

**COURSE DATA****Data Subject**

<b>Code</b>	34480
<b>Name</b>	Nephrology and urology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1204 - Degree in Medicine	Faculty of Medicine and Odontology	4	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1204 - Degree in Medicine	14 - Human clinical training III	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
GORRIZ TERUEL, JOSE LUIS	260 - Medicine
RUIZ CERDA, JOSE LUIS	40 - Surgery

**SUMMARY**

The general objective is to form professionals, in the area of Nephrology and Urology, with theoretical and practical knowledge, attitudes and skills that allow students to guide and solve, if possible, the situations which they will have to face, focusing in the prevention.

**PREVIOUS KNOWLEDGE****Relationship to other subjects of the same degree**

There are no specified enrollment restrictions with other subjects of the curriculum.



### Other requirements

The understanding of the subject Nephrology-Urology needs to integrate knowledge of Anatomy, Histology, Physiology, Immunology, Pathological Anatomy, Microbiology and Pharmacology, as well as the relation with knowledge of other areas of Medicine and Surgery.

## OUTCOMES

### 1204 - Degree in Medicine

- Obtain and elaborate a clinical history with relevant information.
- Perform a physical examination and a mental health assessment.
- Have the capacity to make an initial diagnosis and establish a reasonable strategy of diagnosis.
- Establish the diagnosis, prognosis and treatment, applying principles based on the best information available and on conditions of clinical safety.
- Indicate the most accurate therapy in acute and chronic processes prevailing, as well as for terminally ill patients.
- Plan and propose appropriate preventive measures for each clinical situation.
- Acquire proper clinical experience in hospitals, health care centres and other health institutions, under supervision, as well as basic knowledge of clinical management focused on the patient and the correct use of tests, medicines and other resources available in the health care system.
- Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- Understand the importance and the limitations of scientific thinking in the study, prevention and management of diseases.
- Proper organisation and planning of the workload and timing in professional activities.
- Team-working skills and engaging with other people in the same line of work or different.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Is aware of tumour disease, its diagnose and management.
- Recognises, diagnoses, and guides the management of the main nephrourological pathologies.
- Is aware of the main infectious agents and their mechanisms of action.



- Recognises, diagnoses, and guides the management of the main pathologies affecting the immune system.
- Is aware of the characteristics of prevalent pathologies in the case of elders.
- Is aware of several aspects regarding family and community medicine: the patients vital environment, health promotion in the family and the community.
- Recognises, diagnoses, and guides the management of vital risk situations.
- Knows how to perform a complete anamnesis, focused on the patient and orientated to various pathologies, interpreting its meaning.
- Knows how to perform a physical examination of the body organs and systems, as well as a psychopathological exploration, interpreting their meanings.
- Knows how to evaluate modifications in clinical parameters at different ages.
- Knows how to set an action plan, focused on the patients needs and the family and social environment, which should be coherent regarding the patients symptoms and signs.

## LEARNING OUTCOMES

Once the subject is finished, the student will be able to:

1. Know the concept of each nephro-urological disease, their importance and prevalence in our population.
2. Understand the pathogenic mechanisms and physiopathology of the main nephro-urological diseases.
3. Obtain clinical data from the patient's clinical history and physical examination.
4. Formulate diagnostic hypotheses, to know how to perform the differential diagnosis and to guide the initial treatment and its derivation to a specialized service.
5. Know the prognosis and the information to be transmitted to the patient and his/her family.
6. Know the general treatment and the patterns to be established according the patient's clinical-social situation. To acquire the necessary clinical skills to diagnose and treat these pathologies, as well as to develop preventive actions.
7. Know how to find bibliography and documentation in this area.

## DESCRIPTION OF CONTENTS

### 0. THEORETICAL TEACHING

**Expositive method with active participation, student's questions.**



## **1. THEORETICAL TEACHING (NEPHROLOGY)**

### **1.- Introduction to Nephrology.**

Proteinuria Hematuria Pathogenesis of glomerular diseases. Renal anatomy and physiology, interpretation of laboratory data. Proteinuria, hematuria. Imaging diagnosis, levels of kidney injury and pathogenesis of kidney injury.

### **2.- Nephritic syndrome and accompanying glomerulopathies.**

Know how to recognize the findings that characterize nephritic syndrome, pathogenetic mechanisms, diseases that can lead to nephritic syndrome (acute post-streptococcal GN, extracapillary GN, and IgA nephropathy).

### **3.- Nephrotic syndrome and accompanying glomerulopathies.**

Know how to recognize the characteristics of a nephrotic syndrome, pathogenic mechanisms, diseases that can lead to nephrotic syndrome (membranous GN, segmental and focal GN, membranoproliferative GN, GN due to minimal changes and GN related to alteration of complement proteins).

