ACADEMIC STANDARD
FOR THE COURSE OF " UROLOGY"
Adopted by Decision of the Department Council 3/28.05.2025

1. Objective of the training in the discipline

Urology is a mandatory subject for medical students according to the Unified State Requirements with a minimum teaching load of 45 hours. According to the approved curriculum for the specialty "Medicine", the teaching load of the discipline "Urology" at MU - Plovdiv is 50 hours, with lecture hours being 20 and practical exercises - 30 hours. The discipline is studied during the VIII or IX academic semester and ends with an exam at the end of each semester. After successfully passing the exam, students receive 2.3 credits. Urology is a building block subject and a component of the state exam in surgery.

The course aims to provide basic knowledge in the field of general urology (semiotics of urological diseases, methods for examining a urological patient), including malformative uropathies in urology; to outline the main aspects of clinical andrology with an emphasis on male sexual dysfunctions and male infertility, so that students can navigate its multifactorial nature and the methods for its surgical treatment and its alternatives and foresee the possibilities of reproductive medicine in relation to the male factor of infertility; and also to emphasize modern minimally invasive methods for surgical treatment of a number of urological diseases. The urology course is a necessary and mandatory basis for the overall surgery course.

The practical course introduces students to basic diagnostic techniques through classical physical, clinical and modern imaging and instrumental methods and characterization of the clinical diversity and clinical masks especially of urgent and urgent urological diseases. Adequate knowledge in theoretical and practical aspects is necessary for acquiring the educational and qualification degree "Master" and for a better professional qualification "Physician".

2. Course content

LECTURE PLAN

Lecture No. 1 – 2 hours SEMIOTICS OF UROLOGICAL DISEASES. OVERACTIVE BLADDER.

General symptoms and scales for assessing the patient's general condition. Classification of urological symptoms. Pain - characteristics, localization and mechanism of occurrence. Disorders related to the act of urination. Changes in the excreted urine - quantitative and qualitative (characteristics of hematuria according to various stratification criteria). Genito-sexual disorders. Overactive bladder - diagnosis and treatment.

Lecture No. 2 – 2 hours. INSTRUMENTAL METHODS FOR RESEARCH IN UROLOGY. LABORATORY STUDIES IN UROLOGY .

Anatomical - physiological notes of the male and female urethra. Instrumental methods for examining the urethra, bladder, ureter and kidney - technique, indications and contraindications (relative and absolute). Types of catheters, catheter designations, necessary materials and tools for catheterization. Urological laboratory tests of various biological materials - specific tests, a panel of tumor biomarkers, functional study of renal function and hormonal studies. Standardized criteria for evaluating ejaculate according to WHO (2021). - spermogram abnormalities and their clinical evaluation.

LECTURE #3 – 2 hours CONGENITAL ANOMALIES OF THE EXcretory AND MALE REGENITAL SYSTEM.

Embryonic development of the excretory system. Kidney anomalies - in number, size, position and relationship. Structural anomalies - polycystic kidney disease, kidney cysts. Bosniak classification of cysts. Anomalies of the ureter. Anomalies of the urinary bladder Embryonic development of the testicles. Congenital diseases of the testicles - classification, diagnosis, surgical management. Genetic syndromes leading to abnormalities in the size and structure of the testicle. Congenital diseases of the epididymis. Congenital diseases of the vas deferens. Congenital diseases of the prostate gland. Congenital anomalies of the penis. Congenital anomalies of the urethra Disorders of sexual development - introduction, definitions and classification, clinical manifestation and diagnostic evaluation.

LECTURE #4 – 2 hours INJURIES TO THE URINARY-GENITORIAL SYSTEM

Kidney injuries - introduction, classification, mechanisms of occurrence, pathological forms of closed kidney injuries, clinical features, diagnostics, treatment. Ureter injuries - surgical causes of iatrogenic ureteral injuries, diagnostics, behavior, prevention. Bladder injuries - mechanism of occurrence, classification, surgical causes of iatrogenic bladder injury, diagnostic program, surgical approach. Urethral injuries - classification, clinical manifestations according to the localization of the injury in the urethra, diagnostics, surgical approach. Penile injuries. Testicular injuries.

