

**MEDICAL UNIVERSITY - PLOVDIV**  
**FACULTY OF MEDICINE**

# **PROGRAMME**

**Internal Diseases part II**  
**(Nephrology, Endocrinology,**  
**Gastroenterology)**

**Accepted by the Department Assembly – protocol № 39/30.01.2020**

**Approved by the Faculty Assembly – protocol № 5 от 08.07.2020**

## INTERNAL DISEASES PART II

### Academic Plan

Discipline	Exam due after semester	Academic hours (AH)				AH distributed across academic years and semesters	
						V	
Internal diseases part II - Nephrology cycle - Endocrinology cycle - Gastroenterology cycle	X	Total	Lectures	Practical training	Credits	IX	X
		210	60	150	11,0	30/75	30/75

### *Nephrology Cycle*

**Name of discipline:**

*Nephrology cycle – part of Internal Diseases part II*

**Type of medical discipline:**

Mandatory

**Academic degree:**

Master's degree /M/

**Format of the educational process:**

Lectures, practical training, seminars, self-preparation

**Year of training:**

V year

**Duration of the cycle:**

10 weeks

**Academic hours:**

20 academic hours of lectures, 50 hours of practical training = 70 hours x 3 cycles = 210 hours

**Materials used during the educational process:**

Multimedia presentations, schemes, radiographic and photographic images representing various kidney diseases in different stages of development, pathohistological interpretation of kidney biopsy specimens.

**Methods for student evaluation:**

Periodic evaluation – entry test at the start of the nephrology cycle, weekly evaluation during practical lessons, oral examination, test at the end of the nephrology cycle.

A final grade for the cycle is formed based on test results, case discussion and oral examination.

**Final grade formation:**

Mean grade is formed by taking into account the grades from all three 10-week cycles.

**Aspects taken into account in the process of grade formation:**

Theoretical knowledge, practical skills in bedside interaction with patients, participation in practical training and case discussions, test scores.

**Semester exam (after Semester X):**

Yes, (Case discussion, practical and oral examination) as part of the Internal Medicine part II exam (with Endocrinology and Gastroenterology).

**State exam:**

Yes / practical, written and oral examination /

**Head professors:**

Prof. E. Kumchev, Ph.D.,

Assoc. Prof. E. Tilkiyan, Ph.D.,

Assoc. Prof. D. Nikolov, Ph.D.

**Department:**

II Department of Internal Medicine, Section of Nephrology

➤ **ANNOTATION**

The main aim of the discipline Nephrology (part of Internal Diseases) is to acquire contemporary knowledge and practical skills in the diagnosis and treatment of kidney diseases as well as mastering renal replacement therapy – dialytic methods and renal transplantation.

➤ **MAIN TASKS OF THE ACADEMIC PROGRAMME**

The main tasks of the academic programme are aimed at ensuring that students master the necessary knowledge and practical skills for the assessment of patients with kidney disease through the help of physical examination, laboratory tests, instrumental diagnostic methods and kidney biopsy in the process of establishing the diagnosis and instituting an adequate and up-to-date therapeutic approach.

The realization of the main tasks of the academic programme is achieved through the assigned academic hours of lectures and practical training. The Section of Nephrology has three academically ranked professors and eight assistant professors.

## ➤ EXPECTED RESULTS

Mastering the theoretical knowledge of the etiology, pathogenesis, clinical presentation, differential diagnosis and treatment options of renal diseases. Mastering the theoretical knowledge of dialytic methods and renal transplantation.

Acquiring the practical skills necessary for the diagnosis and treatment of renal diseases as well as renal replacement therapy.

## ➤ LECTURES

**The duration of each lecture is 2 academic hours**

### ***LECTURE № 1***

Functional evaluation of the kidneys. Instrumental methods for the diagnosis of renal disease. Kidney biopsy. Symptoms and syndromes associated with renal disease. Glomerulonephritides – classification, etiology, pathogenesis, pathohistology. Acute post-infectious glomerulonephritis.

### ***LECTURE № 2***

Rapidly progressive glomerulonephritides. Idiopathic nephrotic syndrome. Minimal change disease. IgM nephropathy. C1q nephropathy. Focal and segmental glomerulosclerosis.

### ***LECTURE № 3***

Membranous glomerulopathy. Membranoproliferative (mesangiocapillary) glomerulonephritis. C3 nephropathy.

### ***LECTURE № 4***

IgA nephropathy. The kidney in systemic vasculitides.

### ***LECTURE № 5***

Satellite nephropathies: Classification. The kidney in systemic diseases - Lupus nephritis.

### ***LECTURE № 6***

Metabolic nephropathies: Diabetic nephropathy. Renal amyloidosis.

