SUBJECT OUTLINE

1. Programme of study description

1.1.	**THE "CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY**
1.2.	**THE FACULTY OF MEDICINE**
1.3.	**THE CLINICAL DEPARTMENT 8 Radiologie, Oncologie, Hematologie**
1.4.	**DISCIPLINE MCS-HEMATOLOGIE (CLINICA SI DE LABORATOR) SPITALUL UNIVERSITAR DE URGENTA BUCURESTI**
1.5.	**DOMAIN OF STUDY: Healthcare – regulated sector within the EU**
1.6.	**CYCLE OF STUDIES: BACHELOR'S DEGREE**
1.7.	**PROGRAMME OF STUDY: MEDICINE**

2. Subject description

2.1.	**Name of the subject/compulsory subject/elective subject within the course: Immunophenotyping in immunology and in the diagnosis of hematological diseases**				
2.2.	**Course code:**				
2.3.	**Type of course: (DF/DS/DC): DC**				
2.4.	**Status of course (DOB/DOP/DFA): DOP**				
2.5.	**Course tenured coordinator:** PROF. UNIV. DR. HORIA BUMBEA (56 ani, vechime activitate didactică – 24 ani)				
2.6.	**Practicals/clinical rotations tenured coordinator:** ASIST UNIV. DR. DAN SEBASTIAN SOARE (36 ani, vechime activitate didactică – 7 ani)				
2.7. Year of study	**III**	**2.8. Semester**	I or II	**2.9. Type of assessment**	E

3. Total estimated time (hours/semester of didactic activity) – teaching module

3.1. Number of hours per week	4 hours	**Out of which : 3.2. course**	2 hours	**3.3 seminar/laborator**	**2 hours/ week**
3.4. Total number of hours from curriculum	56 hours	**Out of which : 3.5.** course	28 hours	**3.6. seminar/laborator**	28
Evaluation (nr. hours):					
II. Preparation individual study					
Distribution of allotted time	14 weeks	**Out of which : course**	28 hours	**Seminar/laborator**	**28 hours**
Study from textbooks, courses, bibliography, and student notes					
Additional library study, study on specialized online platforms and field study					
Preparing seminars / laboratories, assignments, reports, portfolios and essays					
Preparation for presentations or checks, preparation for the final examination					
Examinations					

Other activities		
3.7. Total hours individual study		
3.8. Total hours per semester (3.4+3.7.)		
3.9. Number of credit points		2 credits

4. Prerequisites (where applicable)

4.1. of curriculum	Anatomie, Biochimie, Fiziologie, Genetica, Farmacologie, Semiologie Medicală
4.2. of competencies	-

5. Requirements (where applicable)

5.1. for delivering the course	Classroom, videoprojector, PC
5.2. for delivering the clinical rotation	Clinical department, stem cell lab

6. Results of teaching

Professional competencies (expressed through knowledge and skills)	- Notions regarding the production of diseases, the signs and symptoms characteristic of each condition useful for guiding laboratory diagnosis in hematology and immunology - Immunophenotypic diagnostic algorithm in hemopathies - Interpretation of results - Establishing a hematological diagnosis, on clinical and paraclinical bases
Transversal competencies (of role, of professional and personal development)	Theoretical knowledge about the flow cytometry method and applications in hematology and immunology Establishes paraclinical and diagnostic investigation schemes, interprets the results of investigations - (medulogram, immunophenotyping, karyotype) Briefly interprets the specific immunophenotyping analysis bulletins by flow cytometry

7. Subject learning objectives (based on the scale of acquired specific competencies)

7.1. General learning objective	- Familiarization of the student with the applications of flow cytometry in hematology
7.2. Specific learning objectives	At the end of the internship, the student must be able to: - know the principle of the flow cytometry method - knows the applications of the method in hematology and immunology

8. Content

8.1. Curs	**Metode de predare**	**Observații**
History. The fluidic principles of flow cytometry. The working principle of the flow cytometer. Types of flow cytometers. Fluorochromes. Photoreceptors. Monoclonal antibodies. Conjugation with fluorochromes. Sorting by flow cytometry.	Direct exposure electronic support (Power Point presentation)	4 h
Principles of immunophenotypic acquisition, calibration, fluidics, autofluorescence, spectral compensation, histogram, dot-plot graphic expression	Direct exposure electronic support (Power Point presentation)	4 h
Flow cytometry in hematology. Immunological classifications of malignant hemopathies. Diagnosis of acute leukemias	Direct exposure electronic support (Power Point presentation)	4 h

Diagnosis of chronic lymphoproliferative disorders	Direct exposure electronic support (Power Point presentation)	4 h
The study of lymphocytic subpopulations. Applications in immunology	Direct exposure electronic support (Power Point presentation)	4 h
immunophenotyping in transfusiology, benign diseases. Diagnosis of paroxysmal nocturnal hemoglobinuria (PNH)	Direct exposure electronic support (Power Point presentation)	4 h
DNA content study.. Aplications	Direct exposure electronic support (Power Point presentation)	2 h
8.2. Seminar / lab	**Teaching methods**	**Comments**
Direct exposure of clinical cases / patients with hematological diseases admitted to the Departments of Hematology and the Bone Marrow Transplantation department Analiza de cazuri. Interpretation of histograms / dot-plots	Direct exposure electronic support (Power Point presentation). Interactive teaching.	26 h
Bibliography Flow Cytometry in Hematopathology, Nguyen Doyen T., Springer, 2007 Practical Haematology; Dacie and Lewis; Eleventh Edition, 2012 Essential Haematology; Victor Hoffbrand , Paul Moss , John Pettit, 7th Edition (2016)		

9. Assessment

Type of activity	9.1. Assessment criteria	9.2. Assessment methods	9.3. Assessment weighting within the final grade
9.4. Curs	Knowledge of the theoretical notions of the subject	Theoretical exam	100%
9.5. Seminar/ Lucrari practice	Activity during the clinical internship - immunophenotyping indication	Presence registry, case analysis	
9.5.1. individual project (if exists)			
9.6. Minimum performance standard			
Minimum 50% in each component of the assessment			

Date of filing: 10 Septembrie 2025	**Signature of the course tenured coordinator** As in Staff Establishment	**Signature of the seminar tenured coordinator** As in Staff Establishment
Date of approval in the Council of the Department	**Head of Discipline** Prof. Univ. Dr. Horia Bumbea	**Head of Department** Prof. Univ. Dr. Daniel Coriu