INTERNATIONAL HIGHER SCHOOL OF MEDICINE
Department of Introduction to Therapy & family medicine

SYLLABUS

Urinary system

2026-2027 academic year
for students of medical faculty
3 course 5 semester groups – according to timetable
3 credits (105 h, including auditoria 64h, independent work – 41 h)

Lecture	
Introduction to internal medicine	Chokoev Asan Lenarovich (+996705705145 phone whatsapp), **Email:**asanchokoev64@gmail.com **Venue**: Zoom
Introduction to pediatrics	Isakova F.B. (+996707932178 whatsapp) **Email:**isakova.feruza.b@mail.ru **Venue:** Zoom
Topographic anatomy	Dzhumashalieva A.U. (+996772872070 whatsapp) **Email**d_aselya_28_02@mail.ru:). **Venue:** Zoom
Pathophysiology	Ilina Lyudmila Leonidovna +996556818729 phone (Whats app) **Email:** Ludmilailinakg@mail.com **Venue:** Zoom
Urology	Amangeldyev Almanbet Amangeldyevich (+996774 250 808 whatsapp,) **Email: Murzaliev1994**@mail.ru **Venue:** Zoom
Practical:	Chokoev Asan Lenarovicha (+996705705145 whatsapp)
Introduction to internal medicine	**Email:**asanchokoev64@gmail.com **Venue**: Krylova 5 Railway Hospita,room 1 Karataev Mederbek Addylbekovich (+996554 001 186 whatsapp) **Email:** karataev96@mail.com **Venue:** Vedanta Alybaeva street 96 room 204
Introduction to pediatrics	Begimay Toktomusheva (+996505 573 656 whatsapp) **Email:** begimay.toktomusheva@mail.com **Venue:** Lev Tolstoy street 17a/2 Clinical simulative center room 113
Topographic anatomy	ShamshievaE.L. (+996990013313, WhatsApp): **Email:**elya.shamshieva@gmail.com **Venue:** Morfogical corpus 1, room 406. Duishenova Kaliman Sharshenovna (+996559338787), : **Email:**ms.kalyiman@mail.ru). **Venue:** Morphocampus room № 410 Rakhmatov Nurgazy Akylbekovich (+996555744715 (Whatsapp) **Email:** nurgazy.rakhmatov@mail.ru **Venue:** Morphocampus room № 403
Pathophysiology	Ilina Ludmila Leonidovna (+996556818729 phone (Whats app) **Email:** Ludmilailinakg@mail.com **Venue:** Dagestanskaya 6, Vedanta pathology
Urology	Amangeldyev Almanbet Amangeldyevich (+996774250808) whatsapp,) **Email: Murzaliev1994**@mail.ru **Venue:** Akhunbayeva street 92 campus 5

Radiology	Bektur Daniyarov, Assoc.Prof. (+996554091767 WhatsApp,) **Email:** **bsdaniyarov@gmail.com** **Venue:** Vedanta Clinic/ Bishkek, Manas str 34, 6th flor, 611

The Syllabus is considered
at the meeting of the department of Introduction to internal medicine & family medicine
Protocol № 1 dated 27.08.2026
Head of the department _____ Kamchybekova A.A.

Course Objective: Based on comprehensive knowledge, skills and abilities of physical examination and diagnosis of the most common diseases of the Urinary system in adults and children**.**

After study of the discipline the student must have:

Knowledge:

- Causes of pathological abnormalities of the urinary system, the results of physical, clinical and laboratory, functional and instrumental methods of examining a patient with the most common diseases of the endocrine glands
- Psychophysiology mechanisms of development of symptoms and syndromes in the most common diseases and substantiate pathogenetically justified diagnostic methods in various age groups of patients with the most common diseases of the urinary system;
- Patterns of functioning of individual organs and systems, mechanisms of development of the main symptoms and syndromes, as well as methods for their identification;
- The essence of methods for clinical, laboratory and functional examination of adults and children with the most common diseases of the urinary system;

Skill:

- Conduct clinical interpretation of physical, clinical, laboratory, functional and instrumental methods of examining a patient with the most common diseases of the urinary system;
- Analyze and synthesize information about identified pathological symptoms and syndromes affecting the urinary system and prescribe an adequate examination for the purpose of reliable diagnosis of diseases;
- Identify the main symptoms using physical examination methods and group them into syndromes based on knowledge of the anatomical and physiological characteristics and patterns of functioning of the urinary system;
- Analyze the results of clinical, laboratory and functional examination of the body of adults and children in order to diagnose major diseases of the urinary system;

Attitude:

- Skills in the practical use of methods aimed at identifying the main pathological symptoms and syndromes for the purpose of reliable diagnosis of diseases of the urinary system;
- Skills in physical examination of patients with diseases of the urinary system, aimed at identifying the main pathological symptoms and syndromes for the purpose of their reliable diagnosis;
- Skills in conducting basic clinical, laboratory and functional examinations of adults and children with diseases of the urinary system.
- Skills in making a preliminary diagnosis based on the results of biochemical and clinical studies for urinary system pathology.
- Skills in reasoned substantiation of clinical diagnosis and choice of rational treatment tactics