### ***LECTURE № 7***

Tubulointerstitial nephropathies. Acute tubulointerstitial nephritis. Chronic tubulointerstitial nephropathies. Renal impairment in goat. Analgesic nephropathy. Genetic and hereditary nephropathies. Fabry disease. Thin membrane disease.

### ***LECTURE № 8***

Urinary tract infections – classification. Epidemiology, pathogenesis and clinical presentation. Acute and chronic tubulointerstitial nephritis (pyelonephritis). Urinary tract infections and pregnancy. Autosomal dominant polycystic kidney disease. Nephrolithiasis.

### ***LECTURE № 9***

Acute kidney injury. Contrast-induced nephropathy.

## ***LECTURE № 10***

Chronic kidney disease. Chronic renal failure – renal replacement therapy – hemodialysis, peritoneal dialysis, renal transplantation.

### **➤ PRACTICAL LESSONS**

#### ***PRACTICAL LESSON № 1 – 3 academic hours***

Evaluation of renal function. Interpretation of basic symptoms associated with renal disease – edema, hematuria, hypertension, anemia. Diagnostic significance of proteinuria, abnormal urinary sediment, lipids, electrolytes, urea, creatinine, creatinine clearance. Changes in cellular and humoral immune responses. Interpreting ultrasonographic, radiographic and radioisotopic data.

#### ***PRACTICAL LESSON № 2 - 2 academic hours***

Kidney biopsy – indications and contraindications. Comparing the clinical presentation and histological findings. Main syndromes associated with renal disease – nephritic and nephrotic syndrome. Glomerulonephritides – classification, etiology, pathogenesis, pathohistology.

#### ***PRACTICAL LESSON № 3 – 3 academic hours***

Acute post-infectious glomerulonephritis. Clinical presentation, diagnosis, differential diagnosis. Indications for kidney biopsy. Treatment and prognosis.

#### ***PRACTICAL LESSON № 4 – 2 academic hours***

Rapidly progressive glomerulonephritides – classification and pathogenesis of different forms of immune-mediated RPGN. Pathohistological features of RPGN. Clinical presentation, diagnosis, differential diagnosis and treatment.

#### ***PRACTICAL LESSON № 5 – 3 academic hours***

Idiopathic nephrotic syndrome – podocytopathies. Minimal change disease – etiology, pathogenesis, clinical presentation, diagnosis and treatment. IgM nephropathy. C1q nephropathy.

#### ***PRACTICAL LESSON № 6 – 2 academic hours***

Focal and segmental glomerulosclerosis – classification, clinical presentation, diagnosis and treatment.

#### ***PRACTICAL LESSON № 7 – 3 academic hours***

Membranous nephropathy – etiology, pathogenesis, classification, clinical presentation, diagnosis and treatment. Membranoproliferative /mesangiocapillary/ glomerulonephritis – classification, etiology, pathogenesis, clinical presentation, diagnosis and treatment. C3 nephropathy.

#### ***PRACTICAL LESSON № 8 – 2 academic hours***

IgA nephropathy. Mesangioproliferative IgA nephritis – etiology, pathogenesis, clinical presentation, diagnosis and treatment. The kidney in Henoch-Schönlein purpura.

***PRACTICAL LESSON № 9 – 3 academic hours***

The kidney in systemic diseases. Lupus nephritis – diagnostic criteria, classification, pathohistology, clinical presentation, diagnosis and treatment.

***PRACTICAL LESSON № 10 – 2 academic hours***

Diabetic nephropathy – pathogenesis, pathophysiology and pathohistological features, clinical presentation and diagnosis of DN in different stages of its development. Treatment and prognosis of DN. Renal amyloidosis.

***PRACTICAL LESSON № 11 – 3 academic hours***

Tubulointerstitial nephropathies – classification. Acute interstitial nephritis – etiology, pathogenesis, clinical presentation – non-oliguric acute kidney injury. Diagnosis, treatment and prognosis of AIN.

***PRACTICAL LESSON № 12 – 2 academic hours***

Chronic tubulointerstitial nephropathies. Classification. Drug-induced nephropathies. Contrast-induced nephropathy – pathogenesis, diagnosis, clinical presentation, treatment and prophylaxis. Analgesic nephropathy. Renal impairment in goat.

***PRACTICAL LESSON № 13 – 3 academic hours***

Urinary tract infections – classification, epidemiology and pathogenesis. Clinical presentation of proximal and distal, acute and chronic, complicated and uncomplicated UTIs. Acute and chronic pyelonephritis. UTIs and pregnancy. Diagnosis, treatment and prophylaxis.

***PRACTICAL LESSON № 14 – 2 academic hours***

Genetic and hereditary nephropathies. Autosomal dominant polycystic kidney disease – renal and extra renal clinical manifestations. Fabry disease. Thin membrane disease.

***PRACTICAL LESSON № 15 – 3 academic hours***

Nephrolithiasis. Types of renal stones – classification. Etiology and pathogenesis. Clinical presentation of renal colic, diagnosis, differential diagnosis. Conservative and surgical treatment.

