FACULTY OF MEDICINE II

STUDY PROGRAM 0912.2 MEDICINE

DEPARTMENT OF RHEUMATOLGY AND NEPHROLOGY

APPROVED
at the Meeting of the Commission for Quality Assurance and Evaluation of the Curriculum faculty
Minutes No. 1 of 16.09.21

Chairman professor, doctor, PhD
Suman Serghei _____

APPROVED
at the Council Meeting of the Faculty Medicine 2

Minutes No. 1 of 21.09.21

Dean of Faculty, professor, doctor, PhD
Mircea Betiu _____

APPROVED
approved at the Meeting of the Chair Rheumatology and Nephrology
Minutes No. 2 of 14 september 2021

Head of chair, professor, doctor, PhD
Liliana GROPPA _____

SYLLABUS

DISCIPLINE NEPHROLOGY

Integrated studies

Type of course: Compulsory discipline

Curriculum developed by the team of authors:

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Chisinau, 2021

I. Introduction

- General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program

Nephrology is a suitable medical field for integration and implementation of basic medical sciences (anatomy, human physiology, microbiology, pathophysiology etc.) in clinical practice. During the course, the student will study the etiology, pathogenesis, clinical manifestations, evolution, treatment and prevention measures of renal diseases, as well as grasp the practical skills and describe the obtained results.

- **Mission of the curriculum in professional training**

Nephrology's mission is to accrue knowledge and develop necessary skills for the diagnosis, treatment and social rehabilitation of patients with renal diseases.

- **Language(s) of the course**: english.

- **Beneficiaries**: 4th year students, Faculty of Medicine II.

II. MANAGEMENT OF THE DISCIPLINE

Code of discipline		**S.07.O.062**	
Name of the discipline		Nephrology	
In charge of the discipline		**Head of chair, professor, doctor, PhD Liliana GROPPA**	
Year	**IV**	Semesters	**VII/VIII**

Total hours			Nr. ore pe tipuri de activități				Type of assesment	No. ECTS credits
Total	Direct contact	Selftraining	Clinical training	Course	Practice, laboratory work	Seminar		
60	30	30	-	10	10	10	E	2

III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the discipline study the student will be able to:

- *at the level of knowledge and understanding*

1. Comprehend the basics principles from pathology, pathophysiology, pharmacology and semiology;
2. Understanding and applying the specific nephrology nomenclature;
3. Understanding adequately the biological principles for comprehending human pathology and to facilitate making correlation between basic and clinical medical sciences.

- *at the application level:*

1. Theoretically: acquiring the knowledge related to the clinical features of renal diseases;
2. Practice:
   - Clinical examination of a patient with renal disease (Practical skills annex 1)
   - At the end of the course, students must be able to interpret radiological, computer tomography, MRI and ultrasound images of the renal system, describe the laboratory results such as acute phase proteins or immunological screening.

- *at the integration level:*

1. To acknowledge the importance of nephrology in medicine;
2. To approach originally problems from clinical practice;
3. To draw interrelationship between nephrology and other clinical disciplines;
4. To be able to implement and integrate clinical knowledge;
5. To be able to determine and self-assess objectively their knowledge;
6. To be able to comprehend new information from clinical disciplines.

IV. PROVISIONAL TERMS AND CONDITIONS

Nephrology is a suitable medical field for integration and implementation of basic medical sciences (anatomy, human physiology, microbiology, pathophysiology etc.) in clinical practice. During the course, the student will study the etiology, pathogenesis, clinical manifestations, evolution, treatment and prevention measures of renal diseases, as well as grasp the practical skills and describe the obtained results.

Nephrology has a distinct position in establishing the foundations of clinical thinking, which will provide the future doctor the necessary skills and knowledge to put the correct diagnosis, treat the disease as well as fix emergency situations related to renal disease.

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical hours/ seminars and self-training

Nr. d/o	TEMA	Number of hours			
		Lectures	Seminars	Practice work	Self-training
1.	Introduction in Nephrology. Nephrotic and nephritic syndrome	2	2	2	6
2.	Glomerular diseases.	2	2	2	6
3.	Tubulo-interstitial nephritis.	2	2	2	6
4.	Acute kidney injury.	2	2	2	6
5.	Chronic kidney disease.	2	2	2	6
Total		**10**	**10**	**10**	**30**

VI. CLINICAL SKILLS

- Taking the history of the patient with kidney diseases.

- Physical examination of the urinary system.
- Interpretation of laboratory results (urine, biochemistry, immunological tests).
- Interpretation of imaging tests (Xray, ultrasound, CT, MRI etc.)