- **Pre-requisites.**
  - Normal anatomy of urinary system
  - Normal physiology of urinary system
  - Basic pharmacology
  - Nursing
  - Introduction to internal medicine 3 semester

- **Post-requisites.**
  - Internal medicine (nephrology)
  - Polyclinic therapy
  - Family medicine
  - Pediatrics

THEMATIC PLAN OF LECTURES

№	Name	Topic	Hours	Date
1.	**Unit 1.** Introduction to urinary system	L 1: Topographical anatomy of lumbar region. Topographical anatomy of retroperitoneal region and them organs	2	According to the timetable
		L2: Pathophysiology of kidney. Common etiology and pathogenesis of renal disorders.	2	According to the timetable
		L3:Pathophysiologic characteristic of major syndromes: nephritic, nephoitic, renal failure, uremia.	2	According to the timetable

		L 4: Abnormalities of the kidneys and urinary tract	2	According to the timetable
2.	**Unit 2.** Diagnostic methods for diseases of the urinary system	L 5: Semiotics of urinary system diseases in children	2	According to the timetable
		L 6: Methods of examination of urological patients	2	According to the timetable
		L 7: Methods of clinical examination of patients with pathology of the urinary system	2	According to the timetable
3.	**Unit 3.** Semiotics of diseases of the urinary system	L 8: Semiotics of urinary system diseases in urology.	2	According to the timetable
		L 9: Semiotics of urinary system diseases in adults: Urinary syndrome, pain syndrome, renal failure syndrome, arterial hypertension syndrome.	2	According to the timetable
		L 10: Clinical manifestations of nephrotic and nephritic syndromes, criteria of syndromes. .	2	According to the timetable
	Total		**20**	

THEMATIC PLAN OF PRACTICAL CLASSES

№ of unit	Name of unit	Topic of practice classes	Hours	Date
1.	**Unit 1.** Introduction to urinary system	PC 1: Topography of pelvic cavity. Pelvic walls (boundary). Perineum.	2	According to the timetable
		PC 2: Topography of urinary organs.Topography of kidneys, ureter, urinary bladder, urethra.	2	According to the timetable
		PC 3: Topography of male genital organs. Topography of prostate, bulbouretral glands, vas deferense, seminal vesicle, testis. epididymis, penis, scrotum.	2	According to the timetable
		PC 4: .Etiology and pathogenesis of main renal functions disorders: filtration, reabsorption, secretion. Quantitative and qualitative disorders of urination. Concept of hypostenuria and isostenuria.	2	According to the timetable
		PC 5: Etiology and pathogenesis of main renal pathology syndromes: nephritic, nephoitic,renal failure, uremia. Final control of renal pathophysiology.	2	According to the timetable
		PC 6: Anatomical and physiological features of the urinary system in children.	2	According to the timetable
		PC 7: Kidney and urinary tract anomalies.	2	According to the timetable
		PC 8: Unit 1 submission	2	According to the timetable
2.	**Unit 2.** Diagnostic methods for	PC 9: Pediatric referral criteria for a child with edema, hypertension and urinary syndrome. Etiopathogenesis, clinical and laboratory signs	2	According to the timetable

	diseases of the urinary system	of urinary tract infection in children.		
		PC 10 : Etiopathogenesis, clinical and laboratory features of acute poststreptococcal glomerulonephritis, nephritic syndrome and minimal change nephrotic syndrome in children.	2	According to the timetable
		OC 11 : Etiopathogenesis, clinical and laboratory signs of acute kidney injure (AKI), chronic kidney disease (CKD 1-5) in children/	2	According to the timetable
		PC 12: General clinical methods of examination of urological patients. Inspection, palpation, percussion, auscultation. Instrumental and endoscopic methods examination. Puncture biopsy of the kidney, prostate, testicle.	2	According to the timetable
		PC 13: Methods of clinical examination of patients with pathology of the urinary system in adults. . Subjective and objective examination. Urine analysis, Total blood count, Biocemical anaiysis of blood (serum creatinin, urea, uric acid, total protein, albumins, phosphorus, calcium, S-reactive protein, measurement of GFR.	2	According to the timetable
		PC 14: Radiology, X-Ray methods of examination of patients with urinary tract diseases. Importance of ultrasound examination, CT, MRI.	2	According to the timetable
		PC 15: Unit 2 submission.	2	According to the timetable
3.	**Unit 3.** Semiotics of diseases of the urinary system	PC 16: Pain. Etiopathogenesis of renal colic. Clinucal picture. Differential diagnosis of right-sided renal colic from acute appendicitis. Pain in the pathology of renal pelvis, ureter, bladder, prostate gland, urethra.	2	According to the timetable
		PC 17: Dysuria syndrome. Clinical and laboratory criteria for manifestation of dysuria syndrome.	2	According to the timetable
		PC 18 : Syndrome of pain. Urinary syndrome. Causes and clinical manifestations, laboratory and diagnostic criteria.	2	According to the timetable
		PC 19: Urinary tract infection syndrome (non-obstructive form). Arterial hypertension syndrome. Clinical manifestations, laboratory and diagnostic criteria.	2	According to the timetable
		PC 20: Nephrotic syndrome,.nephritic syndrome. Clinical manifestations, diagnostics and laboratory criteria of syndromes.	2	According to the timetable
		PC 21 : Acute renal injuri syndrome, chronic renal injuri syndrome. Clinical manifestations, diagnostics and laboratory criteria of syndromes.	2	According to the timetable
		PC 22: Unit 3 submission.	2	According to the timetable

