1. OVERVIEW

Subject Area	INDICATIONS AND INTERPRETATION OF COMPLEMENTARY EXAMINATIONS
Degree	MEDICINE
School/Faculty	Biomedical and Health Sciences
Ac. Year	6º
ECTS	4 ECTS
Type	Compulsory
Language(s)	Spanish
Delivery Mode	On campus
Semester	SIX-MONTHLY

2. INTRODUCTION

This is a compulsory subject belonging to the Diagnostic and Therapeutic Procedures module and is taught each semester. This module is worth 43 ECTS + 3 ECTS in tutored clinical placements. This module provides students with the skills, qualities and attitudes necessary for performing diagnosis and treating patients. Indications and Interpretation of Complementary Examinations itself is worth 4 ECTS credits. To take this course, students must have passed at least 150 ECTS in the first years of the degree programme.

The overall objectives of the subject area are:

- Introduce the use, indications and interpretation of the main complementary tests (biochemical, haematological, immunological, anatomical pathology and imaging) and assessing the benefit/risk ratio of the procedures.
- Teach how to come to a integrated clinical opinion based on the clinical history and the physical examination of the patient.
- Provide guidelines for making a differential diagnosis.

3. SKILLS AND LEARNING OUTCOMES

Basic Skills (CB, by the acronym in Spanish):

- CB2. Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- CB3. Students have the ability to gather and interpret relevant information (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- CB4. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences

General skills (CG, by the acronym in Spanish):

- CG1: Recognise the essential parts of being a medical professional, including ethical principles and legal responsibilities, together with how to provide a patient-centred service.

- CG2: Understand the importance of such principles to benefit patients, society and the profession, with

particular attention paid to professional secrecy.

- CG3: Know how to apply the principle of social justice to professional practice and understand the ethical implications of health in a constantly changing world.

- CG4: Develop professional practice taking into account patient autonomy, beliefs and culture.

- CG5: Be aware of the need to maintain and update professional skills, paying special attention to continuous self-learning of emerging knowledge and to discover new products and techniques with the aim of improving quality.

- CG6: Carry out professional activity with regard to other health professionals, acquiring teamwork skills.

- CG9: Understand and recognise the effects, mechanisms and manifestations of a disease on the structure and functioning of the human body.

- CG10: Understand and recognise the causal agents and risk factors which determine health conditions and the development of a disease.

- CG12: Understand the principles of action, indications and effectiveness of therapeutic interventions, based on the available scientific evidence.

- CG15: Have the ability to carry out an initial diagnosis and establish a well-founded approach to making a diagnosis.

- CG17: Establish the diagnosis, prognosis and treatment, applying the principles based on the most reliable information possible.

- CG19: Raise and propose the suitable preventative measures required for each clinical situation.

- CG20: Acquire sufficient clinical experience under supervision in hospital institutions, health centres or other healthcare institutions. This also involves basic knowledge of a patient-centred clinical approach and suitable use of tests, medicinal products and other healthcare system resources.

- CG21: Listen attentively, obtain and synthesise information regarding the problems troubling the patient and understand this information.

- CG22: Write clinical histories and other medical records in a way so they can be understood by other people.

- CG23: Communicate effectively and clearly, both orally and in writing, with patients, family members, media and other professionals.

- CG24: Establish good interpersonal communication which allows you to efficiently and empathetically connect with patients, family members, media and other professionals.

- CG26: Assume a role in the prevention and protection against diseases, injuries or accidents, together with the maintenance and promotion of health, both on an individual and community level.

- CG32: Know how to use information and communication technology in clinical, therapeutic, preventative and research activity.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT1: Communication: ability to engage in active listening, ask questions and respond in a clear and concise way, as well as to effectively express ideas and concepts. This includes concise and clear written communication.

- CT2: Leadership: ability to offer ideas, approaches and interpretations through strategies which offer solutions to real-life problems.

- CT3: Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals, evaluate and integrate contributions from the rest of the group members and create a good working environment.

- CT4: Adaptability: ability to detect, interpret and respond to a changing environment. Ability to equip themselves and work effectively in different situations and/or with different groups or individuals. This means adapting to change depending on circumstances or needs. It involves the confidence to take on crucial challenges on a personal or group level, maintaining good physical and mental health to allow effective work to be carried out.

- CT5: Initiative: ability to undertake difficult or risky actions with resolve.

