Degree in Medicine and Surgery

Integrated Course: Systematic Pathology II **12 ECTS**

Module: **Gastroenterology**
SDS: **MED/12**
ECTS: **2**
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Module: **Endocrinology**
SDS: **MED/13**
ECTS: **3**
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Module: Nephrology
SSD: **MED/14**
ECTS: **2**
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Module: **Urology**
SSD: **MED/24**
ECTS: **3**
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Module: **Applied Dietary Technical Sciences**
SSD: **MED/49**
ECTS: **2**
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PREREQUISITES
Students must have acquired good knowledge of embryogenic development, microscopic and macroscopic structures (anatomy and histology) of the digestive tract and liver, of the genito-urinary system and of the endocrine system. Furthermore, they must possess the fundamental knowledges of physiology, Human Anatomy and recognize any correlated physiopathological clinical pictures.

LEARNING OBJECTIVES

The course of Gastroenterology is aimed to provide knowledges on the most important diseases of digestive tract and of the liver and how to discriminate among main digestive symptoms. Furthermore, the aim is to provide basis to define an appropriate diagnostic flowchart for differential diagnosis and to hypothesize the correct medical management for gastroenterological and liver diseases. Moreover, it will be necessary to know the therapy used in clinical practice.

The course of Endocrinology is aimed to provide knowledges of the physiology and pathophysiology of the endocrine system and metabolism, through the analysis of the causes and main endocrine pathologies. At the end of the course, the student will be able to understand the clinical presentation of the different endocrine pathologies, the diagnostic tools used to confirm the diagnosis and the medical and/or surgical therapies to be applied in the different clinical scenarios.

The course of Nephrology aims to provide the student with the essential elements for general theoretical and practical knowledge of the main primary and secondary diseases and syndromes involving the kidneys and excretory tracts. The aim is to provide: 1) a correct methodological and notional approach; 2) a characterization of the pathogenesis and the histological-morphological picture; 3) the acquisition of clinical pictures and knowledge of prevention, differential diagnostics, clinical course, decision making and possible complications. At the end of the lessons the student will know the basic notions of the main renal pathologies in their acute phase and the biochemical, instrumental and clinical investigations necessary for their diagnosis and therapy. The scheduled internships and monothematic elective courses will provide the theoretical-practical basis for recognizing the type of pathology by evaluating the symptoms, clinical signs, laboratory and instrumental tests.

The course of Urology is aimed to provide knowledges regarding pathological features of the genitourinary system. The student will be able to discriminate between the main signs and symptoms in order to identify a correct diagnostic procedure, to set the elements for a differential diagnosis. It will also be necessary to know the current therapeutic protocols. At the end of the course the student must be able to: provide the main notions of anatomy, physiology and pathophysiology of the urinary and male genital tract; develop diagnostic and therapeutic planning, referring to scientific evidence.

The teaching of Technical Dietetic Sciences will provide the student with the techniques and methods of nutritional semiotics for the evaluation of nutritional status, aimed at predicting the risk of pathologies. At the end of the course, the student will have to know the basics of correct nutrition and know how to apply diet therapy programs in different clinical conditions (physiological and pathological).

LEARNING OUTCOMES

Knowledge and understanding

At the end of this teaching, the student will be able to:

- Identify the main signs and symptoms of gastroenterological disorders
- Classify symptoms according to relevance and severity
- Propose a diagnostic flow chart to reach a proper diagnosis by connecting clinical and pathophysiological elements
- Propose medical and interventional approaches for digestive diseases
- Systematically analyze digestive pathological scenarios
- Know the principles of evidence-based medicine and identify settings for their application, and when second-line investigations are warranted
- Use web-based tools for these tasks
- Converse using specific scientific terms, and apply appropriate diagnostic and prognostic scores

- Achieve proficiency in basic patient communication, to collect relevant history, and address the fundamentals of diagnosis and treatment
- Know the pathophysiological bases of the main diseases of the endocrine system and Metabolism
- Know the clinical presentation, diagnosis and differential diagnosis of the main endocrinological diseases
- Identify the main signs and symptoms of renal disorders and understand symptoms according to relevance and severity
- Set up a diagnostic flow chart to reach a right diagnosis by connecting clinical and
- pathophysiological elements
- Knowledge of medical and interventional approaches for renal diseases
- Provide the main notions of anatomy, physiology and pathophysiology of the urinary and male genital tract
- Develop diagnostic reasoning and therapeutic planning, referring to scientific evidence
- Know the main notions of anatomy, physiology and pathophysiology of the urinary and male genital tract
- Know and discriminate between the main urological symptoms
- Know how to recognize the main urological and male genital pathologies
- Propose a symptom-based diagnostic flow chart in order to reach a diagnostic hypothesis
- Know the main urological surgical procedures
- Know the devices commonly used in urological patients (urostomies, catheters, drainage, etc...)
- Know the nutritional risk indicators predictive of pathologies, the metabolic processes involving nutrients and the role of diet in the prevention of several pathologies
- Know the principles of artificial nutrition, nutrigenetics and nutrigenomics and precision nutrition
- Know how to apply specific diet therapy programs in different clinical settings
- Use the appropriate terminology and know specifically the topics present in the program and covered during the lessons

Ability to apply knowledge and understanding

The aim of the integrated course of Systematic Pathology II is the development of an analytical methodological capacity. For each individual teaching module, students will have to know the principles of evidence based medicine, relate them to each specific clinical situation and also be able to identify clinical situations characterized by atypical presentations, proposing for each of them an adequate diagnostic procedure and therapy. Students will also have to develop their learning skills, integrating information from textbooks with the evidence contained in scientific publications, in order to consolidate and expand the knowledge acquired even independently.