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

№	Unit	Name of task	Hours	Discipline
1.	**Unit 1.** Introductio n to urinary	1.Draw the cours of the peritoneum in the abdomenal cavity and explain how the organs of the urinary system are located relaitive to the peritoneum.	1	Topographic anatomy

	system	.Droaw and explain which organs of the urinary system are included in the upper and lower sections of the urinary system. .Draw and Demonstration of the layers of lumbar region. .Draw and explain the structure of the nephron, its blood supply, descending and ascending loop of Henle. Draw and demonstration of the skeletotopy of kidney.		
		8.Make a table of the order of physical examination of patients with Urinary diseases.	2	Propedtherapy
		9.Make a summery on the topic of urology and andrology: its subject, objectives and methods.	1	Urology
		10.Make a table of complaints made by patients with Urinary tract diseases.	1	Propedtherapy
		11.Make a table of complaints and symptoms detected in children during the initial examination with diseases of the urinary system.	1	Propedpediatriya
		12. Make a summary on the topic of urology: 1) Developmental abnormalities and dysfunctions of the male genital organs. 2) Developmental abnormalities of the male external genital organs. 3) Developmental abnormalities of the penis: curvature, hypospadias.	2	Urology
2.	Diagnostic methods used in diseases of the urinary system.	14.Make an abstract of topic what method can be used to determine the glomerular filtration rate. Describ it.	2	Propedtherapy
		15.Make an abstract of topic Cystoscopy, indications for cystoscopy, types of cystoscopes, complications after cystoscopy. Uretroscopy, indications for uretroscopy.	2	Urology
		16.Make a note of what laboratory and auxillary examination methods are prescribed for Urinary tract syndromes and technic of examination.	2	Propedtherapy
		17.Ptepare a repot on the topic: «Tactics of catheterisation and bouginage».	2	Urology
		18.Make a summary with explanations of what methods of invasive contrast diagnostics are prescribed for various diseases of the Urinary tract.	1	Radiology
		19. Evaluation of proteinuria by studies Protein/creatinine ratio of a single portion of urine, Albumin/creatinine ratio in a single portion of urine in children. Abstract/Presentation	2	Propedpediatrics
		20. Method for Determining SCF in Children, Indications and Evaluation of Results. Abstract/Presentation.	2	Propedpediatrics
		21. Evaluation and approaches to diagnosing leukocyturia in children	2	Propedpediatrics
		22. Evaluation and approaches to diagnosing microhematuria in children	1	Propedpediatrics

3.	Semiotics of the urinary system	23.Make a summary : Pain syndrome and urination disorders in the urology practice.	3	Urology
		24. Make an abstract of the topic classification of pain: location, duration, intensity est. Characteristic of features of pain originating from the genitourinary system in the urology practice.	3	Urology
		25.Make a summary on the topic of urology: Changes of urination: definition, classification and disorders. Changes in urine volume, symptoms of lower urinary tract disorders (LUT), symptoms of bladder iritation, symptoms of obstruction.	3	Urology
		26.Draw a diagram and symptomatically of damage to various parts of the urinary system in urinary tract infection syndrome.	3	Propedtherapy
		27.Make a table for the differentiation diagnosis of nephritic and nephrotic syndromes.	2	Propedtherapy
		28.Make a table of types of hematuria, proteinuria, cylindruria. Explain their origin and in what the urinary tract diseases they appear?	3	Propedtherapy
Всего			**41**	

Recommended reading for the discipline:

Basic:

Topographic anatomy:

1. B.D.Chaurasia. Human Anatomy Vol. 1, 48th edition, 2020.
2. NETTER'S CLINICAL ANATOMY, FOURTH EDITION, Carlos A.G. Machado, MD John A. Craig, MD, 2019.
3. Ross & Wilson Anatomy and Physiology in Health and Illness, 13th Edition 2018.

