

SUBJECT TEACHING GUIDE

G159 - The Laboratory in Clinical Diagnosis

Degree in Medicine

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Medicine			Type and Year	Compulsory. Year 5
Faculty	Faculty of Medicine				
Discipline	Subject Area: Diagnostic Laboratory Tests Diagnostic and Therapeutic Procedures				
Course unit title and code	G159 - The Laboratory in Clinical Diagnosis				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

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Other lecturers	MARIA TERESA GARCIA UNZUETA ARMANDO RAUL GUERRA RUIZ DAVID SAN SEGUNDO ARRIBAS BERNARDO ALIO LAVIN GOMEZ JUAN IRURE VENTURA SERGIO GARCIA FERNANDEZ SARA FERNANDEZ LUIS ZAIRA MOURE GARCIA LAURA PEREZ FERNANDEZ JUAN JOSE DOMINGUEZ GARCIA

3.1 LEARNING OUTCOMES

- Upon completion of learning, students should recognize the importance of the clinical laboratory in generating useful information for clinical care in areas such as:

- Health and disease
- Diagnosis and prognosis of the diseases
- Effectiveness of the applied treatment
- Clinical follow-up
- Disease prevention

Also, they should acquire a more responsible and critical attitude when using the laboratory for this purpose

4. OBJECTIVES

Lectures and practical teaching of the subject are aimed at the medical student at training, so that they can be able to fulfill their role in relation to the clinical laboratory, and to integrate it into their daily work. To accomplish this the following objectives are pursued:

- To recognize the importance and complexity of the clinical laboratory as healthcare support in different areas : preanalytical, analytical and postanalytical
- To perform an adequate collection of samples for the clinical laboratory
- To know how to interpret the laboratory results for diagnosis , treatment or clinical follow-up
- To provide an update in new technologies applied to diagnosis
- To take contact with a hospital clinical laboratory to know "in situ" its potential in relation with the activity, the technological development and the services portfolio
- To encourage critical thinking in the laboratory requests from a professional and responsible side , avoiding unnecessary and expensive clinical practice
- To provide the student a broader approach to the degree in Medicine that goes beyond the clinical specialties of high popularity, so that the clinical laboratory be more attractive to new medical specialist in training

6. SUBJECT PROGRAM	
CONTENTS	
1	<p>THE MICROBIOLOGY LABORATORY</p> <ol style="list-style-type: none"> 1. Phenotypic microbiological diagnostic techniques (I): Direct diagnosis 2. Phenotypic microbiological diagnostic techniques (II): Serological or direct diagnosis 3. Molecular techniques for microbiological diagnosis (I): Identification of microorganisms 4. Molecular techniques for microbiological diagnosis (II): Typing of microorganisms 5. Microbiological diagnosis of tuberculosis and mycobacteriosis 6. Microbiological diagnosis of viral infections 7. Microbiological diagnosis of HIV infections 8. Microbiological diagnosis of respiratory tract infections 9. Microbiological diagnosis of urinary tract infections 10. Microbiological diagnosis of gastrointestinal infections 11. Microbiological diagnosis of genital tract infections. STDs 12. Microbiological diagnosis of infections associated with biomaterials and catheters. blood cultures 13. The Antibiogram: Techniques and Interpretation
1.1	- Presentation and discussion of clinical cases in Microbiology
1.2	- Facilities and activity of the Microbiology Laboratory of the University Hospital Marques de Valdecilla (HUMV)
2	<p>THE IMMUNOLOGY LABORATORY</p> <ol style="list-style-type: none"> 14. Plasticity of the immune response. Implication in the development of immunological biomarkers. 15. Laboratory tests to assess the innate and adaptive immune response. 16. Study strategy of an immunodeficiency in the Immunology laboratory. Classification of primary immunodeficiencies. 17. Humoral immunodeficiencies. Most notable features. 18. Cellular immunodeficiencies. Most notable features. 19. Other immunodeficiencies: phagocytic, complement deficiencies, autoinflammatory diseases. 20. Cellular and molecular bases of autoimmunity. Systemic autoimmune diseases I. 21. Systemic autoimmune diseases II. 22. Laboratory test in organ-specific autoimmune diseases. Diagnostic strategy from the Immunology laboratory. 23. Hypersensitivity and allergies. Study of allergies in the laboratory. 24. Tumor immunity: Immunotherapy. 25. Tumor Immunity: Immunomonitoring. 26. The Immunology laboratory in the wake of a transplant. 27. Immunological Basis of Vaccine Responses and Laboratory Assessment
2.1	- Presentation and discussion of clinical cases in Immunology
2.2	- Facilities and activity of the Immunology Laboratory of the University Hospital Marques de Valdecilla (HUMV)
3	<p>THE HEMATOLOGY LABORATORY</p> <ol style="list-style-type: none"> 28. Basic foundations of hematological diagnosis. 29. Genomic studies in oncohematology. 30. Diagnostic approach in hemostasis 31. Diagnostic approach in hematimetry and erythropathology
3.1	- Presentation and discussion of clinical cases in Hematology
3.2	- Visit to laboratory facilities of Hematology at HUMV

