



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Biomedicina, Neuroscienze e Diagnostica avanzata		
ACADEMIC YEAR	2023/2024		
BACHELOR'S DEGREE (BSC)	BIOMEDICAL LABORATORY TECHNIQUES		
INTEGRATED COURSE	CLINICAL PATHOLOGY - INTEGRATED COURSE		
CODE	08456		
MODULES	Yes		
NUMBER OF MODULES	3		
SCIENTIFIC SECTOR(S)	ING-INF/05, MED/05		
HEAD PROFESSOR(S)	BALISTRERI CARMELA	Professore Associato	Univ. di PALERMO
	RITA		
OTHER PROFESSOR(S)	BALISTRERI CARMELA	Professore Associato	Univ. di PALERMO
	RITA		
	SCOLA LETIZIA	Professore Associato	Univ. di PALERMO
CREDITS	12		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	<b>BALISTRERI CARMELA</b> <b>RITA</b> Wednesday 10:00 12:00 Istituto di Patologia generale, Corso Tukory 211 <b>SCOLA LETIZIA</b> Tuesday 10:00 13:00 Sezione di Patologia Generale del Dipartimento di Biopatologia e Biotecnologie Mediche		

**DOCENTE:** Prof.ssa CARMELA RITA BALISTRERI

<b>PREREQUISITES</b>	The student must possess knowledge of biochemistry and pathophysiology of major diseases. It must have also acquired the elements of basic laboratory and professionalized training conducted in the first year of the course.
<b>LEARNING OUTCOMES</b>	<p>Knowledge and understanding The student will acquire the cultural and technical basis in clinical pathology, the organization of the workshop and the information management in the Health sector.</p> <p>Applying knowledge and understanding The knowledge must allow him to apply the analysis procedures for the production and management of laboratory data suited to the identification of the parameters useful for the diagnosis prevention and treatment of diseases, knowing then manage storage communication systems and computerized data management laboratory.</p> <p>Making judgments Ability to make independent decisions on the reliability of the results obtained and on the technical adequacy of the applied methods both in diagnosis laboratory both in immunohematology with particular regard to the production and conservation of emo-components.</p> <p>Communication skills Be able to relate to different professional healthcare operating in the laboratory to correctly communicate the laboratory data also through the use of computing tools devoted to clinical and users.</p> <p>Learning ability Being able to collect, organize and interpret correctly the technical information obtained with biomedical analysis methods and immuno-hematological procedures.</p>
<b>ASSESSMENT METHODS</b>	<p>Oral examination which consists of an interview aimed at verifying knowledge and full understanding of the topics addressed in the course, as well as the candidate personal capacity of explain and processing his/her knowledge.</p> <p>The use of the computer is also foreseen in order to verify the ability to create, modify, and manage a database with laboratory data.</p> <p>The vote is expressed in thirtieth, as detailed in the following schema:</p> <p>30-30 laude: Excellent knowledge of teaching content; students demonstrate high analytical and synthetic capacity and it is able to apply the knowledge to solve problems of high complexity</p> <p>27-29: Excellent knowledge of teaching content and excellent properties of language; students demonstrate analytical and synthetic skills and able to apply their knowledge to solve moderately complex and, in some cases problems, even high</p> <p>24-26: Good knowledge of teaching content and good properties of language, the student is able to apply the knowledge to solve problems of medium complexity</p> <p>21-23: Fair knowledge of teaching content, in some cases limited to the main topic; acceptable ability to use the specific language of the discipline and independently apply the knowledge acquired</p> <p>18-20: Minimum knowledge of teaching content, often limited to the main topic; modest ability to use the specific language of the discipline and independently apply the knowledge acquired</p> <p>1- 17: The student does not have an acceptable knowledge of the main teaching content, very little or no ability to use the specific language of the discipline and independently apply the knowledge acquired.</p>
<b>TEACHING METHODS</b>	Lectures and didactic Labs (Information Processing Systems Module)

## MODULE INFORMATION PROCESSING SYSTEMS

### SUGGESTED BIBLIOGRAPHY

- 1 ) D. Sciuto, G. Buonanno, L. Mari; Introduzione ai sistemi informatici 5/ed, McGraw-Hill. ISBN-13 978-8838668326  
 2) P. Manghi, A. Brogi, V. Gervasi, A. Martinelli, G. Fiorentino, A. P. Pala; Le basi di Dati per Medicina e Farmacia, McGraw-Hill. ISBN-13 978-8838662577  
 3) Dispense integrative e lucidi proposti dal docente.