Pathophysiology:

1. Robbins "Basic Pathology" 10th edition, 2018.
2. Harsh Mohan «Textbook of Pathology» 8th edition, 2019.
3. Kumar Abbas «Essential Pathology» 2021.

Propedtherapy:

1. Bickley L.S. Szilagyi P.G. Bates` quide to physical examination and history taking, 8th ed., 2017.
2. Harrison's principles of Internal Medicine, 2023.
3. Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.
4. Anthony W. Alfrey. Goljan rapid review pathology, 2023.

Pediatrics:

1. O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
2. Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 22th ed.2024.
3. Suraj Gupte. The Short Textbook of Pediatrics, 11th Edition 2009

Radiology:

1. Mayur Arun Kulkarni, Saurabh S Patil, Amit M Shetty. Conceptual Review of Radiology. Nothing beyond for PGMEE, 2018.
2. E. Scott Pretorius, Jeffrey A. Solomon. Radiology Secrets Plus (3d edition), 2011.

Urology:

1. Alan W. Partin MD PhD, Craig A. Peters MD FACSFAAP, Louis R. Kavoussi MD MBA, Roger R. Dmochowski MD FACS, Campbell-Walsh Urology 12th Edition Review 3rd Edition, 2020
2. Christopher R. Chapple, William D. Steers, Practical Urology: Essential Principles and Practice, 2016
3. John Reynard, Simon F. Brewster, Suzanne Biers, Naomi Laura Neal, Oxford Handbook of Urology, 2019
4. Ray Dyer; Christopher Brady; Genitourinary Imaging by Ronald J. Zagoria , 2015
5.

Additional:

1. Frank H. Netter. MD- Atlas of human anatomy, 2019.
2. Jerry L. Prince, Jonathan M. Links. Medical Imaging Signals and Systems. 2nd edition, 2015.
3. John Barone MD, Manuel A. Castro, MD, AAHIVS «Preclinical Pathology review» 2023.
4. Kidney Disease: Improving Global Outcomes (KDIGO) Clinical Practice Guideline Glomerulonephritis. 2012, 2020

Grading policy and procedures for all types of work:

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):

- current score - 20 points
- independent work - 20 points
- unit / module - 20 points
- the overall score - 60 (20+20+20)

For violations of t**he conduct policy**, the overall discipline score will be reduced by a maximum of 10 points.
For violations of **the academic ethics policy**, the overall score in the discipline is reduced by a maximum of 10 points.

Grading system for student's achievements

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Current control - 40	0-23	24-30	31-35	36-40
Interval description	The student refuses to answer or when trying to answer demonstrates a complete lack of knowledge of the material. No clinical task has been solved, no practical task has been completed.	The student knows the educational material partially. Incorrectly performs or disrupts the sequence of clinical examination of the patient. Can apply his knowledge only in a typical familiar situation, and experiences difficulty when changing the question. There are also difficulties in using special skills. Can only solve typical clinical problems and has poor communication skills.	The student knows program material fluently in a familiar situation and makes two or three mistakes when answering. The student confidently answers additional questions. Able to apply knowledge and relevant clinical skills to a range of routine tasks. There are minor errors in the preparation of the medical history or situational task. Good confidence in communication skills and ability to conduct effective dialogue.	The student is fluent in educational material of varying complexity and uses information from other disciplines. The student demonstrates the ability to think and perform practical work independently. All tasks of the practical part were completed at a high level, clinical thinking and a non-standard approach to problem solving were demonstrated. He is fluent in communication skills.

Independent work - 20	0-11	12-15	16-17	18-20
	As above	As above	As above	As above
	The following are additionally considered – logic of reasoning; – original approach to the solution.			
Interval description	student does not possess the listed skills.	Student demonstrates knowledge and understanding of most of the assignment. The student knows the categorical apparatus, can give calculation formulas, and calculate the task.	Student completes the task with minor errors. The student masters the categorical apparatus, can classify the factors of a phenomenon, solve the problem and analyze the results obtained.	Student completed the task completely. The student knows the categorical apparatus, can classify the factors of a phenomenon, solve the problem and analyze the results obtained, explain the reasons for deviations from the desired result, defend his point of view, citing facts.
Control work (module) - 40	0-23	24-30	31-35	36-40
Interval description	Number of correct answers to MCQs –60% or less	Number of correct answers to MCQs –60-76 %	Number of correct answers to MCQs – 76-90%	Number of correct answers to MCQs – 90% and above

Exam 40 points.
The exam is carried out in 2 stages:
Stage 1 - clinical skills exam – 20
Stage 2 - theoretical knowledge exam – 20

Grand total score for the discipline (current score for units 40 + independent work 20 + control score 40) = 100 points
Grand total score for the discipline is signed into the record book.

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).
- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

Academic Ethics Policy.
- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

Guidelines for lessons of the discipline:

Unit I. Key questions covered in lesson 1: Topography the pelvic cavity. Pelvic walls (boundary). Perineum.
1. Orientation of the pelvis.
2. Topography false pelvis.
3. True pelvis.

