INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Clinical and Laboratorial Hematology I			Field of study	Biomedical Laboratory Sciences		
Bachelor in	Biomedical Laboratory Sciences			School	School of Health		
Academic Year	2022/2023	Year of study	3	Level	1-3	ECTS credits	5.0
Type	Semestral	Semester	1	Code	9995-550-3103-00-22		

Workload (hours)	135	Contact hours	T	TP	PL	TC	S	E	OT	O
			-	22,5	30	-	-	-	7,5	-

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): Joao Pedro Afonso Rodrigues, Jose Joaquim Costa, Josiana Adelaide Vaz, 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. Understand some basic concepts and procedures in the area of haematomology.
2. Execute laboratory routine work in the range of hematology.
3. Perform laboratory work plans in the scope of hematology.
4. Participate and explain correctly laboratory results reached in this area.
5. Participate in research projects in this area.
6. Analyze and interpret a critical scientific work.

Prerequisites

Before the course unit the learner is expected to be able to:
N/A

Course contents

The content of the course includes the following topics: The main constituents of blood and its functions; Hematopoiesis; Erythrocyte patology: Anemia, policitemia and aplastic anemia; The iron metabolism: ferropenic anemia, anemia by losses blood and hemochromatosis; Macrocitics anemia; Sideroblastics anemia and medullary dysplasia; Haemolytic anemia.

Course contents (extended version)

1. The main constituents of blood and its functions
   - Blood cells (morphology and functions): Red blood cell, White blood cell: granulocytes, Thrombocytes
   - Plasma (constituents and functions).
2. Hematopoiesis:
   - Structure and function of the bone marrow, spleen and others lymphoid organs;
   - Stem cells and cytokines;
   - Proliferation, differentiation and cell maturation.
3. Erythrocyte patology: Anemia, policitemia and aplastic anemia.
   - Anemia concept.
   - Classification of anemia: etiology and morphology.
   - Fisiopatology of acute and chronic anemia.
   - Policitemia: fisiopatology, classification, diagnosis and treatment.
   - Aplastic anemia.
4. The iron metabolism: ferropenic anemia, anemia by losses blood and hemochromatosis. .
   - a) Cinética and metabolism of iron.
   - b) Ferropenic anemia: etiology, clinical manifestations laboratory demonstrations and treatment.
   - Anemia by blood losses: acute loss, chronic losses and lack of iron.
   - Hemochromatosis: etiology, fisiopatology and treatment.
5. Macrocitics anemia.
   - The metabolism of vitamin B12
   - Folic acid metabolism.
   - Megalobastose and eritropoiese ineffective.
   - Macrocitics anemia: clinical manifestations anemia, laboratory demonstrations and treatment.
6. Sideroblastics anemia and medullary dysplasia.
   - Sideroblastics Anemia: classification, clinical picture and laboratory.
   - Displástics anemia: classification, clinical picture and laboratory.
7. 7. Haemolytic anemia:
   - Fisiopatology classification and laboratory demonstrations: acute, chronic, intra and extravascular;
   - Congenital: i. Membrane change; ii. Outher; iii. Enzymatic deficits;
   - Premature destruction of antibody-mediated.
8. Practices in haetomology:
   - a)Venous blood samples i. General recommendations on venous blood samples ii. Use of anticoagulants;
   - Erythrogram i. Manual count, Haemoglobin, Haematocrit, Hematimétrics indexes determinations;
   - Blood smear and different types of staining.
   - Classification and diagnosis of anemia;
   - Different view of normochromatic morphologies;
   - Assessment of the different theoretical anemia taught in component based on the histogram;
   - Association of the histogram obtained by Automation with the preview of peripheral blood smears.

Recommended reading

1. Dacie, J. , Lewis, S. , Bain, B. , Bates, I. , & Failace, R. (2006). Hematologia prática de Dacie e Lewis. Porto Alegre : Artmed.
2. Pádua, M. (2011). Patologia clínica para técnicos - hematologia-citologia. Loures : Lusociência.
3. Nathan, D. , Orking, S. , & Ginsburg, D. (2003). Nathan and Oski´s haematology of infancy and childhood. Estados Unidos da América : Saunders.
4. Oliveira, R. (2007). Hemograma : como fazer e interpretar. São Paulo: Livraria Médica Paulista Editora.
5. Hoffbrand, A. , Moss, P. , & Pettit, J. (2006). Essential haematology. Oxford : Blackwell, cop.

Teaching and learning methods

Lectures - 30 hours, active methodology, audiovisual resources. Encouraging the participation of students using real clinical cases and concrete. Practical classes - carrying out practical laboratory using specific methodologies for different protocols.

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Assessment methods

1. Distributed assessment - (Regular, Student Worker) (Final)
   - Final Written Exam - 60% (Continuous assessment)
   - Reports and Guides - 15% (Reports)
   - Laboratory Work - 25% (Practical and laboratory exam)
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
   - Final Written Exam - 100% (Final Written Exam)
3. Theoretical and practical subjets - Worker/Final - (Student Worker) (Special)
   - Final Written Exam - 100% (Evaluation by written examination, about the pratical course.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

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02-11-2022	02-11-2022	04-01-2023	07-01-2023

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