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THE BIOCHEMISTRY LABORATORY

36. Clinical laboratory care unit. General considerations. Types of techniques. Information systems.

37. Phases of the analytical process. Pre-analytical and post-analytical phase.

38. Emergency Laboratory.

39. Protein Analysis.

40. Iron, copper and other trace elements. vitamins.

41. Interpretation of Serum Biochemistry I.

42. Interpretation of Serum Biochemistry II.

43. Analytical profiles in the digestive and hepatic study

44. Hormone Analysis.

45. Analytical profiles in pregnancy

46. ??Blood gases

47. Hydroelectrolytic balance.

48. Lipid Analysis. Indications and Interpretation

49. Analysis of urine.

50. Biological fluids

51. Analytical process. QA. Reference values. POCT systems.

4.1

- Presentation and discussion of clinical cases in Biochemistry

4.2

- Facilities and activity of the Clinical Analysis Laboratory of the University Hospital Marques de Valdecilla (HUMV)

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
The exam includes 25 multiple choice questions and 5 short answer questions, and is eliminatory. In the part of the test, negatives (-1/4) will be counted for each failed question, and this penalty will not be applied to blank questions. Leaving 3 or more	Written exam	No	Yes	30,00
The exam includes 25 multiple choice questions and 5 short answer questions, and is eliminatory. In the part of the test, negatives (-1/4) will be counted for each failed question, and this penalty will not be applied to blank questions. Leaving 3 or more	Written exam	No	Yes	30,00
Oral presentations or written work. Evaluation on the resolution of clinical cases related to the syllabus of the subject. Punctuality, attitude and interest in clinical practices will be evaluated.	Work	No	No	10,00
The exam includes 25 multiple choice questions and 5 short answer questions, and is eliminatory. In the part of the test, negatives (-1/4) will be counted for each failed question, and this penalty will not be applied to blank questions. Leaving 3 or more	Written exam	Yes	Yes	30,00
TOTAL				100,00
Observations				
<ul style="list-style-type: none"> - It is mandatory to pass the three partial exams of the course to pass the subject. The minimum mark to pass is 5 out of 10. - There is no compensation between partials. - The recovery of the partial not passed during the course will take place in the extraordinary call of February. It will only be necessary to take the complete exam in this call in case of not presenting or failing the three partial exams. - Failure to pass in extraordinary exam any of the suspended partials, or not presented, in the course, will mean the failure of the subject. - To pass the subject, only the mark of the theoretical exams will be taken into account (it supposes 80% of the total once approved). The practice grade is only applied, once these have been passed, to improve the grade (20% of the final grade). - The presentations of the clinical cases in the classroom practices, and the clinical practices, will be evaluated by the professor. - Attendance at practices (classroom, laboratory, clinics) is mandatory. Any unjustified absence will subtract 0.5 of 2 points in the practice mark. A minimum of two absences without proper justification will mean the failure of the subject. 				
Observations for part-time students				
<ul style="list-style-type: none"> - Students enrolled part-time will undergo only one evaluation from the theoretical part, if requested. The evaluation will include an exam of similar characteristics to those made in the course. - Furthermore, in case of being unable to attend the practical classes regularly, these may be offset by the completion of a written work about any of the subjects which are exposed in them. 				

8. BIBLIOGRAPHY AND TEACHING MATERIALS**BASIC**

- J.M. Prieto, J.R. Yuste: "La clínica y el laboratorio", 22 ed, Elsevier, 2015
- Principios de Bioquímica Clínica y patología Molecular. 2ª ed Ed Elsevier. Autor: Alvaro Glez Hdez
- La Clínica y el Laboratorio. 20ª Ed Ed Masson. Balcells
- Interpretación clínica de las pruebas de laboratorio. 4ª Ed. Ed Masson. Jacques Wallach
- K.J. Ryan, C.G. Ray: "Sherris Medical Microbiology" 5th ed. McGraw Hill, 2010
- G. Prats: "Microbiología Clínica" 1ª ed, Panamericana, Madrid 2006
- Nussbaum, McInnes, Willard: "Thompson & Thompson. Genética en Medicina", Masson, S. A Barcelona, 8ªed, 2015
- Strachan: "Genetics and Genomics in Medicine" . Ed. Garland Science, 2015
- Fainboim L. and Geffner J: "Introducción a la Inmunopatología Humana", 6 ed, Panamericana, 2011
- Regueiro J.R., López-Larrea C., Gonzalez S., Martínez-Naves E: "Inmunología. Biología y Patología del Sistema Inmunitario" 5 ed, Panamericana, 2021.
- Monografías de la Sociedad Española de Inmunología de Diagnóstico y Monitorización de las enfermedades autoinflamatorias, enfermedades alérgicas, del trasplante e inmunoterapia del cáncer (Editorial Elsevier).