***PRACTICAL LESSON № 16 – 2 academic hours***

Acute kidney injury – classification, etiology, pathogenesis, clinical presentation. Differential diagnosis and therapeutic approach in acute kidney injury.

***PRACTICAL LESSON № 17 – 3 academic hours***

Chronic kidney disease – classification, etiology, pathogenesis. Clinical presentation of renal failure – main symptoms and syndromes. Conservative treatment.

***PRACTICAL LESSON № 18 – 2 academic hours***

Renal replacement therapy – types and indications. Preparing the patient for the start of RRT. Treatment of arterial hypertension, renal anemia, bone and mineral disorders in dialysis patients. Complications associated with dialytic therapies.

***PRACTICAL LESSON № 19 – 3 academic hours***

Renal replacement therapy – plasmapheresis and hemoperfusion – indications and technical considerations. Complications of the methods.

***PRACTICAL LESSON № 20 – 2 academic hours***

Renal transplantation – types, indications and contraindications. Pre-transplant work-up – evaluation of donors and recipients. Complications. Therapeutic approach and prognosis for the transplanted patient.

➤ **LITERATURE:**

**I. Main resources:**

1. Lecture course in Nephrology.
2. COMPREHENSIVE CLINICAL NEPHROLOGY. Sixth Edition, Editors: Richard J. Johnson, John Feehally, Jürgen Floege, 2019, Saunders, an imprint of Elsevier Inc.
3. Oxford Textbook of Clinical Nephrology, 4th Ed. Editors: Neil Turner, Norbert Lameire, David J Goldsmith, Christopher G. Winearls, Jonatan Himmelfarb, Giuseppe Remuzzi, 2016, Oxford University Press.
4. Brenner and Rector's The Kidney- 10th edition; Barry M. Brenner – 2016. Elsevier, Inc.

**II. Additional resources:**

1. Diseases of the Kidney and urinary tract. 9th Edition. Robert W. Schrier; 2013.
2. Evidence-based Nephrology, 1st ed. Donald A. Molony, Jonathan C. Craig – 2009

➤ **SEMESTER EXAM (AFTER SEMESTER X) NEPHROLOGY SYLLABUS**  
**Part of Internal Diseases part II exam, V year medical students**

1. Clinical syndromes in nephrology: nephrotic and nephritic syndrome.
2. Glomerulonephritides: classification, etiology and pathogenesis of immune-mediated glomerulopathies.
3. Acute post-infectious glomerulonephritis.
4. Rapidly progressive glomerulonephritides.
5. Minimal change disease and IgM nephropathy.
6. Focal and segmental glomerulosclerosis.
7. Membranous nephropathy.
8. Membranoproliferative glomerulonephritis.
9. IgA nephropathy. The kidney in Henoch-Schönlein purpura.
10. The kidney in systemic vasculitides.
11. Lupus nephritis.
12. Diabetic nephropathy.
13. Renal amyloidosis.
14. Acute tubulointerstitial nephritis – etiology, pathogenesis, classification. Drug-induced nephropathies.
15. Chronic tubulointerstitial disease. Analgesic nephropathy. Balkan endemic nephropathy. Renal impairment in gout.
16. Urinary tract infection – etiology, pathogenesis and classification. Acute pyelonephritis – clinical presentation and treatment.

17. Urinary tract infection – etiology, pathogenesis, classification. Chronic pyelonephritis – etiology, pathogenesis, clinical presentation, treatment and prophylaxis.
18. Autosomal dominant polycystic kidney disease.
19. Nephrolithiasis.
20. Acute kidney injury.
21. Chronic kidney disease. Classification, etiology, pathogenesis and clinical presentation.
22. Renal replacement therapy. Hemodialysis. Peritoneal dialysis.
23. Kidney transplantation. Pre-transplant work-up and basic transplant immunology. Immunosuppression in the transplanted patient. Complications.

➤ **STATE EXAM SYLLABUS**

1. Glomerulonephritides: classification, etiology, pathogenesis of immune-mediated glomerulopathies.
2. Acute post-infectious glomerulonephritis.
3. Rapidly progressive glomerulonephritides.
4. Idiopathic nephrotic syndrome – podocytopathies. Minimal change disease. IgM nephropathy. Focal and segmental glomerulosclerosis.
5. Membranous nephropathy.
6. Membranoproliferative glomerulonephritis.
7. IgA nephropathy. The kidney in Henoch-Schönlein purpura.
8. The kidney in systemic vasculitides.
9. Lupus nephritis.
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14. Urinary tract infection – etiology, pathogenesis and classification. Acute pyelonephritis – clinical presentation and treatment.
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20. Kidney transplantation. Immunosuppression in the transplanted patient. Complications.