LECTURE №5 – 2 hours KIDNEY STONE DISEASE – ETIOLOGY, PATHOGENESIS, CLINICAL PHYSIOLOGY, DIAGNOSIS

Epidemiology. Localization and shape of urinary stones. Etiology of urolithiasis (causal and formal genesis). Chemical composition of concrements. Urolithiasis - diagnostic algorithm. Complications of urolithiasis. Special forms of urolithiasis. ANR (anuria) - subrenal causes. Surgical treatment of urolithiasis - goals, types of operations. Minimally invasive methods of treatment of urolithiasis - extracorporeal and intracorporeal.

LECTURE #6 – 2 hours UROLOGICAL INFECTIONS .

Classification of urological infections. Pyelonephritis - concept, statistics, etiology, predisposing factors in surgical aspect. Purulent-inflammatory diseases of the kidney - acute purulent pyelonephritis - pathoanatomical forms, pathogenesis, clinical course (symptoms and forms), diagnosis, surgical approach and prevention. Urosepsis - definition, localization of purulent foci in the genitourinary system, specific difference between sepsis and urosepsis, clinical course and treatment. Inpatient hospitalization. Inflammatory diseases of the bladder - etiology, classification, conservative treatment and surgical aspects. Inflammatory diseases of the prostate gland - classification, etiology, diagnosis and treatment. Inflammatory diseases of the urethra. Inflammatory diseases of the testicles and epididymis. Fournier's gangrene. Inflammatory diseases of the penis.

LECTURE #7 – 2 hours BENIGN PROSTATE HYPERPLASIA. PROSTATE CARCINOMA.

Benign prostatic hyperplasia (BPH) - consensus definition of the condition, endocrine control of normal prostate growth, pathogenesis of BPH, lower urinary tract symptoms (LUTS), clinical markers of BPH progression, assessment of LUTS, diagnosis and modern medical and surgical treatment of BPH. Prostate carcinoma - oncoepidemiology; histological classification 2022 WHO, risk factors, routes of spread; diagnosis; staging; behavior; surgical treatment, radiotherapy; systemic therapy - hormone therapy and systemic therapy in castrate-resistant PC, combined therapeutic approaches.

LECTURE №8 – 2 hours PARENCHYMAL TUMORS OF THE KIDNEY. PRIMARY UROTHELIAL CARCINOMAS – renal pelvis, ureter and bladder. Renal cell cancer terminology. Oncoepidemiology. 2022 WHO classification of renal tumors. Clinical manifestation and clinical interpretation of symptoms. Paraneoplastic syndrome. Clinical and pathological staging of the primary tumor. Surgical treatment. Treatment of metastatic disease. Tumors of the renal pelvis and

ureter - specificity in tumor spread, diagnosis and treatment. Bladder tumors - histological classification and differentiation of the tumor, clinical manifestation, clinical and pathological staging of the primary tumor, diagnosis, treatment - methods for urine diversion after cystectomy.

LECTURE №9 – 2 hours MALE REPRODUCTIVE SYSTEM NEOPLASMS . Testicular tumors - oncoepidemiology, risk factors, staging, tumor spread pathways, histological classification of testicular tumors according to 2022 WHO, clinical manifestation, specific diagnostic and prognostic tumor biomarkers and their clinical interpretation, general principles of treatment and fertility control after retroperitoneal lymph node dissection and adjuvant therapy. Penile cancer - oncoepidemiology, risk factors. histological classification according to 2022 WHO, pathways of penile cancer spread, principles of treatment. Benign lesions and precancerous lesions of the penis.

LECTURE №10 – 2 hours MALE INFERTILITY. FUNCTIONAL DISORDERS OF ECCAULATION . Male infertility - definition, epidemiology, etiology of the male factor of infertility, diagnostic assessment of the fertility capacity of the man, modern treatment approach in men with reduced fertility (surgical sperm collection for the purposes of assisted reproduction, sperm cryopreservation). Anatomical, physiology and nervous regulation of ejaculation. Anatomical abnormalities of ejaculation. Functional disorders of ejaculation - premature, late, painful, retrograde ejaculation and anejaculation. Pharmacological abnormalities of ejaculation. Treatment of ejaculation disorders (non-surgical and surgical). Male hypogonadism. Erectile dysfunction.

PRACTICALS

PRACTICAL No. 1 – 2 hours Semiotics of urological diseases.

PRACTICAL No. 2 – 2 hours Research methods in urological practice – physical, laboratory, X-ray.

