

## COURSE DETAILS

### "GENERAL PATHOLOGY"

SSD MED/04

DEGREE PROGRAMME: MEDICINE AND SURGERY

ACADEMIC YEAR 2025-2026

## GENERAL INFORMATION—TEACHER REFERENCES

COORDINATOR: ANTONIO FELICIELLO;

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Professor surname and name	Position	Scientific Fields	Phone (081)	Reception (day/time/building)	E-mail (unina.it)
Bifulco Maurizio	Full Professor	General Pathology	081-7462200	Tue 14.30-17(Ed.19)	maubiful@
Fiore Danilo	Associate Professor	General Pathology	081-5452921	Tue 10.00-13(Ed.19)	danilo.fiore@
Chiariotti Lorenzo	Full Professor	General Pathology	081-7462047	Mon 15-17 (Ed. 19)	lorenzo.chiariotti@
Feliciello Antonio	Full Professor	General Pathology	081-7463615	Tue 14.30-17(Ed.19)	feliciel@
Racioppi Luigi	Associate Professor	General Pathology	081-7463037	Tue 14.30-17(Ed.19)	luigi.racioppi@
Palazzo Luca	RTD	General Pathology		Wed 10-13 (Corpo basso Sud)	luca.palazzo@

## GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE (IF APPLICABLE): GENERAL PATHOLOGY

MODULE (IF APPLICABLE):

SSD OF THE MODULE (IF APPLICABLE):

TEACHING LANGUAGE: ENGLISH

CHANNEL (IF APPLICABLE):

YEAR OF THE DEGREE PROGRAMME(I, II, III): III

SEMESTER (I, II, ANNUAL): I

CFU: 8

### REQUIRED PRELIMINARY COURSES

There are no required preliminary courses

### PREREQUISITES (IF APPLICABLE)

Basic concepts of physiology, immunology, microbiology and medical human genetics.

### LEARNING GOALS

The course aims at providing students with basic principles and mechanisms responsible for diseases. General Pathology focuses on four components of the disease: 1. cause/etiology ("why a disease occurs"); 2. mechanisms of development and pathogenesis ("how a disease occurs"); 3. structural, molecular and cellular alterations; 4. direct and indirect consequences (clinical manifestations). Based on fundamental concepts (cell molecular structure and function, metabolic pathways, genome, epigenome and mechanisms of hereditary or complex diseases) that students have previously acquired in the courses of Biology, Biochemistry, and Genetics, this course addresses how perturbations of the normal molecular and cellular function(s) cause tissue and organ damage.

### EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

#### Knowledge and understanding

The student will acquire the fundamental knowledge of the basic mechanisms underlying the human diseases. At the end of the course, students will be able to address:

1. The etiology underlying most important human diseases.
2. The molecular pathogenesis underlying most important human diseases.
3. The major clinical presentations of most important human diseases and link the molecular and cellular alterations to morphology (histopathology) and to the clinical phenotype.

#### Applying knowledge and understanding

The course will provide the appropriate knowledge and instruments to allow the student to:

1. Understand and analyze the etiology and pathogenesis of complex phenotypes through the systematic use of the relevant basic and clinical scientific literature.
2. Integrate the basic knowledge of anatomy, biochemistry, histology/histopathology, cytogenetics, to human molecular pathology.
3. Analytically approach to clinical problems.

### COURSE CONTENT/SYLLABUS

The course deals with the general mechanisms of etiology and pathogenesis of human diseases, with particular emphasis on fundamental pathological processes.

**Concepts of general etiology and pathogenesis:** intrinsic and extrinsic causes of disease. Genetic and epigenetic basis of diseases.

**Acute inflammation.** Chemotaxis, diapedesis, phagocytosis. Mediators of inflammation. Complement system. Receptors of the innate immune response. Systemic manifestations of inflammation. Fever and hyperthermia. Septic shock. Diseases of altered innate response. Dysbiosis and human diseases. Healing processes.

**Chronic inflammation:** fibrosis. Main types of granuloma.

**Mechanisms of cell damage and tissue degeneration.** Necrosis, apoptosis, necroptosis. Hypoxia, ischemia, heart attack, atherosclerosis and dyslipidemia. Steatosis. Protein misfolding, prions, primary and secondary amyloidosis.

**Cellular adaptations.** Hyperplasia, hypoplasia, hypertrophy, hypotrophy, metaplasia. Autophagy. Dysplasia, anaplasia. Precancerous lesions.

**Neurodegenerative diseases.** Alzheimer's disease, vascular and neurodegenerative dementia, frontotemporal dementia (FTD), amyotrophic lateral sclerosis, Parkinson's disease, Huntington's disease.

**Connective tissue diseases.** Hereditary (Marfan syndrome, Ehlers-Danlos syndrome and osteogenesis imperfecta, homocystinuria) and acquired (rheumatoid arthritis, systemic lupus erythematosus, rheumatic fever and osteoarthritis).

**Mitochondrial diseases.** Kearns-Sayre syndrome, Pearson's syndrome, MERRF, MELAS, NARP, MILS, dominant optic atrophy, Charcot-Marie-Tooth 2A and 4A.

**Molecular pathology of signal transduction.** McCune-Albright syndrome, Carney complex disorder, achondroplasia, Laron's syndrome, RASopathies, neurofibromatosis, Noonan's syndrome, Legius syndrome.