<b>AMBIT</b>	10353-Scienze interdisciplinari
<b>INDIVIDUAL STUDY (Hrs)</b>	45
<b>COURSE ACTIVITY (Hrs)</b>	30

### EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims at providing basic knowledge associated to the Information and Communication Technology, as a useful support for laboratory testing in disease diagnosis. The course offers an introduction to computer systems, analysing the related basic operating principles of its infrastructures: the hardware, the software, and the network infrastructures. The course will also introduce the basic concepts of database, DBMS, and information systems, highlighting the LIS (Laboratory Information System) main features. Finally, the last part of the course will be devoted to a simple LIS design and management.

## SYLLABUS

Hrs	Frontal teaching
2	Course introduction; Information representation and processing.
2	Main characteristics of algorithms, programming languages, and source codes.
3	Hardware Infrastructure: introduction to computer architecture; central processing unit; memory systems; I/O devices.
2	Software Infrastructure: features and purposes of an operating system; major components of an operating system.
3	Network Infrastructure: data and information transmission; computer networks; a brief introduction to TCP/IP.
2	An introduction to databases, DBMS, and Information Systems.
5	Database and DBMS. Definition and design of a simple Information System.
5	Database and DBMS. Implementation of a simplified Information System.
5	Database and DBMS. Management of a simplified Information System.
1	Search strategies in Google and Pubmed.

## MODULE CLINICAL PATHOLOGY

*Prof.ssa CARMELA RITA BALISTRERI*

### SUGGESTED BIBLIOGRAPHY

I contenuti minimi riguardanti la diagnostica di laboratorio possono essere reperiti su uno dei seguenti testi

Medicina di Laboratorio \_ Logica & Patologia Clinica – terza edizione-Ed. Piccin (DATA PUBBLICAZIONE: marzo 2019)  
ISBN: 978-88-299-2973-3; CODICE PICCIN: 0110091; NUMERO PAGINE: 1440; AUTORI: Antonozzi - Gulletta

Biochimica clinica e medicina di laboratorio\_ terza edizione \_Ed. Edises (data pubblicazione: 18 agosto 2020); EAN: 9788836230228; ISBN-10:8836230229; Numero PAGINE: 620; AUTORI: M. CIACCIO, G. LIPPI.

Sono inoltre a disposizione degli studenti in possesso delle credenziali d'accesso al portale riservato (<http://immaweb.unipa.it/immaweb/home.seam>) le presentazioni (.pdf) utilizzate durante le lezioni ed, a richiesta, articoli scientifici di approfondimento su specifici argomenti.

<b>AMBIT</b>	10349-Scienze medico-chirurgiche
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	60

### EDUCATIONAL OBJECTIVES OF THE MODULE

The student will have to acquire the cultural and technical bases in the field of clinical pathology that can allow him to apply the procedures, protocols and laboratory methodologies used in the measurement and qualitative analysis of biomarkers useful for the management of pathologies: prevention, diagnosis, prognosis and therapy.

## SYLLABUS

Hrs	Frontal teaching
8	The logic of the diagnostic laboratory and instrumental examinations: - The organization of the clinical pathology laboratory - The instrumental diagnostic - The evaluation of the instrumental data Laboratory - Pre-analysis and Analytical Variability - The validation of the samples - Quality Control - Certification and Accreditation - methods and times for laboratory reporting
8	The patient with hematologic diseases: - Applications Flow Cytometry and FACS - The blood count - Modifications of dell'emocromo pathological parameters and their interpretation
6	The patient with coagulation disorders - Haemostasis - Examinations of first and second level - Molecular diagnostics for bleeding diathesis and thrombophilia
4	The patient with Metabolic diseases: - Enzymatic Biomarkers (techniques and limits) - Genetic and epigenetic Biomarkers - Methods of analysis
3	Run tests for the assessment of the state of inflammation laboratory protocols for the identification of SIRS
10	The patient with diseases of the immune system: - Diagnostic Methods of Laboratory of allergic diseases and allergies - Serological pictures in autoimmune diseases - The laboratory diagnosis in immunodeficiency
4	Examination of biological liquids and specimens: Generalized edema, and localized edema Methods of analysis of liquid spilled in body virtual cavity The examination of ascites and pleural fluids liver and pancreatic secretions stool examination synovial fluid examination examination of the CSF
4	The patient with hepatic diseases: related biomarkers and laboratory methodologies
6	prenatal diagnostics - Screening of the first and second quarter - Amniocentesis, chorionic villus sampling, blood sampling funicular - Diagnostic techniques in diseases of chromosomal aberrations  Laboratory Diagnostics in single-gene and multifactorial diseases - The Mendelian transmitted diseases - Methodological Flowchart - The multifactorial diseases - Methodological Flowchart
3	POCT model and instruments management, POCT analyses repertoire; Blood Gas Analysis