4. Structure of the pelvic walls.
5. Pelvic fascia.
6. Vessels and nerves of the pelvis Muscles of pelvic cavity.
7. Inferior pelvic wall. Pelvic peritoneum.

Recommended reading for this discipline:
1. Human anatomy 5-ed vol-2 Chaurasia B.D. 2010. Pp 259-264
2. Grants Atlas of anatomy Agur A.M. p 120-123
3. Lectures
4. Atlas of human anatomy 4ed Netter F.H. 2006. 267-269,283,289,293,298

Unit I. Key questions covered in lesson 2: Topography of urinary organs. Topography of kidneys, ureter, urinary bladder, urethra

1. Topography the kidneys. Location and description. Blood and nerve supplies.
2. Topography the nephrons. Location and description.
3. Topography the ureter. Location and relation. Blood and nerve supplies.
4. Topography the urinary bladder. Location and relation. Blood and nerve supplies.
5. Topography the male urethra. Location and relation. Blood and nerve supplies.
6. Topography the female urethra. Location and relation. Blood and nerve supplies.

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Recommended reading for this discipline:
[1] Kumar V., Abbas A.K., Aster J.A. Robbins and Cotran Pathologic Basis of Disease. 2015.
[2] Copstead Banasick. Pathophysiology.2013
[3] Calor Mattson Porth. Essentials of pathophysiology.2019

Unit 1. Key questions covered in lesson 3: Topography of male genital organs. Topography of prostate, bulbouretral glands, vas deferense, seminal vesicle, testis. epididymis, penis, scrotum.

1. Topography the prostate. Location. Relation. Blood supply and Nerve supply.
2. Topography the seminal vesicles. Blood supply and Nerve supply.
3. Topography the ductus deferens. Location. Relation. Blood supply and Nerve supply.
4. Topography the spermatic cord. Location. Relation. Blood supply and Nerve supply.
5. Topography the testis. Location. Relation. Blood supply and Nerve supply.
6. Topography of coates of testis.
7. Topography the penis. Location. Relation. Blood supply and Nerve supply.
8. Topography the perineum of the male. Location. Relation. Blood supply and Nerve supply.

Recommended reading for this discipline:
[1] O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
[2] Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed.2015

Key questions covered in lesson 4: Etiology and pathogenesis of main renal functions disorders: filtration, reabsorption, secretion. Quantitative and qualitative disorders of urination. Concept of hypostenuria and isostenuria.

1.Common etiology and pathogenesis of renal functions disorders. Typical disorders of glomerular filtration rate. Disorders of renal perfusion, urine outflow. Damages of kidney parenchyma.
2.Mechanism of PCT and DCT function disorders: reabsorption, secretion, excretion. Neurohumoral regulation disorders of urination;
3.Typical quantitative disorders of urination: polyuria, oliguria, anuria.
4.Pathophysiologic characteristic of typical qualitative disorders of urination: hematuria, proteinuria, leukocyturia, pyuria, cylindruria etc.
5.Common etiology and pathogenesis of hematuria of renal and extrarenal origin.
6.Common etiology and pathogenesis of proteinuria of glomerular and tubular origin.
7.Cylindruria, etiology and pathogenesis. Types of urinary casts.

Recommended reading for this discipline:

1. Kumar V., Abbas A.K., Aster J.A. Robbins Basic Pathology. 2018.
2. Kumar V., Abbas A.K., Aster J.A. Robbins and Cotran Pathologic Basis of Disease. 2015.
3. .Mohan H. Textbook of Pathology. 2019.

Additional literature:

5. Calor Mattson Porth. Essentials of pathophysiology.2019

Unit 1. Key questions covered in lesson 5: Etiology and pathogenesis of main renal pathology syndromes: nephritic, nephoitic,renal failure, uremia. Final control of renal pathophysiology.

1. Nephritic syndrome. Etiology and pathogenesis of renal filter disorders.
2. Nephrotic syndrome. Etiology and pathogenesis of nephrotic syndrome basic signs.
3. Mechanism of nephritic and nephrotic edema development.
4. Typical disorders of renal incretory function: syndrome of renal hypertension. Disorders of pressor and depressor function of kidney.
5. Syndrome of renal failure, etiology, pathogenesis, stages of acute and chronic renal failure. Prerenal, intrarenar and postrenal types of renal failure.
6. Uremia syndrome. Mechanism of basic uremia signs development in different physiological systems. Etiology and pathogenesis of uremic coma. Pathogenic basis to use hemodialysis.

Recommended reading for this discipline:

1.Kumar V., Abbas A.K., Aster J.A. Robbins Basic Pathology. 2018.
2.Kumar V., Abbas A.K., Aster J.A. Robbins and Cotran Pathologic Basis of Disease. 2015.
3.Mohan H. Textbook of Pathology. 2019.