- CT6: Problem solving: ability to solve an unclear or complex issue or situation which has no established solution and requires skill to reach a conclusion.

- CT7: Decision making: ability to choose between different options or methods to effectively solve different problems or situations.

- CT8: Planning and organization: ability to set objectives and choose the right means to fulfil them through the efficient use of time and resources.

- CT9: Ability to put knowledge into practice, using the skills acquired in the classroom to mock situations based on real life experiences that occur in the relevant profession.

- CT10: Independent learning: the ability to govern your own development by choosing the most effective lines of action, strategies, tools and opportunities to independently learn and apply knowledge to practice.

Specific skills (CE, by the acronym in Spanish):

- CE 4.1.1 Evaluate the risk/benefit ratio of procedures.
- CE 4.1.2 Understand the indications of the biochemical, haematological, immunological, microbiological, anatomical pathology and image tests.
- CE4.1.6 Be aware of biochemical markers, cytogenetic analysis and molecular biology applied to clinical diagnosis.
- CE4.1.8 Understand the main diagnostic techniques of microbiology and parasitology and interpret the results.
- CE4.1.1.4 Understand the main indications of the electrophysiological techniques (ECG, EEG, EMG, and others).
- CE 4.2.2 Know how to interpret the results of diagnostic laboratory tests.
- CE 4.2.4 Be able to systematically read a radiological image. Know how to use the different drugs correctly. Know how to perform and interpret an electrocardiogram and electroencephalogram.

Learning outcomes (RA, by the acronym in Spanish):

- Learn how to evaluate the benefit/risk and cost/effectiveness ratios of diagnostic procedures.
- Integrate and associate the knowledge acquired in other subjects regarding the indications of different

complementary tests: biochemical, haematological, immunological, microbiological, anatomical pathology, imaging and electrophysiological tests.

- Integrate and associate the knowledge acquired in other subjects regarding the procedures and measures required for performing different diagnostic techniques.
- Interpret and associate the results of different diagnostic tests while understanding their limits.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CB3, CB4, CG1, CG2, CG3, CG4, CG5, CG6, CG9, CG10, CG12, CG15, CG17, CG19, CG20, CG21, CG22, CG23, CG24, CG26, CG32, CT1, CT2, CT3, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE41, CE42, CE46, CE48, CE54, CE61, CE63	Learn how to evaluate the benefit/risk and cost/effectiveness ratios of diagnostic procedures.
CB2, CB3, CB4, CG1, CG2, CG3, CG4, CG5, CG6, CG9, CG10, CG12, CG15, CG17, CG19, CG20, CG21, CG22, CG23, CG24, CG26, CG 32, CT1, CT2, CT3, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE41, CE42, CE54, CE61, CE63	Integrate and associate the knowledge acquired in other subjects regarding the indications of different complementary tests: biochemical, haematological, immunological, microbiological, anatomical pathology, imaging and electrophysiological tests, etc.
CB2, CB3, CB4, CG1, CG2, CG3, CG4, CG5, CG6, CG9, CG10, CG12, CG15, CG17, CG19, CG20, CG21, CG22, CG23, CG24, CG26, CG32, CT1, CT2, CT3, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE41, CE42, CE54,CE61, CE 63	Integrate and associate the knowledge acquired in other subjects regarding the procedures and measures required for performing different diagnostic techniques.
CB2, CB3, CB4, CG1, CG2, CG3, CG4, CG5, CG6, CG9, CG 10, CG 12, CG 15, CG17, CG19, CG 20, CG 21, CG 22, CG 23, CG 24, CG 26, CG 32, CT1, CT2, CT3, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE41, CE42, CE54, CE 61, CE 63	Interpret and associate the results of different diagnostic tests while understanding their limits.

4. CONTENTS

SYLLABUS
1. CARDIOLOGY MODULE
TOPIC 1. Chest pain.
TOPIC 2. Heart failure.
TOPIC 3. Cardiology case.
2. NEUROLOGY MODULE
TOPIC 4. Cerebrospinal fluid. Infection of the central nervous system.
TOPIC 5. Cerebrovascular event.
TOPIC 6. Dementia. Acute confusional state.
TOPIC 7. Migraine, epileptic seizure, syncope, coma and EEG.
TOPIC 8. Neurological case.
3. DIGESTIVE MODULE
TOPIC 9. Abdominal pain. Acute abdomen. Intestinal obstruction.
TOPIC 10. Diarrhoea. Constipation. Irritable bowel syndrome.
TOPIC 11. Liver enzyme alteration. Jaundice
TOPIC 12. Ascites. Ascitic fluid. Spontaneous bacterial peritonitis.
TOPIC 13. Digestive case.