## MODULE IMMUNOHAEMATOLOGY

Prof.ssa LETIZIA SCOLA

### SUGGESTED BIBLIOGRAPHY

#### Testi consigliati

Giovanni Di Minno, Ferdinando Cirillo, Giorgio Reali : Emocoagulazione ed emostasi. Immunoematologia e trasfusione. Piccin II edizione. editore: Piccin-Nuova Libreria

Edizione: 2. Data di Pubblicazione: 1991. EAN: 9788829917990. ISBN: 8829917990. Pagine: 478.

Biochimica clinica e Medicina di laboratorio\_ terza edizione \_Ed. Edises (data pubblicazione: 18 agosto 2020); EAN: 9788836230228; ISBN-10: 8836230229; Numero PAGINE: 620; AUTORI: M. CIACCIO, G. LIPPI.

V. Del Gobbo "Immunologia ed immunoematologia" Piccin Editore Technical Manual, XV ed.,

American Association of Blood Banks F. Pasquinelli, Diagnostica e Tecniche di Laboratorio Rossini Editore (Manuale tecnico della banca del sangue).

Sono inoltre a disposizione degli studenti le presentazioni (.ppt) utilizzate durante le lezioni ed, a richiesta, articoli scientifici di approfondimento su specifici argomenti .

<b>AMBIT</b>	10349-Scienze medico-chirurgiche
<b>INDIVIDUAL STUDY (Hrs)</b>	45
<b>COURSE ACTIVITY (Hrs)</b>	30

### EDUCATIONAL OBJECTIVES OF THE MODULE

Student must acquire the cultural bases within Immunoematology, learning the characteristics of the main antigenic erythrocyte systems and regular and irregular antibodies, and then apply the technical manual and automatic typing and identification

The student should know the separation of blood components and the use and management of products .In Immunohaematology the technician must be able initiating, maintaining and automatic procedures that accompany a blood transfusion chain, also managing the routine maintenance making the cross-matches. Finally the biomedical laboratory technician is involved in the preparation of blood components for topical use and distribution of those to infusive or industrial use. they should have knowledge to enable them to implement and manage the antibody and erythrocyte typing techniques of manual and automatic basis and to manage and control the instrumental apparatus responsible for this use. Making judgments: Ability' to take autonomous decisions on the issuance of the results which preceded the issuance of the report. Communication Skills: To be able to report its professionalism' with those of a senior health care executive or doctor in the production of results that have a clinical impact by doing the typing of erythrocyte antigens, seeking irregular antibodies or by running pretransfusional cross-match thus require a subsequent validation. Learning ability: the student must be able to correctly interpret the information obtained with biomedical analysis methodologies.

## SYLLABUS

Hrs	Frontal teaching
8	ABO system: gene organization and antigen structure .THE Se se system , natural antibodies, ABO typing. Analysis of discrepancies between major test and reverse test. Sensibilization and Agglutination ;typing on microcolumn and micropiastra. Analysis of automatic and manual typing procedures .
7	The Rh system : The antigen D and Rh phenotype; genetic and structural characterization of Rh. The Rh antigens typing, Variant forms of the antigen D and technical typing procedures. Phenotypes null.
2	The "minor" groups: Lewis, Ii, P, MN, Ss, Kk, Duffy, Kidd, Lutheran
2	Irregular antibodies and testing of direct and indirect Coombs. identification of treated and untreated panels, Titration adsorption and elution.
1	The Cross-match.
4	Preparation of blood components for transfusion use: Preparation and storage of red cells, platelets, red blood cell of plasma; Preparation of blood components for topical use and their characterization.
1	The role of the laboratory in the immunological characterization of immune-mediated hemolytic anemia and drug-induced hemolytic anemia.
1	The laboratory in the prevention and diagnosis of MEN
3	The HLA system: serological and molecular typing
1	Productive apheresis and therapeutic apheresis