Additional literature:

4. Calor Mattson Porth. Essentials of pathophysiology.2019

Unit 1. Key questions covered in lesson 6: Anatomical and physiological features of the urinary system in children

1. Anatomical features of the urinary system in children
2. Physiological features of the urinary system in children

Recommended reading for this discipline:

1. References listed above
2. Lecture notes

Unit 1. Key questions covered in lesson 7: Kidney and urinary tract anomalies.

1.Diagnostic methods: palpation, functional testes, excretory urography, angiography.
2.Types of kidney anomalies: anomalies of quantity – aplasia, hypoplasia, third additional kidney, double kidney with splitting and doubling of the ureter;
3.Position anomalies - homolateral dystopia (pelvic, iliac, lumbar, thoracic), heterolateral dystopia (with fusion, without fusion),
4.Anomalies in the relationship of fused kidneys - symmetrical (horseshoe-shaped kidneys, biscuit-shaped kidneys), asymmetrical (L-shaped, C-shaped),
5.Structural abnormalities - polycystic kidneys, solitary cysts, multicystic kidneys, abnormalities of the structure of the medulla.
6.Ureteral anomalies: achalasia, ureterocele, ectopia.
7.Bladder abnormalities. Diagnostic methods. Types of bladder anomalies: exstrophy, diverticula, double bladder, urinary duct fistulas
8.Anomalies of the male urethra. Diagnostic methods: examination, urethrography. Types of anomalies: urethral atresia, paraurethral ducts, hypospadias (capitate, scrotal, perineal, total), epispadias.

Recommended reading for this discipline:

1. References listed above
2. Lecture notes

3. Alan W. Partin MD PhD, Craig A. Peters MD FACS FAAP, Louis R. Kavoussi MD MBA, Roger R. Dmochowski MD FACS, Campbell-Walsh Urology 12th Edition Review 3rd Edition, 2020

Unit 1. Key questions covered in lesson 8: Unit 1 control.

1.Topography the pelvic cavity. Pelvic walls (boundary). Perineum.

2.Topography of urinary organs. Topography of kidneys, ureter, urinary bladder, urethra

3.Topography of male genital organs. Topography of prostate, bulbouretral glands, vas deferense, seminal vesicle, testis. epididymis, penis, scrotum.

4.Etiology and pathogenesis of main renal functions disorders: filtration, reabsorption, secretion. Quantitative and qualitative disorders of urination. Concept of hypostenuria and isostenuria**.**

5.Etiology and pathogenesis of main renal pathology syndromes: nephritic, nephoitic,renal failure, uremia. Final control of renal pathophysiology.

6.Anatomical and physiological features of the urinary system in children.

7.Kidney and urinary tract anomalies.

Recommended reading for this discipline:

[1] References listed above

[2] Lecture notes

Unit 2. Key questions covered in lesson 9: Semiotics of urinary system diseases in children.

1. Definition and principles of diagnostics of URINARY syndrome
2. Definition and principles of diagnostics of UTI (URINE TRACT INFECTION)
3. Definition of polyuria, pollakyuria, anuria, oligouria, disuria
4. Definition and diagnosis of pathological proteinuria by dipstick test, by 24 hours urine for
5. Method of determining Spot protein/creatinine ratio test and interpretation them
6. Method of determining Spot albumine/creatinine ratio test and interpretation them
7. Method of determining leukocyturia
8. Method of determining hematuria
9. Determination and diagnostics asymptomatic bacteriuria
10. Determination and diagnostics symptomatic bacteriuria
11. Indication to take urine culture by catheterization method, methodology of this test
12. Methods of calculation glomerular filtration rate in children. Normal levels of GFR in children according to age.
13. Evaluation of HYPERTENTION in Children
14. Normal value of Ca, Na, P, glucose, alkaline phosphatase, parathyroid hormone (PTH)
15. Normal value of serum creatinine, urea according to the Age of Child.
16. Normal value of total protein, albumin, cholesterol in serum in child.
17. Normal value of GFR according to the Age of Child
18. Definition and principles of diagnostics NEPHRITIC SYNDROME
19. Definition and principles of diagnostics NEPHROTIC SYNDROME
20. Definition and principles of diagnostics of Acute Kidney Injury (AKI) according pRIFLE-criteria's
21. Principles of diagnostics of prerenal AKI
22. Principles of diagnostics of renal AKI
23. Principles of diagnostics of postrenal AKI
24. Variant of severity of AKI by pRIFLE
25. Variant of outcomes of AKI by pRIFLE
26. Definition of CRONIC KIDNEY DISEASE (CKD)
27. Clinical, laboratory signs and principles treatment of CKD I-II-III-IV-V

Recommended reading for this discipline:

1. Nelson Textbook of Pediatrics, 22th Edition, 2019 by ROBERT M. KLIEGMAN, NATHAN J. BLUM&other, P. 3180-3232.
2. Ghai. Essential Pediatrics. 9 edition.- 2019. 768 p.