### **4.- Secondary glomerulopathies: diabetes, lupus and amyloidosis.**

Know the increasing prevalence of diabetic nephropathy, pathogenic mechanisms and risk factors, meaning of microalbuminuria, and treatments. Knowledge of lupus nephropathy, Alport's Sdr, and 1st and 2nd amyloidosis.

### **5.- Vascular nephropathies**

Know the pathologies that affect the renal vessels as a primary level of injury. Renal: essential hypertension, renovascular hypertension, renal thromboembolism, atheroembolic disease or cholesterol embolism, thrombotic microangiopathy and vasculitis.

### **6.- Acute and chronic tubulointerstitial nephritis.**

Concept of interstitial, acute and chronic nephropathy, clinical findings, possible causes, prevention measures and treatment.

### **7.- Renal cystic diseases.**

Knowledge of prevalence, pathogenetic mechanisms of renal cystic diseases, prognostic significance and treatment. Special emphasis on autosomal dominant polycystic kidney disease.

## **2. THEORETICAL TEACHING (CONTINUATION)**

### **8.- Basic hydroelectrolytic alterations: dehydration. Alterations of Na and K.**

Know the regulatory mechanisms of blood volume, including those related to sodium and water homeostasis, clinical manifestations, and treatment of extracellular volume disorders: dehydration, hyperhydration, hyponatremia, hypernatremia, hyperkalemia and hypokalemia.

### **9.- Acidosis and metabolic alkalosis.**

Knowledge of basic concepts: acidosis, alkalosis, academia, alkalemia. Mechanisms of compensation and regulation of acid-base disorders, diagnosis and treatment.



#### 10.- Tubulopathies

Concept of tubulopathies, symptoms and presentation of the different tubulopathies. Differential diagnosis and characteristics of the same

#### 11.- Acute renal failure.

Classification of acute kidney injury, causes and risk factors. Glomerular hemodynamics. Differential diagnosis acute and chronic renal failure. Diagnosis by laboratory indexes (blood and urine) and imaging tests. Treatment.

#### 12.- Chronic kidney failure.

Concept of chronic kidney disease (CKD). KDIGO classification. Estimation of kidney function. Progression factors in CKD. Nephrotoxicity. Complications of CKD. Renal replacement therapy. Indications and types.

### 3. THEORETICAL TEACHING (UROLOGY)

- 13.- Voiding dysfunction. Benign prostatic hyperplasia
- 14.- Filling dysfunction. Overactive bladder. Urinary incontinence. Neurogenic bladder.
- 15.- Urinary Infection. Basic concepts. Clinical forms.
- 16.- Urinarylithiasis.Obstructive uropathy. Urinary diversion.
- 17.- Urological urgencies.
- 18.- Kidney cancer.
- 19.- Urothelial cancer.
- 20.- Prostate cancer.
- 21.- Penis and testicular cancer.
- 22.- Benign scrotal pathology.
- 23.- Sterility by male factor. Erectile dysfunction.

### 4. SEMINARS

#### Seminars

- 1. Nephrotic syndrome.
- 2. Nephritic syndrome.
- 3. Metabolic acidosis.
- 4. Hypoosmotic syndrome.
- 5. Insuficiencia renal aguda.
- 6. Enfermedad renal crónica.

Seminars based on clinical cases and skills classroom

- 1. Management of patients with acute scrotum
- 2. Management of patients with nephritic colic
- 3. Management of patients with urinary incontinence
- 4. Management of patients with prostate cancer





5. Management of patients with hematuria. Bladder tumor
6. Management of patients with obstructive uropathy. Basic knowledge of urethral catheterization, suprapubic shunt, ureteral catheterization and percutaneous nephrostomy. Basic knowledge of rectal examination.

## 5. CLINICAL PRACTICES

In addition to the seminars and videos with recommended practical content (YouTube and recorded in the Nephrology and Urology services), there will be practices assisting patients. They will be carried out during the rotation through the Nephrology and Urology services, becoming familiar with patients with the most frequent pathologies who need outpatient care or hospitalization in their respective services. It will be a minimum of 27 hours.

## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	26,00	100
Seminars	22,00	100
Clinical practice	23,01	100
Laboratory practices	4,00	100
<b>TOTAL</b>	<b>75,01</b>	

## TEACHING METHODOLOGY

In the **theoretical lessons**, the teacher will expose, through master class, the most important concepts and contents in a structured way, to obtain the knowledge and skills that the students must acquire. The students' participation will be encouraged.

In the virtual classroom the theoretical classes and the power point (pdf) slides will be posted as the classes spoken by the teachers. In the case of Nephrology, the lessons spoken by the teachers will be posted to be studied before class. In the face-to-face class of Nephrology, practical aspects of each topic that the student must have heard and seen in the videos before going to class will be reviewed to ask questions and see practical clinical cases related to the theory of each day. There will be three continuous assessment exams. Carrying out this continuous assessment is voluntary, but it increases the mark obtained in the final exam up to 2 points out of 10. The mark will only increase in those students who have obtained at least 4.5 out of 10 in the final exam.

