Course Unit	Internship in Biomedical Laboratory Sciences I			Field of study	Biomedical Laboratory Sciences								
Bachelor in	Biomedical Laboratory Sciences			School	School of Health								
Academic Year	2023/2024	Year of study	4	Level	1-4	ECTS credits	30.0						
Type	Semestral	Semester	1	Code	9995-804-4101-00-23								
Workload (hours)	810	Contact hours	T -	TP -	PL -	TC -	S -	E 580	OT 30	O -			

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s)	Andrea Luisa Fernandes Afonso, Angela Maria Pais Rodrigues, Antonio Jose Madeira Nogueira, Celso Tome dos Santos Lopes, Emanuel Onofre Serra Lameiras, Jose Pedro dos Santos Neves, Josiana Adelaide Vaz, Rossana Pilar Marcelino Correia, Viviana Andreia dos Santos Gonçalves

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Develop and deepen their own knowledge and practices, the intervention area of Technical Laboratory Biomedical Sciences
2. Demonstrate technical and scientific capacity and practical application of knowledge acquired during the component theoretical and practical course.
3. Develop attitudes ethical conduct of their own profession.
4. Organize the time available to plan, execute and assess effectively, the technical routine in the laboratory.
5. Contribute to the welfare of the team work that is integrated, as well as the actual return from work.
6. Show attitudes of relationships with professionals and users, leading to social relations necessary for the practice.
7. Know how to write a report/"dossier" based on developed practical activity in the scope of training period

Prerequisites

Not applicable

Course contents

The content of the course comprises four modules: Clinical Biochemistry/Immunology Laboratory, Clinical Hematology Laboratory, Clinical Microbiology Laboratory, Clinical Immunohemotherapy Laboratory, all of them are mandatory and to be developed in a hospital environment.

Course contents (extended version)

1. Clinical Hematology Laboratory Module
   - Make venous blood samples.
   - Program and monitor the maintenance of the equipment used in Hematology.
   - Schedule, implement and interpret quality control.
   - Develop the basic techniques of hematology.
   - Prepare the different dyes used in hematology.
   - Prepare and stained by different staining methods, the peripheral blood smear.
   - Show smears of peripheral blood associated with various hematological pathologies.
   - Interpreting results from the visualization of peripheral blood smear.
   - Develop cytochemical and enzymatic techniques.
   - Develop specific techniques for the investigation of various hematologic diseases.
2. Clinical Immunohemotherapy Laboratory Module.
   - Analyze the route of blood in a service of General Imunohematology.
   - Complete separation and storage of components and plasma derivatives.
   - To harvest, storage and separation of blood samples.
   - Prepare, select and store reagents for the various determinations.
   - Implement and evaluate: techniques ABO, Rh and other systems; TAD, PAI, transfusions compatibities.
   - How to act before a transfusion reaction.
   - Determine the quality control in general imunohematology.
   - Develop technical exploration of primary hemostasis, coagulation and fibrinolysis.
   - Use Laboratory equipment and make the calibration, monitoring and maintenance.
   - Making determinations in the field of Virology.
3. Clinical mmunology/Biochemistry Laboratory Module.
   - Collect venous blood and other biological products.
   - Prepare, select and store reagents.
   - Identify and prepare the products to be analyzed.
   - Perform and interpret daily the calibration and control of the techniques that will be used.
   - Validate the internal quality control daily and interpret external quality control.
   - Interpret, evaluate and validate the results obtained always based on the clinical diagnosis.
   - Separate and store organic products in accordance with the determinations to be performed.
   - Prepare, select and store the reagents for the different determinations.
   - Schedule, implement and evaluate: agglutination tests; E. L. I. S. A; M. E. I. A; cytometry Stream.
   - Learn to use equipment Laboratory and make the calibration, monitoring and maintenance.
4. Clinical Microbiology Laboratory Module.
   - Prepare culture mediums.
   - Properly select the culture medium in the act of sowing.
   - Improve sowing techniques for various biological products.
   - Prepare the dyes for: Gram staining, Ziehl-Neelsen, etc.
   - Perform stains: Gram, Ziehl-Neelsen, etc.
   - View and interpret urinary sediment results and smears of different biological products
   - Identify bacterial strains using manual techniques or automated systems.
   - Perform antibiotic susceptibility testing: manual techniques or automated systems.
   - Interpret the results obtained from bacterial identification and antibiogram.
   - Research eggs, cysts and parasites in feces; identify the most common fungi and yeasts.

Recommended reading

1. Lewis, S. , Bain, B. , Bates, I, . & Failace, R. (2006). Hematologia prática de Dacie e Lewis. Porto Alegre : Artmed.
2. Brecher, M. (2005). Technical manual. Maryland : AABB.
3. Henry, J. (1999). Diagnósticos clínicos e tratamento por métodos laboratoriais. São Paulo : Manole.
4. Roitt, I. , Brostoff, J. , & Male, D. (2003). Immunology. Tamboré : Manole.
5. Sacher, R. , & Mcpherson, R. (2002). Interpretação clínica dos exames laboratoriais. Brasil : Manole.

Teaching and learning methods

The internship develops in the clinical pathology and Imuno-hemotherapy services of various public hospitals and is divided into 4 modules of 140 hours plus 22 hours of seminars. The teaching methodology will be expository, explanatory but especially demonstrative and "case-based" learning since this curricular unit will run in the occupational context.

Assessment methods

- Continuous assessment and internship report - (Regular, Student Worker) (Final)
  - Laboratory Work - 80% (Continuous assessment of the internship)
  - Reports and Guides - 20% (Internship report 10% related to written work and 10% discussion of the report)

Language of instruction

Portuguese

Electronic validation

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26-10-2023	21-11-2023	21-11-2023	21-11-2023