PRACTICAL No. 3 – 2 hours Instrumental methods of examination in urology – cystoscopy, ureterorenoscopy. Biopsy methods in urology – needle, endoscopic, open biopsy. Methods for drainage of the lower urinary tract. Methods for drainage of the upper urinary tract.

PRACTICAL No. 4 – 2 hours Malformative uropathies

PRACTICAL No. 5 – 2 hours Traumatic injuries to the kidney, ureter, lower urinary tract and male genitalia.

PRACTICAL No. 6 – 2 hours Urolithiasis - clinical picture, diagnosis.

PRACTICAL No. 7 – 2 hours Urolithiasis - complications and treatment. Inflammatory diseases of the urinary system - pyelonephritis - types and treatment; cystitis. Urosepsis - diagnostic program, principles of treatment

PRACTICAL No. 8 – 2 hours Benign prostatic hyperplasia.

PRACTICAL No. 9 – 2 hours Prostate carcinoma

PRACTICAL No. 10 – 2 hours Tumors of the renal parenchyma and upper urinary tract and bladder.

PRACTICAL No. 11 – 2 hours Bladder tumors. Methods for urine diversion after cystectomy

PRACTICAL No. 12 – 2 hours Obstructive uropathies - classification, clinical picture, diagnostic and surgical approach. Acute and chronic renal failure of urological origin.

PRACTICAL No. 13 – 2 hours Diseases of the male genital organs – phimosis, paraphimosis, Peyronie's disease, priapism, penile cancer; testicular tumors. Acute scrotum from traumatic, inflammatory and non-inflammatory causes. Inflammatory diseases of the prostate gland.

PRACTICAL No. 14 – 2 hours Urinary fistulas. Neurogenic urination disorders. Urodynamic studies

PRACTICAL No. 15 – 2 hours Male infertility. Male sexual disorders – erectile and ejaculatory.

3.Prerequisites

Knowledge of anatomy, physiology, pathoanatomy and pathophysiology, imaging diagnostics, microbiology, and surgical and internal medicine procedures is required.

4. Academic resources

The lecture course is conducted in Bulgarian and English by habilitated lecturers. The practical exercises are conducted by habilitated and non-habilitated lecturers.

5. Material resources

The Department of Urology and General Medicine has the necessary material resources to conduct the training.

Lectures are held in the Auditorium Complex of MU-Plovdiv and Auditorium X, based on the territory of St. George University Hospital.

The practical exercises are held on the territory of St. George University Hospital, 9th floor, Urology Clinic and Kaspela University Hospital, Urology Clinic.

Three classrooms with the possibility of multimedia presentations are available for conducting the exercises.

When conducting practical exercises, the capabilities of the Simulation Center can be used.

6. Lecture training

For the Urology lecture course, interactive teaching with multimedia presentations is preferred and the lectures last 2 hours.

7. Practical exercises

The practical exercises are conducted in groups and last 2 hours. The students' preliminary readiness for the practical exercise is checked with introductory questions on the topic at the beginning of the exercise.

8. Seminar exercises:

There is no specific time set aside for seminars in the program, but discussions on a given topic are held during regular practical exercises. Students are assigned presentations and the exercises are aimed at actively engaging them in discussions on the topics.

9. Information resources.

1. Petar Antonov and colleagues. Handbook of Urology. 2022 and 2025, Laxbook Publishing House. Plovdiv
2. Botyo Zozikov and team Urology - textbook for medical students, 2018 Sofia University "Kliment Ohridski"
3. Paskalev G and colleagues Basic clinical procedures. Published by Medical University - Plovdiv. 2009.

10. Control work

Students are dynamically and intensively loaded during the semester. Teachers monitor the progress of students at least twice a semester. Current control can be carried out through tests or control assignments. Students are provided with timely information and explanations of the results of the control, which will help their further preparation. The results of these checks are included as a component of the final grade for the semester.

11. Independent work and student engagement

Independent work is supervised by the lecturer (assistant), who guides the student both in the literary sources and in the methods of their assimilation. It is recommended to provide training tests, including online, for independent work and exercises for students.

12. Collaboration between students and the teaching team

This cooperation should be expressed in:

- a the teacher's commitment to the student and his/her prior preparation, current difficulties in mastering the material and opportunities with an individual learning program to achieve more ;
- use of office hours for consultations ;
- conducting clubs ;
- inclusion of students in teams for scientific tasks, research, projects, etc.