**Benign and malignant tumors.** Classification and staging of tumors. Cancer epidemiology: risk factors. Hereditary tumors. Fundamental characteristics of tumor cells. Cancer stem cells. Alterations in the cell cycle control, senescence, cell survival and metabolism (Warburg effect). Angiogenesis, invasion and metastasis. Chemical and viral carcinogenesis. Genetics of tumors. Driver genes: oncogenes and tumor suppressor genes. Non-coding RNAs and tumors. Mitochondria, oxidative stress and cancer.

Week	Day	N. Hours	Formal Lectures ILA -Interactive Learning Activities)	Professor
<b>06/10 October</b>	Mon. 16:00-17:00	1	Course introduction	Feliciello
	Tue. 14:00-17:00	3	Cell injury and adaptation to environmental stress	Bifulco
	Wed. 14:00-17:00	3	Mechanisms of cell and tissue injury	Bifulco
	Thur. 16:00-17:00	1	Immune recognition of cell and tissue injury	Bifulco
<b>13/17 October</b>	Mon. 16:00-17:00	1	Acute inflammation	Racioppi
	Tue. 14:00-17:00	3	Acute inflammation	Racioppi
	Wed. 14:00-17:00	3	Chronicinflammation	Racioppi
	Thur. 16:00-17:00	1	Chronicinflammation	Racioppi
<b>20/24 October</b>	Mon. 16:00-17:00	1	Atherosclerosis	Feliciello
	Tue. 14:00-17:00	3	Steatosis, fibrosis	Feliciello
	Wed. 14:00-17:00	3	Collagendiseases	Feliciello
	Thur. 16:00-17:00	1	Hypoxia, ischemia	Feliciello
<b>27/31 October</b>	Mon. 16:00-17:00	1	Amyloidosis	Feliciello
	Tue. 14:00-17:00	3	DNA damage	Feliciello
	Wed. 14:00-17:00	3	Signal transduction in diseases	Feliciello
	Thur. 16:00-17:00	1	Signal transduction in diseases	Feliciello
<b>03/07 November</b>	Mon. 16:00-17:00	1	Mitochondrial disorders	Feliciello
	Wed. 14:00-17:00	3	Mitochondrial disorders	Feliciello
	Thur. 16:00-17:00	1	Oncology: Epidemiology and classification	Palazzo
<b>10/14 November</b>	Mon. 16:00-17:00	1	Oncogenes	Palazzo
	Tue. 14:00-17:00	3	Oncogenes	Palazzo
	Wed. 14:00-17:00	3	Tumor suppressors	Palazzo
	Thur. 16:00-17:00	1	Tumor suppressors	Palazzo
<b>17/21 November</b>	Mon. 16:00-17:00	1	Cell cycle and cellular senescence	Palazzo
	Tue. 14:00-17:00	3	Hereditary tumors	Palazzo
	Wed. 14:00-17:00	3	Halmarks of cancer	Fiore
	Thur. 16:00-17:00	1	Chemical and viralcarcinogenesis	Fiore
<b>24/28 November</b>	Mon. 16:00-17:00	1	Invasion and angiogenesis	Fiore
	Tue. 14:00-17:00	3	Metastasis	Fiore
	Wed. 14:00-17:00	3	miRNA and Cancer	Fiore
	Thur. 16:00-17:00	1	Cancer risk factors	Fiore
<b>01/05 December</b>	Mon. 16:00-17:00	1	Oxidative stress and cancer	Fiore
	Tue. 14:00-17:00	3	Neurodegenerative diseases	Chiariotti

	Wed. 14:00-17:00	3	Neurodegenerative diseases	Chiariotti
	Thur. 16:00-17:00	1	Genetic and epigenetic basis of disease	Chiariotti
<b>09/12 December</b>	Mon. 15:00-17:00	1	Genetic and epigenetic basis of disease	Chiariotti
	Tue. 14:00-17:00	3	Imprinting disorders 1	Chiariotti
	Wed. 14:00-17:00	1	Imprinting disorders 2	Chiariotti
<b>15/19 December</b>	Mon. 16:00-17:00	1	Interactive learning activities	Palazzo
	Tue. 14:00-17:00	3	Interactive learning activities	Chiariotti
	Wed. 14:00-17:00	3	Interactive learning activities	Fiore
	Thur. 16:00-17:00	1	Interactive learning activities	Feliciello

## READINGS/BIBLIOGRAPHY

Suggested textbooks:

1. Robbins & Cotran Pathologic Basis of Disease, 10e 2020 Vinay Kumar, Abul K. Abbas, Jon C. Aster Elsevier Saunders;
2. Rubin's Pathology: Clinico pathologic Foundations of Medicine, 8e 2019 David S. Strayer, Emanuel Rubin WolterSKluer.

## TEACHING METHODS

Frontal lessons, interviews on student request for further information and clarifications, training activities. Clerkship activities will focus on practical aspects of what is discussed at lectures.

## EXAMINATION/EVALUATION CRITERIA

a) Exam type:

Examtype	
written and oral	
only written	
only oral	X
project discussion	
other	

In case of a written exam, questions refer to:	Multiple choice answers	
	Open answers	
	Numerical exercises	

b) Evaluation pattern:

Written text and oral exam