VII. REFERENCE OBJECTIVES OF CONTENT UNITS

Objectives	Content units
Theme (chapter) 1. INTRODUCTION IN NEPHROLOGY.	
• To be able to classify renal diseases; • To be able to interpret laboratory data and diagnostic imaging results; • To demonstrate the physical examination of a renal patient. • To define nephrotic and nephritic syndrome; • To know the diagnostic criteria of nephrotic and nephritic syndrome; • To demonstrate the roles of risk factors in the development of nephrotic and nephritic syndrome; • To integrate all the knowledge for establishing the correct treatment for nephrotic and nephritic syndrome. •	1. Classification of renal diseases; 2. Laboratory investigations and diagnostic imaging; 3. Evaluation of a renal patient. 4. Definition of nephrotic and nephritic syndrome 5. Epidemiology nephrotic and nephritic syndrome 6. Etiopathogenesis nephrotic and nephritic syndrome 7. Classification of nephrotic and nephritic syndrome 8. Clinical manifestations of nephrotic and nephritic syndrome 9. Laboratory assessment and diagnostic imaging nephrotic and nephritic syndrome 10. Management principles; 11. Evolution nephrotic and nephritic syndrome 12. Treatment of nephrotic and nephritic syndrome 13. Prognostic nephrotic and nephritic syndrome
Theme (chapter) 2. GLOMERULAR DISEASES.	
• To define the notion of glomerular diseases; • To know the clinical manifestations of glomerular diseases; • To demonstrate how the etiology leads to the development of glomerular diseases; • To integrate all the knowledge for establishing the correct treatment for glomerular diseases.	1. Definition; 2. Epidemiology; 3. Etiopathogenesis; 4. Classification; 5. Clinical manifestations; 6. Laboratory assessment and diagnostic imaging; 7. Management principles; 8. Evolution; 9. Treatment; 10. Prognostic.
Theme (chapter) 3. TUBULO-INTERSTITIAL NEPHRITIS.	
• To define the notion of tubulo-interstitial nephritis;	1. Definition; 2. Epidemiology;

Objectives	Content units
• To know the clinical manifestations of tubulo-interstitial nephritis; • To demonstrate how the etiology leads to the development of tubulo-interstitial nephritis; • To integrate all the knowledge for establishing the correct treatment for tubulo-interstitial nephritis.	3. Etiopathogenesis; 4. Classification; 5. Clinical manifestations; 6. Laboratory assessment and diagnostic imaging; 7. Management principles; 8. Evolution; 9. Treatment; 10. Prevention.
Theme (chapter) 4. ACUTE KIDNEY INJURY.	
• To define the notion of acute kidney injury • To know the classification of acute kidney injury according to the etiology and clinical picture • To know the clinical manifestations acute kidney injury; • To demonstrate how the etiology leads to the development of acute kidney injury; • To integrate all the knowledge for establishing the correct treatment for acute kidney injury.	1. Definition; 2. Epidemiology; 3. Etiopathogenesis; 4. Classification; 5. Clinical manifestations; 6. Laboratory assessment and diagnostic imaging; 7. Management principles; 8. Evolution; 9. Treatment; 10. Prevention.
Theme (chapter) 5. ACUTE KIDNEY INJURY. CHRONIC KIDNEY DISEASE.	
• To know the classification of chronic kidney disease; • To know the clinical manifestations chronic kidney disease; • To demonstrate how the etiology leads to the development of chronic kidney disease; • To integrate all the knowledge for establishing the correct treatment for chronic kidney disease.	1. Definition; 2. Epidemiology; 3. Etiopathogenesis; 4. Classification; 5. Clinical manifestations; 6. Laboratory assessment and diagnostic imaging; 7. Management principles; 8. Evolution; 9. Treatment; 10. Prognostic.

VIII. PROFESSIONAL (SPECIFIC (PC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY OUTCOMES

- **Professional (specific) (PC) competences**
  - PC1. - Responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force
  - PC2. - Adequate knowledge of the sciences about the structure of the body, physiological functions and behavior of the human body in various physiological and pathological conditions, as well as the relationships between health, physical and social environment
  - PC3. - Resolving clinical situations by developing a plan for diagnosis, treatment and rehabilitation in various pathological situations and selecting appropriate therapeutic procedures for them, including providing emergency medical care

- PC4. - Promoting a healthy lifestyle, applying prevention and self-care measures
- PC5. - Interdisciplinary integration of the doctor's activity in a team with efficient use of all resources
- PC6. - Carrying out scientific research in the field of health and other branches of science

- **Transversal competences (TC)**
  - TC1. - Independency and responsibility

- **Study outcomes**

Teaching students in line with the strictness of the medical act and the understanding of basic sciences for the particular level, as well as for the professional formation. Obtaining of the practical skills to perform correctly various medical tests, and understand their real value;

Theoretical and practical training for helping students put the correct diagnosis of renal diseases.

Note. Study outcomes (are deduced from the professional competencies and formative valences of the informational content of the discipline).

IX. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	Interacting with patients	Evaluation of the patient and put a presumptive diagnosis, with subsequent recommendation for a more complex assessment and treatment.	The ability to create conclusions and the correctitude of writing the medical report.	During the course
2.	Preparation of presentations, posters and reports.	Selected the research subject, determining the plan and deadline. Electing the plan for PowerPoint presentation, poster or report – subject, scope, results, conclusions, practical applications, references.	The degree of insight of the project's subject, the level of scientific support, the quality of conclusions, ingenuity elements; the formation of personal attitude, coherence and the correctness of scientific data; graphical representation, mode of presentation.	Until the end of the course
3.	Using different teaching methods		The volume of work, the degree of insight of the project's subject, the level of scientific support, the quality of conclusions, ingenuity elements;	During the course

			the formation of personal attitude.	