Unit 2. Key questions covered in lesson 10: Methods of examination of urological patients.

1.General clinical examination methods. Inspection, palpation, percussion, auscultation.

2.Instrumental and endoscopic research methods. Charrière scale, Types of cystoscopes. Classification of catheters.

3. Cystoscopy, urethroscopy. Indications, contraindications, complications (urethral fever, false passage, urethrorrhagia).

4.Needle biopsy of the kidney, prostate, testicle. Cytological diagnosis of bladder tumors.

5.Urine examination for latent pyuria: according to Nechiporenko, Kakovsky - Addis. What is an antibiogram?

6.Study of the functional capacity of the kidneys and bladder. Zemnitsky test. Residual nitrogen, urea, blood creatinine. Chromocystoscopy. Cystometry, sphincterometry, uroflowmetry.
7.X-ray anatomy of the kidneys and urinary tract.
8.Preparing the patient for X-ray examination.
9.Survey urography. Education simulating stones of organs of the system.
10.Classification of contrast agents. Excretory urography. Indications and contraindications. Infusion urography, compression. Retrograde pyelography. Antegrade pyelography.
11. Renal pelvis reflux: pyelophornical, pyelotubular, pyelovenous.
12.Descending and retrograde cystography. Pneumocystography (sedimentary cystography), micturition cystography.
13.Pneumorene. Pneumoretroperitoneum. Indications, dangers, complications.
14.Urethrography descending, ascending. Indications, contraindications, complications. Genitography.

Recommended reading for this discipline:
[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.
[3]. Alan W. Partin MD PhD, Craig A. Peters MD FACS FAAP, Louis R. Kavoussi MD MBA, Roger R. Dmochowski MD FACS, Campbell-Walsh Urology 12th Edition Review 3rd Edition, 2020

1. **Unit 2. Key questions covered in lesson 11: Methods of clinical examination of patients with pathology of the urinary system .**
2. History taking: interview, anamnesis morbi, anamnesis vitae.
3. Physical examination
4. Total blood count
5. Urine analysis
6. Biocemical anaiysis of blood (serum creatinin, urea, uric acid, total protein, albumins, phosphorus, calcium, S-reactive protein.
7. Chemical examination of urine.

Recommended reading for this discipline:
[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 2. Key questions covered in lesson 12: Radiology, X-ray methods of examination of patients with urinary tract diseases

1.Angiography: renal, translumbar, transfemoral. Venocavagraphy. Pelvic phlebography..
2.Scanning of kidneys, lymph nodes, bones.
3.Ultrasound, CT, MRI

Recommended reading for this discipline:
[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.
[3] Alan W. Partin MD PhD, Craig A. Peters MD FACS FAAP, Louis R. Kavoussi MD MBA, Roger R. Dmochowski MD FACS, Campbell-Walsh Urology 12th Edition Review 3rd Edition, 2020

Unit 2. Key questions covered in lesson 13: Unit 2 control.

1. Examination in urology practice.
2. Methods of clinical examination in general practice with pathology of the urinary system.
3. Semiotics of urinary system diseases in children.
4. Intravenous urography in diagnostics of urinary pathology. Imprtance of ultrasound examination.
5. Radiology examination.

Recommended reading for this discipline:
[1] References listed above
[2] Lecture notes

Unit 3. Key questions covered in lesson 14: Semiotics of urological diseases.

1. Pain. Etiopathogenesis of renal colic.
2. Clinical picture.
3. Differential diagnosis of right-sided renal colic from acute appendicitis.

4. Pain due to pathology in the pelvis, ureter, bladder, prostate gland, urethra.
5. Urination disorders - dysuria.
6. Oligakiuria, nocturia, stranguria.
7. Urinary incontinence. Difficulty urinating.
8. Acute and chronic ischuria.
9. Paradoxical ischuria.

Recommended reading for this discipline:

[1] Davi Ellen Chabner- The language of medicine. M. 2017.828-880 p.
[2] B.D.Chaurasia . Human Anatomy. Volume 1. New Delhi. 2009.V-2. 225-248 p., V-1. 229-240 p.
[3] Lecture materials.

Unit 3. Key questions covered in lesson 15: Dysuria syndrome. Clinical and laboratory criteria of syndrome. Manifestation Dysuria syndrome..

1. Identifying the various pathophysiologies of dysuria.
2. Assessment the history and physical examination of a patient presenting with dysuria.
3. Selecting the management options available for patients with dysuria.
4. Coordinate among the interprofessional team to enhance the delivery of care for patients with dysuria.

