in the curriculum and scored at least the minimum number of points (72 points) during the study of the module are admitted to the final control. Higher education applicants who during the study of a particular discipline have an average grade point average of 4.5 to 5.0, the form of control of which is the final module control are exempt from the FMC and automatically (by agreement) receive a final grade according to the table.

The amount of material and evaluation criteria for the final module control, determined by the department, are communicated to higher education applicants before the start of training. Standardized methods of control assess the theoretical and practical training of the higher education applicant in accordance with the requirements of the work program. The use of tests of the format of the integrated licensing exam "Step" during the final module control is mandatory. The form of final module control is standardized and includes control of theoretical and practical training: control of theoretical knowledge - by answering ticket questions (oral examination) and testing (written examination); control of practical skills and abilities occurs through individual control of practical actions.

Methods of final control:

- theoretical knowledge - testing, answers to ticket questions;
- practical skills and abilities - individual control of practical actions.

FMC evaluation criteria:

1. Solve 3 situational problems with two questions in each problem for 12 minutes. For the correct answer to the questions of the situational task the higher education applicant receives 10 points, ie the maximum for the correct answers to all questions of the situational tasks the higher education applicant receives 30 points.

2. Carrying out of test control: performance of 7 test tasks of selective type with one correct answer within 10 min. For each correctly performed test task the higher education applicant receives 2 points; maximum for all test tasks - 14 points.

3. Answer to three questions from the list of questions for preparation for FMC (for one higher education applicant for 2 minutes) For the correct answer to one question the higher education applicant receives 12 points, maximum for 3 questions - 36 points.

Tasks for FMC are standardized and aimed at monitoring the achievement of ultimate goals by the higher education applicant while studying the module. Checking the performance of tasks is carried out by the teacher during the FMC as they are performed.

The result of the final module control is evaluated in points (traditional 4-point evaluation is not given). The maximum number of points of the final modular control is 80 points. The minimum number of points of the final module control, for which the control is considered to be passed, is 50 points.

The maximum number of points assigned to higher education applicants when mastering the module (ECTS credit) - 200, including for current educational activities - 120 points (60%) (minimum - 72 points), according to the results of FMC - 80 points (40%) .

The maximum number of points of the final control is 80, the minimum is 50 points (the final module control is considered credited if the higher education applicant has scored at least 50 points out of 80).

The module is credited to the higher education applicant if he scored at least 122 points (72 for current activities + 50 points for the final module control).

### **Teaching methods**

Teaching methods are aimed at solving educational, educational and developmental tasks in the educational process. According to the classification of teaching methods by source of information and the formation of skills and abilities, the department uses the following methods:

- verbal (lecture, explanation, story, conversation, instruction);
- visual (observation, illustration, demonstration);
- practical (different types of experiment, practice).

The training is focused on the acquisition by higher education applicants of specific skills, knowledge and abilities, competencies required in future professional activities in the discipline of "Urology".

### **Control methods**

The following control methods are used at the department: oral, written, test, graphic, programmable, practical examination, methods of self-control and self-assessment.

### **Methodical support**

1. Methodical developments and multimedia presentation of lectures.
2. Methodical instructions for independent work of higher education applicants during preparation for a practical lesson and in class.
3. Methodical instructions for independent work of higher education applicants on studying of the subjects brought on independent working out.
4. Visual aids (educational videos, educational set of radiographs and computer tomograms according to thematic plans).
5. Lists of educational literature used in the study of the discipline

### **Recommended books for English speaking higher education applicants**

#### **Basic**

1. Urology : textbook for students of higher medical educational institutions of IVth accreditation level / ed. S. P. Pasiechnikov ; S. Pasiechnikov, S. Vozianov, V. Lisovyi et al. ; Ministry of Health of Ukraine. - 3rd. ed., edited, transformed. - Vinnytsia : Nova Knyha, 2020. - 391 p.
2. Urology: textbook for students of higher medical educational institutions of IVth accreditation level/S.P.Paciechnikov, S.O.Vozianov, V.M.Lesovoy [et al.]; ed by S.P.Paciechnikov, – Vinnytsia: Nova Knyha, 2016. – 400p.

### **Supplementary**

1. Campbell-Walsh Urology, 12th Edition Review Paperback / Ed. by Alan W. Partin, Craig A. Peters, Louis R. Kavoussi, A.C.Novick // Philadelphia. – Saunders, 2020. – 3826p.



2. Smith`s General Urology, 19th Edition / Ed. by J.W.McAninch, Tom F. Lue // Columbus. – McGraw–Hill, 2020. – 963p.
3. Pasiechnikov S.P., Nikitin O.D., Lytvynenko R.A., Klimenko Y.M. et al. Urology. Study Guide for Practical Work for Medical Higher education applicants // Vinnytsia, Nova Knyha.- 2012.- 172 p.
4. Oxford Handbook of Urology, 1st Edition / Ed. by J.Reynard, S.Brewster, S.Biers // Oxford. – University Press, 2006. - P. 136-187.
5. Silvermann S.G., Cohan R.H. CT Urography // Lippincott Williams & Wilkins, 2006. - 272 p.

#### **Information resources**

**Official Internet Representation of the President of Ukraine** <http://www.president.gov.ua/>

**The Verkhovna Rada of Ukraine** <http://www.rada.gov.ua/>

**Cabinet of Ministers of Ukraine** <http://www.kmu.gov.ua/>

**Ministry of Health of Ukraine** <http://moz.gov.ua/ua/portal/>

**Public Health Center of the Ministry of Health of Ukraine** <https://phc.org.ua/>

**Ministry of Education and Science of Ukraine** <http://www.mon.gov.ua/>

**State Service of Ukraine for Emergencies** <http://www.dsns.gov.ua/>

**National Security and Defense Council of Ukraine** <http://www.rnbo.gov.ua/>

**Permanent Mission of Ukraine to the UN** <http://ukraineun.org/>

**World Health Organization** <http://www.who.int/en/>

**Centers for diseases control and prevention** <http://www.cdc.gov>

**State Institution "Institute of Urology of NAMS of Ukraine"** <http://www.inurol.kiev.ua>

**Ukrainian information portal for urologists** <http://ukraine.uroweb.ru/>

**Urological TV** <http://uro.tv/>

**European Association of Urology (EAU)** <https://uroweb.org/>

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