Teaching aids:

Interactive teaching methods used, including through electronic means:

- multimedia presentations, case studies, clinical scenarios
- role-playing games
- video demonstrations
- discussions
- QR codes
- popular content sharing platforms
- educational films
- links and references to internet resources and current scientific articles
- topic development and presentation, simulation center, work with artificial intelligence

Methods for stimulating students' creative activity

Approaches to encourage active participation and independent work of learners:

- development of projects, term papers and essays
- participating in discussions, presenting personal points of view
- creating presentations and student projects
- use of multimedia, audio and video materials
- working with online platforms
- case solving, clinical data analysis
- role models and simulation scenarios
- development of diagnostic and therapeutic algorithms
- practical solving of clinical problems

13. Exams and formation of the final grade

Forms of assessment for current and final control:

Modern and transparent assessment methods are used, which include at least two different types of components

- presentations and student projects, essays and reports
- solving cases and role-playing situations
- colloquiums
- written and oral exams

The general medicine training ends with a semester exam. The final grade is formed based on:

- at least two grades from ongoing control during the semester;
- grade from a written final exam;
- grade from an oral final exam.

If the grade of one of the components is a weak 2, then the final grade is necessarily a weak 2. Students with a positive grade in the written exam are admitted to the oral exam.

The current grades provided for in the curriculum of the specialty are given for:

1. The student's results in seminar exercises and independent assignments, the student's work with the teacher on scientific research and projects, etc.;
2. At least two (one mid-term and one at the end of the semester) written or oral tests or student projects.

14. Assessment standards:

The standards for assessing student achievement are as follows:

- Excellent (6) – for good knowledge of information sources, in-depth mastery of key and additional knowledge and skills, meaningful and correct understanding of the subject, skills for solving complex problems, own thinking and reasoning of decisions;
- Very good (5) – for very well-mastered key and additional knowledge, meaningful and correct understanding of the subject matter, skills for applying what has been learned to complex cases and tasks;
- Good (4) – for mastering key and additional knowledge for solving cases and tasks, but without being able to develop them into independent thinking;
- Medium (3) – for mastering key knowledge and solving simple problems;
- Weak (2) – does not meet any of the requirements above.

At the beginning of their studies, students should be familiar with the assessment standards, the procedures for conducting ongoing control, and the opportunities for receiving feedback on their progress throughout the semester.

15. Forming a final assessment

The final grade is multi-component and includes: a grade from a current control, a grade from a final written exam and a grade from an oral exam. The student's final grade is obtained as the sum of the grades on a six-point system from the three components, multiplied by a coefficient, respectively 0.2; 0.5 and 0.3. If one of the components of the final grade is weak, then the final grade is necessarily weak 2.

Students have the right and obligation to be informed about the regulations, procedures and results of the assessment, to make claims and complaints according to the established academic standards for quality management at MU - Plovdiv.

The student's right under the previous point is valid in cases of established technical omissions or errors (for example, when forming and applying grades), as well as in cases of serious grounds for a discrepancy between the actually demonstrated knowledge, skills and competencies and the final grade received for them.

Corrections to grades are allowed in the cases under the previous point in the student booklet, the exam protocol, the department journal or in the general ledger only by the course holder.

Possible disputes and claims from country on the students is send in writing to the head of the department, which follows yes gave reasoned answer to the end of the next working day.

Established and proven cases on seriously violation on rights on the student at the assessment on their knowledge, skills and competencies is referred in writing complaint to Deputy. The Rector of the Academy of Sciences of MU-Plovdiv.

The examination materials are stored in the department's archive until the students graduate and the students are given the opportunity to familiarize themselves with them and the grounds for assessment according to the order and procedure announced in advance. The period in which students are provided with access to the examination materials and results is no longer than 3 working days after the exam date.

The characteristic on the discipline is provides on the student in the beginning on training. This requirement is set in accordance with the Higher Education Act, Art. 56. Para. 1, "teachers are obliged to develop and publish in an appropriate manner a description of the lecture course they lead, including titles and sequence of topics from the curriculum, recommended literature, method of forming the assessment and form of testing knowledge and skills."

HEAD OF THE DEPARTMENT OF UROLOGY AND GENERAL MEDICINE:

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