Communication skills

The integrated teaching promotes communication skills to improve individual abilities to argue with effectiveness and expressive precision. These skills will be achieved specifically in teacher-student interactions within different scenarios. Students must have learned an adequate technical-scientific language through the acquisition of universally accepted diagnostic and prognostic scores; furthermore they will have to develop communication skills with the patient, from the collection of the medical history up to the communication of the diagnosis and related prognosis and therapy.

Autonomy of judgment

At the end of the lessons, the student will have learned the fundamental elements relating to the most important pathologies of the modules of the integrated course. They will be able to carry out a logical procedure aimed at critically analyzing the information received from the patient, to diagnose each element differential even in case of rare diseases. The student will have developed the ability to integrate the scientific knowledge acquired by applying it to specific clinical situations, to formulate an appropriate assessment that guides the diagnostic and therapeutic decision-making process.

STUDY COURSE PROGRAM

Gastroenterology

- The esophagus: principles of anatomy, physiology and pathophysiology
- GERD, its different phenotypes and related complications; diagnostic tools and therapy
- Primitive and secondary esophageal motility disorders.
- Esophageal neoplasias: squamous cancer, Barrett esophagus and adenocarcinoma
- H. pylori infections and related complications
- Peptic ulcers and different pattern of gastritis.
- Gastric cancer; histology and genetic and environemental factors
- Diagnosis, prognosis and therapy of upper gastrointestinal bleeding
- Etiology of upper bleeding (ulcers, MW, angiodysplasia GAVE, Dieulafoy, Kaposi, NHL, hemobilia….)
- Celiac disease and complications
- Chronic diarrhea, diagnostic and therapeutic management
- Addominal pain: anatomical and functional disease: IBS
- Inflammatory bowel diseases: ulcerative colitis and Crohn
- Colonic lesions: polyps, colo-rectal cancer, sporadic cancer and hereditary syndromes ;
- genetic factors and evidence based therapy, including biologic treatments
- Physiology and pathophysiology of bile secretion ; gallstone stones and complications
- Acute and chronic pancreatitis
- The liver: functional anatomy (Rappaport unit)
- Viral, autoimmune and drug-induced hepatitis: histology, diagnostic patterns, route of transmission, clinical presentation, prognosis and therapy of chronic liver diseases
- Acute hepatitis and acute liver failure: severity scores and transplantation
- Major indications to liver transplantation.
- Liver cirrhosis, definition, scores, and major complication: portal hypertension
- Esophageal and gastric varices, portal hypertensive gastropathy: pathophysiology.
- Variceal bleeding and treatment: acute setting, primary and secondary prophylaxis
- Hepatic encephalopathy: pathophysiology, classification, prognosis and therapy
- Ascites and hydrotorax: pathophysiology, classification, prognosis and therapy
- Spontaneous bacterial peritonitis and principles of renal failure following hepatic disease.
- Pulmonary syndromes: hepato-pulmonary and porto-pulmonary syndromes
- Hepatocellular carcinoma : epidemiology, pathophysiology and treatment according to BCLC.
- Cholestatic diseases: primary biliary cholangitis and PSC
- Metabolic- induced hepatic diseases: NAFDL/ Wilson and hemochromatosis

Endocrinology

- Physiology and Pathophysiology of the endocrine system; hormones and receptors
- Classification, clinical presentation, diagnosis, and therapy of the main hypothalamic-pituitary diseases: pituitary adenomas, acromegaly/gigantism, hyperprolactinemia, hypopituitarism, diabetes insipidus

- Classification, clinical presentation, diagnosis, and therapy of the main thyroid diseases: thyroiditis, hypothyroidism, hyperthyroidism, thyroid nodule, thyroid carcinoma
- Classification, clinical presentation, diagnosis, and therapy of the main adrenal diseases: hypoadrenalism, Cushing's syndrome, hyperaldosteronism, pheochromocytoma, adrenal masses
- Classification, clinical presentation, diagnosis, and therapy of hyperandrogenisms
- Pathophysiology of the endocrine pancreas, diabetes mellitus, acute and chronic complications, and other forms of diabetes mellitus
- Eating disorders and hypoglycemia
- Obesity and thinness
- Pathophysiology of calcium-phosphorus metabolism, parathyroid-related diseases and osteoporosis
- Dyslipidemias and metabolic disorders.