Classroom practices: **seminars**. In small groups, the teacher will set specialized topics in depth, case studies, bibliography handling, current topics... the group work and oral presentation will be encouraged. It can be understood as "cooperative learning".

**Laboratory practices** in small groups. They are intended to consolidate theoretical knowledge through its practical application. The teacher will present the objectives, report on the handling of the material, supervise the completion of the work and help interpret the results.



**Clinical practices:** students' clinical practices in sanitary services in the different university hospitals, primary health centres, mental health centres, public health areas, in order to learn how to perform an anamnesis and basic clinical explorations, with a first contact with patients, supervised by the professor.

## EVALUATION

**Theoretical evaluation:** 50% of the final exam note. It will be done through a written test that will deal with the contents of the theoretical program and aim to evaluate the acquisition of knowledge. The content of the test will be the same for all groups of the same subject.

**Practical evaluation:** 50% of the final exam note. It will be assessed with the conduct of clinical cases evaluating the acquisition of skills related to general and specific competencies.

**Nephrology:** The theoretical exam will consist of 20 multiple-response test questions that only one will be correct and 5 short questions. The practical exam will consist of 25 multiple-response test on clinical situations. Each of the 50 questions, either test or short answer, score 0.20 points, every 4 wrong answers will be subtracted a hit, the blank answers are not.

There will be two continuous evaluation exams. In the second half of December). Each exam consists of 30 multiple choice questions. Carrying out this continuous assessment is voluntary, but it increases the mark obtained in the final exam up to 2 points out of 10. The mark will only increase in those students who have obtained at least 4.5 out of 10 in the final exam. The grade obtained in the continuous evaluation will be added to the January exam grade and will not be saved for the June exam.

**Urology:** The theoretical exam will consist of 30 questions type multiple-response test of which only one is correct. Each well-answered question scores 1 point. The sum (maximum 30) will be divided by 6 to obtain half of the final score (maximum 5). Each question wrongly answered subtracts 0.25 from the sum of the test. The practical exam will consist of 10 additional questions type multiple-response test of which only one will be correct. These questions will be about clinical cases and may incorporate complementary explorations for their interpretation. Each well-answered question scores 0.5. With the sum, the final score of the practical part will be obtained (maximum 5). Questions with incorrect answers from the practical part do not subtract.

To pass the subject it is necessary to approve the two parts that compose it, at least 2.5 in theory and 2.5 in the practical. If one of the parts is approved, the note will be kept.

It is required to accede to the advance of convocation of this subject that the student has completed all of his practices.

The attendance to the practices will be obligatory. To pass the subject, the student enrolled for the first time must attend at least 80% of the practical activities.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.



Students who have passed one of the two subjects (whether due to a change of university, Erasmus students or for another reason) must notify the secretariat and the two professors in charge of the subject (Urology and Nephrology) no later than December 1 to consider it in the preparation of the minutes of exam.

## REFERENCES

### Basic

- BIBLIOGRAFÍA DE NEFROLOGÍA
  - Hernando Avendaño. Nefrología clínica. 4ª ed, 2017. Ed. Panamericana.
  - Víctor Lorenzo y Juan Manuel López Gómez. Nefrología al día. <https://nefrologiaaldia.org/>
  - Uptodate: <https://www.uptodate.com/contents/search>
  - Nefrología para estudiantes de Medicina: <https://nefrologiaaldia.org/es-docencia>

#### Complementaria:

- Johnson RJ, et al. Comprehensive Clinical Nephrology. 6th ed, 2019. Elsevier Saunders
- Recursos-e Salut: ClinicalKey Student. Elsevier (Scopus, ScienceDirect)
- BIBLIOGRAFÍA DE UROLOGÍA

#### Libros de Texto

- Smith y Tanagho. Urología General 18 Ed.
- Campbell / Walsh. Urología 10ª Ed. Médica Panamericana

#### Guías Clínicas

- Guía de la AEU sobre el cáncer de Próstata ([www.uroweb.org](http://www.uroweb.org) )
- EAU online guidelines (<http://www.uroweb.org/guidelines/online-guidelines/>)

#### Webs urológicas

- [www.emedicine.com/med/UROLOGY.htm](http://www.emedicine.com/med/UROLOGY.htm)
- [www.uroportal.net](http://www.uroportal.net)
- National Cancer Institute (<http://www.cancer.gov>) Español / English-
- Recursos-e Salut: ClinicalKey Student. Elsevier (Scopus, ScienceDirect):  
[uv-es.libguides.com/RecursosSalut/BibliotecaSalut](http://uv-es.libguides.com/RecursosSalut/BibliotecaSalut)