Recommended reading for this discipline:

[1] Kumar V., Abbas A.K., Aster J.A. Robbins and Cotran Pathologic Basis of Disease. 2015.
[2] Copstead Banasick. Pathophysiology.2013
[3] Calor Mattson Porth. Essentials of pathophysiology.2019
[1] John Reynard, Simon F. Brewster, Suzanne Biers, Naomi Laura Neal, Oxford Handbook of Urology, 2019
Alan W. Partin MD PhD, Craig A. Peters MD FACS FAAP, Louis R. Kavoussi MD MBA, Roger R.

Unit 3. Key questions covered in lesson 16: Urinary syndrome, pain syndrome, urinary tract infection syndrome (non-obstructive form). Clinical manifestations, laboratory and diagnostic criteria.

1. Quantitative changes in urine. Polyuria, opsouria, oliguria, anuria (prerenal, renal, postrenal)..
2. Qualitative changes in urine.
3. Urine is normal (specific gravity, hormones, trace elements, organic and inorganic compounds).
4. Hypersthenuria.
5. Change in urine color and transparency.
6. Proteinuria (true, false, glomerular, tubular, mixed). Pyuria.
7. Qualitative changes in urine.
8. Hematuria - macro and microscopic. Initial, total, terminal.
9. Urethrorhagia, differential diagnostics with hematuria.
10. Hemoglobinuria, myoglobinuria, cylindrical urea, bacteriuria, pneumaturia, lipuria, chyluria, hydatiduria.
11. Types of urinary tract infection.
12. Symptoms, causes, risk factors, complications of UTI.
13. Urinary tract infection test.
14. Origin of pain.

Recommended reading for this discipline:

[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.
[3]John Reynard, Simon F. Brewster, Suzanne Biers, Naomi Laura Neal, Oxford Handbook of Urology, 2019

Unit 3. Key questions covered in lesson 17: Arterial hypertension syndrome, renal failure syndrome, nephrotic syndrome,.nephritice syndromes. Clinical manifestations, diagnostics and laboratory criteria of syndromes.

1. Principal causes of an arterial hypertension at diseases of kidneys
2. Clinical manifestation of arterial hypertension syndrome
3. Laboratory-tool methods examination of patients with arterial hypertension syndrome
4. ECG at the arterial hypertension syndrome
5. Fundoscopy: Symptom of cross-roads Hannah-Salus
6. Criteria of nephrotic syndromes.
7. Pathogenetic causes of nephrotic syndrome
8. Clinical manifestation of nephrotic syndrome
9. Edema on face, lower and upper extremities, anasarca.

10. Clinical manifestation of acute nephritic syndrome
11. Criteria of acute nephritic syndromes.
12. Laboratory-tool methods examination patients with acute nephritic syndrome

Recommended reading for this discipline:

[1] John Reynard, Simon F. Brewster, Suzanne Biers, Naomi Laura Neal, Oxford Handbook of Urology, 2019

[2] Alan W. Partin MD PhD, Craig A. Peters MD FACS FAAP, Louis R. Kavoussi MD MBA, Roger R. Dmochowski MD FACS, Campbell-Walsh Urology 12th Edition Review 3rd Edition, 2020

[3] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 3. Key questions covered in lesson 18: Unit 3 control.

1. Syndrome of pain. Origin of pain. Renal colic.Clinical manifestation..
2. Assessment the history and physical examination of a patient presenting with dysuria.
3. Proteinuria, types of proteinuria.
4. Hematuria, types of hematuria.
5. Syndrome of infection of urinary tract.
6. Criteria of Nephrotic and Nephritic syndromes.
7. Arterial hypertension syndrome
8. Urinary syndrome

Recommended reading for this discipline:

[1] References listed above

[2] Lecture notes

Methodological instructions for the implementation of independent work on the discipline

Methodological instructions for making an abstract:

1. To study the curriculum and the working curriculum.
2. Determine the place of the topic of this lecture in the structure of the discipline according to the thematic plan.
3. Find out all the issues that need to be studied.
4. To study material, which is in the syllabus, to clarify the amount of missing material on the basis of control questions, tasks for control work and questions submitted for the module (see the program discipline and the working curriculum).
5. Determine the literature in which there is the necessary educational material, and the sequence of its assimilation.
6. To process each educational material in the following way.
7. Read it in dynamics to understand the general essence.
8. Read the study material a second time, understanding each word and sentence
9. For the third time to identify the basic concepts, the essence of phenomena and processes, their structure and content, as well as the links between them.
10. Write it all down in a synopsis.
11. To establish a connection with the previous educational material.
12. Independently answer all control questions on this topic.

Methodological instructions for independent work:

1. Study the theoretical material well; master the method of applying knowledge in practice.
2. Be able to use the necessary equipment, materials, equipment for measurements.
3. To study the recommendations for specific laboratory or practical work, which are set out in textbooks and methodological developments.
4. Plan for laboratory or practical work.
5. Prepare the necessary material.
6. Perform tasks of laboratory or practical work.
7. Interpret the results and describe the identified phenomena.
8. Draw conclusions.
9. Draw up everything accordingly.