Nefrology

- Nosography of nephropathies
- Semeiotical Nephrology
- Acid Base and electrolytes disorders
- Glomerular Nephropaties: Classification, Pathogenesis
- Nephrotic Syndrome: minimal cgange disease, focal and segmental glomerulosclerosis, membranous nephropathy
- Nephritic Syndrome: post streptococcical nephritis, Berger neprihtis
- Acid base and electrolytes disorders: essentials, practical approach
- Other Glomerulonephritis: membrano-proliferative, rapidly progressive
- Secondary Nephropathies (I): LES, diabetic nephropathy
- Other Glomerulonephritis(II): crioglobulinemia, myeloma kidney, amyloidosis
- Vasculitis: PAN, ANCA Vasculitis, immunecomplex vsculitis
- Thrombotic Mycroangiopaty:,eus e PTT,
- ACUTE RENAL FAILURE I
- ACUTE RENAL FIALURE II
- EREDITARY NEPHROPATHIES: ADPKD, ALPORT syndrome, Fabry disease
- Pregnacy and kidney
- Chronic Renal Failure
- Dialysis: Hemodialysis, peritoneal dialysis, kidney transplantation

Urology

- Basics of the anatomy of the urogenital system and physiology of urination
- Bases of semiotics of the urogenital system
- Complicated and uncomplicated urinary infections
- BPH
- Bladder neck disease
- Urethral stricture
- Urological syndromes
- Urinary incontinence
- Urinary stones, hydronephrosis.
- Tumors of the urogenital system (bladder, upper urinary tract, kidney, prostate, testicle, penis)
- Genitourinary malformations
- Urological emergencies
- Bladder catheterization and other urinary drainages
- Urostomies: management and complications

Applied Dietary Technical Sciences

- Techniques and methods of nutritional semiotics and nutritional status assessment to define the state of health and the risk of disease
- Nutritional risk indicators predictive of pathologies
- Metabolic processes affecting nutrients and the role of diet in the prevention of chronic degenerative diseases
- The principles of Artificial Nutrition: Enteral and parenteral nutrition
- The basics of proper nutrition for maintaining the state of health. Know how to apply diet therapy programs in physiological, paraphysiological and pathological conditions.
- Evaluation of nutritional status and energy needs
- Principles of diet therapy
- Nutrition and chronic degenerative pathology
- Obesity phenotypes
- Intestinal microbiota and psychobiome
- Principles of nutritional genomics
- Precision Nutrition in Predictive, Preventive, Personalized and Participatory Medicine

TEACHING METHOD

The course is divided into lectures. The teachers use didactic tools such as powerpoint presentation with explanatory diagrams, illustrations and images to describe the pathologies. Attendance is mandatory

FINAL EXAM

The exam consists of 2 parts: a written test and a possible oral test.
The written test consists of a total of 100 multiple choice questions (20 questions for each teaching module), with only one correct answer. Each correct answer is given a score of 1.5. Passing the test requires achieving at least minimum score in all 5 modules of the integrated course.
The commission will consider the possibility of allowing the student to take an optional oral test. In the eventual oral test, the student is given the opportunity to demonstrate his preparation by discussing the teaching topics.
Based on the opinion of the commission, students who have achieved at least the minimum score in the individual modules of the course can access the oral exam. The student will be able to choose the modules for which to request completion with the oral exam.
The final evaluation for each individual module will be elaborated by calculating the average between the outcome of the written test and that of the oral test.
The final grade for the entire exam is calculated from the average of the grades obtained in the individual modules. Students who achieve the maximum score in all modules pass the exam with honours.
The exam will be evaluated overall according to the following criteria:
Ineligible: Major gaps and/or inaccuracies in knowledge and understanding of the topics; limited analysis and synthesis skills, frequent generalizations.
18-20: knowledge and understanding of the topics just sufficient with possible imperfections; Sufficient analytical, synthesis and independent judgment skills.
21-23: knowledge and understanding of routine topics; analytical skills e correct summaries with coherent logical argumentation.
24-26: reasonable knowledge and understanding of the topics; good skills analysis and synthesis with rigorously expressed arguments.

27-29: complete knowledge and understanding of the topics; remarkable abilities analysis, synthesis. Good independent judgement.
30-30L: excellent level of knowledge and understanding of the topics. Notable capacity for analysis and synthesis and independent judgement. Arguments expressed in original way

READING MATERIALS

Gastroenterology
Harrison‘s Principle of Internal Medicine
Sleisenger and Fordtran’s gastrointestinal and liver disease
PubMed (review)

Endocrinology
Harrison‘s Principle of Internal Medicine (chapter of Endocrinology)
Manuale di endocrinologia, A. Lenzi. Carocci Editore 2023

Nefrology
Comprehensive Clinical Nephrology E-Book (English Edition) 6° Richard J. Johnson (Autore), John Feehally (Autore). Elsevier; 6° ed (26 giugno 2018)

Urology
Smith and Tanagho’s General urology, Jack Mcaninichch, Tom Lue, Mc Grow Hill Education.
Campbell-Walsh Urology 11th Edizione Review Elsevier

Applied Dietary Technical Sciences

Janice L. Kelly, Raymond Morrow. Krause and Mahan’s Food & The Nutrition Care Process 15th Edition. Elsevier