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- *Teaching and learning methods used*

Nephrology discipline is a mandatory discipline and it is taught according to the classical university standards: courses, seminars and practical lessons. The theoretical course is held by tenured professors.

The discipline reserves the rights to hold the practical lessons and courses in an interactive manner.

The algorithm of the practical lessons in nephrology: duration – 4 academic hours (180 min.)

a) The summary of the student who had a shift the day before – 5-7 min
b) The professor answer to the students' questions regarding the today's topic – 10-15 min
c) Assessment of initial knowledge (pretest) – 10-15 min.
d) Students self-training at the patients' bedside –25-30 min
e) The discussion of the topic using various didactical and graphical materials – 50 min
f) Presentation of various graphs and images (x-rays, EKG, ultrasound, and especially macro- and microscopic slides) – 30 min
g) Continuing discussing the topic at the bedside of specific patients and with clinical cases situations, where the results of laboratory and imaging tests are available – 40 min
h) Evolution of the practical lesson, conclusion – 10 min

- *Applied teaching strategies*

Try to understand the key ideas, explained by the teacher, do not focus only on assessment tools, do not study only for the exams, but to obtain knowledge that you can use further, on other disciplines.

The course is intended to meet the students' requirements for professional development, for this reason ask the teacher to support every piece of information by giving examples, provide practical applications, theoretical and practical problems, in this way you will learn proactive. Develop metacognition – an interior dialog with yourself, this will help you build learning habits, which will aid you in the professional formation.

Use various non-verbal resources, such as schemes, documents, experiences, tools; these will help in the formation of professional skills, create work tasks.

Use different methods of active reading as well as various resources, which encourage critical thinking for solving situation problems. This will improve the organizational skills of the student.

"Try to be a professor" – explain your colleagues the key ideas of the studies topic, give personal examples, explain harder issues, listen to other opinions. The ability to explain the topic to your colleagues will develop your thinking and oral abilities.

- *Applied teaching technologies*

Presentation of clinical case – this teaching method is based on the analysis of the clinical situation of one real (from the department of nephrology) or virtual, role playing "patient-student-professor", which will allow to form the connection between theoretical and practical knowledge and will serve as a platform for clinical teaching.

- *Methods of assessment (including the method of final mark calculation)*

Current:

a. During practical lessons – at each practical lesson, the students obtains a mark based on the pretest (usually impromptu), the performance at the patient's bedside, the communication of the report at the respective topic.
b. Medical report is marked at the end of the discipline and its discussion is performed in front of the colleagues during the course.

Final

Students who have an average mark lower than 5 or did not recover the absences, are not admitted to the final exam.

The final exam is composed of three parts, computer assisted test ("Test Editor" IP SUMPh "Nicolae Testemitanu"), oral assessment and appraisal of practical skills. The oral test consists of 50 questions from all the studies topics, from which 20 are single choice questions and 30 are multiple choice. The student has 1 hour to complete the test. The test is marked from 0 to 10. For the oral assessment, the student will have 30 minutes to prepare for the answer. It is also marked from 0 to 10. The questions for the practical skills exam are approved at the department meeting and are shared with students at least one month before the exam periods.

Assessment of the knowledge is marked with grades from 10 to 1, without decimals:

- Mark 10 or "excellent" (ECTS equivalent – A) is given for studying of 91-100% of the material;
- Mark 9 or "very good" (ECTS equivalent – B) is given for studying of 81-90% of the material;
- Mark 8 or "good" (ECTS equivalent – C) is given for studying of 71-80% of the material;
- Mark 6 and 7 or "fair" (ECTS equivalent – D) is given for studying of 61-65% and 66-70% respectively, of the material;
- Mark 5 or "poor" (ECTS equivalent – E) is given for studying of 51-60% of the material;
- Mark 3 and 4" (ECTS equivalent – FX) is given for studying of 31-40% and 41-50% respectively, of the material;
- Mark 1 and 2 or "insufficient" (ECTS equivalent – F) is given for studying of 0-30% of the material;

The final mark consists of 4 components: annual average X 0.3; practical skills X 0.2; oral exam X 0.3; computer assisted test X 0.2.

Method of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B

8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.

XI. RECOMMENDED LITERATURE:

A. Compulsory:

1. Buy Harrison's Nephrology and Acid-Base Disorders, 2e 2 by J. Larry Jameson, Joseph Loscalzo (ISBN: 9780071814966). Paperback: 336 pages; Publisher: McGraw-Hill Education / Medical; 2 edition (1 May 2013); Language: English;

2. Principles of internal medicine (cardiology, rheumatology, nephrology) Study guide for 5th course students 2016;

B. Additional:

1. Oxford University Press; 3rd Revised edition edition (1 Feb. 1996); Language: English; ISBN-10: 0192621408; ISBN-13: 978-0192621405; Vol3;
2. Nephrology, Author: American College of Physicians, Name: MKSAP 16 Sample - Nephrology, Medical Knowledge Self-Assessment Program, publication date of December 31, 2012.