4. HAEMATOLOGY MODULE
TOPIC 14. Anaemias.
TOPIC 15. Leukocytes. Clotting.
TOPIC 16. Adenopathies. Splenomegaly.
TOPIC 17. Haematological case.
5. PNUEMOLOGY MODULE
TOPIC 18. Dyspnoea. Cough.
TOPIC 19. Pulmonary nodule Masses. Pulmonary consolidation.
TOPIC 20. Haemotypsis. Pleural fluid. PTE and VT. D-dimer.
6. NEPHROLOGY MODULE
TOPIC 21. Chronic kidney failure. Ion alterations Na/K and Ca/P.
TOPIC 22. Sediment alterations. Haematuria. Pyuria.
7. PLURIPATHOLOGY MODULE
TOPIC 23: Monoarthritis. Polyarthritis. Autoantibodies.
TOPIC 24: Lumbago. Vertebral collapse.
TOPIC 25: PET/CT. Gammagraphy.
TOPIC 26: Metastasis of unknown origin. Tumour markers.
TOPIC 27. Fever of unknown origin. Cultures and inflammatory parameters.
TOPIC 28. Oedemas. Weight loss. Asthenia and muscle weakness.
TOPIC 29: Integrated clinical reasoning and differential diagnosis in various pathologies (clinical cases – pluri-pathology/pnuemology/nephrology or endocrine).
8. ENDOCRINOLOGY MODULE
TOPIC 30: Pituitary gland. Hypopituitarism. Acromegaly.
TOPIC 31. Thyroids and adrenal gland.

WORKSHOPS
ECG INTERPRETATION WORKSHOP
RADIOLOGICAL TESTS INTERPRETATION WORKSHOP
CLINICAL ULTRASOUND COURSE

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Problem-based learning: Presentation of problems, reorganising into small groups, literature analysis, analysis of scientific texts and documents, symposiums and presentations, directed debates, specialised individual and collective tutorials, and reaching a consensus.
- Specialised seminars: literature research and debate on scientific data in small groups.
- Lectures: Classroom presentations by the professor on basic theory, encouraging debate and student participation.
- Case study method: presentation and discussion of clinical cases in small groups.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

Learning activity	Number of hours
Theory/practical learning activities on-campus	46
Directed learning activities	11
Independent working	30
Tutorials	12
Knowledge tests	1
TOTAL	**100**

7. ASSESSMENT

This subject area will use the continuous assessment system (including tests throughout the course (30%), the final knowledge test (50%) and OSCE test (20%). As part of the subject assessment, students must attend at least 50% of theory classes and 100% of practical workshops. Failure to register attendance through the methods provided by the University will mean a fail in the ordinary examination period and no tests performed during the continuous assessment will be saved for the extraordinary examination period.
The assessment methods, plus their weighting in the final grade for the subject area, are as follows:

Assessment system	Weighting
Continuous assessment (CLINICAL CASES)	30%
Final assessment exam	50%
ECOE	20%

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The reference bibliography for the follow-up of the subject is:

- **Harrison's Principles of Internal Medicine.** McGraw-Hill Interamericana. 21ª edición (2021). Acceso a este recurso digital (usuarios Universidad Europea de Madrid) https://accessmedicine- mhmedical-com.ezproxy.universidadeuropea.es/book.aspx?bookid=2129

- **Radiología esencial**, 2 tomos (Seram). Del Cura Rodríguez - Pedraza Gutiérrez - Gayete. Panamericana.
- **Radiología básica. Aspectos fundamentales**. Herring, William. 4ª Edición 2020 ISBN: 9788491136651 / E-ISBN 9788491137115 para reforzar el apoyo a los contenidos de Radiologia

Recommended bibliography is indicated below:

- Wallach's Interpretation of Diagnostic Tests- L. Michael Snyder , L.V. Rao – Ed. Wolters Kluwer Health 2016. ISBN (libro electrónico) 9781975105594. Acceso a este recurso digital (usuarios Universidad Europea de Madrid) https://ebookcentral-proquest- com.ezproxy.universidadeuropea.es/lib/ueurmad/reader.action?docID=6561633

- Plataforma PROMIR Editorial Médica Panamericana; 2022